Feeding and Growth Patterns in the First Years of Life: Assessment of Children from Two Family Health Units of the Municipality of Cascais

Alimentação e Crescimento nos Primeiros Anos de Vida: Avaliação de Crianças de Duas Unidades de Saúde Familiar

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Abstract

Introduction: Nutrition is a pillar of child health necessary for adequate cognitive and height-weight development. We aim to characterize the eating habits and nutritional status of children up to the third year of life.

Methods: Socio-clinical-nutritional survey and anthropometric measurements of a representative sample of the 6 to 35 months-age children from Primary Health Care follow-up in Cascais municipality.

Results: Two hundred fifty-four children were evaluated. At birth, 85.8% of infants were breastfed, with a mean duration higher in mothers with more than 12 years of schooling (8 months versus 11 months, p=0.03). On average, complementary food was started at 5.1 months; cereals with gluten introduced at 7 months, egg at 9.2 months and cow's milk after 12 months in 83% of children. Supplementation with cholecalciferol was provided in 75% of the children. The large majority of children had their nutritional status within the normal range, although almost 7% was considered obese after 12 months old. After the first year of life: average of 5 meals a day with > 50% consuming vegetables, fruit, meat, fish and milk. Daily, sugary cereals are consumed by 64.9% of children; desserts/sweets by 43.2% and sugary drinks by 58.7%. This consumption is lower if mothers have > 12 years of schooling (p= 0.004).

Conclusion: This study demonstrates the need to reinforce the extension of breastfeeding, optimize the age of introduction of cow's milk and promote supplementation with cholecalciferol. After the first year of life, we should reinforce the reduction of consumption of sugary foods.

Keywords: Breast Feeding; Child; Child Development; Cholecalciferol; Feeding Behavior; Infant; Infant Food; Nutrition Assessment

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Resumo

Introdução: A alimentação é um pilar da saúde infantil, necessário para o adequado desenvolvimento cognitivo e estaturo-ponderal. Pretendemos caracterizar os hábitos alimentares e antropometria de crianças até ao 3º ano de vida.

Métodos: Aplicação de inquérito socio-clínico-nutricional e avaliação antropométrica de amostra representativa da população entre os 6 e os 35 meses, utentes de duas Unidades de saúde familiar do Concelho de Cascais.

Resultados: Avaliadas 254 crianças. Iniciaram aleitamento materno ao nascimento, 85,3%, com duração média superior em mães com > 12 anos de escolaridade (11 meses *versus* 8 meses, *p*=0,03). Início médio da diversificação alimentar: 5,1 meses; cereais com glúten introduzidos em média aos 7 meses, ovo aos 9 meses, leite de vaca após os 12 meses em 83%. Cumprem suplementação com colecalciferol, 75%. A grande maioria das crianças tinha um estado nutricional considerado normal, embora quase 7% sejam considerados obesos após os 12 meses. Após o primeiro ano de vida: média de 4,9 refeições diárias, > 50% com consumo diário de vegetais, fruta, carne, peixe e leite. Diariamente, cereais infantis açucarados consumidos por 64,9%; sobremesas/doces por 43,2% e bebidas açucaradas por 58,7% das crianças. Este consumo é menor se mãe com > 12 anos de escolaridade (*p*=0,004).

Conclusão: Este estudo mostra a necessidade de reforçar o prolongamento do aleitamento materno, otimizar a idade de introdução do leite de vaca e promover a suplementação com colecalciferol. Após o primeiro ano de vida, importa reforçar a redução do consumo de alimentos açucarados.

Palavras-chave: Aleitamento Materno; Alimentos Infantis; Avaliação Nutricional; Colecalciferol; Comportamento Alimentar; Criança; Desenvolvimento Infantil; Lactente

Introduction

Food is one of the main pillars of childhood, a crucial period for growth and neurocognitive development with demanding nutritional needs.[1] Dietary intake, at this stage of life, has received considerable attention in recent years due to the rapid increase in prevalence of overweight and obesity among children.[2] Early nutritional education contributes to reversing the prevalence of chronic diseases, such as childhood obesity, and guarantees preference for healthy eating patterns that last into adulthood.[1] Family is the main influencing factor in the children's feeding behaviors, where eating habits are formed.

