



Maternal knowledge on infant feeding in São Luís, Maranhão, Brazil


Paula Pizzatto ¹

 <https://orcid.org/0000-0001-8120-6489>

Caroline C. Dalabona ²

 <https://orcid.org/0000-0002-3197-3847>


Mariana Lima Correa ³

 <https://orcid.org/0000-0003-2373-3584>

Nelson A. Neumann ⁴

 <https://orcid.org/0000-0002-7015-115X>

Juraci Almeida Cesar ⁵

 <https://orcid.org/0000-0003-0864-0486>

^{1,5} Programa de Pós-graduação em Saúde Pública. Faculdade de Medicina. Universidade Federal do Rio Grande (FURG). Rua Visconde de Paranaguá, 102. Rio Grande, RS, Brasil. CEP: 96.201-900. E-mail: nutri@pastoraldacrianca.org.br

^{2,4} Coordenação Nacional da Pastoral da Criança, Curitiba, PR, Brasil.

³ Programa de Pós-graduação em Epidemiologia. Universidade Federal de Pelotas. Pelotas, RS, Brasil.

Abstract

Objectives: to describe the knowledge of infant feeding on breastfeeding and the introduction of complementary feeding among mothers of children under one-year-old in São Luís, MA.

Methods: a cross-sectional descriptive study using a single questionnaire, standardized by trained interviewers, who visited all the residents in 20 communities chosen by convenience. This questionnaire searched for socioeconomic, demographic information, care received during pregnancy, and the knowledge about infant feeding. The analysis was performed through the creation of knowledge scores, frequency listing, central tendency and dispersion measurements.

Results: among the 709 interviewees, 53.5% presented satisfactory knowledge. The score on the percentage mean of knowledge on infant feeding was 66.7%. The specific score on the introduction of complementary feeding was 60.7% and breastfeeding was 71.4%. The benefits of breastfeeding for the babies were better known than the advantages it confers on mothers. The worst result was related to porridge preparation, (13.5%).

Conclusion: the proportion of mothers who did not know about the basic teachings of infant feeding is high. This can lead to reduce exclusive breastfeeding time, increase rates of improper introduction of food and drink, and in favor early weaning.

Key words Knowledge, Mothers, Breastfeeding, Infant feeding



Introduction

An adequate nutrition early in life is crucial. Although the benefits of breastfeeding for both mother and baby are well established, the median of exclusive breastfeeding (EBF) in Brazilian capitals is still far below, reaching only 1.8 months.¹ Although it is even more severe that the EBF rate has been decreasing. Between 2006 and 2013, babies aged 0 to 2 months and 3 to 5 months, the decrease was 0.3% and 15.1%, respectively. The prevalence of EBF among babies under six months of age was 36.6% in 2013.² In São Luís, Maranhão, it reached 46.7% in 2008.¹

Maternal knowledge (MK) can positively influence both breastfeeding practices,^{3,4,5} as well as the practices related to the introduction of complementary feeding (CF).^{6,7} In Ethiopia, mothers with less knowledge about infant feeding offered more liquid drinks than breast milk (BM) in the first three days of life, comparing to other mothers.⁶ Some authors have shown that the knowledge acquired by mothers come mainly from health professionals,^{4,8} but currently, the media is a powerful source of information that has significant influence in making decisions and, therefore, it should be used with caution. Sites with incorrect information and abusive advertising aimed for children, adversely affect the clarification for the mothers and lead to inappropriate practices.⁹ Some studies pointed out that mothers with good MK did not change their behavior regarding to feeding their children, introducing them to ultra-processed food at early age.¹⁰

The mother's decision, whether to breastfeed or perform a proper CF, depends on the social context in which she and the child are inserted. This context involves beliefs, local customs, experiences with other children, lifestyle, the influence of family members, and participation in support groups.^{8,11,12} It is crucial to consider that the preparation of quality food requires time, availability, and resources from families. Also, in vulnerable communities, access to ultra-processed food is higher than fresh food.¹³

The introduction of CF should start at six months of age when the BM is no longer sufficient in supplying the baby's energy and nutrient demands. It should be done gradually, adequate in consistency, quality, variety, quantity, and respecting the child's appetite.^{14,15} Few studies assessed the MK on the introduction of CF, and those demonstrated low MK on the subject.¹⁵⁻¹⁷

The present study aimed to describe the knowledge of infant feeding on breastfeeding and the introduction of complementary feeding among

mothers of children under one-year-old living on the outskirts of São Luís, MA.

Methods

This study is part of a broader assessment conducted by the *Coordenação Nacional da Pastoral da Criança* (Children Pastoral National Coordination), whose main objective is to measure the impact of its action of Nutritional Monitoring on child growth.

The information presented in this article comes from the baseline study of this research, which was collected between August and November 2017 in São Luís, MA. At that time, this city had about 1.1 million inhabitants, the infant mortality rate was 17 per 1,000 live births, the human development index was 0.768. The average minimum wage presented was 3.0. 33.4% of the population was employed and, in terms of accessing the health services, there were 100 health establishments in the public health system and the Family Health Strategy coverage was 34.5%.¹⁸

This study included biological mothers of babies under one year of age, living in communities in the outskirt neighborhoods of São Luís. Those who were unable to answer the questionnaire, due to cognitive limitations, would be excluded, but this did not occur.

