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Comparison between the reported practices of baby-led weaning and the traditional approach for complementary feeding

Comparação entre práticas relatadas da abordagem do baby-led weaning e a tradicional para a realização da alimentação complementar

Abstract

Objective: To compare the characteristics of complementary feeding for infants whose mothers reported practising baby-led weaning with those who reported using the traditional approach. ***Methods***: Quantitative descriptive study with online interviews of mothers of infants aged 1 to 2 years, invited via social networks to complete a form containing socioeconomic, breastfeeding and complementary feeding data. The differences between the groups were verified using *t*-test or chi-square. ***Results***: 208 respondents (57.9%) were identified who reported using the traditional approach and 151 (42.1%), baby-led weaning. Of the babies in the baby-led weaning group, 84.1% were breastfeeding, against 56.2% following the traditional approach; they were also less exposed to formulas, thickeners, bottles and pacifiers (p <0.05). In terms of complementary feeding, 7.3% of the baby-led weaning group initiated this before 6 months compared with 23.1% in the traditional approach group (p <0.05). Statistically significant differences were observed for the age of introduction of most food groups and for the use of ultra-processed foods, juices, sugar and salt. At 12 months those following baby-led weaning were significantly more likely to be sharing family food (71.5% *vs* 11.5%), to be seated appropriately at the table (89.4% *vs* 66.8%) and to be eating foods of an appropriate consistency (74.2% *vs.* 62.0%). ***Conclusion:*** In the present study, infants whose mothers reported following baby-led weaning were more likely to be introduced to food in accordance with national recommendations compared with those who were exposed to the traditional approach.

Keywords: Infant nutrition. Child development. Breast feeding. Complementary feeding.

Resumo

Objetivo: Comparar as características da alimentação complementar de lactentes cujas mães referiram praticar o *baby-led weaning* com aquelas que relataram utilização da abordagem tradicional. ***Métodos:*** Estudo quantitativo descritivo com entrevistas *online* de mães de bebês de 1 a 2 anos, convidadas via redes sociais a preencherem formulário contendo dados socioeconômicos, de aleitamento materno e relativos à alimentação complementar. As diferenças entre os grupos foi verificada por meio dos teste *t* ou do qui-quadrado. ***Resultados:*** Foram identificadas 208 entrevistadas (57,9%) que relataram usar a abordagem tradicional e 151 (42,1%), o *baby-led weaning*. Dos bebês em *baby-led weaning*, 84,1% mantinham-se em aleitamento materno, contra 56,2% em abordagem tradicional, e foram menos expostos a fórmulas, espessantes,

mamadeiras e chupetas (p<0,05). Quanto à alimentação complementar, 7,3% do grupo *baby-led weaning* iniciou antes dos 6 meses, comparados aos 23,1% do grupo abordagem tradicional (p<0,05). Observaram-se diferenças estatisticamente significantes para a idade de introdução da maioria dos grupos de alimentos, para utilização de produtos ultraprocessados, sucos, açúcar e sal. Aqueles em *baby-led weaning* chegaram, significativamente, aos 12 meses com diferenças quanto a compartilhar a comida da família (71,5% *vs* 11,5%), sentar-se adequadamente à mesa (89,4% *vs* 66,8%) e utilizando a consistência adequada dos alimentos (74,2% *vs* 62,0%). *Conclusão:* No presente estudo, lactentes cujas mães relataram realizar o *baby-led weaning* caracterizaram-se pela introdução de alimentos atendendo às recomendações nacionais comparados àqueles que foram expostos à abordagem tradicional.

Palavras-chave: Nutrição do lactente. Desenvolvimento infantil. Aleitamento materno. Alimentação complementar.

INTRODUCTION

The period of complementary feeding (CF), which, it is recommended, should begin from six months of life,[1] has been the subject of discussion in relation to the possibility of the infant feeding himself.[2] Baby-led weaning (BLW), proposed by professionals and researchers as a viable option during this period,[3,4] is an approach underpinned by several principles, such as the practice of shared meals, food offered in pieces, control of feeding resting with the baby (when to start, what to eat, how much to eat and the pace of feeding), self-feeding with the hands, and the gradual progression of feeding according to the baby's development. Meanwhile, traditionally, the process of CF is guided by the adult, who decides when to start, actively feeds the infant with food of a pureed consistency using a spoon, and decides which foods he will eat, in what quantities and how quickly.[5]

The most recent national infant feeding guide suggests that, in addition to mashed food offered by spoon, infants may also be offered soft foods, in large pieces, that they can grasp and take to their mouth.[6] According to the Brazilian Society of Pediatrics,[7] using his hands to experiment with food in pieces, in sizes consistent with his development, allows the infant to discover different textures, which contributes to his sensory-motor learning.

