

NBCAL violation of products that compete with breastfeeding on the social network Instagram

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Abstract *The article aims to identify NBCAL violations and analyze the content of messages posted on the Instagram social network. This qualitative-quantitative study consisted of a convenience sample of profiles identified through specific terms preceded by the hashtag symbol (#). Data were collected for two months by trained researchers using a structured questionnaire. We calculated the product promotion frequency that characterized violation of the NBCAL per category and manufacturer. The messages were analyzed using the content analysis technique. We identified 64 personal accounts of mothers with violations in 89 products, mainly food (n = 72), dairy compounds (54.2%), and infant formulas (45.8%) were the most publicized. Two thematic categories emerged from the posted texts, one related to the quality of the products and the other about breastfeeding difficulty, especially low milk production. The study identified NBCAL violations on the Instagram social network, alerting the need to recognize digital marketing to include it in the rules imposed by the Norm in the virtual context, considering the capillarity of social networks in disseminating information to the public in question.*

Key words *Virtual social network, Marketing, Breastfeeding, Maternity, Infant food*

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Introduction

Breastfeeding is a fundamental human right with indisputable maternal and child health benefits. Besides its protective role against childhood diseases, obesity, and chronic noncommunicable diseases in adulthood, breastfeeding positively affects children's emotional and cognitive development and women's emotional well-being¹. The World Health Organization (WHO) recommends breastfeeding up to two years or older and exclusive breastfeeding up to six months².

Although this practice's advantages are recognized worldwide, the early interruption of exclusive breastfeeding and the use of products that compete with breastfeeding are everyday situations in Brazil and several countries around the world¹. According to the most recent national survey, the prevalence of EBF in Brazil is 45.8%, below the target of 70% recommended by the WHO by 2030, while using bottles and nipples in children under six months achieves a frequency of 52.1%³.

The Brazilian Norm for the Marketing of Food for Infants and Young Children, Nipples, Pacifiers and Bottles (NBCAL), enacted by Law N° 11.265/2006⁴, is an adaptation of the WHO International Code of Marketing of Breast-Milk Substitutes² and regulates the commercial promotion of infant formulas and other products that compete with breastfeeding, establishing rules in the sale, labeling, advertising, education and information to the public and defines commercial promotion as any strategy of informative activity and persuasion to induce the acquisition or sale of these products⁴.

Marketing and commercial promotion are potential influencers of infant feeding-related choices⁵. The search in virtual media for information about breastfeeding has increased in recent years, providing opportunities for invasive marketing practices from large industries that take advantage of the vulnerability, especially of mothers⁶. A systematic review of studies reporting violations of the International Code in digital media revealed a significant increase from five to 44 publications from 2000 onwards, corresponding to the evolution of the digital marketing setting⁷. Manufacturers of milk, infant formulas, and other products for children have used digital marketing to induce mothers to purchase these products. Through screening mechanisms that identify the profile of parents, companies seek to approach them to build a relationship of bonding, trust, and support, including breastfeeding,

interested in helping to solve their problems and difficulties⁸.

The publication of videos and other types of posts on social networks can either result in encouragement to breastfeed or in giving up this practice⁹. Studies have reported the influence of social media in supporting and promoting breastfeeding¹⁰⁻¹². However, there needs to be more research on using social networks to commercialize human milk substitutes.

In this context, we assume that the maternal statements on the social network Instagram violate the NBCAL and that there is intentionality in the contents beyond simple reports of experiences. As a result, this study aimed to identify marketing strategies that are NBCAL violations on the social network Instagram and analyze the content of the posted messages.

Methods

An exploratory documental qualitative-quantitative research¹³ was conducted from the intentional selection of user profiles with personal pages on the Instagram social network that advertised in their posts products for infants or early childhood children, covered by NBCAL. Profiles that shared content (texts and images) about the following products were included: infant formulas, follow-up infant formulas, nipples, pacifiers, bottles, and dairy compounds. While not mentioned by name in the Law⁴, dairy compounds were included for evaluation in the present study because they are aimed at children from one year of age. Therefore, they are considered by it. The unit of analysis was the product; that is, each product was computed only once, regardless of whether it appeared with others or the number of profile posts.

