

DEVELOPMENT OF NUTRITION IN CHILDREN AGED 6 TO 24 MONTHS

Caracterização do desenvolvimento da alimentação em crianças de 6 a 24 meses

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ABSTRACT

Purpose: to characterize the feeding of children between six and 24 months old of a Rio Grande do Sul municipality. **Methods:** it is a transverse and descriptive method. The sample consisted of 88 children who were enrolled in the municipal health department. Data collection was carried out during July-September 2012 interview with those responsible were conducted. **Results:** it was found that 86% of infants were exclusively breastfed with an average duration of three and a half months. There was early introduction of liquids with four months of age, and on average, there was a positive correlation with shorter breastfeeding. The offer of pasty food was early, with a median of introduction in the fifth month; the consistency was adequate in the current age. Soft drinks and snacks were consumed by 80.7% and 76.1% of the children, respectively. The bottle was used by 93.2% and the use was correlated with shorter breastfeeding. The pacifier was used by 64% of them. From the responsible, about 47,7% had received information of the introduction of food by pediatricians (47.7%). **Conclusion:** it was found that both the practice of exclusive breastfeeding and the complemented feeding occur in a shorter period than recommended. The early introduction of liquids and pastes was predominant. There was high use of bottles and pacifiers. Even though the pediatrician was the most cited source of information about feeding, we also identified lay advice.

KEYWORDS: Public Health; Breast Feeding; Feeding; Child

■ INTRODUCTION

The practice of a qualitative and quantitative feeding is essential for appropriate growth and development of human beings, especially early in life¹. In the infant feedings practice there are socio-economic, cultural, geographic, demographic, and psychological factors which result from mother and child interaction and reflect in the quality of infant feeding².

From the perspective of speech pathology, proper growth and normal development of the stomatognathic system structures are directly related to external and internal stimuli offered to the oral region, essentially in early life^{3,4}. The oral

and motor development occurs early in life through the movements performed by the phonoarticulatory organs (lips, tongue, lower jaw, jaw, cheeks, soft palate, hard palate, mouth floor, oral musculature and dental arches) during sucking⁵. Thus, breastfeeding, besides its nutritional, immunological and emotional benefits widely disseminated, also has positive effects for communication and for the stomatognathic system. The act of sucking breast works as a natural regulation for growth and harmonial development of the structure involved⁵⁻⁷.

The availability of different food consistencies from the seventh month is recommended by several organizations^{8,9} because it represents the continuity in strengthening muscles and facial bone structures. Stimuli such as utensils choice and food consistency are important for the adjustment of functions as swallowing, breathing, chewing and speech articulation.

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According to the Ministry of Health, after the six month of life, the infant may receive supplementary food three times a day, keeping breastfeeding up to two years or more. These food should be mashed by a fork and not liquefied or sieved, must be offered by a spoon and not by a bottle. The consistency should be progressed according to the child abilities, starting with mashed and consistent food and later with crushed and chopped food and finally with the family diet consistence. The supply can be quiet varied, aiming the nutrients absorption and the development of healthy eating habits⁸.

The harmful oral habits, among which it is emphasized the pacifier and bottle use and the finger sucking and nail biting, may affect the natural process of growth and functionality of the stomatognathic function. These habits arise when the need for suction is not properly answered¹⁰.

Several authors¹¹⁻¹³ emphasize the importance of instructing parents about how should be a child healthy diet, avoiding not recommended behaviors, such as offering inadequate food to the age and liquids as water and teas. It is evidenced by the literature that such practices tends to a early weaning, damaging the whole child health, a fact that appears to still unknown by the responsible.

Since one of the speech pathologist function is to comprise prevention and health promotion¹⁴, the present research shows to be relevant given the importance of becoming aware of health, care and life condition of the population, with the purpose of creating effective public policies^{15,16}.

The aim of this study is to characterize the feeding of children aged between six and twenty four months in the Paverama-RS, and specifically describe the demographic profile of the population interviewed, indicate time of introduction, types of food and consistency which are being offered to this age group, verify the presence of harmful habits and find out from which professionals or sources, parents received guidelines about food consistency transition.