The cross-sectional design used was descriptive, with mothers being interviewed only once at home. The sampling units were defined based on the IBGE census sectors located in areas (communities) covered by the *Pastoral da Criança*. Thus, 53 communities were defined, 20 of which were chosen by convenience for this study. In these communities, all the residents were visited in search of mothers whose child was up to 11.9 months old.

A single standardized questionnaire was used, which searched for demographic, socioeconomic characteristics, reproductive life, care during pregnancy and childbirth, in addition to issues, related to MK in infant feeding. These addresses the definition and EBF duration, adequate breastfeeding techniques, advantages of breastfeeding for the mother and baby, the age which the introduction of CF should start, and the preparation forms (consistency, quantity, diversity, and quality). For each of the question, the mother answered the questions by showing the interviewer one of the three small signs previously given to her. The first identified the answer as "yes" (green), another the answer was "no" (red) and the third was a question mark, indicating "I don't know" responses.

The outcome of the study consisted of the MK

on infant feeding, which was analyzed in two ways. The first, by the MK scores: total, specific to BF, and specific to CF. The distribution of the scores is detailed in Table 1. With 34 questions, the total score could vary from 0 to 64 points. A score higher than average was considered knowledge satisfactory. The second way was by the percentage of correct answers for each question, assigning one point for each correct answer and 0 (zero) for incorrect answers and "I don't know" answers, the total was converted into a percentage. The definition of correct and incorrect answers was based on the Food Guide for Children Under Two Years old, the Manual on the *Orientação do Departamento de Nutrologia da Sociedade Brasileira de Pediatria* (the Brazilian Society of Pediatrics Orientation Department) and the *Caderno de Atenção Básica* (the Primary Care Notebook) number 23.^{14,19,20}

The team in this study was formed by a general coordinator (PP), two supervisors, and eight interviewers. These last two groups received training during five days, which consisted of reading the questionnaire and the instruction manual, applying the instrument in pairs, and simulating interviews in class. On the last day, a pilot study was conducted in a community not included in the study.

Two teams were formed, each one was assigned to cover a distinct group of communities previously mapped and numbered. Once there, the interviewers were distributed on the streets and alleys, and they had to visit all the residents in search of babies under one year of age. Once found, the mothers received explanation about the study, and were invited to participate. By accepting, two copies of the informed consent form were provided for the mothers to sign. One term was in their possession, and the other was filed at the head office of the project. After this, the interview was conducted.

The interviews were conducted with tablets and REDCap application (Research Electronic Data Capture).²¹ These data were daily sent over the internet to a central server, where they were reviewed by the supervisors and coordinators of the study. The discrepancies found were immediately corrected and, if necessary, a new contact with the interviewee was made, generally, by telephone. All of this information was accumulated in a databank to create derived variables and subsequent analyzes.

For quality control, 10% of the interviewees were chosen systematically after every 100 questionnaires and partially repeated by telephone. The purpose of this was to confirm the application of the questionnaire and to compare responses. The data concordance was subsequently assessed using the

Kappa index, which ranged from 0.63 to 0.97 for the variables: number of people living together at home and carrying out some prenatal consultation during pregnancy, respectively.

Data analysis consisted of listing the frequency of each studied variable and outcome, obtaining measures of central tendency when applicable.

The research project, from which this article originates, "Evaluation of the impact of the nutritional monitoring of Pastoral da Criança on children's nutritional status: a quasi-experimental, community-based study" was approved by the Research Ethics Committee in the Health Area at Universidade Federal University do Rio Grande (FURG) – Document number: 23116.004589 / 2017-70.

Results

This study identified 714 mothers. Of this total, it was possible to interview 709 of them, which reveals a respondent rate of 99.3%.

Table 2 shows that about one-fifth of the mothers were teenagers (<19 years old), around 70.0% of them were mixed race, lived with a partner, and had their own home. Sixty-three of them were at least high school graduates, the family income was below one minimum monthly wage, 35.0%, and 42.4% received assistance from the *Bolsa Família* (Family Aid) Program. It is also possible to verify that almost 90.0% of the mothers had at least one prenatal consultation in their last pregnancy and about two-thirds of them started these consultations in the first trimester of the pregnancy and performed six or more of them. 77.6% of the pregnancies were not planned, and 55.6% of the mothers were not visited during the pregnancy, neither by the community health agent nor by the Pastoral da Criança volunteer. The assistance in the public health services predominated, both in prenatal care, 59.9%, and in childbirth, 89.8%.

The result of the total MK score ranged from 18 to 61 points. The average, determining the cutoff point for satisfactory knowledge, was 42.7 points, which corresponded to 66.7% of the correct answers. Just over half of the mothers, 53.5%, obtained satisfactory knowledge. When the specific scores were analyzed, 71.4% of the correct responses were obtained on BF and 60.7% on CF (Table 3).

