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# Relationship of Food Consumption and Family Income of Children under 2 Years Old in Three Counties in the Metropolitan Region of Belém

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***Keywords*** *— **Food Consumption, Children, Income, Food Security.***

***Abstract****—Objective: To relate the food consumption of the previous day and family income of children under 6 months to 2 years of age living in the metropolitan region of Belém, Pará. Methodology: Descriptive-analytical cross-sectional study with application of an online questionnaire via google forms, carried out in the metropolitan region of Belém-Pará, which covers 3 municipalities (Belém, Ananindeua and Marituba). The questions formulated in the food survey were based on food consumption markers from the SISVAN platform. Results: 221 responses from caregivers were obtained. Most declared to receive up to a monthly minimum wage. breast milk was consumed by all children younger than 6 months. In children aged over six months to two years, it was observed that breastfeeding did not occur continuously in children from groups with higher family income, and the ingestion of ultra-processed foods by children with lower incomes was observed. Conclusion: The data demonstrate dietary inadequacy, habits that are configured for the development of chronic non-communicable diseases throughout life. In addition, there is a low consumption of fresh and minimally processed foods, as well as an inadequate introduction of ultra-processed foods, especially in children belonging to families with lower incomes.*

## I. INTRODUCTION

Inadequate nutrition in the first two years of life is associated with the development of chronic diseases, which compromise the health and life of children. In this way, children with inadequate habits are more vulnerable to infectious diseases, respiratory infections, malnutrition, obesity, dental caries and micronutrient deficiencies such as iron and vitamin A. In this way, ensuring adequate nutrition in the first two years, such as breastfeeding and a healthy complementary diet can contribute to reversing this scenario in addition to helping to reduce current nutritional problems [1].

The Food Guide for Brazilian children under two years of age recommends that a healthy diet should start in childhood, and that this diet starts with breastfeeding in the first six months, and after that period, being complementary to a diet with healthy foods with greater diversity of *in natura* and minimally processed foods. Breast milk, in addition to nutritional benefits, is also considered an economic food, since it is produced by the mother herself, requiring no extra preparation and expenses, ideal for families with low purchasing power. On the other hand, the supply of infant formula and other milks can compromise a good part of the family income, in addition to being associated with the illness of non-breastfed children, generating even more expenses [2, 3].

In this context, from the sixth month of life onwards, complementary feeding with healthy foods should be started, limiting the supply of processed foods and avoiding the consumption of processed foods, offering a greater diversity of foods so that the child knows the foods and develops healthier habits. In this sense, the supply of foods rich in fat, additives and sugary foods are strongly associated with maternal influence and family members with inadequate eating habits. In addition, such habits are configured for the reality of many families who are in food and nutritional insecurity, since these socially vulnerable groups have difficulties to buy fresh and minimally processed food and access to more affordable prices, factors that compromise the food quality [2].

In this sense, adequate food is a basic human right, which is guaranteed by law in order to ensure that people have access to quality food in sufficient quantity, as well as being adopted by the government through public policies and indispensable actions to promote and guarantee food and nutrition security for the population. In Brazil, advances in having access to adequate food have been the result of a set of actions to face and fight hunger and poverty, despite this, one of the indicators of poverty and extreme poverty has shown an important relationship between food security and nutritional status, since, in Brazil and in other countries, the absence of income is the main factor that prevents people from having access to food [4].

According to the National Study of Child Food and Nutrition (ENANI, 2019), in which it evaluated 14,558 children living in the five macro-regions of Brazil, it was possible to verify that 47.1% of the evaluated households showed some degree of food insecurity, of these 38.1 % mild food insecurity, 5.2% moderate and 3.8% severe. Furthermore, it was found that the prevalence of food insecurity occurred in families that received some benefit from the government, with 61.4%, and in those that did not receive any benefit, it was 38.8%. In this sense, it was observed that the regions that presented the highest rates of receiving any benefit were the Northeast regions with 57.0% and the North with 53.5%, being the regions with the highest proportions of food insecurity. [5]

Considering the above, the objective of this study was to relate the food consumption of the previous day and family income of children less than 6 months to 2 years of age living in three municipalities in the metropolitan region of Belém, Pará.

## II. METHODOLOGY

Descriptive-analytical cross-sectional study with application of an online questionnaire via Google Forms, carried out in the metropolitan region of Belém-Pará, with the participation of 3 municipalities (Belém, Ananindeua and Marituba). The research sample was simple random, consisting of guardians and/or caregivers (over 18 years old), of children under 24 months of age who were reached by the form through sharing a link through the internet, from October to December 2021 , in which 221 responses were obtained. Those responsible (over 18 years old) of the target audience of this study were included, who agreed to participate in the research after signing the informed consent form. Participants who did not fill in all the data for the survey were excluded.