In the United Kingdom, current recommendations state that foods suitable for self-feeding can be offered from the beginning of CF, following signs of readiness in the infant.[8] Since 2014, Canada, too, has incorporated some of the fundamentals of BLW, especially those related to offering food suitable for eating with the hands, as a strategy to promote responsive feeding, in which the infant's signals of hunger and satiety determine when, how much and how quickly the child eats.[9]

Research into BLW began in the 2000s and has shown some potential benefits, such as a calmer atmosphere at mealtimes,[10] shared family food,[11] better regulation of appetite,[12] lower incidence of picky eating[13] and strengthening of the bond between parents and children.[14] On the other hand, risks previously attributed to such an approach, such as choking and nutritional deficiencies, have not been confirmed.[10,15-18] Almost all of the literature on the topic has been produced in North American and European countries, with sociodemographic characteristics that differ from Brazil, where no exploratory study of BLW has been published.[14,19]

Stronger evidence is required concerning factors that trigger concerns amongst professionals, such as the possible exposure of babies to nutritional deficiencies through this approach. In addition, the appropriateness of BLW where there are infant characteristics that may lead to developmental delays needs to be considered. Furthermore, unlike the more traditional approach guided by health professionals, BLW has been shared widely amongst families, which could lead to inappropriate eating practices.[14,20] With a view to strengthening the evidence related to infant self-feeding, New Zealand researchers developed an intervention protocol known as Baby-Led Introduction to Solids (BLISS),[21] which emphasises the importance of taking care to minimise the risk of choking and of ensuring the consumption of foods rich in iron and with higher energy density. Their results have shown that professional guidance leads to improvements in the different parameters studied.[10,15,16,18,22]

The definition of the practice of BLW has been discussed in the literature. Brown & Lee[23] defined it as using spoon-feeding and/or purees less than 10% of the time. Probably, in some situations, feeding by the adult occurs simultaneously with the baby eating with his own hands,[24] something that has been encouraged, also, by the Brazilian Society of Pediatrics.[20]

Faced with the common scenario, in which caregivers enact a variety of approaches, the development of investigations that can confirm the implementation of all the principles of BLW is challenging, owing to the

difficulty of obtaining a sample. Thus, some studies have opted to use reference data or to define BLW according to just some of its principles; it is therefore essential to exercise caution in interpreting the results obtained, in order not to reach conclusions that are not valid. On the other hand, it is worth noting that it may be possible to obtain some benefits related to infant feeding even where not all the principles of BLW are in place.

In view of the above, this article aims to compare the characteristics of feeding, during the complementary period, of infants whose mothers reported practising baby-led weaning with those who indicated they were using the traditional approach.

METHODS

A quantitative descriptive study was carried out, between August 2017 and May 2019, with mothers of children aged 12 to 24 months living in Brazil, based on partial data from a database obtained as part of research into dietary practices in the first two years of life (protocol approved by the Ethics Committee of the Faculty of Public Health, University of São Paulo: 6666. 3117.5.0000.5421).

The women who formed this cohort were invited, via social networks (Facebook and Instagram), to complete a Google Docs form. Pages and groups related to maternity and/or infant feeding were used to gain access to the target group, who each received, in return, an *e-book* on infant feeding. Exclusion criteria consisted of prematurity, defined as birth before 37 weeks, as well as pre-existing diseases and conditions that could interfere with the start time of CF or its characteristics.

The completed form was subdivided into: sociodemographic data relating to the mother, data relating to the child's birth, health and education monitoring, data on breastfeeding and data on CF. In addition, the respondent indicated their implementation of the traditional approach (TA), BLW, other or none, according to a brief explanation, in the form itself, of the features of each category. BLW was presented as an approach characterised by food being offered in pieces, the infant feeding himself and the sharing of family food, while TA was described as the baby being offered pureed food by a caregiver, using a spoon.