According to the analysis of the topics, the percentage of the correct answers about BF varied from 44.7% to 98.7%, and 13.5% to 90.5% about CF. Figures 1 and 2 show these prevalence. It is noteworthy that less than half of the interviewees

Table 1

Description on the distribution of the scoring of the questions about breastfeeding and complementary feeding to calculate the scores.

Highest score (3 points) Ministry of Health recommendations	Lowest score (1 point) General Questions
Breastfeeding	
EBF Definition	General orientations about breastfeeding
EBF Duration	Breast milk characteristics
Duration of breastfeeding	The good attachment to the breast
Situational question about EBF	Benefits of breastfeeding to mother and baby
Colostrum offer	
Free demand	
Complementary feeding	
Age to start the introduction	Prioritize offering food first to breast milk
Hydration	Babies do not have to eat everything on the plate
Quantity of meals	
Variety	
Age to avoid ultra-processed food	
Porridge preparation – consistency, adding salt and sugar	

EBF = Exclusive breastfeeding.

(47.5%) reported having heard about EBF, 48.9% correctly answered their definition (giving only breast milk and nothing else), as well as the situational question about the necessity to offer water to three-month-old babies who live in warm places (44.7%). The same proportion correctly defined the ideal breastfeeding time (2 years or more). The benefits of breast milk for babies obtained a percentage of MK higher than 78.6%; however, they had known that breastfeeding contributes to the woman's body in returning to normal faster after childbirth, 61.8% of the interviewees. Two-thirds did not relate the baby's crying to weak breast milk.

Almost half of the interviewees (48.4%) reported having received guidance to the introduction of CF. This amount may be related to the fact that 41.2% of the mothers had children older than 6 months old. Only one of the 12 questions pertaining to CF obtained more than 90.0% of the correct answers

(babies do not have to eat everything on the plate). The lowest percentage of MK was related to the way in preparing baby food to those who did not yet have teeth (13.5%), which according to the manuals, should not be blended or sieved. Regarding to the quality of food, 31.7% said that ultra-processed products should not be offered to children up to two years of age (48.4% of them believed that they should avoid up to 1 year). Concerning variety, just over half (51.3%) identified the example of a meal with one food from each food group, with 42.6% opting for more vegetables and no animal protein (Figure 2).

Discussion

This study showed that just over half of the mothers (53.5%) obtained satisfactory MK on infant feeding. The subject with the highest number of correct

Table 2

Description on demographic, socioeconomic characteristics and the use of health services of mothers in their last pregnancy with children under one year old. São Luís, MA. 2017 (n=709).

Variable	N	%
Interviewee's age (years)		
Up to 19	104	14.7
20 to 24	245	34.7
25 to 29	158	22.3
30 or more	202	28.5
$\bar{X} \pm SD$		25.8 ± 6.2
Skin color (self-reported)		
White	98	12.9
Black	130	17.2
Mixed race	530	69.9
Lives with a partner	518	73.1
Schooling (complete years of schooling)		
Up to 8	141	19.9
9 to 11	122	17.2
12 or more	445	62.9
$\bar{X} \pm SD$		10.9 ± 2.4
Last month's family income in minimum wages (n=639)		
Less than 1	210	35.0
1 to 1.9	207	34.5
2 to 3.9	140	23.3
4 or more	43	7.2
$\bar{X} \pm SD$		1.7 ± 1.6
Receives assistance from the <i>Bolsa Família</i> (Family Aid) Program	301	42.4
Own a home	489	69.0
Planned pregnancy	159	22.4
Did any prenatal consultation	701	98.9
Started consultations in the 1 st quarter	452	64.6
Number of prenatal consultations		
0 to 5	256	36.6
6 or more	444	63.4
Location of the prenatal consultations		
Public Health Unit	419	59.9
Private office/hospital or health insurance	127	18.1
Other	154	22.0
Receive visits from the community health agent	184	25.9
Receive visits from the <i>Pastoral da Criança</i> volunteer	75	10.6
Place of childbirth		
Public hospital/maternity	637	89.8
Private hospital/maternity	61	8.6
At home or other	11	1.6
Baby's age		
Less than 6 months	417	58.8
More than 6 months	292	41.2
Received orientation on complementary feeding	343	48.4
From whom received this orientation		
Physician or health professional	266	37.5
Relatives, friends or others	92	13.4

