

# Inequality in breastfeeding and complementary feeding practices in Argentina by household income level in 2018–2019

María E. Zapata<sup>a</sup> , Alicia Rovirosa<sup>a</sup> , María C. Nessier<sup>a,b</sup> , Natalia Romero Mathieu<sup>b</sup> ,  
Julieta R. Gijena<sup>b</sup> , Ana M. Bonet<sup>b</sup> 

## ABSTRACT

**Introduction.** Diet quality is a right related to survival, healthy growth, prevention of chronic diseases, and malnutrition in all its forms. The objective of this study was to analyze breastfeeding and feeding practices in children younger than 2 years from urban areas of Argentina in 2018–2019 according to their household income level.

**Population and methods.** Secondary analysis of data of the Second National Survey on Nutrition and Health (ENNyS2) of 2018–2019. Breastfeeding and complementary feeding indicators proposed by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) were analyzed. Data were stratified by household income level.

**Results.** The analysis included 5763 children younger than 24 months old. Although 97% was ever breastfed, only 47% of infants younger than 6 months were exclusively breastfed the previous day and 48% continued with breastfeeding after 1 year old, with a higher prevalence in low-income children. The previous day, 23% of children aged 6 to 23 months did not eat any fruit or vegetable, 60% consumed unhealthy foods, and 50% consumed sweet beverages. The consumption of sweet beverages and the absence of fruit and vegetables were higher in low-income households.

**Conclusion.** The quality of children’s diet is far from the recommendations and is conditioned by income. Early initiation of breastfeeding, minimum dietary diversity, fruit and vegetable consumption are lower and sweet beverage consumption is greater in impoverished sectors.

**Keywords:** *breastfeeding; complementary feeding; nutritional surveys; socioeconomic factors; Argentina.*

doi: <http://dx.doi.org/10.5546/aap.2023-10221.eng>

**To cite:** Zapata ME, Rovirosa A, Nessier MC, Romero Mathieu N, et al. Inequality in breastfeeding and complementary feeding practices in Argentina by household income level in 2018–2019. *Arch Argent Pediatr.* 2024;122(4):e202310221.

<sup>a</sup> Child Nutrition Study Center Dr. Alejandro O’Donnell (Centro de Estudios sobre Nutrición Infantil Dr. Alejandro O’Donnell), City of Buenos Aires, Argentina; <sup>b</sup> School of Health Sciences (Facultad de Ciencias de la Salud), Universidad Católica de Santa Fe, Santa Fe, Argentina.

**Correspondence to** María E. Zapata: [mezapata@cesni.org.ar](mailto:mezapata@cesni.org.ar)

**Funding:** This analysis is part of the research project titled “An approach to the diet of Argentine children younger than 2 years from a qualitative-quantitative perspective,” RENIS IS004013, conducted with the support of the Health Research Scholarships 2022–2023 granted by the National Ministry of Health of Argentina.

**Conflict of interest:** None.

**Received:** 9-14-2023

**Accepted:** 1-12-2024



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## INTRODUCTION

Adequate nutrition at an early age is key to survival, healthy growth, development, learning, prevention of chronic diseases, and malnutrition in all its forms. In addition, it is a basic right.<sup>1,2</sup>

Although breastfeeding initiation rates are high for Argentina, only 43.7% of children younger than 6 months are exclusively breastfed, with a drop in the prevalence of breastfeeding by 2 years of age.<sup>3,4</sup> The dietary pattern of children and adolescents is significantly less healthy than that of adults, with a higher percentage of energy obtained from ultra-processed foods.<sup>5</sup> This is probably explained by the multiple underlying causes described in the bibliography, which are related to settings that promote overweight and obesity, a high availability and accessibility of foods and beverages of poor nutritional quality, together with a dietary system that does not respond to the nutritional needs of children,<sup>6</sup> which affects the full realization of their rights.

