

# The approach to breastfeeding in the first years of elementary school\*

ABORDAGEM DA AMAMENTAÇÃO NOS PRIMEIROS ANOS DO ENSINO FUNDAMENTAL

ABORDAJE DE LA LACTANCIA EN LOS PRIMEROS AÑOS DE LA ENSEÑANZA PRIMARIA

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## ABSTRACT

To review the curricula and content of 1st- through 5th-year elementary school science textbooks with respect to the presence or absence of terms related to breastfeeding, we conducted a descriptive study analyzing the curricula and 16 textbooks of 25 public schools in 03 municipalities of São Paulo between September 2010 and February 2011. In particular, we defined essential concepts to teach and explain breastfeeding to children. We found that no block themed curriculum explicitly addressed the theme of breastfeeding. Nine of the sixteen predefined concepts were present in eight of the sixteen textbooks adopted. From the analysis, we identified a new category: *Support and help the family*. Three textbooks used illustrations associated with artificial feeding. In the program and textbooks, there are several opportunities to introduce this topic. We advise integrating this content into all science textbooks in the early years of elementary school.

## DESCRIPTORS

Breast feeding  
Health promotion  
Education, primary and secondary  
Curriculum

## RESUMO

Para analisar os currículos e os livros escolares adotados nos primeiros cinco anos do Ensino Fundamental na disciplina de Ciências quanto à presença ou não de termos relacionados à prática da amamentação, realizamos um estudo descritivo analisando o currículo e 16 manuais de 25 escolas públicas de três municípios do interior paulista, de setembro/2010 a fevereiro/2011. Definimos previamente alguns conceitos considerados imprescindíveis para ensinar e explicar à criança noções de amamentação. Verificamos que nenhum bloco temático do currículo aborda explicitamente a temática amamentação. Nove dos 16 conteúdos definidos estavam presentes em oito dos 16 livros. Da análise emergiu a categoria *apoio e ajuda da família*. Três obras utilizavam ilustrações associadas à alimentação artificial. No programa e nos manuais escolares existem diversas oportunidades de incluir este tema. Aconselha-se a integração dos conteúdos em todos os manuais de Ciências dos primeiros anos do ensino fundamental.

## DESCRIPTORIOS

Aleitamento materno  
Promoção da saúde  
Ensino fundamental e médio  
Currículo

## RESUMEN

Para analizar los programas y libros escolares adoptados en los primeros cinco años de Enseñanza Primaria en la materia de Ciencias respecto de la presencia o ausencia de términos relacionados a la práctica de la lactancia, realizamos un estudio descriptivo, analizando el programa y 16 manuales de 25 escuelas públicas en tres municipios del interior paulista, entre setiembre 2010 y febrero 2012. Definimos previamente algunos conceptos considerados imprescindibles para enseñar y explicar al niño nociones de lactancia. Verificamos que ninguna unidad temática del programa aborda explícitamente la cuestión. Nueve de los dieciséis contenidos definidos estaban presentes en ocho de los dieciséis libros. Del análisis surgió la categoría *apoyo y ayuda familiar*. Tres obras utilizaban ilustraciones asociadas a la alimentación artificial. En el programa y manuales escolares existe oportunidad de incluir el tema. Se aconseja integración de contenidos en todos los manuales de Ciencias de los primeros años de enseñanza primaria.

## DESCRIPTORIOS

Lactancia materna  
Promoción de la salud  
Educación primaria y secundaria  
Curriculum

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## INTRODUCTION

The decision to breastfeed for the recommended period of time<sup>(1)</sup> is a complex process dependent upon variables that diverge by country, group, or individual. Intimately tied to a woman's life history and the meaning she attributes to it, this decision is associated with a woman's early education. The decision to breastfeed should be reinforced during the early years through both formal and family education<sup>(2)</sup>.

The importance of teaching the best breastfeeding practices beginning in preschool cannot be emphasized enough, as it will contribute to a woman entering pregnancy with an ingrained habit acquired from her family and society as well as to greater male support for this motherly decision<sup>(3)</sup>.