The research protocol requested sociodemographic information from the children's caregivers. In addition, mothers and/or caregivers were asked about food being offered to the child.

The questions formulated in the food survey were based on food consumption markers from the SISVAN platform, plus questions regarding the use of artificial teats (pacifiers and/or bottle) and the offer of regional foods to the child. Being the children classified according to their age groups and answering questions related to these.

The variables studied were measured using the Microsoft Excel program, and analyzed using the Bioestat 5.3

program. For analytical statistics, the Kruskal-Wallis statistical test was used. An alpha at % was adopted as significance.

The evaluation process by the ethics committee followed the norms of the National Research Ethics Commission - CONEP, present in CNS resolution 466/2012 and 510/2016 and their complementary norms. The research was approved under opinion: 45110721.9.0000.0018.

## III. RESULTS

In this study, 221 responses were obtained from caregivers of children between 6 months and two years of age using the Google form. Table 1 shows the sociodemographic data of the interviewees, it can be seen that in relation to the degree of kinship with the child, most participants were mother and/or father (80.89%), and most residents of the city of Belém, (49.32%)

In addition, most participants (58.37%) were between 18 and 30 years old, as well as most of these were single (45.70%) and had only one child (55.66%). As for the level of education, 40.72% had high school as the highest level. With regard to monthly family income, most of them reported receiving up to one minimum monthly wage (32.58%). Regarding the number of residents in the house, 34.84% stated that three people lived in the household.

*Table 1 – Sociodemographic characterization of caregivers.*

| Sociodemographic data | N | % | p value* |
|---|---|---|---|
| **Degree of kinship with the child** | | | |
| Mother or Father | 177 | 80.89 | p<0.0001 |
| Grandfather or Grandmother | 6 | 2.71 | |
| Uncle or Aunt | 23 | 10.41 | |
| Siblings | 2 | 0.90 | |
| Babysitter | 2 | 0.90 | |
| Others | 11 | 4.98 | |
| **Sex** | | | |
| Female | 198 | 89.59 | |
| Male | 23 | 10.41 | |
| **City** | | | |
| Belém | 109 | 49.32 | |
| Ananindeua | 73 | 33.03 | p<0.0001 |
| Marituba | 39 | 17.65 | |
| **Age Group** | | | |
| Between 18 to 30 years | 129 | 58.37 | |
| Between 31 to 40 years | 74 | 33.48 | p<0.0001 |
| Between 41 to 51 years | 17 | 7.69 | |
| More than 50 years | 1 | 0.45 | |
| **Race/color** | | | |
| White | 59 | 26.70 | |
| Black | 31 | 14.03 | |
| Mixed race | 127 | 57.47 | p<0.0001 |
| Asian | 4 | 1.81 | |
| Indigenous | 0 | 0 | |
| **Estado civil** | | | |
| Single | 101 | 45.70 | |
| Married | 95 | 42.99 | p<0.0001 |

| | | | |
|---|---|---|---|
| Legal separation | 3 | 1.36 | |
| Others | 22 | 9.65 | |
| **Number of Children** | | | |
| 1 children | 123 | 55.66 | |
| 2 children | 61 | 27.60 | |
| 3 children | 20 | 9.05 | p<0.0001 |
| 4 children | 5 | 2.26 | |
| Don't Have children | 12 | 5.43 | |
| **Schooling** | | | |
| 1st to 4th grade of Elementary School | 1 | 0.45 | |
| 5th to 8th of Elementary School | 15 | 6.79 | |
| High school | 90 | 40.72 | |
| Higher Education | 74 | 33.48 | p<0.0001 |
| Specialization | 33 | 14.93 | |
| Master Degree | 7 | 3.17 | |
| Doctorate degree | 1 | 0.45 | |
| **Family income (MW)** | | | |
| To 01 MW | 72 | 32.58 | |
| Between 01 and 02 MW | 58 | 26.24 | p<0.0001 |
| Between 02 and 03 MW | 36 | 16.29 | |
| More than 03 MW | 55 | 24.89 | |
| **Number of residents in the house** | | | |
| 2 people | 20 | 9.05 | |
| 3 people | 77 | 34.84 | p<0.0001 |
| 4 people | 61 | 27.60 | |
| 5 or more | 36 | 28.51 | |

**Source:** Survey data, 2022.

Caption: MW: Minimum Wage

*p value obtained by the Kruskal-Wallis test

As for the relation of food consumption on the previous day correlated with the family income variable of children under six months of age in the metropolitan region of Belém-Pará (Table 2), it is observed that all children under six months of age consumed breast milk being higher in families that received up to one minimum wage (56%); following (32%) above one to two salaries and (12%) above three.