Among the maternal variables were place of residence (by municipality and state, further classified according to regions), age, education (in years of study), presence or absence of a partner, whether or not in paid work or in receipt of own income, number of children and entitlement to maternity leave.

The general variables related to the infant included sex, gestational age and birth weight, location of health care in the antenatal period (insured/private, public sector or other), during childbirth (in a private, public or other hospital) and currently (insured/private, public sector or other), whether the infant attends some kind of daycare or nursery and, if so, whether this is a private or public establishment.

Breastfeeding was measured as the duration (in months) of exclusive and continued breastfeeding. In addition, information was obtained about the use of pacifiers, bottles, infant formula and thickeners.

Complementary feeding was analysed according to the offer of liquids or solid foods before six months, age (in months) of introduction of the different food groups (cereals/roots/tubers, vegetables, green vegetables, fruits, legumes and meat/eggs) and meals offered (breakfast/morning snack, lunch, afternoon snack and dinner), consumption of certain foods or ingredients before 12 months (ultra-processed foods, sugar, salt and juices), consistency of foods at six and 12 months (sieved/pureed foods, soup, mashed food or pieces of food, subsequently classified as inappropriate or appropriate according to the official recommendations), sharing family food at 12 months and if the infant ate while seated appropriately at the

table (that is, in a seat that provided an upright position of the trunk and without the use of screens). For variables related to the age of introduction of the different groups of foods and meals, the question was answered in months and then classified as "early", "appropriate" or "late". The introduction of any group of foods, or meals, before the age of six months was considered early. The introduction of food groups and meals after the age of seven months was classified as late, with the exception of “dinner”, which was considered late after the age of eight months.

The data were tabulated and analysed using Excel software. The frequencies of categorical variables and the values of the mean and standard deviation for continuous variables were calculated. Differences between groups reporting BLW and TA were evaluated by chi-square and *t*-test, as appropriate, with significance level p <0.05.

RESULTS

939 responses were received. As this was a study with voluntary participation, 338 women had to be excluded because they did not meet the profile defined in the study and/or because they answered the questionnaire more than once. Of the remaining 601, 208 indicated they followed TA (34.6%), 151 BLW (25.1%), 215 other approaches or simultaneous BLW and TA, (35.8%), while 27 did not identify any specific approach (4.5%).

Data provided by 208 mothers who indicated following TA and 151 who declared they followed BLW were analysed, totalling 359 participants, from all regions of the country: 69.0% from the Southeast, 16.7% from the South, 10.7% the Northeast, 2.8% the Midwest and 0.8% from the North. In terms of the age group, 242 women (67.4%) were 30 years old or older (p <0.05) and 274 (76.6%) had completed higher education (p> 0.05). Regarding the sex of the babies, 46.6% of those who chose TA were girls; for BLW, the prevalence was 57.0% (p> 0.05).

Table 1 presents the maternal sociodemographic data. It can be seen that there are no statistical differences between the two groups in relation to the variables investigated, except that mothers who reported following BLW tended to be younger and less likely to be in paid work, compared with mothers who reported following TA.

Table 1. Description of mothers of children aged 12 to 24 months according to sociodemographic data. Brazil, 2017-2019.

	Traditional	BLW	P-value
Age (years)	32.5 (5.16)	31.1 (4.56)	**0 012**
Number of children	1.3 (0.60)	1.2 (0.48)	0.261
Schooling (in years)			0.756
≤ 9	4 (1.9%)	2 (1.3%)	
10-12	48 (23.1%)	31 (20.5%)	
> 12	156 (75.0%)	118 (78.1%)	
Marital status			0.510
With partner	195 (93.8%)	144 (95.4%)	
Without partner	13 (6.2%)	7 (4.6%)	
Paid work			**0.004**
Yes	139 (66.8%)	78 (51.7%)	
No	69 (33.2%)	73 (48.3%)	

Table 1. Description of mothers of children aged 12 to 24 months according to sociodemographic data. Brazil, 2017-2019. (Continues)

	Traditional	BLW	P-value
Mother has own source of income			0.184
Yes	150 (72.1%)	99 (65.6%)	
No	58 (29.9%)	52 (34.4%)	

For continuous variables, the mean and standard deviation are given; for categorical variables, the value is also expressed as a percentage

Table 2 contains data relating to pregnancy, health care and education, as well as information about the practice of breastfeeding. Significant differences were observed for both exclusive breastfeeding (EBF) and current breastfeeding. Worthy of note is the fact that 79.5% of babies who followed BLW were still breastfeeding at the time of data collection, compared with 55.5% of those following TA.

