



FOOD INTRODUCTION IN INFANTS FROM A MATERNAL PERSPECTIVE

***¹Ana Carlla Soares de Assis, ²Iaggo Raphael David, ³Leonardo Lima Pereira Santos, ^{2,4}Stenio Fernando Pimentel Duarte, ⁵Rafael Cerqueira Campos Luna and ⁵Alessandra Caldeira Gaspar Padre**

¹Medical School Undergraduate, Faculdade de Saúde Santo Agostinho; ²Professor and Researcher of the Center for Teaching, Research and Extension in Chronic Diseases - NEPEdc; Specialist Professor at Universidade Paulista – UNIP; ³Mechanical Engineering in Federal University of São Francisco Valley – UNIVASF; ⁴PhD Professor and Researcher at the Center for Teaching, Research and Extension in Chronic Diseases - NEPEdc; Professor at the Santo Agostinho Faculty of Health, Independent Faculty of the Northeast and Faculty of Technology and Sciences; ⁵Pediatrician and Medical School Professor, Faculdade de Saúde Santo Agostinho

ARTICLE INFO

Article History:

Received 17th September, 2019
Received in revised form
06th October, 2019
Accepted 02nd November, 2019
Published online 31st December, 2019

Key Words:

Feeding; Food introduction Pediatric;
Child.

*Corresponding author:

Felipe Garcia Bittencourt

ABSTRACT

Food introduction is essential for good child growth and development as well as ensuring good feeding practices. Therefore, culturally widespread misguided habits may cause long-term damage in an infant's growth and development, making it necessary to understand motherly vision on complementary feeding. Thus, through a transverse analytical research, both qualitative and quantitative in design, applied with 73 infant's mothers in a referential pediatric ambulatory, it was possible to identify feeding mistakes made by parents regarding food introduction due to lack of proper information. In doing so, food introduction practices by the mothers was profiled showing that it has occurred in a premature way. Overall, it is possible to present measures that improve nutritional profile and reflect better life quality for infants.

Copyright © 2019, Ana Carlla Soares de Assis et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Ana Carlla Soares de Assis, Iaggo Raphael David, Leonardo Lima Pereira Santos, Stenio Fernando Pimentel Duarte et al., 2019. "Food introduction in infants from a maternal perspective", *International Journal of Development Research*, 09, (12), 32598-32602.

INTRODUCTION

Ideal feeding involves practices that ensure good nutritional support, necessary to an infant's growth and development (BRASIL, 2015). In this context, it is recommended to maintain exclusive breastfeeding up to six months of age and only then introduce complementary feeding (SOCIEDADE BRASILEIRA DE PEDIATRIA, 2018). During food introduction, misguided perceptions about how initial feeding must occur might alter adequate infant nourishment, both in supplying excessive macro and micro nutrients, and its low absorption, considering that physiological maturation to digest certain types of food only happens from six months of age (WERE, 2018). Innutrition is responsible for 60% annual deaths among children below five years old, whereas most of those deaths are associated to inadequate feeding practices, mainly in the first year of live, being necessary to pay attention

to the mother's life nutrition habits, since there is a relation between those and the child's nutrition profile (WHO; 2003). Within this premise, paradigm shift revolving the modern woman, that doesn't live to care for the home and children anymore has direct influence in infantile alimentation, correlating to motherly scholar level and family income (Silveira, 2008). Thus, it is necessary to ensure that the mother has support during feeding transition: not only technical information, but also active aid - given that lack of mothers' nutritional education is a reality in Brazil, with studies proving its relation to early weaning and misguided complementary feeding (Were, 2018 and Silveira, 2008). Nutrition is an important part on a child's life, therefore, the analysis of how food introduction has occurred is fundamental to evaluate the nutritional risk in which the child is inserted. As a result, it is possible to identify a feeding pattern - adequate or not - that initiates with habits acquired since the first food exposure, benefiting or not the infant. Hence, this present study aims to

evaluate motherly perception on infant's complementary feeding.