Porridge consumption was present in the food consumption of children belonging to family members who received the lowest income, being (4%) in families with income of up to one salary, and (4%) above one to two salaries. In addition, the consumption of water and/or tea occurred in (8%) in the groups with up to one salary and above one to two, respectively. Likewise, the consumption of cow's milk was (4%) in the groups that received more than one to two wages.

Regarding the consumption of infant formula, there was a consumption of (4%) of children in the group with up to one salary, (4%) above one to two and (4%) in those with more than three salaries. Fruit juice consumption was (4%) in families with an income of up to one salary and above one to two, respectively. Furthermore, the prevalence of fruit consumption occurred in (4%) of families with an income of up to one salary and (8%) in those that received more than one to two.

The family's food was given to (4%) of the children who were part of the classes with an income of one to two minimum wages. On the other hand, the consumption of other liquids and the consumption of flour

porridge ("caribé") were not present in any of the social conditions. Differently from that, the consumption of Açaí berry was of (4%) in the families that received above one to two salaries minimums.

*Table 2 – Relationship of food consumption of the previous day and family income of "children under 6 months of age" residing in the metropolitan region of Belém-Pará.*

| Consumption of the previous day | To 01 MW | Above 01to 02 MW | Above 02 to03 MW | More than 03 MW |
|---|---|---|---|---|
| **BreastMilk** | | | | |
| Sim | 56.00% | 32.00% | 0.00% | 12.00% |
| No | 0.00% | 0.00% | 0.00% | 0.00% |
| **Porridge** | | | | |
| Yes | 4.00% | 4.00% | 0.00% | 0.00% |
| No | 52.00% | 28.00% | 0.00% | 12.00% |
| **Water/Tea** | | | | |
| Yes | 8.00% | 8.00% | 0.00% | 0.00% |
| No | 48.00% | 24.00% | 0.00% | 12.00% |
| **Milk** | | | | |
| Yes | 0.00% | 4.00% | 0.00% | 0.00% |
| No | 56.00% | 28.00% | 0.00% | 12.00% |
| **Infant Formula** | | | | |
| Yes | 4.00% | 4.00% | 0.00% | 4.00% |
| No | 52.00% | 28.00% | 0.00% | 8.00% |
| **FruitJuice** | | | | |
| Yes | 4.00% | 4.00% | 0.00% | 0.00% |
| No | 52.00% | 28.00% | 0.00% | 12.00% |
| **Fruit** | | | | |
| Yes | 4.00% | 8.00% | 0.00% | 0.00% |
| No | 52.00% | 24.00% | 0.00% | 12.00% |
| **Home food** | | | | |
| Yes | 0.00% | 4.00% | 0.00% | 0.00% |
| No | 56.00% | 28.00% | 0.00% | 12.00% |
| **Consumptionofothersliquids** | | | | |
| Yes | 0.00% | 0.00% | 0.00% | 0.00% |
| No | 56.00% | 32.00% | 0.00% | 12.00% |
| **Caribé (FloursPorridge)** | | | | |
| Yes | 0.00% | 0.00% | 0.00% | 0.00% |
| No | 56.00% | 32.00% | 0.00% | 12.00% |
| **Açaí Berry** | | | | |
| Yes | 0.00% | 4.00% | 0.00% | 0.00% |
| No | 56.00% | 28.00% | 0.00% | 12.00% |

**Source:** Survey data, 2022.

Caption: MW: Minimum wage.

Regarding food consumption and family income of children from 6 months to 1 year of age (Table 3), it appears that children who did not consume breast milk on the day before the survey were higher in the groups that received more than three minimum wages (15%), of those who received up to 1 minimum wage (12.20%) and above two to three wages (10.98%).

Regarding the supply of food for the family, it is noted that the prevalence of this consumption was twice a day and the highest prevalence was among groups with lower incomes, with one to two salaries being higher (21.8%), up to one salary (18.75%), above three salaries (9.38%) and above two to three (6.25%).

The offer of fruit to children aged 6 months to one year was twice a day, being higher in groups with lower income, being (18.75%) up to one salary, (9.38%) above one salary and (6.25%) higher than three. In addition, it is observed that there was no offer of other types of milk in any of the family incomes.

Regarding porridge, consumption of (21.88%) is observed in groups with income above one to two minimum wages, with (15.63%) belonging to groups of up to one salary and above three salaries, respectively. In addition, yogurt consumption was prevalent in families with incomes greater than three minimum wages (15.63%) and (9.38%) belonging to groups that received more than one to two minimum wages.