Table 3

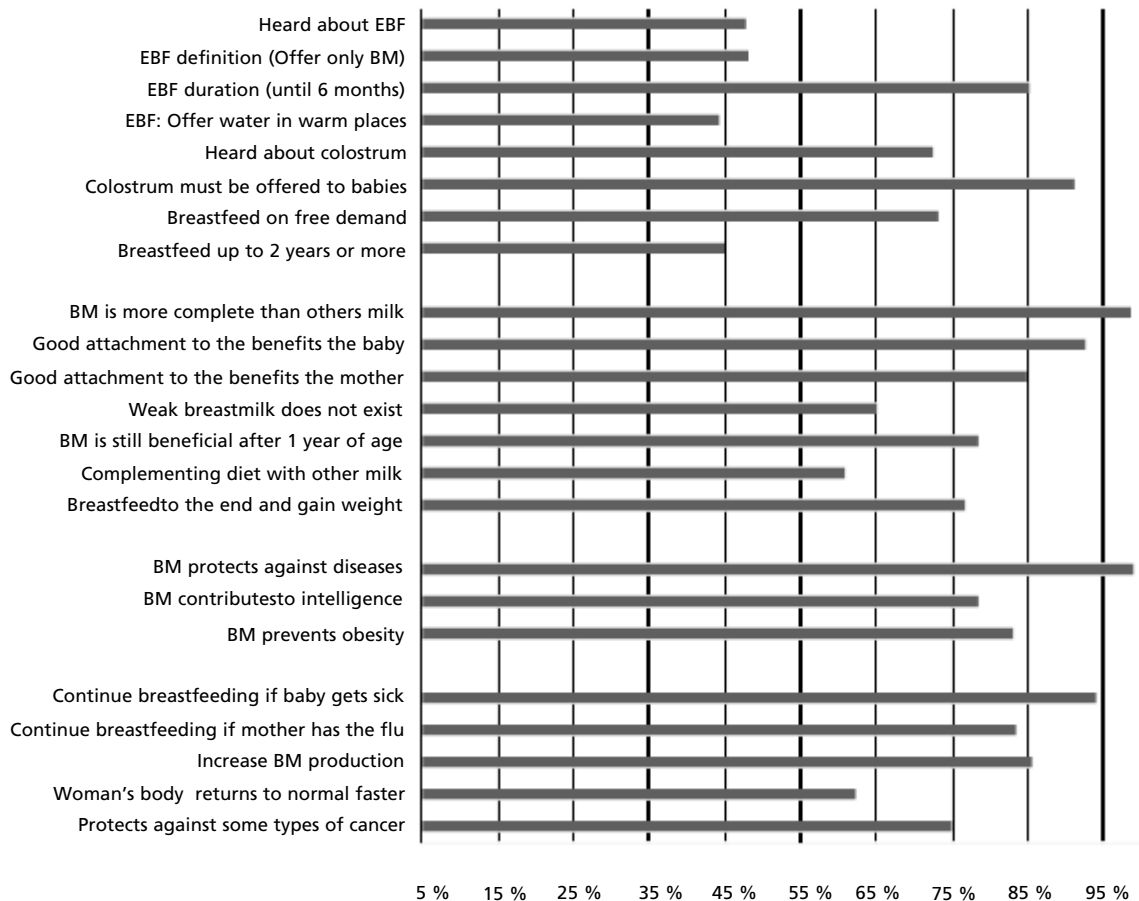
Results on the scores of total and specific maternal knowledge on breastfeeding and introduction of complementary feeding. São Luís, MA. 2017 (n=708).

Scores	N	%	$\bar{X} \pm SD$	Mean (%)
Total maternal knowledge			42.7 ± 7.6	66.7
Insatisfactory	329	46.5		
Satisfactory*	379	53.5		
Maternal knowledge on breastfeeding			25.0 ± 5.5	71.4
Insatisfactory		319	45.0	
Satisfactory*	390	55.0		
Maternal knowledge about introduction of complementary feeding			17.6 ± 4.2	60.7
Insatisfactory	360	50.8		
Satisfactory*	348	49.2		

*Maternal knowledge satisfactory = >mean.