MATERIALS AND METHODOLOGY

This is an analytical, transverse research with descriptive design, developed within a both qualitative and quantitative approach in which data was collected between April and September 2019, in a referral pediatric clinic in Southwest Bahia, Brazil. Seventy-three infant's mothers constituted the sample. Average mother age was 30,6 +- 7,65 years. Average infant age was 13,4 +- 7,56 months. Data collection about how food introduction occurred was performed by own questionnaire (Annex A), composed of 30 questions divided in two domains: food introduction and maternal beliefs. It is important to highlight that 73 mothers answered the first domain and only 50, the second. As explanatory variables, sociodemographic and cultural characteristics were considered, as well as the beginning of food introduction in infants. In the food introduction domain, sociodemographic characteristics can be evidenced by mother's and infant's (0-24 months) age. Cultural characteristics were analyzed from the origin of information about complementary feeding (mother/mother-in-law, Internet, Unidade Básica de Saúde (UBS), friends, TV, pediatrician, nutritionist) from Baby Led Weaning (BLW) method acknowledgment or Baby-Led Introduction to Solids (BLISS) (yes/no) and from how the pap is made, since food cleaning processes (only water, soap and water, sanitary water and water, baking soda and water) down to salt (yes/no) and oil (canola, soy, sunflower, coconut) usage. Other parameters were also assessed: prevalence of exclusive breastfeeding (EBF), formula use, tea, water, cow milk, farinaceous, sweet and salty pap introduction, correlating to age of introduction. Furthermore, quantification and specification of feeding mistakes were evaluated in questions that approached salt use, pap making, high energy level food introduction, allergenic food introduction and juice introduction. On the other hand, on the second domain, maternal beliefs evaluation occurred through multiple choice questions such as: what is the first food to be introduced to a child, what is the best food to be introduced to a child between six months and a year old, which utensil should be used to initially offer food, up to which age should a child be breastfed and if there is fear to offer nuts, seafood and egg.

Data analysis

For statistical analysis, IBM SPSS Statistics (Statistical Package for the Social Sciences), 25.0 Windows® version was used. The data was organized in tables and described based on absolute and relative frequencies. Statistical data analysis was performed from the variables: mother's age, nutritional information attainment, BLW/BLISS methods acknowledgment, motherly beliefs, exclusive breastfeeding duration, formula/cow milk/ farinaceous use, water/tea/fruit/vegetables/meat/egg/fish/nuts age introduction, pap making, juice offering and vegetables cleaning.

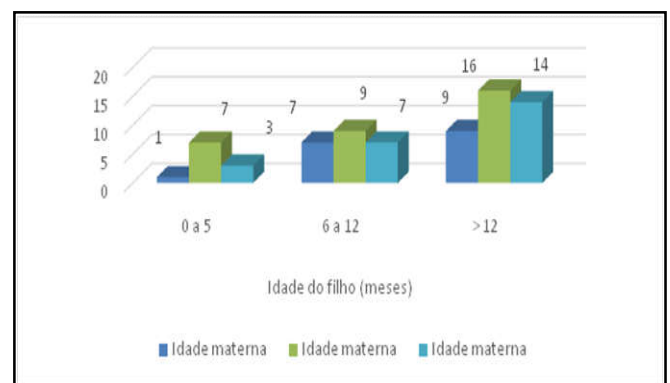
Ethical aspects

Regarding ethical aspects, the research abides by the ethical requirements, following the guidelines of the present Resolution 466/12. It is approved by Comitê de Ética em Pesquisa (CEP) under CAAE 13240419.9.0000.8089.

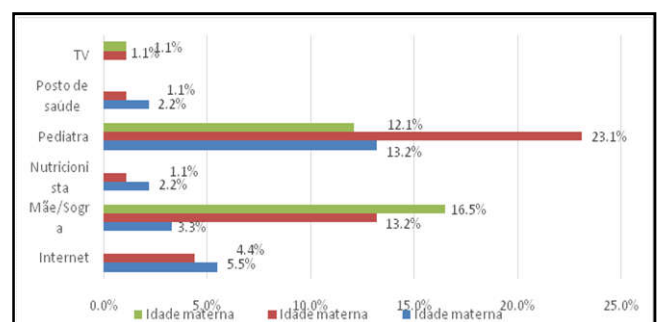
Participants signed the Termo de Consentimento Livre e Esclarecido (TCLE) in two-way, one kept by the researcher and the other by the volunteer and its responsible part.

RESULTS AND DISCUSSION

This study included seventy-three mothers of children up to two years old with average ages of 30,6 +- 7,65 years and 13,4 +- 7,56 months, respectively. The mother - child age rate can be best seen in graphic one. To attain nutritional informational, the pediatrician appears as main knowledge source, chosen by 48,4% of the mothers interviewed, followed by mother/mother-in-law. A total of 20,5% of the mothers has referred to use more than one source of information, as evidenced in graphic two. Regarding other complementary feeding approaches, such as BLW/BLISS methods, 76,7% of the mothers do not know about this type of food introduction. The acknowledgment of these techniques is important because it enables other weaning forms, in which the baby is protagonist (SOCIEDADE BRASILEIRA DE PEDIATRIA, 2017). In this method, the infant uses food pieces and strips, getting dirty and interacting during meals, granting more autonomy and freedom to the process (SOCIEDADE BRASILEIRA DE PEDIATRIA, 2017).