In terms of items that may make the maintenance of breastfeeding difficult, the use of formula, bottles, thickeners and pacifiers was statistically higher in the TA group. Formula, in particular, was used with 62.0% of babies following TA and 24.5% of the BLW group.

Table 2. Description of infants and their mothers according to general health, education and breastfeeding variables. Brazil, 2017-2019.

	Traditional	BLW	P-value
Weight at birth (g)	3,290 (446)	3,310 (450)	0.505
Location of antenatal care			0.683
Health insurance/private	171 (82.2%)	120 (79.5%)	
Primary health care facility	29 (13.9%)	26 (17.2%)	
Other	8 (3.8%)	5 (3.3%)	
Maternity leave			0.445
Yes	164 (78.8%)	105 (69.5%)	
No	44 (21.2%)	46 (30.5%)	
Place of birth			0.018
Private hospital	156 (75.0%)	95 (62.9%)	
Public hospital	46 (22.1%)	44 (29.1%)	
Other	6 (2.9%)	12 (8.0%)	
Location of current health care			0.535
Health insurance/private	179 (86.1%)	124 (82.1%)	
Primary health care facility	21 (10.1%)	21 (13.9%)	
Other	8 (3.8%)	6 (4.0%)	
Attends daycare/nursery			0.103
No	116 (55.8%)	101 (66.9%)	
Private	69 (33.2%)	38 (25.2%)	
Public	23 (11.1%)	12 (7.9%)	
Exclusive breastfeeding (EBF)			<0.001
Yes	173 (83.2%)	148 (98.0%)	
No	35 (16.8%)	3 (2.0%)	
EBF for first six months			0.01
Yes	117 (56.2%)	127 (84.1%)	
No	91 (43.8%)	34 (15.9%)	

Table 2. Description of infants and their mothers according to general health, education and breastfeeding variables. Brazil, 2017-2019. (Continues).

	Traditional	BLW	P-value
Mean duration of EBF (months)	4.5 (2.30)	5.4 (1.75)	<0.001
Current breastfeeding			<0.001
Yes	115 (55.3%)	120 (79.5%)	
No	93 (44.7%)	31 (30.5%)	
Use of pacifier			<0.001
Yes	83 (39.9%)	32 (21.2%)	
No	125 (60.1%)	119 (79.8%)	
Use of baby bottle			0.01
Yes	142 (68.3%)	39 (25.8%)	
No	66 (31.7%)	112 (74.2%)	
Use of infant formula			0.01
Yes	129 (62.0%)	37 (24.5%)	
No	79 (38.0%)	114 (74.5%)	
Use of thickener			<0.001
Yes	38 (18.3%)	7 (4.6%)	
No	170 (81.7%)	144 (95.4%)	

For continuous variables, the mean and standard deviation are given; for categorical variables, the value is also expressed as a percentage; EBF: exclusive breastfeeding

Table 3 shows the types of food and fluids consumed in addition to breastmilk or formula. It shows that the TA group tended to start CF before six months (that is, early), with 19.2% offering liquids and 23.1% offering solids before this age. In the BLW group, 4.6% received liquids and 7.3% received solids before the age of six months ($p < 0.05$).

Babies following the BLW approach were statistically more likely to introduce food at the recommended time for all food groups. Fruits were the food group most often offered early in the TA group (23.6%), with 3.3% of babies in the BLW group receiving fruit before the age of six months. Vegetables, legumes and meats were the food groups most often offered late, by followers of both TA and BLW. It is worth noting that 45.8% of TA babies and 30.5% of BLW babies were offered green vegetables from seven months ($p < 0.05$).