According to the World Health Organization (WHO), breast milk is the ideal food for infants, providing all the energy and nutrients that are necessary for the first months of life and continuing to provide part of the child's nutritional needs during the second half of the first year and during the second year of life.[3]

Complementary food should be initiated between 4 and 6 months of age. Introduction of different foods does not currently follow a rigid chronology. According to the most recent recommendations from the European Society for Pediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) for food diversification, breastfeeding as well as early experience of the variety of flavors are of significant importance; there is no convincing scientific evidence that avoiding or delaying the introduction of potentially allergenic foods, such as fish or eggs, reduces allergy in infants considered at risk. In fact, breastfeeding is the most effective dietary measure for the prevention of allergic disease, particularly in infants at risk.[4,5]

Obesity, defined by WHO as the "21st century epidemic", is a multifactorial disease. Although the interaction of genetic and metabolic factors is relevant, the clinical expression of obesity depends fundamentally on behavioral factors. Regarding dietary diversification, some observational studies report a higher probability of overweight and obesity when complementary food is started before 4 months.[6] In 2019, the inadequate eating habits of the Portuguese population were the fifth risk factor that most contributed to the loss of healthy years of life.[7,8] As for the pediatric population, overweight is the most common childhood disease in Europe, with an accentuated prevalence in Portugal: one in every three children is already overweight.[9] Recent projects based of the National Health and Nutrition Examination Surveys predict that if current trends continue, the prevalence of overweight and obesity in children is likely to double by 2030.[10] To prevent obesity in childhood, and therefore in adulthood, it is of utmost importance to acquire early healthy eating habits, assess regularly children's intake as well as advise and correct dietary errors.

Methods

We carried out a cross-sectional study of children aged between 6 and 35 months, who attended USF São Martinho de Alcabideche and USF Mare, between July and December 2019. Based on data from the National Register of Users, collected on the 15th April 2019, 333 children were enrolled in the USF São Martinho de Alcabideche and 369 in the USF Mare, totalizing 702 children. For a significance level of 5%, a sample of 249 children was estimated. Data was collected through questionnaires filled by parents or caregivers (Appendix A). The

study and data collection were authorized by Administração Regional de Saúde de Lisboa e Vale do Tejo Ethics Committee. Participants (parents/caregivers) were informed of the general objectives of the research and of the voluntary and anonymous nature of participation, signing an informed consent. We handed out 301 questionnaires. Two hundred and eighty-three (85%) questionnaires were returned, of which 29 were excluded for not being adequately filled, resulting in a total sample of 254 respondents. Eating habits in the first years of life were assessed using a direct administration questionnaire that included sociodemographic and pregnancy questions, personal and anthropometric data of the child as well as questions about their eating habits. Statistical analysis was performed using the IBM SPSS® v.24 program. Chi-Square test or Fisher test were used to compare the variables analyzed. The level of significance was considered as $p<0.05$.

Table 1. Children's sample characterization.

Variables	Results	*p*-value
Gender [n (%)]	- Male: 130 (51.2) - Female: 124 (48.8)	
Median Age [months (range)]	12.5 (6-35)	
Nationality [n (%)]	- Portuguese: 240 (94.49) - Brazilian: 8 (3.15) - Bangladeshi: 3 (1.18) - Polish: 1 (0.39) - Moldovan: 1 (0.39) - Italian: 1 (0.39)	
First child	- Yes [n (%)] 121 (48.4)	
Gestation data	- Median Gestational Age [months (range)]: 39 (30-42) - Median birth weight [kg (range)]: 3.21 (1.51-4.52) - Median length at birth [cm, (range)]: 48.2 (35-56) - Eutocic birth [n (%)]: 160 (63) - Mothers diagnosed with gestational diabetes [n (%)]: 14 (5.5) - Alcohol consumption [n (%)]: 2 (0.8) - Tobacco consumption [n (%)]:30 (11.8) - Dietary supplementations [n (%)]:232 (91.3) - Folic acid [n (%)]: 195 (76.8) - Iron [n (%)]: 151 (59.4) Mean weight gain during pregnancy [Kg (SD)]: 14.7 (±6.2)	
Chronic diseases	- Yes [n (%)]: 17 (6.67) - Asthma: 2 (0.79) - Atopic skin: 2 (0.79) - Angioedema: 1 (0.39) - Food intolerance/allergy: 12 (4.7)	
Supplementation with cholecalciferol in the first year of life	- Yes [n (%)]: 183 (75%) - Mothers aged < 36 years: 137 (74,9) - Mothers aged ≥ 36 years: 46 (25,1)	*p*=0.01*