Breastfeeding is a natural act that should be taught as early as possible<sup>(4)</sup>. Therefore, it is important to disseminate information about breastfeeding in school manuals, grounded on the idea that schools represent a space for the acquisition of knowledge that will perpetuate and influence attitudes throughout adulthood. Introducing this theme at school allows children to become familiar with this practice, as their families are often estranged from the process<sup>(5-6)</sup>.

As essential vehicles to share the importance of breast milk, textbooks eventually become a space for opportunities lost; when human beings are excluded from the mammal category, infant food is associated with bottles, and breastfeeding is removed from pedagogical projects<sup>(7)</sup>. On the other hand, information on breastfeeding can easily be included in a number of school subjects, promoting childhood awareness of breastfeeding and the idea that a woman can easily reconcile breastfeeding practices with her professional activities.

Given that Brazil has governmental policies, programs and goals; systematized data on breastfeeding; and breastfeeding promotion campaigns in the health system as well as in families, communities, schools and the workplace, we wondered what approach elementary education took to teaching breastfeeding.

A promotional approach to breastfeeding at this level of education seems adequate, as there is not enough information available on studies that focus on children and on what they know, think, learn, or have experienced with respect to breastfeeding.

The objective of this study was to analyze the school curricula for the early years of science studies at the elementary level as well as the content of textbooks adopted for the

subject in Brazilian public schools to identify the presence or absence of terms related to breastfeeding practices.

## LITERATURE REVIEW

Education may significantly contribute to building a culture that favors breastfeeding. Given that both male and female attitudes affect social norms, boys and girls should be positively guided by experiences provided in their formal education throughout childhood and the teenage years to appreciate the practices and advantages of breastfeeding.

If school children were given adequate information on breastfeeding, girls would be more motivated to breastfeed when they became mothers, and boys would be more apt to support this motherly decision<sup>(3)</sup>.

Elementary and secondary schools should include breastfeeding in the curriculum and should teach children early on about the advantages of breastfeeding, the dangers of artificial foods, and weaning. It is important for schools to try to integrate health education with everyday life education to become *Health-Promoting Schools*<sup>(7)</sup>.

As they become safe and healthy spaces, schools will facilitate the adoption of healthy behaviors and are therefore in an ideal position to promote and maintain health in education as well as in the surrounding community<sup>(8)</sup>. Schools will thus be able to provide children with formal education concerning breast milk and breastfeeding, and the family and social community will provide children with informal health education concerning this theme.

Geared for six- to fourteen-year-olds and taught in the Portuguese language, primary schooling in Brazil is mandatory and free in public institutions. Schooling lasts nine<sup>(9)</sup> years and is focused on providing citizens with a basic education. Primary education is conventionally organized and is characterized by two cycles. Cycle one corresponds to the first five years (referred to as initial years) and is usually implemented in classes with only one teacher. Cycle number two (the next 4 years) corresponds to the final years, in which the pedagogical job is performed by a team of teachers who are specialized in different disciplines<sup>(9)</sup>.

Curricula share a common national base and are complemented in each teaching system and school by the diverse regional and local characteristics of the society, culture, economy and population<sup>(9)</sup>. Curricula must cover the Portuguese language and mathematical studies, knowledge of the physical and natural world, and knowledge of the social and political reality, particularly that of Brazil<sup>(9)</sup>.

Breastfeeding is a natural act that should be taught as early as possible. Therefore, it is important to disseminate information about breastfeeding in school manuals, grounded on the idea that schools represent a space for the acquisition of knowledge that will perpetuate and influence attitudes throughout adulthood.

The areas of knowledge to be taught in every school include the following: Portuguese Language, Mother Language for indigenous and migrant populations, Mathematics, Sciences, Geography, History, Foreign Language, Art Education, Physical Education, and Religious Education<sup>(10)</sup>.

The process of the systematic pedagogical assessment of teaching materials registered under the National Textbook Program has been conducted by the Secretariat for Basic Education since 1996<sup>(11)</sup>. The purpose of the National Textbook Program is to offer every public school teacher and student free textbooks and Portuguese-language dictionaries to support the teaching-learning process they develop in the classroom<sup>(11)</sup>.