A higher proportion of infants whose mothers reported using TA received foods and ingredients considered unsuitable for the CF period, such as sugar, ultra-processed foods in general, salt and fruit juices ($p < 0.05$). Ultra-processed foods were offered before 12 months for 27.9% of babies in the TA group and for 12.2% of those following BLW; for juices, the proportions were 60.1% and 40.4%, respectively.

Table 3. Description of the characteristics of complementary feeding (CF) of infants who practised the traditional approach or BLW in relation to when foods, ingredients or food groups were offered. Brazil, 2017-2019.

	Traditional	BLW	P-value
Liquids before 6 months			<0.001
Yes	40 (19.2%)	7 (4.6%)	
No	168 (80.8%)	144 (95.4%)	

Table 3. Description of the characteristics of complementary feeding (CF) of infants who practised the traditional approach or BLW in relation to when foods, ingredients or food groups were offered. Brazil, 2017-2019. (Continues).

	Traditional	BLW	P-value
Solid foods before 6 months			<0.001
Yes	48 (23.1%)	11 (7.3%)	
No	160 (76.9%)	140 (92.7%)	
Fruit			<0.001
Early	49 (23.6%)	5 (3.3%)	
Appropriate	143 (68.8%)	118 (78.1%)	
Late	16 (7.7%)	28 (18.5%)	
Cereals, roots and tubers			0.017
Early	16 (7.7%)	3 (2.0%)	
Appropriate	136 (64.4%)	116 (76.8%)	
Late	56 (26.9%)	32 (21.2%)	
Vegetables			0.072
Early	15 (7.2%)	4 (2.6%)	
Appropriate	145 (69.7%)	119 (78.8%)	
Late	48 (23.1%)	28 (18.5%)	
Green vegetables			0.048
Early	9 (4.3%)	4 (2.6%)	
Appropriate	118 (56.7%)	101 (66.9%)	
Late	91 (43.8%)	46 (30.5%)	
Legumes			0.56
Early	6 (2.9%)	2 (1.3%)	
Appropriate	90 (43.3%)	71 (47.0%)	
Late	112 (53.8%)	78 (51.7%)	
Meat/eggs			0.515
Early	6 (2.9%)	2 (1.3%)	
Appropriate	102 (49.0%)	80 (53.0%)	
Late	100 (48.1%)	69 (45.7%)	
Ultra-processed foods			<0.001
Yes	58 (27.9%)	20 (12.2%)	
No	150 (72.1%)	131 (87.8%)	
Juices			<0.001
Yes	125 (60.1%)	61 (40.4%)	
No	83 (39.9%)	90 (59.6%)	
Sugar			<0.001
Yes	34 (16.3%)	5 (3.3%)	
No	174 (83.7%)	146 (96.7%)	
Salt			<0.001
Yes	109 (52.4%)	51 (34.7%)	
No	99 (47.6%)	100 (65.3%)	

* The following were considered ultra-processed foods: processed meats, processed dairy products, packaged biscuits, soft drinks and other sugary drinks.

Table 4 shows the format of the meals in the CF period. Most babies in the BLW group were initially offered food in pieces (74.2%), while of those in the TA group, 68.3% receive mashed food (p <0.05). In this latter approach, 26.9% of babies received food of a consistency inappropriate for six months, that is, sieved,

pureed or in the form of soups. At 12 months, the supply of food of inappropriate consistency was statistically greater for those subject to TA (34.6%). For those following BLW, 20.5% received food of a consistency that was not that of the family meal.

BLW babies were significantly more likely to share the same food as the rest of the family (71.5% vs 11.5%) and to eat while seated appropriately at the table (89.4% vs 66.8%). Morning and afternoon snacks were significantly more likely to be offered early in TA, with rates of 13.0% and 11.5%, respectively. In BLW, morning snacks were offered before six months for 2.0% and afternoon snacks for 2.6%. Similarly, morning snacks were offered late by 37.5% of TA mothers and by 25.8% of BLW mothers.

Table 4. Description of the characteristics of complementary feeding (CF) of infants who practised the traditional approach or BLW in relation to the consistency of the food, introduction of different meals, sharing of family foods and being seated appropriately at the table. Brazil, 2017-2019.