Initially, we accessed users' accounts using Portuguese search terms preceded by the hashtag symbol (#), used to direct users to pages, topics, publications, and discussions on various social networks. The terms were as follows: #formulainfantil, #chupeta, #mamadeira, #mamadeirasim, and #maedeformula. This initial search allowed identifying other terms that alluded to commercial brands, which were incorporated in the study, namely: #nan1, #nan2, #nan3, #milnutriprofutura, #paisprofutura, #ninhohoradedormir, #ninhohct, #milnutribrasil, and #danonenutricia. We characterized marketing strategies that violated the NBCAL per the group of products disclosed in the posts:

1) Group of infant formulas (IF), follow-up for infants, formulas for specific dietary and therapeutic needs; and related childcare products (nipples, pacifiers, and bottles): Posts containing references to any of these products by NBCAL represented a violation, as any commercial promotion strategy that refers to these products is prohibited;

2) Group of infant formulas for early childhood children (ECIF) or dairy compounds: Posts containing reference to any of these products without a sentence or with inadequate warning statement from the Ministry of Health represented a violation of the NBCAL. Although NBCAL allows commercial promotion, these foods should contain a warning statement: “The Ministry of Health informs: breastfeeding prevents infections and allergies and is recommended up to two years of age or older” and “The Ministry of Health informs: after six months of age, continue breastfeeding your child and offer new foods”, in the case of dairy compounds. If the statements were present, they should be in visual prominence, legible, bold, framed, and horizontal. Failure to comply with these requirements is a violation of the NBCAL⁴.

Data were collected three days a week in July and August 2021 by researchers trained at the NBCAL through standardized training. Each researcher was responsible for half of the pre-defined search terms to perform the collection, thus preventing the same publication from being tracked more than once.

We extracted data on gender, number of page followers, and whether the child was an infant or preschooler when her image was present in the post to characterize the user's profile. We collected the name and manufacturer to characterize the product. An infringement of the NBCAL was considered when the posts advertised products from group 1 and, in the case of group 2 when the warning statement was not found or was inadequate. Besides the information inherent to the products, we extracted the other contents of the posts to identify the marketing strategies.

We performed a quantitative analysis of the data using the Excel[®] program to obtain the absolute frequencies and percentages of user and product characteristics, which are expressed according to the categories: Food and Related Childcare Products, as established by NBCAL.

The texts contained in the posts were analyzed using the content analysis technique, with a verbal (oral or written), gestural, figurative, or documentary message that expresses social representations as its starting point. Messages have

implications in everyday life because they are established by socio-cognitive processes, influencing communication and behavior¹⁴.

The qualitative analysis was conducted from the pre-analysis, material exploration, and interpretation stages. In the first stage, the messages were extracted and read in-depth to systematize the content's initial impressions. The material's exploration consisted of coding and aggregating it into thematic categories, not defined a priori, identified per the most evident theme in the groupings. For the interpretation, the information obtained based on theoretical material was analyzed to support the inferences and interpretations¹⁵, also considering that the interpretation succeeds the understanding from the appropriation of what is understood when elaborating the possibilities projected by what is understood¹⁶.

Results

We selected 64 profiles of Instagram users, including women, mothers of preschoolers, and infants, who showed images of children ($n = 42$; 65.6%). In the photographs, the children were displayed consuming the food or surrounded by cans stacked in a pyramid shape, showing the large volume of product consumed until then. In posts about nipples and bottles, children usually appeared using the products, holding them with their hands.

The number of page followers ranged from 169 to 14,000,000, with half of the profiles having over 10,700 followers. A total of 94 posts were identified, of which 8.5% ($n = 8$) were recognized as advertising material, as they contained the terms “publ”, “sponsored”, or “paid partnership” preceded by the # symbol in Feeds or Stories.

The number of products advertised per post ranged from 1 to 4, totaling 89 products that violated the NBCAL, of which 72 (80.9%) were food and 17 (19.1%) related to childcare products (nipples, bottles, and pacifiers). Regarding food, dairy compounds had the highest number of promotions identified ($n = 39$; 54.2%), while in the correlated, bottles appeared more frequently in publications ($n = 15$; 88.2%). The distribution of these products by category is shown in Table 1.