At the end of the process, a Textbook Guide is developed in partnership with public universities for distribution to schools as a teacher support instrument for the selection of textbooks every 3 years<sup>(11)</sup>. For the 2010-12 period, school manual choices were submitted via the internet between June 8-28, 2010<sup>(11)</sup>.

The integration of science as a discipline in elementary school is intended to help children understand the world and its transformations and recognize human beings as individuals and as a part of the universe<sup>(12)</sup>. The concepts and content taught and the strategies used are one way to afford children with expanded explanations about natural phenomena, to further their understanding and encourage their challenging of the different ways to interact with nature, and to increase their awareness of the various modes in which natural resources are used. For elementary school children,

(...) knowing science is increasing their current possibilities for social participation and enabling their full capacity for social participation in the future. (...) [The objectives of this discipline]... are conceived so that students develop competencies that will allow them to understand the world and act as individuals and citizens, using scientific and technological knowledge<sup>(12)</sup>.

The scientific content is organized into four thematic blocks: the Environment; Human Beings and Health; Technological Resources; and the Earth and the Universe. However, only the first three themes are elaborated upon throughout the entire elementary education<sup>(12)</sup>.

In the Environment theme block, the most important knowledge to be developed is an understanding of the mutual relationships between society and the environment, marked by human needs, knowledge, values, and the specific issues of technological resources, which are intimately related with environmental transformations. The problems related to environmental, economic, political, social, and historic factors are discussed. The intention is to instill in the students the human responsibilities that are focused on common well-being and on sustainable development, with an eye on reverting the planet-level social and environmental crisis<sup>(12)</sup>.

In the Human Beings and Health theme block, privilege is given to content referring to the human body as an integrated system that interacts with the environment and reflects the individual's life history. The intent is for students to view the human body as a dynamically articulated whole. An important aspect therein is respect for individual characteristics and differences. The teaching includes content on health and illness, aspects that interfere with these states, different phases of the life cycle, bodily and behavioral transformations in the different stages of life, biological needs that are common to all human beings, a study of the anatomy and physiology of the male and female reproductive systems, pregnancy, delivery, contraception, ways to prevent sexually transmitted diseases, and human sexuality in the different phases of life<sup>(12)</sup>.

The Technological Resources theme block focuses on content related to the transformation of material and energy resources into products, devices, machines or instruments that are necessary to human life, on the processes that enable these transformations, and on the social implications of developing and using technologies. The theme encompasses discussions about the relationships between Science, Technology and Society, in the present as well as in the past, in Brazil as well as in the world, and in various cultural contexts. Concepts such as matter, energy, space, and time are also addressed, as well as the transformations and systems applied to technology that mediate between human beings and their environment<sup>(12)</sup>.

The Guide to Textbooks (Guia de Livros Didáticos PNLD 2010 – Ciências)<sup>(13)</sup> presented reviews of the 11 registered science collections so that teachers in every school could choose their textbooks. The implementation of a nine-year elementary education program required a re-adaptation of the National Textbook Program objectives and a re-organization of the textbook collections used in the early years of elementary education. Only students attending the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grades received a non-consumable book for the Science component of the curriculum at that time<sup>(13)</sup>.

## METHODS

Of all of the subjects taught to schoolchildren in the early years of their education, we believe that Science would be the most suitable curriculum unit in which to address the theme of breastfeeding. Thus, a qualitative descriptive study was developed between September 2010 and February 2011 in 25 elementary schools in three municipalities of inner São Paulo State, and both the school curricula and the textbooks used for the 2<sup>nd</sup>-5<sup>th</sup> grades were analyzed.

These regions were selected for data collection because they contain vast populations and many teaching institutions—potential targets for this study—that can be accessed in a more organized and systematized fashion and with easier access than a single large center such as the city of São Paulo.

A formal request was then made for the development of this study by liaising with the education coordinators, teachers and principals of 25 public elementary schools in writing, by telephone, and personally, and acceptance was finally granted by the Ethics and Research Committee of the São Paulo University's Nursing School under process number 961/2010/CEP-EEUSP. All schools were individually consulted, and the teachers were asked to provide bibliographic references of the school science manual in every grade.