With regard to the supply of vegetables, it appears that (12.50%) of the children whose group receives up to one minimum wage and (6.25%) above one to two minimum wages did not consume any type of vegetable. Furthermore, it can be seen that (6.25%) of these, whose groups received above one to two salaries, did not consume any type of orange-colored vegetable or fruit.

The consumption of leafy vegetables, it appears that most children from six months to one year, belonging to families with lower purchasing power, being (25%) of the groups that received up to one salary and (18.75%) above one to two salaries, did not consume leafy vegetables.

As for the consumption of proteins, it is noted that (15.63%) of the children belonging to the groups of up to one minimum wage and (9.38%) of the groups that received more than one to two wages, did not consume meat or eggs, demonstrating that among families with lower income, there was a higher prevalence of children who did not consume any type of animal protein.

Regarding the consumption of rice, roots and tubers, among those who did not consume these foods, they belonged to the lower income groups, with (9.38%) up to one minimum wage and (6.25%) above one to two salaries.

Hamburgers and/or sausages were not consumed by children belonging to the income groups. On the other hand, sweetened beverages were consumed by (6.25%) children from families with an income of up to one minimum wage and above three wages, respectively. The consumption of instant noodles, packaged snacks or crackers was observed in the groups above one to two salaries (6.25%) and with higher income, respectively.

Regarding the consumption of stuffed cookies, sweets and/or sweets, it was observed that (3.13%) of the children belonging to the lowest income group, as well as the highest income group, consumed these items, respectively. In addition, most children who were part of the income groups did not consume flour porridge (caribé). Differently from this, the consumption of açaíberry occurred in (12.50%) in the amima groups of one to two salaries; (9.38%) in the lowest and highest income groups, respectively.

*Table 3 – Relation of food consumption from the previous day and family income of "children aged 6 months to 1 year" living in the metropolitan region of Belém, Pa.*

| Consumption of the previous day | To 01 MW | Above 01 and 02 MW | Above 02 and 03 MW | More than 03 MW |
|---|---|---|---|---|
| Breast Milk | | | | |
| Yes | **13.41%** | **19.00%** | **7.32%** | **15.%** |

| | | | | |
|---|---|---|---|---|
| No | **12.20%** | **6.1%** | **10.98%** | **15.%** |
| Home food | | | | |
| 1 time/day | **9.38%** | **9.38%** | **0.00%** | **6.28%** |
| 2 times/day | **18.75%** | **21.8%** | **6.25%** | **9.38%** |
| 3 times or more | **0.00%** | **3.13%** | **0.00%** | **3.13%** |
| NO | **6.25%** | **3.18%** | **3.13%** | **0.00%** |
| Fruit | | | | |
| 1 time/day | **6.25%** | **15.63%** | **0.00%** | **12.50%** |
| 2 times/day | **18.75%** | **9.38%** | **3.13%** | **6.25%** |
| 3 times or more | **6.25%** | **9.38%** | **0.00%** | **0.00%** |
| No | **3.13%** | **3.13%** | **6.25%** | **0.00%** |
| Others kind of milk | | | | |
| yes | **0.00%** | **0.00%** | **0.00%** | **0.00%** |
| No | **8.54%** | **10.98%** | **5.49%** | **9.15%** |
| Porridge | | | | |
| yes | **15.63%** | **21.88%** | **3.13%** | **15.63%** |
| No | **18.75%** | **15.63%** | **6.25%** | **3.13%** |
| Yogurt | | | | |
| Yes | **6.25%** | **9.38%** | **0.00%** | **15.63%** |
| No | **28.13%** | **28.13%** | **9.38%** | **3.13%** |
| vegetables | | | | |
| yes | **21.88%** | **31.25%** | **3.13%** | **15.63%** |
| no | **12.50%** | **6.25%** | **6.25%** | **3.13%** |
| VegetablesoryellowFruits | | | | |
| Yes | **31.25%** | **31.25%** | **6.25%** | **18.75%** |
| No | **3.13%** | **6.25%** | **3.13%** | **0.00%** |
| Verdure | | | | |
| yes | **9.38%** | **18.75%** | **3.13%** | **9.38%** |
| No | **25.00%** | **18.75%** | **6.25%** | **9.38%** |
| meat and or eggs | | | | |
| yes | **18.75%** | **28.13%** | **6.25%** | **18.75%** |