The background information shows that diet of the Argentine population is far from the recommendations, with significant inequalities based on their income level and region,<sup>7</sup> in addition to the fact that malnutrition is strongly related to socioeconomic and educational inequalities.<sup>8,9</sup> Precarious social and environmental conditions have an impact on the population's food supply and increase the vulnerability of populations exposed to ecological and social risks. Such inequality results in a vicious circle of vulnerability: malnutrition increases the risk of other diseases and limits the full realization of other rights, such as education, health, and an adequate standard of living.<sup>10,11</sup>

However, there is little evidence about dietary patterns at an early age and about breastfeeding and complementary feeding indicators recently updated by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).<sup>1</sup> Therefore, the objective of this study was to analyze breastfeeding and feeding practices in children younger than 2 years from urban areas of Argentina in 2018–2019 according to their household income level.

## POPULATION AND METHODS

### Type of study and source of data

Secondary analysis of data obtained from the database of the Second Nutritional Survey on Nutrition and Health (Segunda Encuesta Nacional de Nutrición y Salud, ENNyS 2) (available at <http://datos.salud.gob.ar/dataset/ennys2>), conducted in

Argentina between 2018 and 2019. The survey was based on a multistage probability sample of urban areas with 5000 inhabitants or more. This analysis was performed using the sample of children aged 0 to 23 months; questionnaires were completed by their adult caregivers.

Data were collected using a 24-hour recall interview about individual consumption using the 5-step method to record all foods and beverages consumed the day prior to the interview. The Argentine Food Digital Photographic Atlas (Atlas Fotográfico Digital de Alimentos Argentinos, AFDA) was used during collection of the data. In a subset of the population, a second recall interview was conducted; for this analysis, the values of the first interview were used. The details about the methodology can be found in the ENNyS document.<sup>3,4</sup>

Block 3 of the individual questionnaire, which collects information on breastfeeding, was considered. The following variables were obtained from the sociodemographic questionnaire: age, sex, level of education of the head of household, health coverage, family income quintile per consumer unit (CU), region, and status as indigenous individual or descendant of indigenous peoples, and participation in a food assistance program. All these variables were categorized according to the survey database.<sup>3,4</sup>

### Variables

*Table 1* summarizes analyzed indicators and the questionnaire used to develop each one. For the dietary diversity indicator, the 1040 items recorded were classified into the categories proposed in the WHO and UNICEF methodology.<sup>1</sup> For the sweet beverages indicator, the consumption of commercial and fresh (natural) juices, soft drinks, flavored waters, flavored milks, liquid yogurt, and flavored plant-based beverages were considered. Another indicator was also developed considering sugar consumption, which may be used to sweeten beverages as well as preparations. For the unhealthy food indicator, cookies, pastries, candies, sweets, ice cream, desserts, and snacks were considered.

The minimum meal frequency and minimum acceptable diet could not be estimated because the database does not include data on meal times.

### Data analysis

A descriptive analysis was performed and outcome measures were stratified by the

**TABLE 1. Source of information for each analyzed variable included in the National Survey on Nutrition and Health of 2018–2019**

Breastfeeding indicators	Source of data to obtain/develop the indicator	
	0–23 month of age questionnaire	24-hour recal
1. Ever breastfed (0 to 23 months old)	BLOCK 3. Question 3.1	
2. Early initiation of breastfeeding (0 to 23 months of age)	BLOCK 3. Question 3.2	
3. Exclusive breastfeeding under 6 months (0 to 5 months of age)		x
4. Mixed milk feeding under 6 months (0 to 5 months of age)		x
5. Continued breastfeeding (12–23 months of age)		x
<b>Complementary feeding indicators</b>		
1. Introduction of solid, semisolid or soft foods 6–8 months		x
2. Minimum dietary diversity 6–23 months		x
3. Minimum meal frequency 6–23 months		NA
4. Minimum milk feeding frequency for non-breastfed children 6–23 months		NA
5. Minimum acceptable diet 6–23 months		NA
6. Egg and/or flesh food consumption 6–23 months		x
7. Sweet beverage consumption 6–23 months		x
8. Unhealthy food consumption 6–23 months		x
9. Zero vegetable or fruit consumption 6–23 months		x
<b>Additional indicators</b>		
1. Bottle feeding 0–23 months	BLOCK 3. Question 3.15	
2. Area chart depicting infant feeding in infants 0–5 months of age who were fed exclusively with breast milk, breast milk and water only, breast milk and non-milk liquids, breast milk and animal milk/formula, breast milk and complementary foods, and not breastfed during the previous day.		
<b>Dietary diversity</b>		
1. Presence of food group diversity 6–23 months		x
2. Diversity score 6–23 months		x