The 25 schools adopted 16 textbooks, distributed as follows: 4 manuals from 4 publishers for the 2<sup>nd</sup> grade, 4 manuals from 4 publishers for the 3<sup>rd</sup> grade, 4 manuals from 3 publishers for the 4<sup>th</sup> grade, and 4 manuals from 3 publishers for the 5<sup>th</sup> grade.

As we are only interested in the breastfeeding-related content offered to the children during these four years of schooling, we have made the ethical and methodological decision not to reveal the bibliographic references in the school manuals. The manuals are designated by a capital letter followed by the school grade (e.g., A2, B3...). In grades where two manuals were adopted from a single publisher, one of those two was identified by the capital letter of the alphabet followed by school grade adding (2<sup>nd</sup> Manual) afterwards (e.g., A4, A4 (2<sup>nd</sup> Manual)).

In the textbook analysis, the contents were organized according to Bardin's principles for content analysis, which apply to a vast diversity of contents and containers<sup>(14)</sup>. Our categories were based on the Catalan study developed by Eva Pegenaute<sup>(15)</sup> with mid and higher primary education cycles (3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> grades) for 8- to 12-year-old students; in addition, we added categories that we considered important to teach and explain basic breastfeeding notions to children: 1) we are mammals; 2) we start drinking from our mother's breasts soon after we are born; 3) breastfeeding promotes nutrition and relationships; 4) drinking breast milk right after being born is natural; 5) breastfeeding is advantageous for the mother, baby, family, community, and environment; 6) breast milk is better than artificial foods; 7) the physiology of breastfeeding, including how a breast works to produce milk; 8) the breastfeeding position is very important and can be taught; 9) breastfeeding does not hurt, and, if it does, it is only because the child is in a bad position; 10) how to offer the breast, including postures and no schedules; 11) the importance of starting breastfeeding as early as possible for correct suckling and because colostrum benefits the baby by providing proteins, vitamins, minerals, and a very high concentration of antibodies that will protect him/her from a variety of diseases; 12) the breastfeeding period (only milk from birth to 6 months, then with solid foods for up to 2 years or more, if the mother and baby so wish); 13) the father is an important element in the breastfeeding process; 14) the use of pacifiers and bottles is harmful to breastfeeding; and 15) myths corrected: a) there is no

weak milk, including explanations of early and late milk and varied and balanced breastfeeding; b) the baby does not need water; up to the 6<sup>th</sup> month, babies should feed on breast milk only, and they do not need water.

A semantic-level content analysis technique was followed, as the technique is characterized by heeding the meaning of words and the analysis of proposed themes or categories<sup>(16)</sup>.

As mentioned earlier, the categories were defined in advance, and the deductive method was followed; however, we were mindful of the potential appearance of new categories during the analysis, and, if such categories arose, we would follow the inductive method.

For a first exposure to and an initial knowledge of the content addressed in each of the manuals, we proceeded with a thorough reading of each manual<sup>(14)</sup>. Later, each book was analyzed, and a remark was made to include the previously determined content and build an analytical grid that enabled an overview of each piece and a comparison among manuals.

## RESULTS

This analysis of the science curriculum allowed us to determine that in the four years of schooling, none of the three thematic blocks explicitly addresses any content that relates breastfeeding with human beings.

This essential knowledge could be included whenever 2<sup>nd</sup> and 3<sup>rd</sup> graders are taught topics related to the effect of human beings on the environment, including the following topics: environmental degradation; environmental protection attitudes; the different living beings and their characteristics and habits; the functions of feeding and reproducing; the cycle of life; the body; growth and development; aspects that contribute to promoting health and avoiding disease; and the life cycle of humans, from newborns to the elderly.

Breastfeeding-related content could be introduced to 4<sup>th</sup> and 5<sup>th</sup> graders when addressing, for instance, the different forms and causes of pollution; other types of aggression on the environment and how they relate to health problems; the scarcity of water on the planet; the human body and its various systems and sub-systems, including specific conditions that affect their functions; recognizing foods as sources of energy and materials for the growth and maintenance of a healthy body; relationships between poor personal or environmental hygiene and diseases; and vaccines and their importance in disease prevention.