SD - standard deviation; * Chi-Square Test

Results

Sample characterization

Of 254 children, 130 (51.2%) were male and 124 (48.8%) were female. Median age was 12.5 months (6-35 months). Most children were Portuguese (n=240; 94.5%). One hundred and twenty-nine children (51.6%) had at least one sibling. Median birth weight was 3.21 kg (1.51-4.52 Kg) and median length at birth was 48.2 cm (35-56 cm). Regarding personal history, the prevalence of chronic diseases was 1.5% (n=4) (asthma, n=2; atopic skin, n=2; and angioedema, n=1) and 12 (4.7%) children had food intolerance/allergy. Only 183 (75%) of children were supplemented with vitamin D according to the actual recommendations. Mothers aged less than 36 years were keener on complying with vitamin D supplement recommendations (p=0.01). During pregnancy, 14 (5.5%) mothers had gestational diabetes; only 2 (0.8%) consumed alcohol and 30 (11.8%) consumed tobacco, on average 6.3 cigarettes per day (SD±2.8). Most mothers (n=232; 91.3%) took dietary supplements, mainly folic acid (n=195; 76.8%) and iron (n=151; 59.4%) supplementations. Most deliveries (n=160; 63%) were eutocic, with a median gestational age of 39 weeks (30-42 weeks) and mean weight gain during pregnancy was 14.7 kg (SD±6.2). Children's sample characterization is summarized in Table 1.

Regarding parents, mother's age ranged between 17 and 42 years (median 32) and father's age between 20 and 56 years (median 34.8) and 42.9% (n=109) of parents were legally married. Median parents' schooling years was 12 (2-22 years). Most mothers (n=176; 70.7%) and fathers (n=211; 90.2%) were employed. Most mothers (n=196; 77.2%) and fathers (n=187; 73.6%) were Portuguese.

First year of life

Most children (n=218; 85.3%) were breastfed with an average duration of 9.36 months (SD±6.5). One hundred and seventy-four (68.5%) and 153 (60.2%) children were breastfed for at least 3 and 6 months, respectively. Sixty-nine (27.17%) children were breastfed after 12 months, but only 5.96% were breastfed after two years of age. Average duration of breastfeeding was superior in children whose mothers had more than 12 schooling years compared to children whose mothers had 12 or less schooling years (11 months *vs* 8 months, p=0.03). There was no statistically significant difference between duration of breastfeeding and mother's age (> 35 years: 8.8 months *vs* ≤ 35 years: 9.6 months, p=0.43) or employment status (employed: 9.2 months *vs* non employed: 9.2 months, p=1). Mean exclu-

Table 2. Breastfeeding and infant formula patterns.

Variables	Results	*p*-value
Children breastfed	Yes [n (%)]: 218 (85.83)	
Mean duration of breastmilk [months (SD)]	9.36 (±6.5)	
	- Mothers with > 12 schooling years: 11 (±6.09) - Mothers with ≤ 12 schooling years: 8 (±6.54)	*p*=0.03*
	- Mothers aged < 36 years: 9.6 (±6.7) - Mothers aged ≥ 36 years: 8.8 (±5.86)	*p*=0.43*
	- Mothers employed: 9,2 (±5,93) - Mothers unemployed: 9,2 (±6,6)	*p*=1*
Children breastfed ate the age of [n (%)]	- 3-months-old: 174 (68.5) - 6 months-old: 153 (60.2) - 12-months-old: 69 (27.17) - > 2-years-old: 13 (5.96)	
Mean duration of exclusively breastmilk [months (SD)]	4.72 (±1.99)	
Breastmilk maintained at the age of [n (%)]:	- 7-months-old: 9 (3.5) - 9-months-old: 8 (3.15) - 15-months-old: 1 (0.39)	
Infantile formula consumption [n (%)]	141 (54.2)	
Age of introduction of Infantile Formula [months (%)]	- < 4-months-old: 76 (53.9) - 4-6-months-old: 37 (26.24) - > 6 months-old: 28 (19.86)	
Growth milk consumption [n (%)]	29 (11.4)	