NA: not available due to missing data necessary for its development.

household income quintile, considering the weighted sample. Differences were compared using 95% confidence intervals (CIs). The SPSS software, version 20, was used.

### Ethical considerations

This study was conducted based on the data obtained from the ENNyS of 2018–2019 database, which included children younger than 2 years and was authorized by the Ethics Committee of the Department of Health Research of the National Ministry of Health and Social Development.

### RESULTS

The ENNyS included 5763 children aged 0 to 23 months; their characteristics are described in *Table 2*. The highest proportion of children under 2 years in Argentina is concentrated in the center of the country. Also, 58.5% of the heads of

household did not complete secondary education; more than half of the households with children younger than 2 years corresponded to income quintiles 1 and 2. One third of all households received food assistance.

In relation to the level of education and health coverage, inverse gradients were observed in the different categories as the income level increases. Participation in a food assistance program reduces as the household income level increases; the highest value (50%) was observed in households in quintile 1.

*Table 3* describes the results for each breastfeeding and complementary feeding indicator. Almost all children in Argentina were ever breastfed (96.9%), but the initiation of breastfeeding in the first hour of life was observed in approximately only half of children (56.4%).

According to the 24-hour food recall, in the group of infants aged 0 to 5 months, 46.6%

**TABLE 2. Characteristics of the sample of infants and children aged 0 to 23 months from urban areas of Argentina, National Survey on Nutrition and Health of 2018–2019**

	TOTAL n = 5763	Q1 n = 1727	Q2 n = 1443	Q3 n = 1038	Q4 n = 901	Q5 n = 654
%	100	29.2	25.8	17.3	15.5	12.2
<b>Household income per consumer unit (ARS)</b>	10 194	4097	7535	10 145	14 180	25 481
mean (SD)	(7616)	(1654)	(1265)	(1669)	(2757)	(9744)
<b>Age (months old)</b>	11.7	11.3	11.8	11.9	11.6	12.4
mean (SD)	(6.7)	(6.8)	(6.7)	(6.6)	(6.6)	(6.7)
<b>Age groups, %</b>						
0 to 5 months	22.7	25.2	22.8	19.9	23.3	19.6
6 to 11 months	28.5	29.9	27.2	28.4	28.9	28.0
12 to 17 months	25.2	22.2	25.8	28.6	25.7	25.7
18 to 23 months	23.6	22.7	24.2	23.1	22.1	26.7
<b>Women, %</b>	46.7	45.8	46.6	48.2	45.7	48.3
<b>Level of education of head of household, %</b>						
Incomplete secondary education (< 12 years)	58.5	80.5	72.2	55.1	35.0	11.4
Complete secondary or higher education (≥ 12 years)	40.3	18.8	25.7	43.9	63.7	88.2
No data	1.2	0.7	2.1	1.0	1.3	0.5
<b>Health coverage, %</b>						
Public	58.7	88.5	74.2	52.3	22.8	8.8
Private company or labor union	41.0	11.1	25.5	47.5	76.8	91.1
No data	0.3	0.4	0.3	0.2	0.4	0.1
<b>Region, %</b>						
GBA	34.1	33.8	38.7	32.9	31.7	30.2
Pampa	29.7	30.7	28.1	30.1	31.0	28.4
NOA	12.6	13.2	10.7	12.5	12.5	15.7
NEA	9.4	8.0	8.4	11.3	9.4	11.8
Cuyo	7.4	7.7	6.8	7.9	7.3	6.9
Patagonia	6.8	6.6	7.3	5.3	8.0	7.1
<b>Indigenous or descendant of indigenous peoples, %</b>	2.0	3.2	1.9	1.0	2.4	0.2
<b>Any household member receiving food assistance, %</b>	33.1	50.0	39.2	28.5	16.1	7.4