As we analyzed how breastfeeding content was included in school grades and manuals, we realized that two of the four manuals used in the 2<sup>nd</sup> grade each included two themes, as illustrated in Chart 1.

**Chart 1** – Identification of previously defined content in school manuals for the 2<sup>nd</sup> grade

Identified content	<i>We are mammals. We start drinking from our mothers' breasts right after we are born.</i>	<i>Drinking breast milk right after being born is natural.</i>	<i>The breastfeeding period (only milk from birth to 6 months, then with solid foods for up to 2 years or more, if the mother and baby so wish).</i>	<i>Breastfeeding advantages for mother, baby, family, community, and environment.</i>
School manual	B2		C2	
Theme block	Environment Human Beings and Health		Human Beings and Health	
Unit	Unit 1 – <i>Life on planet Earth</i> Unit 6 – <i>Learning about animals</i> Unit 7 – <i>What are human beings like?</i>		Unit 3 – <i>I want my health</i>	
Item	<i>Living beings and non-living elements</i> <i>How are animals born</i>		<i>Health starts in the mouth</i>	
Text excerpts	<p>(...) every living being is born, grows, and dies. Living beings may also reproduce; that is, they may originate other similar beings. In nature, living beings find air, water, earth, light, heat, and sun. They also find the food that they need in order to live (p. 7).</p> <p>The children are shown a photo of a mother breastfeeding a child (p. 8).</p> <p><i>A human baby, for instance, totally depends on adults for food, clothing, and shelter. Likewise, a dolphin's calf is fed by the mother and protected as well by other adults (...)</i> (p. 65).</p> <p>(...) like what happens with nearly all mammals, human beings are born from their mother's body. (p. 74)</p> <p>(...) they are animals that feed on their mother's breast milk, like human beings, cats, whales and dolphins. (p. 74)</p> <p>After birth, human beings continue to depend on adults for food (p. 75).</p>		<p><i>After the sixth month of life, a child's nutrition should include various food sources. (...)</i> (p. 88).</p> <p><i>And, before that age, do you have any idea how babies are fed?</i> (p. 89).</p> <p>An image of a mother breastfeeding a child is shown, with subtitles: <i>Guess what the best food for infants is! Babies love it, and it has everything they need.</i> (p. 89)</p>	

Three of the four 3<sup>rd</sup>-grade textbooks contained previously identified content. Manual A3 included such concepts as follows: *breastfeeding promotes nutrition and relationships; drinking breast milk right after being born is only natural; breastfeeding is advantageous for the mother, baby, family, community, and environment; breastfeed-*

*ing is better than artificial foods; the breastfeeding period (only milk from birth to 6 months, then with solid foods for up to 2 years or more, if the mother and baby so wish); myths corrected: the baby does not need water; up to the 6<sup>th</sup> month, babies should feed on breast milk only, and they do not need water* (Chart 2).

**Chart 2** – Identification of previously defined contents in School Manual A3

Identified content	“Breastfeeding promotes nutrition and relationships”	“Drinking breast milk right after being born is natural”	“Breastfeeding is advantageous for the mother, baby, family, community, and environment”	“Breastfeeding is better than artificial foods”	“The breastfeeding period (only milk from birth to 6 months, then with solid foods for up to 2 years or more, if the mother and baby so wish)”	“Myths corrected: the baby does not need water; up to the 6 <sup>th</sup> month, babies should feed on breast milk only, and they do not need water”
School Manual	A3					
Theme Block	Environment					
Unit	Unit 8 – <i>How do living beings reproduce?</i>					
Item	<i>A new life starts in the animal kingdom</i>					
Text excerpt	<p>Image of a breastfeeding mother with subtitles: <i>breastfeeding mother</i> (p. 118). This image and another of a pregnant woman are used to represent the animal kingdom.</p> <p><i>Animals that develop inside their mothers are called viviparous</i> (p. 120).</p> <p><i>Human beings are viviparous animals, because their babies develop inside their mother's uterus (...)</i> the baby will be there until birth (...) (p. 123).</p> <p><i>As they are born, and while they are small, babies must be breastfed. This is so because breast milk is adequate for the baby, for it contains nutrients and antibodies that are passed from mother down to baby so the baby can be fed and protected against diseases. Furthermore, it is easily digested and absorbed. The World Health Organization (WHO) proposes that babies feed only on breast milk until the 6<sup>th</sup> month of age, provided their growth and development are adequate.</i> (p.12).</p> <p>Photo of a breastfeeding mother (p.12).</p> <p><i>When they are born, babies need a lot of care in order to develop into healthy adults. Human beings take care of their babies from the very early hours of life onwards. Their mother usually feeds them, providing them with the care and protection they need (...)</i> (p.128).</p>					