	Traditional	BLW	P-value
Main consistency of first complementary foods			
Inappropriate *	56 (26.9%)	5 (3.3%)	<0.001
Pureed	142 (68.3%)	31 (20.5%)	
In pieces	5 (2.4%)	112 (74.2%)	
NR	5 (2.4%)	3 (2.0%)	
Main consistency of food at 12 months			0.005
Inappropriate **	72 (34.6%)	31 (20.5%)	
Appropriate**	129 (62.0%)	112 (74.2%)	
NR	7 (3.4%)	8 (5.3%)	
Morning snack offered			<0.001
Early	27 (13.0%)	3 (2.0%)	
Appropriate	99 (47.5%)	94 (62.3%)	
Late	78 (37.5%)	54 (25.8%)	
NR	2 (1.0%)	0 (0.0%)	
Lunch offered			0.239
Early	17 (8.2%)	3 (2.0%)	
Appropriate	128 (61.5%)	107 (70.9%)	
Late	63 (30.3%)	41 (27.2%)	
Afternoon snack offered			0.006
Early	24 (11.5%)	4 (2.6%)	
Appropriate	97 (46.7%)	83 (55.0%)	
Late	84 (40.4%)	64 (42.4%)	
NR	3 (1.4%)	0 (0.0%)	
Dinner offered			0.113
Early	9 (4.3%)	1 (0.7%)	
Appropriate	139 (66.8%)	106 (70.2%)	
Late	60 (28.8%)	44 (29.1%)	
At 12 months, child received family food			<0.001
No	24 (11.5%)	7 (4.6%)	
Partly	155 (74.5%)	35 (23.2%)	
Yes	24 (11.5%)	108 (71.5%)	
NR	5 (2.4%)	1 (0.7%)	
Seated appropriately during complementary feeding			<0.001
Yes	139 (66.8%)	135 (89.4%)	
No	69 (33.2%)	26 (10.6%)	

* Sieved or pureed consistency, or soup, was considered inappropriate. **Consistency was considered inappropriate if not in pieces/solid. NR: no response.

DISCUSSION

Historically, food offered by spoon, in the form of a puree, was the norm when infants started to eat other foods, at a time when weaning occurred early and alternatives to breastmilk were risky. Prior to 2002, the introduction of complementary food was recommended from four months; since then the recommendation has been six months.[1] Since there are important differences in the development of the infant at these two ages, consideration should be given to how he is to be fed.

Wright et al.[24] point out that the majority of babies of six months of age have developed sufficiently to feed themselves and, therefore, to follow BLW. The data in the present study indicate important associations related to baby-led weaning, such as less exposure to ingredients or foods that are inappropriate for age, the use of food of appropriate consistency at 12 months and the norm of the baby eating at the family table. There was also less chance that food groups or meals would be introduced late.

Consistent with other studies, BLW was associated with the introduction of CF at six months in a significantly higher proportion when compared to the TA group.[25] Recognising the importance of signs of readiness,[26] families who follow BLW tend to wait until the baby is able to sit with minimal support, and to bring objects to his mouth unaided. Such signs generally appear around the age of six months, coinciding with the recommendation of the World Health Organization regarding the beginning of the introduction of new foods.[1]

Another result similar to that found in the literature concerns the relationship between BLW and breastfeeding.[25] In this study, infants whose mothers said they followed BLW were also more likely to report exclusive and continued breastfeeding. Theoretically, breastfeeding in the first months of life favours the practice of BLW, since, during breastfeeding, the baby controls the amount of milk and the pace of the feed; conversely, the use of formula is more closely related to TA, because the adult tends to maintain greater control over both.[27,28] As shown by Brown & Lee,[28] BLW tends to be chosen more often by mothers who breastfeed their children than by those who use formula. This may be because they consider it a more "healthy" or "natural" approach, or because these mothers are more likely to trust their baby's capacity for self-feeding. Continuing to breastfeed on demand after the start of solid feeding allows the process to be truly baby-led, because if the infant does not eat enough food to meet his needs, he will make up for it with breastmilk. Some authors suggest the explanation may lie in the educational level of the mother, which tends to be higher among those who choose BLW,[23] albeit that this was not reflected in the current study. However, in our study the mothers in the BLW group were less likely to be in paid work, which may suggest contact with the baby for a longer time, which in turn favours the maintenance of breastfeeding.