Source: Developed by the authors based on data from the ENNyS 2018-2019.

SD: standard deviation, n: number, Q: quintile, GBA: Greater Buenos Aires Area, NOA: Northwest region of Argentina, NEA: Northeast region of Argentina.

received exclusive breastfeeding the previous day and 26.8% received mixed milk feeding. *Figure 1* shows the difference in the ideal feeding pattern and the pattern observed in Argentine children. In the group of children aged 12 to 23 months, 47.7% continued with breastfeeding. The day before the survey, 3 out of every 4 children younger than 2 years consumed any liquid (water, tea, animal milk, breast milk, etc.) and/or any food (cereals, pap, etc.) using a bottle.

In relation to complementary feeding, it should be noted that, the day before the survey, 9 out of every 10 infants aged 6 to 8 months consumed solid, semisolid, or soft foods (91.4%). In the group of children aged 6 to 23 months, the indicator that showed the greatest adherence was meat and/or egg consumption (78.0%). Also in that group, the previous day, 59.7% of children consumed unhealthy foods and half of them (49.6%) consumed sweet beverages, a

percentage that rose to 63.9% when considering table sugar use. Also, 1 in every 5 children did not consume any fruit or vegetable (*Table 3*).

In relation to dietary diversity, in average, children aged 6 to 23 months consumed  $4.6 \pm 1.4$  different food groups, while 54.8% consumed at least 5 different food groups. Pulses, nuts and seeds accounted for the less commonly consumed food group—only 3.6% of children aged 6 to 23 months consumed these—, whereas dairy products and grains were the most consumed food group: 78.6% and 72.3%, respectively (*Figure 2*).

The analysis of breastfeeding indicators by household income level showed a higher prevalence of early initiation of breastfeeding in children corresponding to quintile 5, whereas continued breastfeeding varied across the different income levels, with a lower prevalence in quintile 5 compared to quintile 1 (*Table 3*).

**TABLE 3. Prevalence of breastfeeding and complementary feeding indicators according to the World Health Organization and the United Nations Children's Fund for children younger than 24 months, National Survey on Nutrition and Health of 2018–2019**