| | | | | |
|---|---|---|---|---|
| No | **15.63%** | **9.38%** | **3.13%** | **0.00%** |
| rice, Potato, Yamor cassava | | | | |
| Yes | **25.00%** | **31.25%** | **3.13%** | **18.75%** |
| No | **9.38%** | **6.25%** | **6.25%** | **0.00%** |
| Hamburger an or sausages | | | | |
| yes | **0.00%** | **0.00%** | **0.00%** | **0.00%** |
| No | **34.38%** | **37.50%** | **9.38%** | **18.75%** |
| Sweetened Drinks | | | | |
| Yes | **6.25%** | **3.13%** | **0.00%** | **6.25%** |
| No | **28.13%** | **34.38%** | **9.38%** | **12.50%** |
| Noodles, snacks, orcrackers | | | | |
| Yes | **0.00%** | **6.25%** | **0.00%** | **6.25%** |
| No | **34.38%** | **31.25%** | **9.38%** | **12.50%** |
| Cookies and or candy | | | | |
| Yes | **3.13%** | **0.00%** | **0.00%** | **3.13%** |
| No | **31.25%** | **37.50%** | **9.38%** | **15.63%** |
| “Caribé” (Flour Porridge) | | | | |
| Yes | **0.00%** | **3.13%** | **0.00%** | **3.13%** |
| No | **34.38%** | **34.38%** | **9.38%** | **15.63%** |
| Açaí berry | | | | |
| yes | **9.38%** | **12.50%** | **0.00%** | **9.38%** |
| No | **25.00%** | **25.00%** | **9.38%** | **9.38%** |

**Source:** Survey data, 2022.

Caption: MW: Minimum Wage.

The food consumption of the previous day and the family income variable of children from one to two years of age (Table 4), it can be seen that with regard to the continued supply of breast milk, it can be observed that among the groups with greater financial conditions, there is no there was the offer of breast milk on the previous day, being (15.24%) greater than three minimum wages; followed by (12.20%) those with the lowest income; (10.98%) with family income above two and three and (6.10%) above one to two salaries.

Regarding the consumption of other types of milk, it is observed that consumption occurred in children who are part of the groups with income above one to two salaries (10.98%), followed by (9.15%) those with income

greater than three salaries, (8.54%) up to one salary and (5.49%) above two to three minimum salaries.

The consumption of porridge was prevalent in children aged one to two years, who were part of families with lower income, being (17.88%) in the group with income of up to one salary, (17.07%) with income above one to two salaries, followed by higher incomes, with (11.59%) of those earning more than three salaries and (10.98%) those earning more than two to three salaries.

In this sense, it is observed that in relation to yogurt consumption, the prevalence was in children whose family has the lowest income, being (17.07%) up to one salary and (15.85%) with a greater gain of one to two, the other incomes were (10.98%) of those earning more than three minimum wages and (7.32%) those earning more than two and three minimum wages.

The consumption of healthy foods such as vegetables, it is observed that most children belonging to all incomes consumed this food, but it is possible to observe that (6.10%) of children belonging to groups with income above one to two salaries did not consume this food. this food, as well as (3.66%) of those earning more than three salaries and (3.05%) of those who received up to one salary, also did not eat vegetables.

The consumption of orange-colored vegetables or fruits, it is observed that (5.49%) of those who receive up to one salary and of those who receive more than two to three minimum wages did not eat this food, as well as (3.05%) of those who had a higher income of one to two salaries and those with income above three salaries also did not eat some of these foods, respectively.

Likewise, regarding the consumption of leafy vegetables, it is noted that children with income up to one minimum wage (15.85%) did not consume any type of food, as well as (15.24%) of those with higher incomes did not eat leafy vegetables (14.63%) of those with income above two and three salaries and (14.02%), demonstrating a low consumption of this healthy food.

Meat and/or eggs were consumed by most children belonging to family incomes, with a higher consumption (29.27%) in families whose income exceeds three minimum wages, however this consumption also occurred in children with lower incomes (24.39 %) of up to one salary, followed by (25%) of those who received above one to two salaries and (17.68%) above two to three salaries.

Regarding the consumption of rice, roots and tubers, it is noted that despite consumption being higher in all incomes, (3.66%) of the children whose family received up to one minimum wage did not consume any of these foods. On the other hand, it is observed that the consumption of hamburgers and/or sausages occurs in families of lower social status, being (6.71%) of those who received up to one salary and (6.10%) of those with income above one to two salaries minimum.

Sugar-sweetened beverages were consumed by (13.41%) children whose families had lower purchasing power, (10.37%) of those who received more than one to two wages, followed by a lower rate for families with higher incomes, being (7.32%) with salary gain above two to three salaries and (5.49%) of those who received more than three salaries.

Regarding the consumption of instant noodles, packaged snacks or crackers, it is noted that this consumption occurred in most families with lower incomes, with this rate (13.41%) of those who received up to one salary, following with (7.93% ) of those earning more than one to two salaries, the other incomes were (4.27%) with a salary gain of more than three salaries and (3.05%) of those who earned more than two to three salaries.