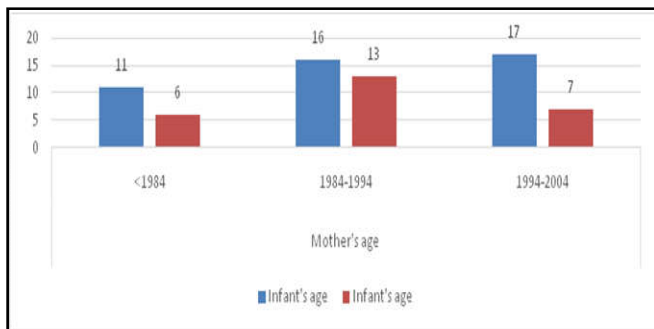
Graphic 1. Mother and child age ratio. Source: Own research, 2019



Graphic 2. Mother age and attainment of infant alimentation ratio. Source: Own research, 2019

The present study evidenced that 32,9% of the mothers kept EBF up until 6 months, a small number considering the recommendations of the Ministry of Health (2015) and the Brazilian Pediatric Society (2018), which state that breastfeeding must be exclusively maintained up to six months of age and proceed alongside food introduction until two years old or more, with weaning happening naturally (BRASIL, 2015 and SOCIEDADE, 2018). Moreover, 6,8% of the infants in this study has never been breastfed, fact that may increase respiratory and gastrointestinal infections, atop allergenic

processes (SOCIEDADE, 2018 and Were, 2003). Furthermore, it was observed that 43,8% of the mothers weaned their child before 6 months of age, corroborating with studies that demonstrate lack of nutritional information to the mothers being a reality in Brazil, considering the amount of premature weaning and erroneous complementary food introduction. In the face of researches which results evince intrinsic factors leading towards not breastfeeding, it was detected that the cultural aspect and work away from home contribute to non-adherence, besides young mothers, as evidenced in this study, taking into account that among mothers born between 1994-2004, the high premature weaning rate (Silveira, 2008; SOTERO, 2015; RODRIGUES, 2019; DALLAZEN, 2018). Withal, lower educational level, grandparents food offers to the infant, the “lack of milk/weak milk”, mammary issues and baby refusal to latch on the breast are also referred by literature as factors that disfavor EBF (RODRIGUES, 2019; DALLAZEN, 2018; LOPES, 2018 and DIAS DE ARAÚJO, 2008). Regarding maternal belief about how long should a child be breastfed, 58,5% of the mothers believe that it shall be until two years or older. This result corroborates with Rodrigues’ (2019) research, which reports that although interviewed mothers had been oriented, most of them did not follow the recommended (RODRIGUES, 2019). When questioned about formula use, 46,15% of the mothers stated the practice. In similar studies, it was found that the highest proportion of children researched initially received formulated milk, which despite being the best option for premature weaning, has a high cost (LOPES, 2018). Such fact would lead, probably, to a short period of its use, being replaced by whole powdered milk or cow milk, contraindicate in the first year.¹² Moreover, cow milk introduction before six months of age was observed in 21,9% of the researched infants, and farinaceous in 16,4% of the sample.

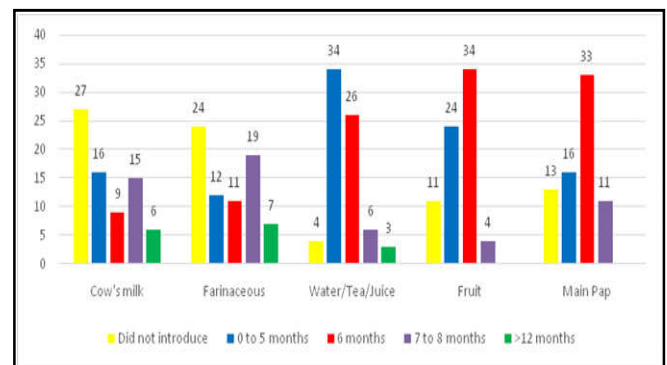


Graphic 3. Mother's age and food introduction ratio. Source: Own Research, 2019

Culturally, mothers believe that liquids such as water, tea or other types of milk are complementary to breast milk and offer more energy and nutrients to the babies, however, it is known that premature cow milk introduction might unravel allergenic processes and atopic diseases (BRUNKEN, 2012 and SCHINCAGLIA, 2015). BPS, MH, and WHO current recommendations indicate that food introduction must occur preferably after six months of age, enough time for neurophysiological and gastrointestinal maturity to receive the food. Nevertheless, the present study evidenced that food is being prematurely introduced in 60,27% of the cases as shown in graphics three and four. This fact is in line with Brunken's studies (2012) that also verified the occurrence of food intake by children below six months old. Given these facts, it is known that premature food introduction entails shorter EBF