Breastfeeding indicators	n	TOTAL	Q1	Q2 % (95% CI)	Q3	Q4	Q5
1. Ever breastfed (0 to 23 months old)	5494	96.9 (96.4–97.3)	96.7 (95.8–97.5)	95.7 (94.6–96.7)	98.1 (97.2–98.9)	96.9 (95.3–97.7)	98.2 (97.0–99.0)
2. Early initiation of breastfeeding (0 to 23 months of age)	3261	56.4 (55.1–57.7)	56.2 (53.7–58.5)	54.5 (51.9–57.1)	56.6 (53.5–59.7)	55.0 (51.7–58.4)	62.4 (58.6–66.0)
3. Exclusive breastfeeding under 6 months (0 to 5 months of age)	713	46.6 (43.9–49.3)	40.4 (35.8–45.1)	48.1 (42.9–53.5)	48.4 (41.2–55.2)	51.0 (44.1–57.9)	52.6 (44.6–61.2)
4. Mixed milk feeding under 6 months (0 to 5 months of age)	349	26.8 (24.4–29.2)	23.5 (19.7–27.7)	21.8 (17.7–26.5)	30.2 (24.2–37.1)	37.1 (30.5–43.8)	29.4 (22.2–37.4)
5. Continued breastfeeding (12–23 months of age)	1413	47.7 (45.8–49.5)	47.8 (44.3–51.3)	49.2 (45.7–52.9)	53.9 (49.5–58.2)	45.0 (40.5–49.8)	38.7 (33.9–43.8)
<b>Complementary feeding indicators</b>							
1. Introduction of solid, semisolid or soft foods (6–8 months of age)	664	91.4 (89.2–93.2)	86.6 (81.9–90.6)	92.2 (88.0–95.3)	93.9 (89.7–97.1)	94.1 (88.7–97.6)	94.3 (88.9–98.4)
2. Minimum dietary diversity (6–23 months of age)	2415	54.8 (53.3–56.3)	55.4 (52.6–58.1)	56.7 (53.9–59.6)	50.4 (47.0–53.9)	48.9 (45.1–52.7)	63.0 (58.9–66.9)
3. Minimum meal frequency (6–23 months of age)		NA					
4. Minimum milk feeding frequency for non-breastfed children (6–23 months of age)		NA					
5. Minimum acceptable diet (6–23 months of age)		NA					
6. Egg and/or flesh food consumption (6–23 months of age)	3301	78.0 (76.7–79.1)	77.9 (75.6–80.2)	78.0 (75.5–80.3)	76.6 (73.6–79.5)	75.2 (71.8–78.3)	83.1 (79.9–86.1)
7. Sweet beverage consumption (6–23 months of age)	2038	49.6 (48.1–51.1)	54.8 (52.0–57.5)	52.8 (49.9–55.7)	48.6 (45.2–52.1)	43.3 (39.5–46.9)	40.5 (36.6–44.7)
7.b Sweet beverage and table sugar consumption (6–23 months of age)	2763	63.9 (62.5–65.3)	71.7 (69.2–74.1)	69.5 (66.8–72.1)	61.4 (58.0–64.7)	54.9 (51.2–58.6)	49.7 (45.5–53.8)
8. Unhealthy food consumption (6–23 months of age)	2359	59.7 (58.3–61.2)	55.9 (53.2–58.6)	60.0 (57.1–62.8)	58.8 (55.5–62.3)	64.8 (61.0–68.2)	63.0 (58.9–66.9)
9. Zero vegetable or fruit consumption (6–23 months of age)	1036	23.0 (21.8–24.3)	24.9 (22.5–27.3)	23.8 (21.4–26.3)	26.8 (23.8–30.0)	24.2 (21.1–27.6)	10.2 (7.9–12.9)
<b>Additional indicators</b>							
1. Bottle feeding (6–23 months of age)*	4345	76.6 (75.4–77.6)	78.1 (76.1–80.1)	75.8 (73.6–78.0)	74.9 (72.1–77.5)	75.2 (72.3–78.0)	78.5 (75.3–81.5)

NA: not available due to missing data necessary for its calculation.

Source: Developed by the authors based on data from the ENNyS 2018–2019.

\*Analyzed based on the individual questionnaire, question: “3.15 Any day of the past week, did the child consume any liquid (e.g., water, tea, animal milk, breast milk, etc.) and/or any food (e.g., cereals, pap, etc.) using a bottle?”

n: number, Q: quintile, CI: confidence interval.