Figure 1

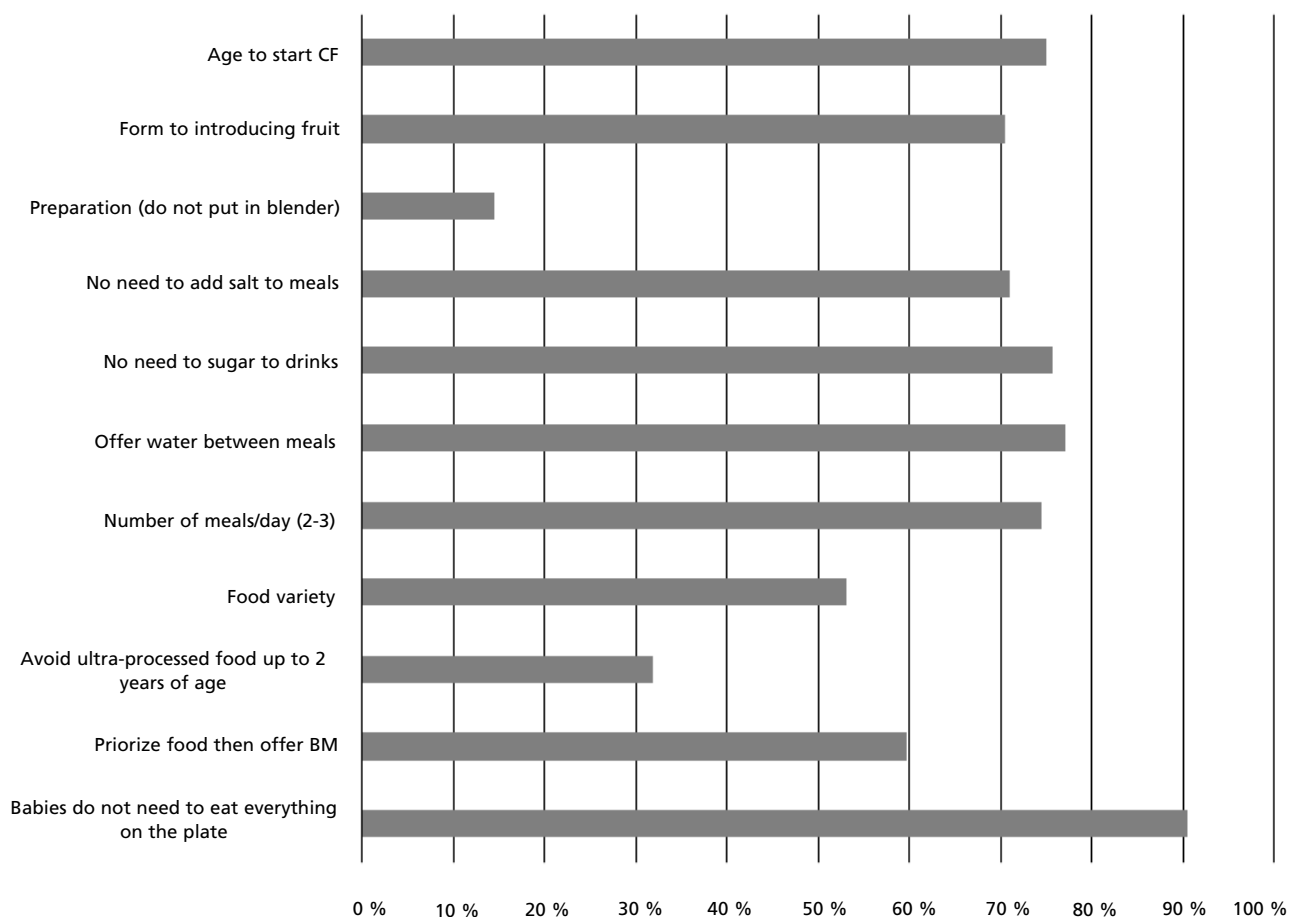
Maternal knowledge on breastfeeding. São Luís, MA. 2017 (n=709).



EBF = exclusive breastfeeding; BM= breast milk.

Figure 2

Maternal knowledge about introducing complementary feeding. São Luís, MA. 2017 (n=708).



CF = complementary feeding; BM= breast milk.

answers was BF; this may be due to the greater dissemination of information about BF in the health services, campaigns, or in the media.¹² The average of the total score on infant feeding was 42.7 out of a total of 64 points, equivalent to 66.7% of the correct answers. Separately, the result on BF corresponded to 71.4% of the correct answers on an average, and the percentage of CF was 60.7%.

In the literature review, different cut-off points were found to determine the knowledge score on BF, and through the analysis of the percentages of the means, results similar to the current study are observed, 69.7%, 71.2%,^{2,22} lower, 56.7%, 58.5%,^{3,23} and higher 82.5%.²⁴ Regarding to the CF score, Shams *et al.*²⁵ in Iran found a score of 0.8%, 20.4%, and 78.8%, considering low, regular, and

good knowledge, respectively, with an average of 42.8%. The lowest satisfactory on MK was found in Nigeria (14.9%) and Ethiopia (28.75%).^{16,17}

About the results from each question, the lowest rates of the correct answers were related to the introduction of CF: regarding the way of preparing baby food (13.5%) and the age limit (2 years) to avoid offering ultra-processed food to children (31.7%). Regarding to BF, the lowest percentage of the correct answers (44.7, 47.5%, 48.9%) were related to the ideal breastfeeding time, have heard about EBF and the definition on EBF.

Despite the intense effort from the Ministry of Health (MH) since the 1980s to disseminate the importance and benefits of exclusive breastfeeding to babies and women who breastfeed, less than half

of the interviewees in this study reported have heard about EBF and knew its correct definition. Almost 11.0% of them believed that other liquids such as water, milk, or juice could be offered to babies who are exclusively breastfed. Regarding the definition of EBF, this was the lowest percentage of correct answers ever found when compared to other studies, whose prevalence varied from 66.1% to 85.6%.^{3,4,23,26,27} The situational question, about the need to offer water to three-month-old babies living in warm places, (as is the case in São Luís) was included in order to reinforce this investigation, and also because it has already been shown that the early introduction of water to Northeast children was 13.6%, almost 5 times higher than in the South Region.¹ This answer obtained 44.7% of the correct answers, a percentage similar to the finding by Nguyen in Vietnam (47.6%), and considerably lower than the one reported by Gewa in Kenya (88.0%).^{4,7}

However, when asked the question about the EBF duration, which explained its meaning ("How long should babies only breastfeed, without even receiving water?") The correct answer (up to 6 months) appeared for 85.7% of the respondents. That means there is a difficulty in understanding the word "exclusive", in view of the increase in the correct answers, after detailing. Still, when asked about what age should the baby start receiving food, three-quarters of the mothers responded correctly. Such prevalence over the EBF duration were similar to the findings of some studies,^{4,26} but higher than others, which ranged from 30.6% to 69.4%.^{23,24,28} The lack of understanding exclusive breastfeeding is described in the Brazilian studies.^{5,8,15,12} As an example, about 30.0% of the nursing mothers interviewed by Campos *et al.*⁸ reported that their children were in EBF, when in fact, they had already received other liquids.