■ METHODS

The project was approved by the Health department municipality and by the ethic committee of the origin research institution under the number 51368 and is linked to the research "characterization of feeding in child with and without cleft palate".

The present research is qualitative, cross-sectional, involving all children between six and twenty four months, of both genders, who were registered at the Health Department Municipality, totaling 106 subjects.

Distant 100 Km from the capital city, the town belongs to the Taquari Valley and is located in the central region of Rio Grande do Sul. The population estimated is of 7.744 inhabitants (2000 census), with an average of 70 births/year, according to Datasus (2000). The current economy is based primarily on the shoe sector, agribusiness sector, industrial equipment and metal foundry.

The Basic Health Unit (BHU) Center performs the primary health care to the entire population following the Health Strategy model. The technical services are formed by five general physicians, two nurses, four nursing technicians, 14 community health care workers, one dentist, one dental health technician, one psychologist and one pharmacologist. The speech pathologist is not inserted in the USB. There is also no gynecologist or pediatrician. These are carried out by an agreement by professionals not related to the health care, respecting the spontaneous demand system. The prenatal appointments are monthly performed by the general physician and, after the appointment, the pregnant participate in a group where they receive information and guidelines from the nurses. There is no puerperal monitoring by the general physician or pediatrician. The visits are conducted by the community health workers.

The sample selection, as well as the data affiliation, phone number and address obtainment, was performed by the Municipal Health Department by TeiSaúde 1.0.55, using the field "birth date" for searching. The period prescribed was of children between July 2010 and January 2012. It was analyzed data from 106 children, whose parents agreed to sign the free and informed consent. From these criteria it was excluded: preterm (13), craniofacial defect, genetic or neurological syndrome (02); and collected by the Guardianship Board. The final sample was composed by 88 children.

The interview was adapted from Carneiro and col.¹⁷ and applied to the parents in their address, being the visit previously schedule by phone. The interview contained questions about labor, birth conditions, type and cooking method and utensils used for feeding and also investigated the presence of harmful oral habits. At the end of the interview the parent received a folder containing information about the issues discussed in the interview

It was conducted a pilot study with three interviews to verify the possibility of adjustments, which was not necessary.

The criteria used to define the type of breastfeeding and early weaning were established by the World Health Organization¹, in the category "exclusive maternal breastfeeding" (EMB), in which the child receives milk only and no other liquid or

solid food; in the category “maternal breastfeeding (MB), the child receives breast milk, independently of receiving other kind of food, including non human milk; in the category “complementary feeding” (CF), the child receive both breast milk and solid and semi solid food. It was considered early weaning the interruption of breastfeeding before the child had completed six months, regardless of mother decision to interrupt it.

It was considered as thin liquids: water, juice, soft drink, tea, chocolate or coffee milk. The thickened liquids were: flour milk, shakes, yogurt, and liquefied fruits. The term “both” was used when both were consumed.

The database was stored in the Excel program and for statistical analyses it was opted to use the SPSS/PC 10.0 program, using measure of central tendency and crosstabs.

To verify the possible factors associated to the independent variables of the sample, it was used the Fischer’s Exact Test, being considered as significant $p < 0,05$ and the Pearson linear correlation coefficient to verify the possible correlation between this variables.

■ RESULTS

The study sample consisted of 88 children, with a mean age of one year and three months, being 20

(22.7%) between six and 11 months and 29 days, 40 (45.4%) between 12 and 17 months and 29 days and 28 (31.8%) up to 18 months. Cesarean delivery occurred in 78.4% of the sample and the gender distribution was equal.

Regarding the population sociodemographic characteristics, the mothers average age was 28 years, and 38.6% didn’t complete the elementary school and 47,7% were primiparous. The most common income was between one and two minimum salaries.