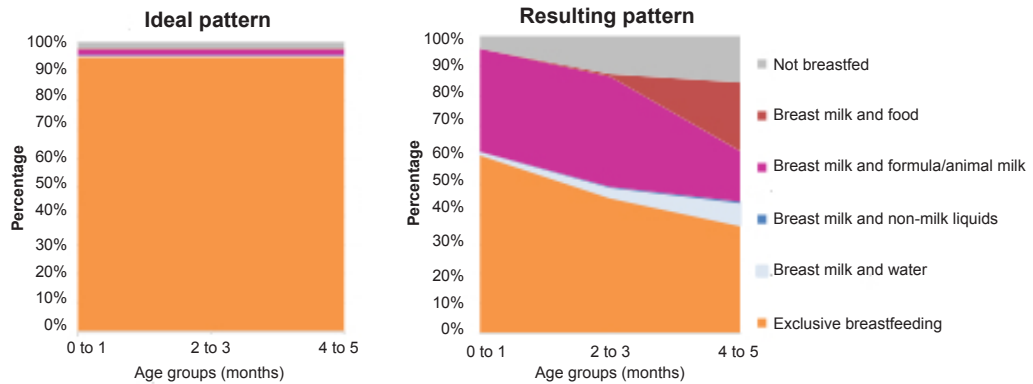
Complementary feeding indicators showed differences in the consumption of sweet beverages and of sweet beverages and table sugar; both decrease as the household income level increases. The consumption of unhealthy foods was higher as the household income level increases. Out of every 4 children, 1 did not consume fruits or vegetables the previous day; consumption values in children whose households corresponded to quintile 5 were lower than the national average (Table 3). In relation to the

consumption of dietary diversity groups, the greatest distance between quintiles 1 and 5 is observed in the egg, other fruit and vegetables, vitamin-A rich fruit and vegetables, and flesh food and organ meats groups. The percentage of children who consumed them was higher among those in quintile 5, whereas the distance for breast milk showed the opposite trend (Figure 2).

## DISCUSSION

The results of this study evidence the

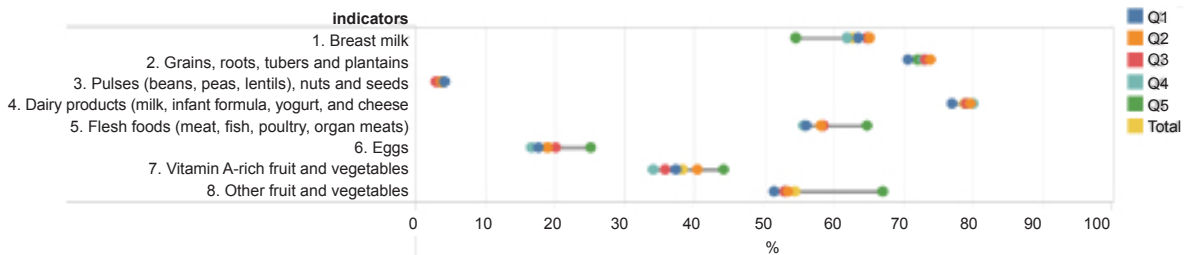
**FIGURE 1. Area chart of child diet in a sample of infants and children aged 0 to 5 months from urban areas of Argentina, National Survey on Nutrition and Health of 2018–2019**



Source: Developed by the authors based on data from the ENNyS 2018-2019.

Note: the truncated age value was used to develop age groups.

**FIGURE 2. Consumption of food groups based on dietary diversity in children aged 6 to 23 months from urban areas of Argentina, total and by household income level, National Survey on Nutrition and Health of 2018–2019**



Source: Developed by the authors based on data from the ENNyS 2018-2019.

asymmetry in breastfeeding and feeding practices in children younger than 2 years from urban areas of Argentina according to their household income level. Disparities in dietary patterns are conditioned by food prices, mainly in urban societies, so that income may behave as a structural determinant of food purchase decisions in the household.<sup>13</sup>

First of all, as described in the ENNyS report,<sup>3,4</sup> an adequate breastfeeding initiation is evident, but only about half of the children are breastfed in the first hour of life and less than half of the children under 6 months of age are exclusively breastfed; these figures are lower in children from low-income households, inversely to what is observed with continued breastfeeding at 1 year old.