In the Environment block theme, Manual B3 introduces the following notion: *We are mammals. We start drinking from our mothers' breasts right after we are born.* In Unit 4, *Animal Characteristics*, *The birth of animals* explains the characteristics of viviparous animal, that is, those animals that develop inside their mother's body until they are born. The text reads:

It is usually the mother who feeds and protects her young, until they can fend for themselves, but there are cases where both parents take charge of these tasks. Many of the animals we know are viviparous: dogs, cats, horses, whales, dolphins, and human beings (p. 51).

In Unit 5, *Vertebrate and invertebrate animals*, when the authors of the manual classify the animals as mammals, they present the following text, on page 63:

Nearly all mammals are viviparous. Mammals breastfeed when they are young, which means that they thrive on the milk produced by their mothers. Either their mother or both parents take care of their young up to a certain age. Many mammals live in family or larger groups. Human beings are mammals.

On page 64, among the proposed activities, we find the following: *Mention two human characteristics that include humans in the mammal group!*

Another manual that included breastfeeding-related content was C3. Remarkably, in the item *What about people?*, this manual introduces a very important concept in support of breastfeeding: *After leaving maternity, mothers should be given family attention and support, as well as help in caring for the baby (...)* (p. 107). A new category is thus considered to have emerged: *Family support and help* (Chart 3).

**Chart 3** – Identification of previously defined contents in School Manual C3

Identified content	<i>We are mammals. We start drinking from our mothers' breasts right after we are born.</i>	<i>The father is an important element in this process.</i>	<i>Drinking breast milk right after being born is only natural.</i>	<i>The breastfeeding period (only milk from birth to 6 months, then with solid foods up to 2 years or more, if the mother and baby so wish).</i>	<i>Myths corrected: the baby does not need water; up to the 6<sup>th</sup> month, babies should feed breast milk only, and they do not need water.</i>	<i>Breastfeeding is better than artificial food.</i>	<i>Family support and help.</i>
School manual	C3						
Theme block	Environment Human Beings and Health						
Unit	Unit 2 – <i>The living world</i> ; Unit 3 – <i>Transforming life</i>						
Item	<i>Classification of beings</i> <i>Birth from eggs</i> <i>A child's food</i> <i>What about people?</i>						
Text excerpt	<p>(...) <i>Mothers breastfeed their young (...)</i>. (p. 69)</p> <p>Children are asked to draw a mammal, and then they have to answer to which group of vertebrates they belong.</p> <p>(...) <i>In most mammals, the egg is very small, has no hard shell, and remains inside the body of the female. Inside the egg, the embryo develops until birth. (...) Even mammal young who are born at a greater development stage depend on a lot of care. Their mothers feed them, clean them (...) Sometimes fathers also participate in those care efforts (...)</i>. (p. 102 and 103)</p> <p>The illustration for this text shows a female dog breastfeeding its pups, and the subtitles read, "<i>Breastfeeding their young characterizes mammal females.</i></p> <p>(...) <i>since their birth, babies need to be breastfed. Up until the 6th month of life, children should only take breast milk (...). After the sixth month, children should start to take other foods as well (...)</i>(p. 108).</p> <p>The illustration here includes the image of a mother breastfeeding a child, and subtitles read, <i>Breast milk is the best food for a baby</i> (p. 108).</p> <p>In proposed exercises, children are encouraged to speak to their family to learn whether they were breastfed and for how long. <i>After leaving maternity, mothers should be given family attention and support, as well as help in caring for the baby (...)</i> (p. 107).</p>						

From the 4<sup>th</sup>-grade textbooks, only A4 (2<sup>nd</sup> Manual) included the previously selected content, as illustrated in Chart 4.