SD - standard deviation; *Independent Samples Test

Table 3. Complementary food patterns of the sample studied.

Variables	Results
Children who had started complementary feeding [n (%)]	242 (95.3)
Median starting age [months (range)]	5 (3-12) - < 4-months-old: 3 (1.2) - 4-6-months-old: 230 (95.04) - > 6-months-old: 9 (3.72)
First introduced food [n (%)]	- Vegetable's pure: 92 (76) - Cereals/porridges: 43 (35.5) - Fruit: 42 (34.7)
Mean age of introduction of [months (SD)]	- Fruit: 5.4 (±1.5) - Vegetables: 5 (±1.9) - Meat: 6.8 (±1.6) - Fish: 7.6 (±1.6) - Gluten: 7 (±1.8) - Yogurts: 7.5 (±2.6) - Egg: 9.1 (±2) - Legumes: 10 (±3) - Cow's milk: 13.4 (±4.2) - Dry fruits: 11.7 (±3.9)

SD - standard deviation

Table 4. Classification of the nutritional status of children at birth, 6, 12 and above 13 months old according to the BMI z-score.

Variables	Results			
	Birth	6 months	12 months	13-35 months
Underweight Zsc BMI <-2, [n (%)]	9 (3.96)	6 (2.79)	1 (0.75)	1 (1.6)
Normal -2 ≤ Zsc BMI ≤ 2, [n (%)]	211 (92.95)	198 (92.09)	127 (94.78)	62 (72.09)
Overweight 2 < Zsc BMI ≤ 3, [n (%)]	7 (3.08)	6 (2.79)	6 (4.48)	17 (19.77)
Obese Zsc BMI > 3, [n (%)]	0 (0)	5 (2.33)	0 (0)	6 (6.98)

BMI - body mass index

sive breastfeeding lasted 4.72 months (SD±1.99). One child was exclusively breastfed for 15 months. Infantile formula was introduced in 141 (54.2%) children, 76 of these (53.9%) before 4 months old, 37 of 141 (26.24%) between 4- and 6-months old and 28 of 141 (19.86%) after 6 months old. Growth milk was consumed by 29 (11.4%) children. The upper results are summarized in Table 2.

At the time of the study almost all children (95.3%, n=242) had already started complementary feeding, with a starting age between 3 and 12 months (median 5 months). Only 3 children (1.2%) started complementary feeding before 4 months of age and 9 (3.72%) after 6 months of age. The most frequent type of food to be introduced firstly was vegetable's puree (n=92; 76%), followed by cereals/porridges (n=43, 35.5%) and fruits (n=42, 34.7%). Fruit was introduced into the children's diet at an average age of 5.4 months of age (SD±1.5) and vegetables at 5 months of age (SD±1.9). Meat was first consumed around 6.8 months (SD±1.6) and fish at 7.6 months of age (SD±1.6). Gluten was introduced at 7 months of age (SD±1.8), yogurts at 7.5 months (SD±2.6), egg at 9.1 months (SD±2) and legumes at 10 months of age (SD±3). Cow's milk ingestion started around 13.4 months of age (SD±4.2) as the main source of dairy, although 17.1% and 10.2% of children consumed it before 12 and 9 months of age, respectively. Dry fruits were started around 11.7 months of age (SD±3.9). Complementary food data is summarized in Table 3.

Classification of the nutritional status of children at birth, 6, 12 and 13 and above months old according to the body mass index (BMI) z-score are described in Table 4.