Secondly, the results show a low prevalence of minimum dietary diversity. A non-diverse diet may increase the risk of micronutrient deficiencies, which may impair children's physical and cognitive development. This behavior is uniform throughout

the child population given that the overall score is not associated with household income; however, when disaggregated by food groups, some categories show greater distance according to the household income. The indicator of absence of fruit and vegetable consumption showed that about a quarter of children younger than 2 years did not consume any fruit or vegetable the previous day, and that this condition is only less prevalent among children in income quintile 5. This pattern is consistent with analyses based on household expenditure surveys, which show significant inequalities in fruit and vegetable consumption according to household living conditions.<sup>14</sup> These results show how income may operate as a structural determinant of dietary practices, reflecting the disadvantages suffered by this social group in which more than three quarters of the heads of household in quintiles 1 and 2 did not complete secondary education and have public health coverage.

Thirdly, more than half of children younger than 2 years consumed, the previous day, foods and beverages that should be avoided according to dietary guidelines<sup>15,16</sup> because they are associated with poor dietary quality, particularly sweet beverages and table sugar, whose consumption is higher in low-income households. This is consistent with previous studies that used the data from the ENNyS 2 for individuals older than 2 years; their consumption was far from recommendations,<sup>5</sup> with a high presence of ultra-processed foods, especially in younger children.<sup>5</sup> In Argentina, Law no. 27642 on the Promotion of Healthy Eating, as regulated in 2022, is currently in force. The objective of this law is to regulate the promotion, advertising, and sponsorship of ultra-processed foods, mainly those targeted at children, as well as their offer in school settings. A challenge for future studies will be to assess how its implementation has impacted on these indicators.

Among the strengths of this study, it is worth the availability of more recently obtained information. Since 2005, there had been no nationally representative data on early feeding practices; in addition, the UNICEF analysis did not include data for Argentina.<sup>17</sup> This study also provides opportunities to identify the main problems in breastfeeding and complementary feeding practices of children younger than 2 years in urban areas of Argentina, which allows to define priorities and plan targeted actions.

In relation to the limitations of this study, it is necessary to consider that, since the sample only included the population from urban areas with at least 5000 inhabitants, the population is not representative of smaller urban areas and rural agglomerates. Also, although this study used the most current sources of information available, the dynamic nature of the social composition may not be representative of the most recent transformations.

Establishing healthy eating habits at an early age is part of a relevant strategy to fight obesity and prevent malnutrition.<sup>18</sup> In order to promote a quality diet, policies must consider multiple strategies<sup>19,20</sup> and several dimensions, given that feeding practices are affected by structural determinants and sociocultural dynamics that condition both food choices and access to quality food from the beginning of life.<sup>21</sup>

Nutritional deficiencies imply the violation of the human right to adequate food for children established by virtue of the first paragraph

of Article 11 of the International Covenant on Economic, Social and Cultural Rights,<sup>22</sup> Article 24.c of the Convention on the Rights of the Child,<sup>23</sup> and Articles 12 and 16 of the American Convention on Human Rights.<sup>24</sup> This also affects the right to health of a particularly vulnerable population, such as children, which has serious implications for the well-being of this group, as well as for public health in the short and long term. Given that the child population is particularly vulnerable to their food environment, the promotion of caregiving policies aimed at promoting breastfeeding and access to food of adequate nutritional quality is an essential mechanism for the prevention of malnutrition, the protection of food security, and the well-being of the population, and thus for the effective realization of the rights to food and health.

## CONCLUSION

According to the results, the diet of children younger than 2 years living in urban areas of Argentina is far from the recommendations and is affected by income level. Early initiation of breastfeeding, minimum dietary diversity, fruit and vegetable consumption are lower and sweet beverage consumption is greater in impoverished sectors. Comprehensive approaches focused on the environments and the food system are required, which at the same time contribute to improving the diet of the entire population, especially from an early age, and to reducing inequalities in access to quality food. ■

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