Regarding the consumption of stuffed biscuits, sweets and/or sweets, it was found that the highest consumption occurred among children with lower family income, with (12.20%) of the families that received up to one salary, (7.93%) of those with income above one to two salaries, followed by the highest income (6.10%) of those earning above three salaries and (4.27%) with salary gain above two to three minimum salaries.

As for the consumption of flour porridge ("caribé"), it was noted that it was not present in the diet of most children belonging to all incomes. On the other hand, açaíberry was consumed by (14.02%) of the children whose families received more than one to two salaries, (12.20%) of those with a higher family income of more than three salaries, of those with an income of up to one salary (11.59%) and those belonging to the group with earnings above two to three salaries was (6.71%).

The consumption of regional foods, most of the children belonging to the income, did not consume these foods. However, (1.22%) with an income of up to one salary and (0.61%) with a salary above one to two, consumed Vatapá and Maniçoba, respectively.

*Table 4 – Relationship of food consumption from the previous day and family income of "children aged 1 to 2 years" living in the metropolitan region of Belém, Pa.*

| Consumption of the previous day | To 01 MW | Above 01 and 02 MW | Above 02 and 03 MW | More than 03 MW |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Breast Milk | | | | |
| yes | **13.41%** | **19.51%** | **7.32%** | **15.24%** |
| No | **12.20%** | **6.10%** | **10.98%** | **15.24%** |
| Others kind of milk | | | | |
| yes | **17.07%** | **14.63%** | **12.80%** | **21.34%** |
| No | **8.54%** | **10.98%** | **5.49%** | **9.15%** |
| porridge | | | | |
| yes | **17.68%** | **17.07%** | **10.98%** | **11.59%** |
| no | **7.93%** | **8.54%** | **7.32%** | **18.90%** |
| yogurt | | | | |
| yes | **17.07%** | **15.85%** | **7.32%** | **10.98%** |
| No | **8.54%** | **9.76%** | **10.98%** | **19.51%** |
| vegetables | | | | |
| yes | **22.56%** | **19.51%** | **15.85%** | **26.83%** |
| No | **3.05%** | **6.10%** | **2.44%** | **3.66%** |
| Vegetableoryellowfruits | | | | |
| yes | **20.12%** | **22.56%** | **12.80%** | **27.44%** |
| No | **5.4.9%** | **3.05%** | **5.49%** | **3.05%** |
| Verdure | | | | |
| yes | **9.76%** | **11.59%** | **3.66%** | **15.24%** |
| No | **15.85%** | **14.02%** | **14.63%** | **15.24%** |
| meat and or eggs | | | | |
| yes | **24.39%** | **25.00%** | **17.68%** | **29.27%** |
| no | **1.22%** | **0.61%** | **0.61%** | **1.22%** |
| rice, potato, yamorcassava | | | | |
| yes | **21.95%** | **25.00%** | **17.68%** | **29.27%** |
| no | **3.66%** | **0.61%** | **0.61%** | **1.22%** |
| hamburger and or sausage | | | | |
| yes | **6.71%** | **6.10%** | **1.22%** | **1.22%** |
| No | **18.90%** | **19.51%** | **17.07%** | **29.27%** |
| sweetened drinks | | | | |
| yes | **13.41%** | **10.37%** | **7.32%** | **5.49%** |
| no | **12.20%** | **15.24%** | **10.98%** | **25.00%** |
| nodles, snacksor cracker | | | | |
| yes | **13.41%** | **6.71%** | **3.05%** | **4.27%** |
| No | **12.20%** | **18.90%** | **15.24%** | **26.22%** |
| cookiesandcandy | | | | |

| | | | | |
|---|---|---|---|---|
| yes | **12.20%** | **7.93%** | **4.27%** | **6.10%** |
| No | **13.41%** | **17.68%** | **14.02%** | **24.39%** |
| “Caribé” (flour porridge) | | | | |
| yes | **0.00%** | **0.00%** | **1.22%** | **0.00%** |
| No | **25.61%** | **25.61%** | **17.07%** | **30.49%** |
| Açaí berry | | | | |
| yes | **11.59%** | **14.02%** | **6.71%** | **12.20%** |
| no | **14.02%** | **11.59%** | **11.59%** | **18.29%** |
| regional foods | | | | |
| Vatapá | **1.22%** | **0.61%** | **0.00%** | **0.00%** |
| Tacacá | **0.00%** | **0.00%** | **0.00%** | **0.00%** |
| Maniçoba | **1.22%** | **0.61%** | **0.00%** | **0.00%** |
| Did no consume | **24.39%** | **24.39%** | **18.29%** | **30.49%** |

**Source:** Survey data, 2022.

Caption: MW: Minimum Wage.