Second and third years of life

After the first year of life, children had an average of 5 daily meals. Daily intake of different foods is described in Table 5.

Fruit, vegetables, meat and fish were ingested daily by about 100% of children every day. Fruit is mostly consumed as whole

Table 5. Daily consumption of food after the first year of life.

Variables	Results	*p*-value
Mean daily meals [meals (SD)]	4.97 (±0.78)	
Answers by topic (n)	- Fruit, vegetables, meat, fish, egg, cow's milk: 82 - Sugary cereals: 77 - Sugary drinks: 75 - Desserts and sweets: 74	

Daily consumption of [n (%)]	- Fruit: 82 (100)
	  - Whole fruit: 45 (54.9)
	  - Juice: 19 (23.2)
	  - Pureed potter fruit: 18 (22.5)
	- Vegetables: 82 (100)
	  - Fresh vegetables: 20 (24.4)
	  - Vegetable's puree: 62 (75.6)
	- Meat: 80 (97.6)
	- Fish: 81 (98.8)
	- Egg: 77 (93.9)
	- Cow's milk: 62 (75.6)
	- Sugary cereals: 50 (64.9)
	- Sugary drinks: 44 (58.7)
	- Desserts and sweets: 32 (43.2)	

Consumption of sugary drinks [n (%)]	- Mothers with > 12 schooling years: 11 (37.9) - Mothers with ≤ 12 schooling years: 33 (71.71)	*p*=0.004*

SD - standard deviation; * Chi-Square Test

fruit (54.9%) or as juice (23.2%) and pureed potted fruit (22.5%). Vegetables are mainly eaten as fresh vegetables (24.4%) or vegetable puree (75.6%). Daily, 64.9% and 58.7% of children consume sugary cereals and drinks, respectively. The consumption of sugary drinks was found to be lower in mothers with more than 12 years of schooling (p=0.004). It was also reported a high daily consumption of desserts and sweets in 43.2% of children.

Discussion

The present study aimed to characterize the eating habits in the first three years of life of children who attended USF São Martinho de Alcabideche and USF Mare.

There was a high prevalence of breastfeeding, although 14.2% of the children were never breastfed. The mean duration of exclusive breastfeeding was 4.7 months, similar to previous studies.[11] We found that mother's schooling years was a factor associated with a higher duration of breastfeeding in children, but we could not associate the latter with other factors such as mother's age or employment status. At the age of 3 months and 6 months, respectively, our sample showed a higher prevalence of breastfeeding (68.5% and 60.2%, respectively), compared to the data collected from previous studies from the Portuguese population,[12,13] but only 27% and 6% extended breastfeeding after the first and the second year of their child's life respectively. Despite these results, they are undoubtedly an improvement over those presented in a previous study, in a similar population where 82% of children abandoned breastfeeding before 6 months.[12] Health care professionals should emphasize the maintenance of breastfeeding at least until the child is 2 years old, according to the WHO recommendations,[14] as well as providing clear instructions on the collection and storage of breast milk. Besides the known benefits for the health of the child and mother, breastfeeding seems to influence the food preferences, as the flavors and compounds in food eaten by the mother are believed to be transmitted and impact eating habits of the child.[15]

It is consensually recognized that from the point of view of maturational evolution, the normal full-term infant is prepared to start diversifying food from 4 months of age on.[16] This is defined as the period during which the infant starts consuming foods other than breast milk or infantile formula accompanied by a progressive reduction of the latter, until their introduction into the family diet.[4,14,17,18] From this age onwards, it becomes progressively more difficult for infants to meet their nutritional needs through exclusive breastfeeding, in terms of energy, proteins, iron, zinc and some fat-soluble vitamins.[19,20] According to national recommendations, healthy children up to 12 months old, should have their diet supplemented with vitamin D at a dose of 400 IU.[21] However, in the present study, only three quarters of children followed those references correctly.