The MH recommends that BM should be offered to babies on free demand during exclusive breastfeeding. Similar to Leshi *et al.*²³ findings in Nigeria, about 72.8% of the interviewed mothers knew this orientation. The population studied by Gewa *et al.*⁴ obtained 90.0% of the correct answers for this question.

The present study investigated the knowledge about breastfeeding technique on "the good attachment to the breast," which, when done correctly, prevents the nipple from hurting, suffering from cracking, and causing pain to the mother, which, in turn, can lead to giving up breastfeeding.

Furthermore, this good attachment provides better sucking of the milk by the baby. Interestingly, mothers demonstrated greater knowledge when

asked about the benefits that the technique gives to babies (92.6%) than about the advantages of protection to the maternal breast (84.7%). Two other studies found prevalence on MK below these, 73.7% and 64.0%.^{22,23}

The knowledge that BM is the most complete food for babies, superior to other kinds of milk such as infant formulas, and the benefits that breastfeeding gives to babies, showed high percentages of correct answers. Now, when it came to the advantages for women, 61.8% knew that breastfeeding made mother's body returns to normal quicker, and 74.5%, that this act protects them against some types of cancer. However, this result was considerably higher than that found in Nigeria for cancer protection, 35.5%.³ In Kenya, this difference was not so pronounced, 65.0% knew about the benefits of exclusive breastfeeding for babies and 61.0% of the advantages for mothers.⁴ Other Brazilian studies have shown lower MK on the advantages conferred by breastfeeding for mothers.^{11,12} These data indicate that, in Brazil, greater emphasis may be given to the benefits of breastfeeding for babies, once, emphasizing the benefits for mothers since prenatal and continuing in the postpartum period, can be an essential factor to contribute to adherence to breastfeeding.¹¹

One in three mothers questioned in this study associated the baby's crying with the occurrence of weak milk, the prevalence was higher than the 15.2% found by Boff *et al.*²⁴ The fact that women worry that their milk is weak and, therefore, her child may not be gaining weight properly, it is a common justification for the interruption of EBF and early introduction of other types of milk or food.^{4,5}

Regarding to the prolonged breastfeeding, almost 80.0% of the mothers knew that BF still benefits the baby after 12 months; however, only half reported that BF should be continued until, at least, two years of age as recommended by MH. This response may have been influenced by situation experienced in real life, which would lead, due to the need of returning to work, or due to advice received from family members or medical advice, mothers introduce other types of milk to babies, complementary or not to breastfeeding before the baby turns two years old.²⁸

Although the Brazilian Society of Pediatrics (SBP) and the Ministry of Health advise against the supply of cow's milk (CM) to children up to one year of age,²⁰ a Brazilian research conducted by Caetano *et al.*²⁹ showed that this habit is frequent and high. Also, this milk consumption comes with added sugar, cereals, and chocolate, which may predispose

to childhood obesity. The present study corroborates this situation by demonstrating that almost 40.0% of the mothers believe it is necessary to introduce another type of milk to eight months babies who are already feeding and still breastfeeding. This belief can be justified by the mothers' excessive concern that the child becomes strong and gains weight, or by the fact that preparing a bottle of milk with some cereal or supplement is faster and more practical than preparing a meal.

The most deficient on MK regarding the introduction of CF (13.5%) was about how to prepare food for babies who do not have teeth yet. According to the manuals from the Ministry of Health, food must have consistency in the form of puree since the beginning, to stimulate chewing and the development of facial muscles; therefore, they must be mashed with a fork.^{14,19} Still on consistency, about 27.5% of the respondents believed that fruit should be offered initially in the form of juice. It should be remembered that this was already a guideline for food introduction, which has undergone modification because, in addition to the damage of chewing previously mentioned, the addition of water reduces the energy supply compared to fruit. Furthermore, it was identified that almost all the mothers (96.2%) considered healthier natural juices for children. It is worth mentioning that despite being healthy, the intake should be limited (100mL at 6 months and 150mL for preschoolers), and if possible, avoid, prioritizing the offer of fresh fruit.²⁰ Mothers who considered artificial fruit juices (powder or canister) healthier for children reached only 3.2%.

Regarding the question of food variety, the mother should choose one of the 3 options that she judged to be the most complete and justify her answer. Just over half, 51.3%, identified the meal option with food from each food group, including meat, and 42.6% opted for the meal with more vegetables, without animal protein. Among the main reasons for this choice, the following stood out: being more indicated, healthier, nutritious, lighter, have more vegetables; contain the most iron-rich food. It is observed concerning this last point, that beans were the most cited food as a source of iron, followed by meat and beets. It is noteworthy that these food contain vegetable iron, which has low bioavailability and, therefore, must be accompanied by food source of vitamin C. Since meat is the primary source of bioavailable iron, which is why it is recommended to be included in the children's daily diet to prevent anemia.^{14,19}

About quantity, studies have shown that few mothers, 29.6%, and 13.6% knew that babies aged 6

to 8.9 months need to receive at least two meals a day.^{17,16} However, in the current study, 73.6% of the mothers knew this answer.