Nestlé was the most frequently published brand ($n = 43$; 59.7%) of the foods, followed by Danone ($n = 27$; 37.5%). In the category of related childcare products, Philips was the most frequent manufacturer ($n = 7$; 41.2%), followed by MAM ($n = 5$; 29.4%) and Lillo ($n = 2$; 11.8%).

Two thematic categories emerged from the posted texts, one related to the quality of the advertised products and the other about the difficulty with breastfeeding. The narratives that illustrate these categories are presented in Chart 1. They were selected considering the type of product covered by the NBCAL, the arguments presented by the mothers for choosing the products due to the breastfeeding difficulty, and the marketing done about their quality attributes.

As for the quality of food and childcare products, 67 posts highlighted their importance to the child's growth and development, intestinal health, sleep, vision, and nutrient content. Regarding related childcare products, the texts highlighted their role in preventing colic and gas and the similarity of the nipple to the mother's breast (Table 2).

Regarding the breastfeeding difficulties observed in 24 posts, the low milk production and the child's difficulty in breastfeeding were highlighted (Table 3).

Discussion

All 64 publications selected on the Instagram social network were made by mother users, indicating that breastfeeding and food care in childhood involve a gender issue, with women assuming the leadership in this culturally "typical feminine" role^{17,18}. Establishing breastfeeding requires learning and constant support to remain successful. The partner, family, friends, health professionals, and the neighborhood can integrate this support network. Nóbrega (2019)¹¹ affirms that

bonds and exchanges are strengthened through interactions, generating a feeling of recognition, solidarity, and satisfaction that can strengthen this practice.

Although the lack of a support network did not appear among the reasons for breastfeeding difficulties, some women reported the baby's difficulty in latching onto the breast, and others, milk rejection. These reasons may have led them to seek support and shelter in virtual spaces. Through social networks, they find other women who share the same afflictions and insecurities, identify themselves, and feel accepting and belonging vis-à-vis the difficulties and guilt of motherhood¹⁹.

However, virtual spaces have been used by companies to promote their products. Senkal *et al.* (2019)²⁰ identified violations of the International Code of Marketing of Breast-milk Substitutes by marketing infant formulas in individual accounts of digital influencers in media such as Facebook and Instagram, who had financial relationships with manufacturers. These authors also found the use of health or nutrition claims to publicize formulas in a direct contact relationship with mothers²⁰. In the present study, a mother who marketed infant formula published a sponsorship request to Nestlé, claiming she had never asked the company for anything until then (Chart 1). Based on this comment, we can assume that the mothers know potential economic interests between manufacturers and influencers. The potential reach of posted comments is also worth considering depending on the number of page followers. Of the investigated profiles, half had over 10,700 followers, and some had millions (Chart 1).

The findings of a systematic review of digital marketing of breast milk substitutes indicate that this practice has been used by companies that offer financial or other incentives for pregnant women and new mothers to act as "influencers" when marketing their products to their followers⁷. A WHO multicenter study conducted in 2022 to verify the impact of digital marketing strategies for breast milk substitutes analyzed 4 million social media posts about infant feeding published in 2021, which reached 2.47 billion people and generated more than 12 million likes, shares, or comments. The study revealed that formula companies pay social media platforms and digital influencers to gain direct access to pregnant women and mothers, reaching up to four times more users than manufacturers⁵ when these influencers post content.

Table 1. Distribution of products covered by NBCAL disclosed in Instagram user profile posts. Brazil, 2021.

Foods	n	%
Infant formulas	33	45.8
Dairy compounds	39	54.2
Total	72	100
Related Childcare Products	n	%
Bottles	15	88.2
Silicone nipples	2	11.8
Total	17	100
Overall total	89	100

NBCAL: Brazilian Norm for the Marketing of Food for Infants and Young Children, Nipples, Pacifiers and Bottles.

Source: Authors.

Chart 1. Narratives posted on Instagram alluding to the quality of products and breastfeeding difficulties. Brazil, 2021.