Complementary feeding does not follow rigid rules concerning the introduction of different food groups, with no evidence of benefit of avoidance of potentially allergenic foods, and as such, we considered our sample to have reasonable decisions considering the introduction ages. It should be taken into account social and cultural factors, such as local customs, socioeconomic issues, the child's temperament, availability of the household or other particularities of the infant and respective family.[22] Complementary feeding onset age was globally correct in our study. We only found 3 children starting it before 4 months old, factor that increases the probability of overweight/obesity.[6] Eight children started complementary feeding after 6 months old and three children before 4 months old. The remain children started complementary feeding between 4 and 6 months. In a previous study on the same population starting age for complementary feeding was also correct, although 3 children had started it in the first trimester of life and 12 children after 9 months old.[12]

As observed in other studies, the first introduced food was vegetable puree.[11,23] Health care professionals should be aware that children in which complementary feeding was started with cereals/porridge may present higher energy and macronutrients intake, increasing the risk of overweight/obesity.[24] Also, given the innate taste for sweets, the early introduction of these foods may also difficult the exposure to new flavors.[16] We would like to highlight the improvement seen in the age of introduction of cow's milk. Comparing to a previous study

in the population of our Municipality, its introduction before 12 months was less prevalent than before.[12]

Regarding anthropometric values measured and after calculating BMI z-score, we found that the large majority of children had their nutritional status within the normal range at 12 months old, although between 13 and 35 months of age almost 20% of children were overweight or obese and 7% were already categorized as obesity.

The dietary pattern of children and families is influenced by sociocultural factors: cost and availability of food; food advertising; physiological factors such as hunger that varies from individual to individual, sensory factors that interfere with appetite; psychological factors related to values and beliefs, among others.[25] The eating habits of our sample, after the first year of life, included a diversified diet with daily consumption of fruit, vegetables, fish and meat. We found that fruit was mostly consumed as whole fruit, but the relatively high daily consumption of fruit juice and pureed fruit of the children analyzed revealed that parents might not be aware of the association with metabolic syndrome, liver injury and infantile obesity.[26] We also found an excessive intake of sugary cereals, as well as dessert and sweets, as reported in previous national studies.[11] The significant percentages of those consumptions indicate the need for developing strategies concerning its reduction.

The reported data through our questionnaire, applied in the primary health care services, are an important description of feeding and growth patterns in the first years of life. However, this study presents some limitations. First, as a cross-sectional analysis, it is impossible to infer causality of the findings and secondly, the data collected in this work are from a specific municipality, which prevents the extrapolation to the rest of the country.

Conclusion

In conclusion, despite the high prevalence of breastfeeding, health professionals should encourage the families to maintain it for as long as possible to guarantee the child's full development and growth. Compliance with vitamin D recommendations should be reinforced. Complementary feeding seems to be established in accordance with healthy eating patterns despite there is still an early introduction of cow's milk in several children. Families should be aware of the dietary influences of fruit juices and sugary foods on the children's health and risk for future obesity; more efforts should be made to inform and correct such habits in the population. As family is found to be the main influencing factor in the pattern of children's food, health professionals should invest on the caretakers' education about healthy eating habits in order to prevent childhood overweight and obesity.

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Presentations

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Responsabilidades Éticas

Conflitos de Interesse: Os autores declaram a inexistência de conflitos de interesse na realização do presente trabalho.

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Proteção de Pessoas e Animais: Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pelos responsáveis da Comissão de Investigação Clínica e Ética e de acordo com a Declaração de Helsínquia revista em 2013 e da Associação Médica Mundial.