Brazilian studies have detected early child consumption of unhealthy foods such as cookies, soft drinks, sweets, and snacks.^{29,30} In the current research, we tried to evaluate when mothers believe that it should be avoided to offer this type of food to children and, only 31.7% reported after 2 years of age, which is in line with the recommendation of the MH. But 48.4% believe that avoiding the offer of these types of food until one year of age is adequate. Such food are harmful to the health, impair the control of appetite and satiety because they are hyper-palatable due to the high content of sugar and fat¹⁰ and, therefore, the later introduced to infant feeding, sporadically, the better.

The average percentage of the BF score was considerably high, 71.4%; this may be related to the fact that the majority of the interviewees participated in six or more prenatal consultations and started them from the first trimester of pregnancy, a context that may have favored receiving guidance on BF. It was seen that not half of the study participants (48.4%) were instructed on the introduction of CF, a proportion considerably lower than that found in Campinas (66.0%),¹⁵ and of these, 38.0% received guidance by physicians and health professionals and 13.2% by family or friends, which can be a mean of misleading and outdated information. Other obsolete sources of data on the dietary introduction that can harm mothers' conduct are websites of health professionals, as shown by a study.⁹ It is noteworthy that such orientations are fundamental for the prevention of nutritional disorders, especially childhood obesity, which is a great public health problem nowadays.

The results point to gaps in maternal knowledge about BF and the introduction of CF, demonstrating that educational actions regarding infant feeding may not be carried out satisfactorily in São Luís city in the State of Maranhão and need to be intensified, especially concerning the introduction of CF since less than half of the mothers received some guidance on the subject. Also, health professionals must be updated on the current recommendations of the topics and work with mothers in prenatal and child-care consultations. At the same time, the community health workers and volunteers from non-governmental organizations such as *Pastoral da Criança* are also important vehicles for information and, therefore, the intensification of home visits made by them would contribute significantly, especially to the most vulnerable families.

Although this study focuses on the mothers' knowledge, it is essential to emphasize that the whole family is responsible for both breastfeeding and feeding the child, as well as the society and the Government. Sharing domestic activities, which support women on breastfeeding, the fulfillment of public policies that favor access to healthy food in vulnerable areas, the subsidy to small producers, the taxation of unhealthy products and the restriction of advertising directed to the children, stand out among the strategies to ensure better nutrition for the children.

The findings are relevant for both the mothers and guardians of the children, professionals who work to promote maternal and child health, and nutritional education. Further studies are recommended to investigate MK in other areas of the country, as well as those that analyze the influence

of knowledge on dietary practices, to subsidize preventive actions for weaning and introducing early food to achieve better and exclusive breastfeeding rates.

Authors' contributions

Pizzatto P participated in the design and execution of the study, writing the initial and final versions of the article. Cesar JA and Dalabona CC contributed to the study design and initial and final reviews. Neumann NA participated in the critical evaluation of the manuscript. Correa ML participated in the critical review of the paper and the English review. All authors approved the final version of the article.