In the 5<sup>th</sup> grade, in the thematic block Human Beings and Health, textbooks A5 (2<sup>nd</sup> Manual) and B5 addressed the previously selected contents related to breastfeeding, as shown in Chart 5.

**Chart 4** – Identification of previously defined content in 4<sup>th</sup>-grade school textbooks

Identified content	<i>We are mammals. We start drinking from our mothers' breasts right after we are born.</i>	<i>Breastfeeding is advantageous for the mother, baby, family, community, and environment.</i>
School manual	A4 (2 <sup>nd</sup> Manual)	
Theme block	Environment Human Beings and Health	
Unit	Unit 2 <i>Living beings in the environment</i> Unit 4 <i>Human beings in the environment</i>	
Item	<i>Learning about animal groups</i> <i>A new human life</i>	
Text excerpt	...have mammal glands, which produce milk to feed their young; their body is covered by hair, either whole or only parts (p. 111). (...) in most mammals, their young develop inside the body of the female (p. 118). <i>Why is milk important for newborn mammals?</i> (p. 149).	

**Chart 5** – Identification of previously defined contents in 5<sup>th</sup>-grade school manuals

Identified content	<i>We are mammals. We start drinking from our mothers' breasts right after we are born.</i>	<i>Drinking breast milk right after being born is natural.</i>	<i>It is important to start breastfeeding as early as possible for correct suckling and because the colostrum benefits the baby by providing protein, vitamins, minerals, and a very high concentration of antibodies that will protect him/her from a variety of diseases.</i>
School manual	A5 (2 <sup>nd</sup> Manual)		B5
Theme block	Human Beings and Health		Human Beings and Health
Unit	Unit 6 <i>Human reproduction</i>		
Item	<i>Human Beings: a very special living being</i>		
Text excerpt	<i>Human beings are part of the animal kingdom, they are vertebrates, and, because of their characteristics, they belong to the mammals group... like most mammals, human beings also start life from a minuscule egg... (p. 132).</i>	<i>(...) Upon birth, a baby starts to breathe on his/her own and can already take in food. The first food for a newborn is breast milk, which is complete with all nutrients a baby needs and with substances produced by his/her mother's body that will defend and protect him/her from diseases (...)</i> (p. 97).	

In analyzing the 16 manuals adopted for every grade, we were mindful of the presence of images associated with artificial foods. Images of pacifiers were found in two textbooks, and bottles were found in one school manual. Pacifier images were present in the textbook B4, on page 111, where a father is shown holding a child who is using a pacifier, and C5, on page 100, where there is a child using a pacifier. The image of a bottle was found once in relation with non-human animals and again in school manual C4, on page 124, associated with an animal caretaker in a protected reservation. The subtitles of the image state that the caretaker is feeding an animal that has been orphaned.

## DISCUSSION

As we analyzed the Science curriculum for every grade, comparing the content addressed in the textbooks with what we expected to see included, we noticed that although they did not explicitly address any human-related breastfeeding content, there were many instances in the four grades in which this theme could have been included in the syllabi of the three thematic blocks of that school subject. These results coincide with what has been observed in the curriculum for Environment, which is taught to children attending the 1<sup>st</sup> cycle of Elementary Education

in Portugal<sup>(17)</sup>. Introducing this theme in school is a way for children to become familiar with this practice<sup>(5-6)</sup> which is reason enough for schools to include breastfeeding in their curricula<sup>(7)</sup>.