## IV. DISCUSSION

When analyzing the family income of the children's families in the cities of Belém, Ananindeua and Marituba, it was observed that the majority (32.58%) lived with a monthly family income of up to one minimum wage, and their highest level of education was high school (40.72%). Schooling, family income, culture, and caregivers' workload influence the living, health and food conditions of these families [6].

Regarding food consumption, the prevalence of breast milk consumption among children less than six months of age occurred in families of lower social status, with 56% in families that received up to one salary, 32% above one to two salaries and only 12 % greater than three. This can be considered a protective factor for low-income children, as breast milk is economical and provides essential nutrients for the child's growth and development, and protects against infections. In addition to generating benefits for the mother during the puerperium [7].

The consumption of other foods and liquids in children aged 0 to 6 months was present in families with lower purchasing power who had from 1 to 2 minimum wages, and the consumption of porridge (4%); water and/or tea (8%), cow's milk (4%) and infant formula (4%). This factor is worrying, as the early introduction of food interferes with the period of Exclusive Breastfeeding (EBF), in addition to being associated with increased infant morbidity and mortality; in addition, such foods are expensive and may compromise family income.

The introduction of porridge and other milks is still frequent, due to family beliefs that lead to the understanding that breast milk is not able to meet the needs of children [8]. According to Sá [9] in her study, it was also found that before six months the children received food, such as: water (79.2%), tea (84.5%), porridge (55.6%) and other types of milk (57%), and that 77.8% of the families in which these children were part had an income below the minimum wage, corroborating the results of the present study.

Second, Oliveira et al. [10] in “Exclusive Breastfeeding and the introduction of industrialized foods in the first two years of life” found that the rate of breastfeeding at or above six months was lower in classes with higher incomes, 10.5% in class C1 (R$2,705) and 5.3% in class C2 (R$1,625). In this research, the rate of children who did not consume breast milk was higher in the groups that received more than three minimum wages (15%), of those that received up to 1 minimum wage (12.20%) and above two to three minimum wages ( 10.98%). Data that corroborate the findings of this author.

Fruit consumption in children between 6 months and 1 year, the offer of this group twice a day, was higher in groups with lower income, being (18.75%) up to one salary, (9.38%) above one salary. Demonstrating that a low number of children are consuming foods from this food group. From 6 months, other foods need to be offered to children, seeking a healthy and balanced diet. Flores et al. [11] in their study, it was observed that the supply of fruits in children aged 6 to 11 months and 29 days was 76.6%,

with the majority (27.3%) belonging to groups with lower income.

Yogurt intake was found to be higher (15.63%) by children from families with incomes above three minimum wages and (9.38%) by those with incomes above one to two minimum wages. However, Porto et al. [12] found that the majority (74%) of the children who ate this food had a family income greater than one minimum wage and 26% had an income less than or equal to one salary.

Regarding the consumption of leafy vegetables, most children aged from six months to one year, being (25%) of the groups that received up to one salary and (18.75%) above one to two salaries, did not consume any type ofvegetable. This is worrying as such foods are sources of vitamins and minerals essential for child growth, so their absence in food contributes to the development of nutritional deficiencies.

In the research by Oliveira and Assis [13] 93.3% of children had an inadequate consumption of leaves, of these 16.6% were younger than six months and 53% belonged to families with income less than or equal to one minimum wage. Therefore, this may be related to low access to *in natura* food, due to the values that become inaccessible to the groups that are more socially vulnerable, associated with food and nutritional insecurity to which many of these families are subject, directly affecting their health and quality of life for these children.

With regard to the consumption of sweetened beverages, it was (6.25%) children from families with incomes above three minimum wages. Oliveira et al. [10] found that among children aged 6 to 11 months, the introduction of foods rich in sugar, such as chocolate drinks, soft drinks and artificial juices, was higher in the higher purchasing power classes, with 23.1% B2 (R$4,852), and only 3.3% in the groups that received less than one minimum wage. The consumption of other ultra-processed foods, such as instant noodles, was prevalent in the groups that received more than one to two wages (6.25%).

This intake of ultra-processed foods is not recommended because it is associated with the development of childhood obesity and other nutritional problems, in addition to inducing their frequent consumption, and thus can lead to the child's lack of interest in natural or minimally processed foods [3].

Regarding the food consumption of children from 1 to 2 years of age, breast milk consumption was frequent in 15.24% of children from families with income above 3 minimum wages. This finding may be related to the mother's greater understanding of the importance of maintaining breast milk, even after the period of food introduction. Giesta et al., [14] in their study, found that among children aged 4 to 24 months, 39.3% had their breastfeeding interrupted before six months and 9.3% after the sixth month of life, of these 65.5% had an average income, this value being higher than two minimum wages.