QUALITY OF PRODUCTS
<p><i>"Did you know that there is an ideal NINHO for every moment of the day? This morning, Dedeco took NINHO Hora da Escola, which has Omega 3, to help him concentrate. Find out more about the "Hora da Escola" of the "Hora de Dormir" ritual on the NINHO website. Thank you, @nestleninho, for participating in my son's routine, making Dedeco a healthier, smarter, and more energetic child!"</i> (10,000 followers)</p>
<p><i>"Our pediatrician prescribed @enfamil premium 2 milk (because Antonella started taking it after 6 months)! As informed by the pediatrician, this milk is most similar to breast milk (of course, nothing replaces mom's breast). However, its formula has components that help the baby's mental and visual development (scientifically proven)! Milk also has essential oils, which make the baby's intestines work normally".</i> (49,600 followers)</p>
<p><i>"...but as things go along, someone asks about the milk that Luli drinks; it's #milnutri from @danonebaby. She has been drinking it since she was 1, like Nina drank up to 2 years old. Moreover, the bottle is from @mambrasiloficial that can be disassembled. A beauty to clean. There's even a post about it on the blog".</i> (6,500 followers)</p>
<p><i>"Kian started breastfeeding formulas at 1 month old. Enfamil is a North American powdered milk brand that gradually arrived in Brazil and is currently one of the best-selling brands in the country. One of its main products is Enfamil 1 Premium, designed to help develop the baby's immune system, as it contains the necessary nutrients for its growth and development".</i> (10,000 followers)</p>
<p><i>"The Phillips Advent petal bottle has a nipple that features an innovative petal design so baby can latch onto it like a breast, making it easier to breastfeed and bottle feed".</i> (49,600 followers)</p>
BREASTFEEDING DIFFICULTIES
<p><i>"A mother's joy is knowing that the baby's food is guaranteed for the month!... Moreover, I'm not less of a mother for not exclusively breastfeeding, and you, moms, who feed your child entirely on formula, we are no more mothers than you."</i> (11,700 followers)</p>
<p><i>"I had problems with milk production. I am no less a mother for not exclusively breastfeeding, and you are no more a mother than I am for exclusively breastfeeding."</i> (93,900 followers)</p>
<p><i>"Kian started to breastfeed formulas at 1 month old. I couldn't breastfeed, and he cried a lot. Yes, I know that breast milk is essential, but it didn't work for me."</i> (10,200 followers)</p>
<p><i>"I struggled to be able to breastfeed without formula. I manipulated alfalfa capsules and drank liters of water. Every mother knows what is best for herself and her baby. She also does not become "less of a mother" by having to introduce formula."</i> (58,000 followers)</p>
<p><i>"My breast nipple was flat, and my baby could not latch on at all and was super agonized wanting to suckle."</i> (6,335 followers)</p>
<p><i>Every mother dreams of breastfeeding, but it's not always possible. The essential thing is that there is LOVE, and I'll always have plenty to give to my little one.</i> (1,009 followers - Post with photo of son in front of a pyramid of stacked IF cans).</p>
<p><i>Yes, I felt less of a mother for being unable to breastfeed, but today I realized it doesn't matter. My son is very well cared for and loved. Moreover, no BREAST will classify me as a good mother."</i> (169 followers - Post with a picture of the baby among piles of IF cans).</p>
<p><i>I nursed on my mother's breast for up to 2 and a half months. Then, for some reason, I started with the formula. I used 60 cans in that year alone. @nestle_br, sponsor us; I never asked you for anything.</i> (2,257 followers)</p>
<p><i>Bottle @mam, who has used it? I confess that initially, she didn't like it when my baby was a newborn. I don't know if it was the shape of the nipple or the flow. I don't know. She adapted much better to the round nipple, the bottle itself.</i> (2,376 followers)</p>

Source: Authors.

Just as the WHO International Code of Marketing of Breast-milk Substitutes recommends that sales representatives of these products do not

directly or indirectly contact pregnant women or mothers of infants and young children², Article 8 of the NBCAL⁴ prohibits financial incentives of

Table 2. Frequency (%) of posts alluding to food quality and related childcare products on Instagram. Brazil, 2021.