Breastfeeding requires early learning, and it is important to disseminate that information in schools because it allows children to become familiar with this practice<sup>(4-6)</sup>. In the analysis of school manuals, we have observed that five (31.25%) of the 16 textbooks included the following content: *We are mammals. We start drinking from our mothers' breasts right after we are born.* Four textbooks (25.00%) included the following: *Drinking breast milk right after being born is natural.* Three textbooks (18.75%) included the following: *Breastfeeding is advantageous for the mother, baby, family, community, and environment* and *The breastfeeding period (only milk from birth to 6 months, then with solid foods for up to 2 years or more, if the mother and baby so wish).*

Schools should include breastfeeding in the curricula and teach children about the advantages of breastfeeding, the dangers of artificial foods, and weaning<sup>(7)</sup>. Additionally, two manuals (12.50%) referred to the following content: *Breastfeed is better than artificial food, Myths corrected: There is no need for water; up to the 6<sup>th</sup> month, babies should feed on breast milk only, and they do not*

need water, and *The importance of starting breastfeeding as early as possible for correct suckling and because the colostrum benefits the baby by providing protein, vitamins, minerals, and a very high concentration of antibodies that will protect him/her from a variety of diseases.* The latter topic was not observed in any school manual in the study conducted in Spain<sup>(15)</sup>. We have also observed that the content *Father is an important element in the breastfeeding process and Breastfeeding is nutrition and relation* were included in one (6.25%) of the analyzed manuals.

Information on breastfeeding may be easily included in school manuals to increase children's awareness of the practice<sup>(5-6)</sup> and facilitate adoption of health-promoting behaviors<sup>(8)</sup>.

In a study conducted in Spain<sup>(15)</sup>, 82.00% of the books that were analyzed did not correct myths regarding the time suggested for exclusive and complemented breastfeeding, and 42.00% did not correct the myth that breastfeeding does not need complementation.

Similarly to the Spanish study<sup>(15)</sup>, we have observed that no school manual included information on the following important aspects of promoting breastfeeding: *The use of pacifiers and bottles is harmful to breastfeeding, The breastfeeding position is very important and can be learned, Breastfeeding does not hurt, and, if it does, it is only because the child is in a bad position, and How to offer the breast: postures and no schedules.*

In this study, no manual analyzed addressed the content *The physiology of breastfeeding: How does a breast work to produce milk?*, whereas the author of the study conducted in Spain<sup>(15)</sup> observed that 14.00% of the analyzed books addressed this topic.

In a study conducted in Portugal, the authors<sup>(17)</sup> observed that only two manuals for the 3<sup>rd</sup> grade included the following content: *We are mammals. We start drinking from our mother's breasts right after we are born and Drinking breast milk right after being born is natural.* This observation demonstrates that textbooks represent a space for lost opportunities<sup>(7)</sup>.

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## CONCLUSION

In conclusion, when analyzing the school subject of science, we anticipated that the theme of breastfeeding could have been included in various chapters of the many syllabi of the three theme blocks. The analysis of the 16 manuals allowed us to confirm what we had anticipated. However, we noticed that not all of the adopted textbooks considered that theme; only eight addressed the concepts we had defined previously. We also observed that only 9 of the 15 previously identified concepts were present in the manuals that addressed breastfeeding concepts.

Another fact to be underlined is that only two textbooks included images of pacifiers, and another one contained the image of a bottle, the latter being associated with feeding orphaned animals. Outstandingly, also, the analysis introduced a new category, *Family support and help*.

Noticeably, school programs and manuals contain various opportunities to include other critical aspects that teach, clarify and help children acquire a culture of natural food.

There are, indeed, numerous opportunities to include this theme in school programs and manuals. Our recommendation is therefore to include the theme of breastfeeding in the content of all school science manuals for children in the early grades of elementary education in Brazil's public schools.

As we have seen, the process of pedagogical evaluation of textbooks is conducted in partnership with public universities, and it is important that nurses be familiar with the programs and content taught to children so we can identify the need to integrate this content, thereby facilitating the acquisition of health knowledge at an early age in a progressive fashion. We are thus promoting responsibility for healthy choices; implementing promotional measures concerning breastfeeding in early childhood; protecting, promoting and supporting breastfeeding as a whole; identifying breastfeeding as a public health priority; and promoting a return to the culture of breast milk.



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