Regarding the supply of other milks to children aged one to two years, Gurmini et al., [15] in their research showed that the consumption of other milks such as cow's and artificial milk were consumed by 47.5 % and 15%, respectively, by children aged over or equal to six months, and among them 79.2% had less than three minimum wages. In this research, this rate occurred in children who belonged to groups with income above one to two minimum wages (10.98%), and with income above three minimum wages (9.15%). The data corroborate the findings of this author.

Porridge consumption was predominant in children whose groups were of lower purchasing power, with 17.88% of the income of up to one salary, 17.07% with income above one to two salaries, and for Flores et al., (2021) 54 were present, 5% in children aged 12 to 23 months and 29 days, with 25.2% being low-income. The data contribute to the findings of this study in question.

Likewise, the consumption of vegetables Oliveira and Assis [12] in their study, found inadequacy with regard to the consumption of this item, since 76.7% of children aged 6 to 36 months, most of them (53.3%) with income up to one minimum wage. On the other hand, in this research, the rate of those who did not consume vegetables was slightly lower, but prevalent in most family income groups, being (6.10%) with income above one to two wages; (3.66%) of those with income above three salaries and of those with lower purchasing power (3.05%). Despite this, most children consumed this food. Thus representing an inadequacy of food for this public.

Drinks rich in sugar were consumed by children of lower social status, being (13.41%) those who received up to one salary and (10.37%) those who received more than one to two salaries. In the study by Flores et al. [11] it was observed that the consumption of sugary drinks in children aged 12 to 23 months was higher than in this research, with 25.8% consuming soft drinks and 38.3% artificial juices, verifying these children were found to belong to groups with lower purchasing power. This prevalence demonstrates that the consumption of processed foods is associated with the socioeconomic level of greater vulnerability.

Regarding the consumption of instant noodles, packaged snacks or crackers, it can be observed that this consumption was predominant in families with lower

income, being (13.41%) of those who received up to one salary. Oliveira and Assis [13] found that 50% of children aged 6 to 36 months consumed instant noodles and 16.7% consumed some type of salty food, and most of these were part of incomes of up to one minimum wage. The findings reinforce the prevalence in the consumption of ultra-processed foods in groups with incomes below one salary.

Regarding the consumption of açaí berry, a food that is part of the culture of Pará, it was consumed by (14.02%) of the children whose families received above one to two salaries, in those with a higher family income above three salaries (12.20%), of those with income of up to one salary (11.59%) and those with earnings above two to three salaries was (6.71%), being present in the consumption of all family income brackets.

The "Food Guide for Brazilian Children under the age of two" [3] recommends that the introduction of food be made with a wide variety of healthy foods, which respect the local culture. Regarding the fruit group, açaí is a great option, due to the easy access of this food in the metropolitan region of Belém / Pará, and for its nutritional characteristics. The supply of fruits is essential during food introduction, as they are foods rich in fiber, vitamins and minerals.

## V. CONCLUSION

The children were cared for by their mother and/or father, were between 18 and 30 years old, and most of them were single and had only one child, and most declared that they had completed high school. Regarding monthly family income, the majority declared that they received up to a monthly minimum wage, which shows that most children belonged to families with lower purchasing power.

Regarding the children's eating practices, it was noted that although all children had received breast milk, there was an offer of non-recommended foods in the first six months, such as porridge, water, tea, fruit and fruit juice, demonstrating interruption early exclusive breastfeeding. Most of the children who received some food belonged to families with lower incomes, which demonstrates the lack of access to information and knowledge regarding the benefits of exclusive breastfeeding, as well as the promotion and protection of health and injuries that occur.

In children aged over six months to two years, it was observed that breastfeeding did not occur continuously in children from groups with higher family income. In this sense, it was observed that recommended foods such as *in natura* and minimally processed foods were little consumed by children whose families received up to a minimum wage. In addition, non-recommended foods were offered, such as: sugary drinks, stuffed biscuits, sweets, instant noodles, snacks and salty biscuits, and this consumption occurred among children who were part of families with lower purchasing power.

These data demonstrate dietary inadequacy, habits that are configured for the development of chronic non-communicable diseases throughout life. In addition, there is a low consumption of fresh and minimally processed foods, as well as an inadequate introduction of ultra-processed foods, especially in children belonging to families with lower incomes.

It is also necessary to reflect that a more committed work process is essential to promote information about the benefits of exclusive breastfeeding, as well as adequate food, and it is up to the public power to regulate such actions, as well as to provide investments in public policies that act in the face of insecurity food and nutrition, in order to guarantee the right to quality food for the population.

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