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Appendix A

Questionnaire

Feeding and growth patterns in the first years of life

Date / /

Socio-economic information

1. Information of the mother:

1.1 Age: ____ years

1.2 Nationality: _____

1.3 Marital Status:

Single: ☐ Married: ☐ Domestic partnership: ☐ Separated/Divorced: ☐ Widow: ☐

1.4 Schooling years: __ complete years

1.5 Professional status: Unemployed: ☐ Employed: ☐

2. Information of the father:

2.1 Age: ____ years

2.2 Nationality: _____

2.3 Marital Status:

Single: ☐ Married: ☐ Domestic partnership: ☐ Separated/Divorced: ☐ Widow: ☐

2.4 Schooling years: __ complete years

2.5 Professional status: Unemployed: ☐ Employed: ☐

3. Information of the child

3.1 Sex: Male: ☐ Female: ☐

3.2 Date of birth: __/__/____

3.3 Nationality: _____

3.4 First-born child: Yes: ☐ No: ☐

3.5 Chronical diseases: Yes: ☐ No: ☐

3.5.1 If yes, specify which: _____

_____

3.6 Intolerances/Food allergies: Yes: ☐ No: ☐

3.6.1 If yes, specify which: _____

_____

3.7 Personal child health record:

	Weight (Kg)	Length (cm)
At birth		
At 6 months of age		
At 12 months of age		

3.8 Vitamin supplements (ex. Vitamin D – Vigantol®): Yes: ☐ No: ☐

3.8.1 If yes, specify which: _____

_____

Child's personal medical history

4. Pregnancy:

4.1 Gestacional diabetes (Maternal diabetes during pregnancy): Yes: ☐ No: ☐

4.2 Alcohol consumption: Yes: ☐ No: ☐

4.3 Smoking: Yes: ☐ No: ☐

4.3.1 If YES, how many cigarettes per day: _____

4.4 Time of pregnancy: ____ weeks

4.5 Maternal weight gain during pregnancy: ___ Kg

4.6 Delivery: Vaginal ☐ Other (ex. C-section) ☐

4.7 Supplements during pregnancy? (ex.: iron, folic acid, iodine) Yes: ☐ No: ☐

4.7.1 If YES, specify which: _____
_____

Feeding and supplements during the first year of life

5. Feeding of the child – First year of life

5.1 Breastfed: Yes: ☐ No: ☐

5.1.1 If YES: Start: _____ months End: _____ months

5.2 Infant formula: Yes: ☐ No: ☐

5.2.1 If YES: Start: _____ months End: _____ months

5.3 Growth formula: Yes: ☐ No: ☐

5.3.1 If YES: Start: _____ months End: _____ months

5.4 Exclusive total breastfeeding time: _____ months

5.5 Complementary feeding starting age: _____ months

5.6 First complementary food:

Dairy/non-dairy flours: ☐ Soup: ☐ Fruit: ☐ Cookies: ☐ Other: ☐

5.6.1 If you answered OTHER, please specify which: _____

5.7 Age of introduction of vegetables: _____ months | Not applicable ☐

5.8 Age of introduction of fruit: _____ months | Not applicable ☐

5.9 Age of introduction of fish: _____ months Not applicable ☐

5.10 Age of introduction of meat: _____ months | Not applicable ☐

5.11 Age of introduction of gluten: _____ months | Not applicable ☐

5.12 Age of introduction of eggs: _____ months | Not applicable ☐

5.13 Age of introduction of dry fruits: _____ months | Not applicable ☐

5.14 Age of introduction of yoghurt: _____ months | Not applicable ☐

5.15 Age of introduction of cow milk: _____ months | Not applicable ☐

5.16 Age of introduction of legumes (beans, grains):___ months | Not applicable ☐

Feeding in the second and third years of life

6. Feeding of the child – 2 and 3 years of life

6.1 Number of daily meals: _____

6.2 Select the types of food used daily for alimentation of the child

6.2.1 Milk: ☐

6.2.2 Yoghurt: ☐

6.2.3 Fruit: ☐

Fresh fruit: ☐ Pureed potted fruit: ☐ Natural fruit juice: ☐ Not applicable ☐

6.2.4 Vegetables: ☐

Fresh vegetables: ☐ Vegetable's puree: ☐ Both ☐ Not applicable ☐

6.2.5 Meat: ☐

6.2.6 Fish: ☐

6.2.7 Infant cereals: ☐ How many times per day _____

6.2.8 Sugary drinks: ☐ How many times per day _____

Nectars: ☐ Soda with gas: ☐ Soda without gas: ☐ Not applicable ☐

6.2.9 Deserts and sweets: ☐ How many times per day _____

Nutritional status of the child

7. Nutritional status of the child

7.1 Weight: _____ (Kg)

7.2 Length/Height: _____ (cm)

7.3 Body Mass Index _____ (cm/m^2)