Foods	n	%
Essential for growth and development	22	32.8
Essential for intestinal health and better absorption of nutrients	4	6.0
Important for sleep	7	10.4
It contains vitamins and minerals	15	22.4
Important for visual, brain, concentration, and intelligence health	7	10.4
Essential for the immune system	1	1.5
Related Childcare Products	n	%
Prevents gas and colic	3	4.5
Easy to clean and durable material	3	4.5
Product resembles the mother's breast and helps with breastfeeding	4	6.0
Orthodontic nipple	1	1.5
Total	67	100.0

Source: Authors.

Table 3. Frequency of posts about difficulties with breastfeeding on Instagram. Brazil, 2021.

Breastfeeding difficulty	N	%
Low milk production	7	29.2
The baby had difficulty latching on	7	29.2
The child rejected it	4	16.6
Maternal stress	1	4.2
Did not specify the difficulty	5	20.8
Total	24	100

Source: Authors.

breast-milk substitute companies to individuals. Therefore, the posts that seemed to be advertising material in the present study violated the Law and should be notified to Health Surveillance for the appropriate measures.

One of the digital marketing strategies for breast milk substitutes is using images and texts suggesting the similarity of the product to milk or the mother's breast, as observed in the present investigation in posts about silicone nipples and baby bottles (Table 2). In Brazil, these infractions on the Internet and social media were found in the 2020 annual monitoring by the International Network in Defense of the Right to Breastfeed (IBFAN)²¹ in the sale of pacifiers, bottles, nipple protectors, and infant formulas. In Mexico, viola-

tions of the WHO International Code of Marketing of Breast-milk Substitutes also occurred on television, social networks, and websites through these strategies, and Nestlé® was the company with the most promotions in the food category (60.3%)²². Similarly, this company had a more significant presence in the posts of the present study.

As for infant formulas, marketing or commercial promotion is prohibited under Article 4 of Chapter II of the NBCAL⁴. Besides comparing the product's characteristics with breast milk, some posts reported that its use occurred during the first month of life, a phase in which the child is still learning to suck the breast. The use of these products concomitantly with breastfeeding gradually reduces the volume of milk secreted in the breasts, interrupting breastfeeding²³ (Chart 1).

As explained, NBCAL allows the commercial promotion of follow-up infant formulas as long as a warning statement accompanies it. However, none of the posts included the required warning statement, not even those identified as advertising materials, in which the responsibility involves the manufacturer, which is another violation of the NBCAL.

Still, regarding food, dairy compounds were found most frequently in posts (Table 1). It is a powder formula containing cow's milk and several other ingredients, some nutritionally unsuitable for toddlers, such as sugars, in high concentrations²⁴. This food is classified as ultra-processed by the Food Guide for Brazilian children under two years of age²⁵. Therefore, its consumption should be avoided. Like all processed foods commercially intended for children up to three years of age, dairy compounds should be within the scope of the NBCAL to be marketed according to its rules.

In the present study, the texts of the posts about dairy compounds used scientific language, with medical terms highlighting the role of a specific nutrient in the body, for example, in sleep, brain development, intelligence, vision, and intestinal health (Box 1). The effects of such exposure strategies on mothers have been evaluated in international studies^{5,25}. Research by Vilar Compte *et al.* (2022)²⁶ conducted with 1,044 Mexican women (pregnant women and mothers of children younger than 18 months) identified that most (80%) believed that children needed the product for its role in satiety, brain development, and allergy control.

Some publications argued that a health professional had prescribed the product. However,

this is optional for consumption by another child (Chart 1). The only food that can be widely recommended is breast milk, except in specific situations of maternal or child illnesses.

The records identified in the posts regarding the difficulties women face in breastfeeding suggest that marketing companies exploit vulnerabilities, standing as allies, without judgment, and in support of women, employing several tactics to build trust and emotional connections. We should clarify that the NBCAL⁴ provides for punishment for legal entities – manufacturer, distributor, and seller – and health professionals who market breastfeeding substitutes on social networks. Health Surveillance punishes companies, resulting in fines ranging from R\$2,000.00 to R\$1,500,000.00, depending on the infraction's severity²⁷. On the other hand, individuals, as identified in this study, go unpunished when they violate the NBCAL.