Although 86.4% of the subjects received EMB, with an average of three months and a half, 55.7% of the sample, was not receiving breast milk anymore at the time of the interview, being the median weaning fixed in the fourth month of life, as it can be verified at table 1. The prevalence of maternal breastfeeding until the six month was of 17.1% and about the reason of weaning, 38.0% of the mothers reported to introduce other kind of food in the child diet, 24,0% argued lack or insufficient amount of milk, 16% reported having done this under pediatrician orders and 10.0% because of back to work.

The early introduction of supplementary food in the children studied occurred in 82.9% of the subjects, in which was verified the predominance of liquids supply as described in table 2.

Table 1- Sample distribution according to the mean period of exclusive maternal breastfeeding and supplemented breastfeeding. Paverama, 2012

Kind of breastfeeding	n	YES	n	NO	Mean days	average (days)
Exclusive maternal breastfeeding	76	86,4%	12	13,6%	107,1	
Maternal breastfeeding	78	88,6%	10	11,36%	230,2	
weaning	49	55,7%	39	44,3%	148,5	120

n=88

Table 2- Data distribution according to the average (days) of age introduction to liquids. Paverama, 2012

Age of liquids consumption	yes %	no %	total %	Average (Days)
tea	91	9	100	120
water	100	0	100	120
other kind of milk	81	19	100	120

n= 88

Among the 80 children which received tea, 36 (45.0%) did it before the third month, 41 (51.0%) did it between the third and six month, and only three (3.8%) did it before the six month. It was also identified a moderate positive correlation ($r=0.489$; $p=0.000$) among the tea introduction and weaning and weak positive correlation ($r=0.326$; $p=0,022$) among water introduction and weaning respectively, meaning that child which received tea and water, weaned earlier when compared to those that didn't receive these liquids.

Regarding solid foods, fruits were the first option among mothers, being offered on average in the fifth month, followed by vegetable soup at five months and seven days. The smashed consistency was chosen by mothers in both cases predominately, in 98.9% for fruits and 84.1% for soup. Table 3 presents the evolution of meat offer, of smashed consistency up into pieces. These results suggest the age progression of subjects

Table 3 - Data distribution according to the group age and meat consistency

Group age	meat consistency				Total	
	crushed		sliced			
	N	%	n	%	n	%
0 - 6 meses	52	98,1	1	1,9	53	100,0
7 - 12 meses	27	84,4	5	15,6	32	100,0
Total	79	89,7	6	7,0	85	100,0

$p=0,026$

Fischer Exact test

The cookies had an average of introduction of fifth month and an evolution in the form in offering this food is presented in table 4. When examining the soft drink introduction, it was observed that of the 88% children, 71 (80.7%) consumed this drink

and 10 (11.3%) of them had less than or equal to six month of age beginning. The industrialized snacks were also part of the diet of a large number of participants (76.1%), with an average of 11 months of introduction.

Table 4- Data distribution according to age group and cookies consistency

Age cookies	Cookies Consistency				Total	
	smashed		unprocessed			
	N	%	n	%	n	%
0 - 6 meses months	56	80,0	14	20,0	70	100,0
7 - 12 meses months	7	43,8	9	56,3	16	100,0
> 12 meses months			2	100,0	2	100,0
Total	63	71,6	25	28,4	88	100,0

$p=0,026$

Fischer Exact Test

In the open question, concerning the importance of change in diet consistency, 70 (79.0%) of the interviewed reported that this was given to increase the nutritional support, 15 (17.0%) to learn chewing and to be adapted to different kind of food. Other answers like "not getting sick" or not to suck all time, totaled 2.0%. One mother didn't answer.

Most of the parents related receiving information about food introduction and change in consistency

of pediatricians (47.7%), followed by known people (43.2%) and nurse (6.8%).

No significant differences between duration of breastfeeding and maternal characteristics such as primiparity, education, family income, type of delivery among children, who received supplementary feeding and who was introduced to new foods starting from six months.