duration and lower breast milk nutrient absorption, atop increasing diarrhea episodes, risk of contamination, allergic reactions and chronic diseases, such as obesity and diabetes, mainly in infants that receive solid foods before 4 months of age (DIAS DE ARAÚJO, 2008 and MAIS, 2014).

Nonetheless, studies prove the maternal belief that the child feels thirst and may dehydrate, therefore, a reason to introduce water and tea before six months old, as evinced in this research, in which 46,6% of the mothers prematurely introduced tea/water. Moreover, other reasons for premature liquid introduction mentioned by the literature would be colic relief and calming the child when it cries (LOPES, 2018; BRUNKEN, 2012 and MAIS, 2014). Fruit introduction occurred, mainly, in line with what is recommended by the BPS (2018): 46,6% introduced at six months old and 30,1% between 4-5 months. Main pap introduction occurred within 4 to 8 months. Proteins, contrary to popular belief, must be introduced alongside main pap, also being proved by this study, hence shredded meat/chicken introduction happening at 4 months old, with the main pap (BRASIL, 2015 and SOCIEDADE BRASILEIRA DE PEDIATRIA, 2018). The present study evidenced that 71,7% of the mothers believe that the first foods to be offered to the child are fruits and vegetables, as also believe that fruit/vegetables and beans are the best food for children between 6-12 months (71,7%) however, 28,3% believe that it is soup. Even so, low weight gain and motherly perception about inappropriate food intake results in attempts to increase the baby's nutrients consumption, feeding it with higher frequency before foreseen time, in a disagreement with Ministry of Health's recommendations (Were, 2018; MAIS, 2014 and VITOLO, 2008). In the meantime, there is a relation between lower education level and family income and bad eating habits due to higher availability and accessibility of highly processed foods, with premature food introduction (MAIS, 2015 and GIESTA, 2019). Furthermore, it was evinced that adolescent mothers initiated complementary feeding before the seventh month with higher frequency being that their children also received more sugary, oily and fatty food and less meat and eggs than adult mother's children (COSTA, 2018).



Graphic 4. Introduction age and type of food ratio. Source: Own Research, 2019

In this study, among the mothers that introduced sodas, candy and snacks, most of them did it after 9 months of age, representing 32,8% of the sample. This data corroborates the thesis that exists a cultural habit in offering superfluous food to the child, given that it is hyper palatable and pleasing. Nevertheless, 4,4% referred not introducing such high-energy content foods in the infant's nourishment. Howsoever, the

introduction of such foods in the first years of life is discouraged by literature (BRASIL, 2015; SOCIEDADE BRASILEIRA DE PEDIATRIA, 2018; SOCIEDADE BRASILEIRA DE PEDIATRIA, 2011; HEITOR, 2011). Regarding main pap preparation, 58,4% do not use the blender. Most of the mothers (75,5%) said to believe that the spoon is the best utensil to offer food to a 6 month old, however, 18,9% believes it to be the baby bottle, data correlated by Schincaglia (2015) with a higher rate of premature food introduction, considering that mothers use it to cease the child's crying (SCHINCAGLIA, 2015). In addition, the belief of how should the food be offered initially may be visualized in table 1, which demonstrates the positive ratio with what is recommended by BPS and MH, by mentioning that the food must be kneaded with the fork and offered with a spoon to the infant (BRASIL, 2015 and SOCIEDADE BRASILEIRA DE PEDIATRIA, 2018). Moreover, 50,7% stated the use of salt in main pap. Regardless, most of the mothers declared to use oil to braise/season it, in line with current recommendation from the BPS (BRASIL, 2015). Most used oil was olive oil, followed by soy. Even so, 24,66% of the mothers referred not to braise the pap with oils. Regarding liquid offering, Brazilian Pediatric Society (2018) recommends that juice intake should be avoided due to higher calorie consumption alongside low fiber ingestion, entailing higher sugar absorption (SOCIEDADE BRASILEIRA DE PEDIATRIA, 2018).