In the present investigation, previous unsuccessful experiences with breastfeeding served as a backdrop for promoting the products. Through narratives about real issues, we intended to show that using infant formula is a common practice for women who struggle with breastfeeding. The lack of milk pointed out by mothers as a motivation for using milk formulas was also observed in a study conducted in Teresina, Piauí, Brazil, with eleven mothers aged 18 to 43 who weaned early²⁸.

Thus, the explicit content in the messages aimed to present a solution for women who, possibly, in a context of anxiety and insecurity, struggled with breastfeeding. Mothers who are suffering are received by others who, with clear or subtle narratives about the mishaps of motherhood, publicize the advantages and benefits of foods and products, the use of which undermines breastfeeding. These influencers establish a pro-market and anti-breastfeeding support network, possibly captured by the industry⁵. The manifestation of the posted content is complex. It can exert a manipulative, ideological, and idealized influence, causing impacts and effects that guide different behaviors and actions, giving new meaning to beliefs and concepts, considering these women's context¹⁴.

We should underscore that this study was conducted during the COVID-19 pandemic, when many women resorted to electronic pages and social media, becoming more vulnerable to more invasive advertising strategies²¹. An international study that evaluated the marketing tactics of nine manufacturers of breastfeeding substitutes over the Internet in 14 countries during

the pandemic identified the use of messages containing statements such as “it boosts the immune system” and “prevents respiratory and digestive infections caused by viruses and bacteria” so that consumers believe that the products would help fight COVID-19 in babies or make them less susceptible. We also found that Nestlé® used in its advertisements, via social networks, the numbers of confirmed cases of COVID-19, targeting parents and suggesting that its products increased immunity²⁹.

As observed in this study, the online sharing of experiences among mothers allowed us to identify that the social network is a powerful tool for exchange and acceptance, often used to deal with the insecurities, uncertainties, and pressures inherent to the mothering experience. However, it also promotes the dissemination of erroneous information that can give credibility to products and lead to consumption, even more so when it comes to care related to baby feeding. This issue is undoubtedly crucial for users who seek information on this subject. Therefore, it can justify why health was the main motto in the posts that highlighted the quality of the product, a sensitive topic regarding childcare. Although only a few posts were displayed as advertising material, which received sponsorship, it is doubtful whether the others were also a communication channel for companies to market their products covertly.

One of the limitations of the study concerns the fact of undertaking an analysis of the content in a social network, where the lines are limited to the posts, without there being a greater knowledge of the context of the women's lives and assuming that there is a previous intentionality by some of them to do marketing. This fact may have prevented an in-depth analysis of their opinions, beliefs, values, and representations about the breastfeeding experience.

When seeking to understand, we should exercise the understanding of contradictions, considering that it is understood in action and language, and both are conflicting and contradictory due to the effects of power, the social relationships of producing social inequalities and interests¹⁵. Regarding NBCAL, product companies that compete with breastfeeding do not comply with marketing rules. At the current technological level, power relationships have transcended the physical socialization spaces and vigorously reached digital environments such as social networks, highlighting the need for greater protection of pregnant women, puerperae, and breastfeeding women, a vulnerable target audience.

Final considerations:

Breast milk is the healthiest food recognized worldwide as a public health priority for infant feeding. Aligned with the WHO, Brazil has established several guidelines to support, promote, and protect breastfeeding by ensuring the appropriate use of breast milk substitutes, when necessary, based on adequate information and regulated marketing. However, the study identified several violations of the NBCAL on social network Instagram. Publications displayed commercial promotion of products covered by the Norm, including those with prohibited promotion.

Thus, these results highlight the need to recognize digital marketing to include it in the norms' rules in the virtual context, considering the capillary social networks in disseminating information to the public in question. This measure becomes even more urgent because industries perceive this gap in the Law.

Furthermore, the study highlighted the need for better dissemination of information on the protection and promotion of breastfeeding and adequate and healthy food for infants and young children, aligned with national public food and nutrition policies.

Collaborations

EOF Sally, DS Gomes and LOC Dantas: conception and planning of the study. DS Gomes and LOC Dantas: data collection. EOF Sally, DS Gomes, LOC Dantas and P Henrique: analysis and interpretation of data and preparation of the manuscript. All authors approved the submitted version of the article.

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