References

1. Brasil. Ministério da Saúde. Departamento de Ações Programáticas e Estratégicas. Secretaria de Atenção à Saúde. II pesquisa de prevalência de aleitamento materno nas capitais brasileiras e Distrito Federal. Brasília, DF; 2009.
2. Boccolini CS, Boccolini PMM, Monteiro FR, Venâncio SI, Giugliani ERJ. Tendência de indicadores do aleitamento materno no Brasil em três décadas. *Rev Saúde Pública*. 2017; 51: 108.
3. Akinyinka MR, Olatona FA, Oluwole EO. Breastfeeding knowledge and practice among mothers of children under 2 years of age living in a military barrack in southwest Nigeria. *Int J MCH AIDS* 2016; 5 (1): 1-13.
4. Gewa CA, Chepkemboi J. Maternal knowledge, outcome expectancies and normative beliefs as determinants of cessation of exclusive breastfeeding: a cross-sectional study in rural Kenya. *BMC Public Health*. 2016; 16: 243.
5. Noguera MD, Orellana JJ. Conocimientos maternos sobre conductas óptimas de lactancia. *Rev Colomb Obstet Ginecol*. 2004; 55 (1): 9-17.
6. Tariku A, Biks GA, Wassie MM, Gebeyehu A, Getie AA. Factors associated with prelacteal feeding in the rural population of northwest Ethiopia: a community cross-sectional study. *Int Breastfeed J*. 2016; 11: 14.
7. Nguyen PH, Keithly S, Nguyen NT, Nguyen TT, Tran LM, Hajeebhoy N. Prelacteal feeding practices in Vietnam: challenges and associated factors. *BMC Public Health*. 2013; 13: 932.
8. Campos AMS, Chaoul CO, Carmona EV, Higa R, Vale IN. Prática de aleitamento materno exclusivo informado pela mãe e oferta de líquidos aos seus filhos. *Rev Latino Am Enferm*. 2015; 23 (2): 283-90.
9. Silva RQ, Gubert MB, Qualidade das informações sobre aleitamento materno e alimentação complementar em sites brasileiros de profissionais de saúde disponíveis na internet. *Rev Bras Saúde Matern Infant*. 2010; 10 (3): 331-40.
10. Giesta JM, Zoche E, Corrêa RS, Bosa VL. Fatores associados à introdução precoce de alimentos ultraprocessados na alimentação de crianças menores de dois anos. *Ciêns Saúde Coletiva*. 2019; 24 (7): 2387-97.
11. Azevedo DS, Reis ACS, Freitas LV, Costa PB, Pinheiro PNC, Damasceno AKC. Conhecimento de primíparas sobre os benefícios do aleitamento materno. *Rev Rene*. 2010;11 (2): 53-62.
12. Rosa JBS, Delgado SE. Conhecimento de puérperas sobre amamentação e introdução alimentar. *Rev Bras Promoç Saúde*, 2017; 30 (4): 1-9.
13. Gama SR, Cardoso LO, Rubinsztajn IK, Fischer A, Carvalho MS. Alimentação de crianças em uma favela no Rio de Janeiro, Brasil: quanto se gasta e qual seria o custo de uma dieta saudável. *Rev Bras Saúde Matern Infant*. 2015; 15 (4): 425-34.
14. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Saúde da Criança: Aleitamento Materno e Alimentação Complementar. Brasília, DF; 2015. Cadernos de Atenção Básica, nº 23.
15. Valezin DF, Ballestero E, Aparecido JC, Ribeiro JF, Marinho PCM, Costa LFV. Instrumento educativo sobre alimentação de lactentes - baseado nas necessidades de conhecimento das mães. *Rev Inst Ciêns Saúde*. 2009; 27 (1): 11-7.
16. Demilew YM, Factors associated with mother's knowledge on infant and young child feeding recommendation in slum areas of Bahir Dar City, Ethiopia: cross sectional study. *BMC Res Notes*. 2017; 10: 191.
17. Olatona FA, Adenihun JO, Aderibigbe AS, Adeniyi OF. Complementary feeding knowledge, practices, and dietary diversity among mothers of under-five children in an urban

- community in Lagos State, Nigeria. *Int J MCH AIDS*. 2017; 6 (1): 46-59.
18. IBGE (Instituto Brasileiro de Geografia e Estatística). Censo Demográfico 2010. Rio de Janeiro; 2011.
 19. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Dez passos para uma alimentação saudável: guia alimentar para crianças menores de dois anos. Um guia para o profissional da saúde na atenção básica. Brasília, DF; 2013.
 20. Sociedade Brasileira de Pediatria. Manual de orientação para a alimentação do lactente, do pré-escolar, do escolar, do adolescente e na escola. Departamento de Nutrologia. 3 ed. Rio de Janeiro; 2012.
 21. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)-A metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009; 42 (2): 377-81.
 22. Tamim H, Ghandour LA, Shamsedine L, Charafeddine L, Nasser F, Khalil Y, Nabulsi M. Adaptation and validation of the arabic version of the infant breastfeeding knowledge questionnaire among lebanese women. *J Hum Lact*. 2016; 32 (4): 682-8.
 23. Leshi O, Samuel FO, Ajakaye MO. Breastfeeding knowledge, attitude and intention among female young adults in Ibadan, Nigeria. *Open J Nurs*. 2016; 6: 11-23.
 24. Boff ADG, Paniagua LM, Scherer S, Goulart BNG. Aspectos socioeconômicos e conhecimento de puérperas sobre o aleitamento materno. *Audiol Commun Res*. 2015; 20 (2): 141-5.
 25. Shams N, Mostafavi F, Hassanzadeh A. Determinants of complementary feeding practices among mothers of 6-24 months failure to thrive children based on behavioral analysis phase of PRECED model, Tehran. *J Educ Health Promot*. 2016; 5: 24.
 26. Mogre V, Dery M, Gaa PK. Knowledge, attitudes and determinants of exclusive breastfeeding practice among Ghanaian rural lactating mothers. *Int Breastfeed J*. 2016; 11: 12.
 27. Ortiz YMB, Navarro CC, Ruiz GG. Lactancia materna exclusiva: La conocen las madres realmente? *Rev Cuid*. 2014; 5 (2): 723-30.
 28. Gyampoh S, Otoo GE, Aryeetey RNO. Child feeding knowledge and practices among women participating in growth monitoring and promotion in Accra, Ghana. *BMC Pregnancy Childbirth*. 2014; 14: 180.
 29. Caetano MC, Ortiz TTO, Silva SGL, Souza FIS, Sarni ROS. Alimentação complementar: práticas inadequadas em lactentes. *J Pediatr*. 2010; 86 (3): 196-201.
 30. Jaime PC, Frias PG, Monteiro HOC, Almeida PVB, Malta DC. Assistência em saúde e alimentação não saudável em crianças menores de dois anos: dados da Pesquisa Nacional de Saúde, Brasil, 2013. *Rev Bras Saúde Matern Infant*. 2016; 16 (2): 159-67.

Received on March 14, 2019

Final version presented on October 14, 2019

Approved on December 19, 2019