The American Pediatric Academy (2017), on the other hand, corroborates the previous idea, admonishing against juice ingestion for children below one year of age, given that the high carbohydrate consumption in juice inclines the infant into developing chronic diarrhea and restricts growth, due to bad absorption of other nutrients. However, the research evinced that 75,34% of the interviewed mothers offered between 50-100mL of juice in 34,25% of the cases. In reference of egg introduction, 31,5% did it at six months old and 28,8% stated not to have introduced. The MH (2015) recommends hard-boiled egg introduction starting from six months of age.¹ 35,85% of the analyzed mothers in this study stated fear of introducing egg due to allergic reactions whilst 35,96% said to be afraid of peanut/nuts and 47,17% felt afraid to offer seafood, as shown in Table 2. The studies of Dutoit et al. (2015) proved that there are benefits in reference to premature introduction - 4 to 11 months old - of peanuts and other nuts (DUTOIT, 2015). The Brazilian Pediatric Society (2018) also understands that the reasons to tardy introduction (>12 months) of solid foods with allergenic potential are based in few scientific evidences (BRASIL, 2015). Thereupon, it is understood that premature introduction of such food does not increase prepossession to developing allergies. Moreover, the risks to develop peanut or other nuts allergies depend on personal atopy history, severe atopic dermatitis and/or egg allergy on children, not being beneficial to extend its introduction to more than 12 months of age (DUTOIT, 2015 and FILHO, 2015). Concerning food cleaning, 49,3% uses only running water whereas only 28,8% uses sanitary water and water mix. However, food offered within food introduction phase must have its sanitation carefully observed, being recommended the use of baking soda and chlorinated solution to clean it (BRUNKEN, 2012).

Final Considerations

Most of the mothers weaned the child before six months of age and introduced complementary feeding next. Moreover, as

nutritional information source, the pediatrician appears in first place, followed by mother/mother-in-law. There has also been hyper caloric food introduction and cow milk before 12 months old, critical point to child development, in which such food should not be offered. In this way, it is indispensable that the mothers attain professional support regarding complementary feeding advising, seeking to adapt healthy practices to the sociocultural reality in which the family is inserted. Thus, ensuring the adequate nutritional contribution - that will influence future feeding choices and bring better life quality to the infant, decreasing the risk of allergic diseases, atopy and obesity.

REFERENCES

- AMERICAN ACADEMY OF PEDIATRICS. Fruit Juice in Infants, Children, and Adolescents: Current Recommendations; Junho de 2017.
- ASHIDA, S., Lynn, F., Williams, N., & Schafer, E. (2016). Competing infant feeding information in mothers' networks: Advice that supports v. undermines clinical recommendations. *Public Health Nutrition*, 19(7), 1200-1210.
- BRASIL. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Saúde da criança : aleitamento materno e alimentação complementar / Ministério da Saúde, Secretaria de Atenção à Saúde, Departamento de Atenção Básica. – 2. ed. – Brasília : Ministério da Saúde, 2015. 184 p. : il. – (Cadernos de Atenção Básica ; n. 23).
- BRUNKEN, Gisela S.; Silva, Solanyara M.; França, Giovanni V. A.; Escuder, Maria M.; Venâncio, Sonia I. Conhecimentos maternos: influência na introdução da alimentação complementar. *Com. Ciências Saúde*. 2012; 23(3):263-270.
- COSTA, Karla Adriana Oliveira da, et al. Feeding style of adolescent mothers and complementary feeding practice of their infants. *Rev. Nutr.*, Campinas. v. 31, n. 1, p. 49-58, Feb, 2018.
- DALLAZEN, Camila et al. Introdução de alimentos não recomendados no primeiro ano de vida e fatores associados em crianças de baixo nível socioeconômico. *Cad. Saúde Pública*, Rio de Janeiro, v. 34, n. 2, 2018.
- DIAS DE ARAÚJO, Olívia; Cunha, Adélia Leana da; Rocha Lustosa, Lidiana; Sampaio Nery, Inez; Magalhães Mendonça, Rita de Cássia; Araújo Campelo, Sônia Maria de. Aleitamento materno: fatores que levam ao desmame precoce. *Revista Brasileira de Enfermagem*, vol. 61, núm. 4, julho-agosto, 2008, pp. 488-492.
- DUTOIT G, Roberts G, Sayre PH, Bahnson HT, Radulovic S, Santos AF, et al. Randomized trial of peanut consumption in infants at risk for peanut allergy. *N Engl J Med*. 2015; 372:803---13.
- FILHO, N.R. Introdução precoce do alimento para prevenção de alergia alimentar. O estudo LEAP (learning early about peanut). *Rev Paul Pediatría*. 2015.
- GIESTA, Juliana Mariante et al. Fatores associados à introdução precoce de alimentos ultraprocessados na alimentação de crianças menores de dois anos. *Ciênc. saúde coletiva*, Rio de Janeiro, v. 24, n. 7, p. 2387-2397, July 2019.
- HEITOR, Sara & Lr, Rodrigues & Santiago, Luciano. (2011). Introdução de alimentos supérfluos no primeiro ano de