In addition to achieving better breastfeeding rates, babies who followed BLW were less exposed to the use of artificial teats, formula and thickeners, items that have a direct relationship with shorter breastfeeding time.[29.30] Given this set of characteristics, infants who follow BLW seem better positioned to maintain breastfeeding during CF, and even after 12 months, as found in the present study.[31]

It is interesting to note that the timing of the introduction of the different food groups by mothers who reported having followed BLW was generally in line with the recommendations, especially in relation to avoiding early exposure to new foods, which is known to represent health risks for the infant.[1] The rate of late introduction of most food groups (vegetables, cereals/roots/tubers, meat/eggs and legumes) was similar for both TA and BLW groups, except for green vegetables, which were introduced more appropriately in the BLW group. This finding contradicts the concern of some professionals that families would find it more difficult to present certain types of food to a self-feeding infant, thereby delaying the child's exposure to them.[32] Fruits were the only group for which late introduction was greater in the BLW group: 18.5% compared

with 7.5% for TA. It is important to highlight that foods that are sources of protein and iron tended to be offered late by a significant proportion of families in both groups, decreasing food diversity and potentially predisposing the child to anaemia. Daniels et al.[21] point out that, when BLW is implemented in a well-oriented way, there is no increased risk of iron deficiency, something confirmed in an intervention by Dogan et al.[17] Thus, there is a clear role for health professionals to emphasise the need to pay attention to the diet.

It is important to highlight the higher prevalence in the TA group of babies who were offered ultra-processed foods, juices, sugar and salt, compared with babies in the BLW group, even though BLW favours the sharing of family meals with the baby, which could increase exposure to inappropriate foods. However, in spite of the fact that TA tends to favour food that is prepared separately from that consumed by the family, these infants had access to worse quality products.[11] This result is consistent with those reported by Brown & Lee[23] and Cameron et al.,[11] who found that babies who followed BLW received less processed food. Initial exposure to different foods tends to influence consumption during childhood, especially when hyper-palatable products, such as those high in sugar, are available. With respect to sugar, Townsend & Pitchford[33] found that preschool children who had followed BLW showed a preference for foods rich in complex carbohydrates, while those that had followed the traditional approach tended to prefer sweet foods.

Although BLW proposes that babies should be included in family mealtimes once they show an interest, with no specific age protocol for introducing different meals, in this study BLW babies were introduced to meals according to the recommendations of the national guidelines, whereas[6] TA carried a greater risk of early introduction of meals, in general. For the morning snack, late introduction was more prevalent in the TA group. For lunch, afternoon snacks and dinner, late introduction was similar for both groups. These results contradict those found by Brown & Lee,[23] who observed that, in BLW, families offered fewer meals to their babies.

Food consistency is an important aspect of food introduction. When the consistency of the food does not evolve in the period up to 12 months, that is, when the child is not, by that age, eating food of the same consistency as the rest of the family, future eating difficulties are more likely.[34] It is expected that infants who follow BLW from the beginning of CF will not be given pureed or blended foods. In the case of the infants in this study, 34.0% of the babies whose mothers declared that they were following TA consumed foods with a pureed consistency; for the group of mothers who reported BLW, the prevalence was 20.5%.

Two variables related to the circumstances surrounding eating: the infant sitting appropriately at the table, without the use of screens, and eating the same food as the family. For both of these, significant differences were found between the two groups, with 89.4% of babies who followed BLW eating at the table in the first year of life and 71.5% routinely sharing family food. For the TA group, 66.8% ate at the table and 11.5% shared family food. Rowan & Harris[35] found that BLW babies consumed, on average, 57% of the same foods as their parents. Eating together, in a pleasant atmosphere, encourages the child to eat and to enjoy eating.[6] In addition to promoting the development of social skills at mealtimes, and encouraging eating through the example of other people, eating while sitting appropriately in a chair is a safety measure that reduces the risk of choking.[26]

The present study has some limitations that are important to identify. Because the infants were not a random sample, care must be taken over extrapolating the findings. The fact that the participants voluntarily responded to an invitation published on social networks tends to suggest a population that is also more attuned to children's nutritional needs.

While the consumption of ultra-processed foods by infants under one year old, at national level, is 43.1%, according to Relvas et al.,[36] only 27.9% of the TA group (and 12.2% of the BLW group) consumed these

products. It is therefore not possible to extrapolate these findings to the national context. However, the comparison between the BLW and TA groups remains valid and suggests that the differences may be even greater, since, according to international literature, mothers who follow BLW tend to fall into a higher socioeconomic group, which, in turn, is often associated with better health care.[23] Given that, in the present study, there were no differences between the two groups in relation to most of the sociodemographic variables, and yet the BLW group reported more distinctly favourable eating practices, one would expect to find higher rates of weaning, early feeding and the use of inappropriate foods in the TA group.

The amount of food consumed by the infants was not measured, making it impossible to confirm that there were no differences between the approaches. According to Arden & Abbott,[37] parents who choose BLW consider the inclusion of the baby at mealtimes to be more important than the quantity of food consumed. In the present study, it can be seen that babies had access to the variety of foods recommended for their age and were able, when following BLW, to consume quantities that were sufficient for them at the time. Brown & Lee[38] state that, by allowing the baby to take food to his mouth by himself, with minimal interference from the parents, eating takes place at a pace that allows for a natural satiety response. Conversely, when the baby is actively fed the caregiver tends to idealise, consciously or unconsciously, the size of the portion to be eaten. A lower level of caregiver control over meals can have positive effects on infant feeding. For example, a study conducted by Gross et al.[39] found that a controlling maternal feeding style in the first months of life was associated with a later risk of overweight and obesity.

On the subject of the sampling strategy, online sampling is being increasingly used as a way of obtaining information from different locations.[23,40] As the practice of BLW is widespread, and supported by maternal groups within social networks, and since families often seek information primarily via the internet,[41] it would be difficult to find a sufficiently large sample based on settings such as health centres or educational institutions.

This research, which lists some important differences between groups that identify themselves as TA and BLW in relation to infant feeding, helps to strengthen some hypotheses and pave the way for further investigation of this subject. For example, work to define the practice of BLW more precisely would contribute greatly to our understanding of the approach. A cohort study, on the other hand, would provide information about medium and long-term outcomes associated with BLW. A discussion about the implementation of BLW or, at least, about allowing babies to feed themselves, is also urgent, given that more and more families choose to allow their baby to self-feed.

In this study, 34.6% of women who responded to the survey indicated that they followed TA. Most of the others reported following BLW, or a "mix" of the two approaches. Brown & Lee,[23] working with 655 mothers of babies aged six to 12 months recruited from daycare centres and community centres in the UK, noted that 44.1% of families never offered pureed food and 35.5% never used a spoon to feed their child. Many families, according to Arden & Abbott,[37] opt for BLW based on parenting ideals, or following the experience of a failed attempt to use TA.

Since BLW is a way of offering food that has specific characteristics, it is essential that families are properly guided, based on scientific evidence, in order to prevent risks such as choking and nutritional deficiencies, while at the same time benefiting from advantages related to food.

CONCLUSION

In this study, a greater proportion of those infants whose mothers reported following BLW were introduced to food at the recommended time, with lower rates of both early and late introduction for most food groups, when compared with infants whose mothers reported following TA. In addition, the BLW group had less exposure to inappropriate foods and/or ingredients, such as ultra-processed products, juices, sugar and salt.

The introduction of meals, as recommended for children under one year of age, also occurred more appropriately, or with no difference, when compared with the group that followed TA. BLW babies were also more likely to be offered food of an appropriate consistency at 12 months, to eat at the family table, seated appropriately and without screens, and to share the family's food.

Associations with breastfeeding were also seen, confirming that women who opt for BLW are more likely to adhere to recommendations concerning exclusive breastfeeding, and to continue breastfeeding for longer.

Possible biases related to the methodology need to be borne in mind before the findings are extrapolated. However, given the scarcity of literature on the topic, especially at the national level, these results will assist the discussion related to the practice of BLW, at a time when more and more families are seeking this approach.

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Contributors

Vieira VL was responsible for the conception and design, analysis and interpretation of data, and for editing and approval of the final version of the article; Vanicolli BA was responsible for the study design, data analysis and article review; Rapley G was responsible for data interpretation, review and approval of the final version of the article.

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