- vida e as repercussões nutricionais. *Ciência, Cuidado e Saúde*. 10.
- LOPES, Wanessa Casteluber et al .ALIMENTAÇÃO DE CRIANÇAS NOS PRIMEIROS DOIS ANOS DE VIDA. *Rev. paul. pediatr.*, São Paulo , v. 36, n. 2, p. 164-170, June 2018 .
- MAIS, Laís Amaral; DOMENE, Semíramis Martins Álvares; BARBOSA, Marina Borelli and TADDEI, José Augusto de Aguiar Carrazedo. Diagnóstico das práticas de alimentação complementar para o matriciamento das ações na Atenção Básica. *Ciênc. saúde coletiva* [online]. 2014, vol.19, n.1, pp.93-104.
- RODRIGUES, T.E.G. Percepção materna sobre amamentação e introdução precoce da alimentação complementar. Tese (Programa de Residência Multiprofissional) - Escola Multicampi de Ciências Médicas, Universidade Federal do Rio Grande do Norte. Rio Grande do Norte, p. 14-16. 2019.
- SCHINCAGLIA, Raquel Machado; OLIVEIRA, Amanda Cristine de; SOUSA, Lucilene Maria; MARTINS, Karine Anusca. Práticas alimentares e fatores associados à introdução precoce da alimentação complementar entre crianças menores de seis meses na região noroeste de Goiânia. *Epidemiol. Serv. Saúde*, Brasília, 24(3):465-474, jul-set 2015.
- SILVEIRA VG, MARTINS MC, ALBUQUERQUE CM, FROTA MA. Percepção da mãe sobre aleitamento materno na puericultura. *CiêncCuidSaude*. 2008; 7(4):523-9.
- SIMON, Viviane Gabriela Nascimento; SOUZA, José Maria Pacheco de and SOUZA, Sonia Buongiorno de. Introdução de alimentos complementares e sua relação com variáveis demográficas e socioeconômicas, em crianças no primeiro ano de vida, nascidas em Hospital Universitário no município de São Paulo. *Rev. bras. epidemiol.* [online]. 2003, vol.6, n.1, pp.29-38.
- SOCIEDADE BRASILEIRA DE PEDIATRIA. A Alimentação Complementar e o Método BLW (Baby-Led Weaning) ;*Departamento Científico de Nutrologia*, maio de 2017
- SOCIEDADE BRASILEIRA DE PEDIATRIA. Manual de Alimentação: orientações para alimentação do lactente ao adolescente, na escola, na gestante, na prevenção de doenças e segurança alimentar / *Sociedade Brasileira de Pediatria. Departamento Científico de Nutrologia*. – 4ª ed. – São Paulo: SBP, 2018. 172p.
- SOCIEDADE BRASILEIRA DE PEDIATRIA. Manual do lanche saudável / Virginia Resende Silva Weffort... [et al.]. – São Paulo: Sociedade Brasileira de Pediatria. Departamento Científico de Nutrologia, 2011.
- SOTERO, Andréa Marques; CABRAL, Poliana Coelho and SILVA, Giselia Alves Pontes da. Fatores socioeconômicos, culturais e demográficos maternos associados ao padrão alimentar de lactentes. *Rev. paul. pediatr.* [online]. 2015, vol.33, n.4, pp.445-452.
- VITOLO, R. M. Nutrição: da Gestaçao ao Envelhecimento. Rio de Janeiro: Rubio, 2008.
- WERE F, N, Lifschitz C: Complementary Feeding: Beyond Nutrition. *Ann NutrMetab*, 2018; (suppl 1) : 20-25.
- WORLD HEALTH ORGANIZATION. Technical meeting on the implementation of the global strategy for infant and young child feeding. *Genevra: WHO*; 2003.