On the current feeding, at the time of data collection, 82 children (93.2%) used bottle. In the correlation test between bottle and weaning it was obtained strong positive correlation ($r=0.720$; $p=0.000$). The increase in the bottle hole was related by 26 mothers (31.7%) and there was predominance of thin liquids supply in this utensils.

Despite of the high rate of participants who used bottle, cup usage was reported by 72.7% of the mothers.

Regarding the use of pacifiers, it was verified a frequency of 61.4% and it was not found association between use and shorter breastfeeding, exclusive or supplemented.

Among those interviewed, 42.0% reported that they did not know the speech pathologist profession.

■ DISCUSSION

In the last years, there was an increase in scientific evidences confirming the importance of exclusive breastfeeding in the first six months and the breast feeding maintenance until two years of age^{1,5-9}. Regardless the recommendation of health agencies^{1,8,9}, the EMB until six months is not- with few exceptions- practiced by women, being or not from developed or undeveloped countries. While in the United Kingdom, less than 2% of women breastfeed exclusively until six month¹⁸, in Brazil the results of the II National Research about Breastfeeding¹⁹ showed that 41% of children received EMB until the established age. It was verified that, although Brazil has a higher index, the practice is far away from desired.

Concerning this finding, the present research obtained similar results to those found in Araçatuba-SP²⁰, verifying that the practice of exclusive maternal breastfeeding was performed by 86.4% of children. Despite, the average duration has not exceeded three months of age. Different results was found by a similar research conducted in the Canoas municipality-RS in 2009, in which 98% of the children received EMB, with average duration of two months and eight days. Lower EMB average was also found in the municipalities of the southern region by the research prevalence breastfeeding²¹, published by the Ministry of Health in the 2010. The values found for both EMB index and period of exclusive breastfeeding, are far away from the recommended.

Data reported in the literature^{22,23}, denote that women recognize the importance of breastfeeding, but not the relevancy of it exclusivity until the six month. The presence of maternal beliefs and myths as “weak milk”, “insufficient milk”, “The baby didn’t get the breast”, “the breast milk didn’t quench

thirsty” and “breast fall with lactation” shows women insecurity towards issues of daily life during breast-feeding and seems to have great influence on early introduction of supplementary feeding.

Analyzing the reason to EMB withdrawal in the present study, it was identified as the main factor, the mother’s decision in offering other kind of food, in 38.6% of the cases, followed by the “the lack or insufficient milk” (23.9%) and pediatrician guidance (15.9%). In this case, it’s worth mentioning that such an orientation from the health professional may have been based on previous OMS organization,⁹ which suggested that breastfeeding should be exclusive within four and six months.

Liquids such as tea, water and not human milk were predominantly introduced early in the children diets from these sample, with an average start of three months and a half, four and five months, respectively. Confirming this result, a recent study²⁴ called attention about the prominent position which takes south region in relation to tea consumption by children in their first six months of life. Moreover, it is known that early introduction of tea, water and milk formula, among others, are important to determine early weaning²⁵, by preventing that children receive the benefits of exclusive breastfeeding, putting on greater risk of morbidity and mortality.

In Rio Grande do Sul, children under one year of age who were not breastfed had 14 times greater risk of dying of diarrhea and were four times more likely to die from respiratory disease when compared to children with the same age who were exclusive breastfed²⁶. Besides, the benefit effect of breastfeeding regarding the motor sensory system is highlighted by different authors^{3-8,10,17}. It was also verified, in the aforementioned literature that various anatomical disorders could be prevented respecting the adequate period of breastfeeding, since this practice promotes the correct development of the stomatognathic system and its function (breathing, sucking, swallowing, chewing, speech sound articulation).

Brazilian authors²⁷ found that juice and water consumption by the breastfed children interfere less than tea in the breastfeeding indicators. In the present study, such interference was observed in relation to the breastfeeding period. There was strong correlation among tea introduction and shorter period of breastfeeding ($r=0.489$; $p=0.000$) than water and maternal breastfeeding ($r=0.326$; $p=0.022$), although both showed to be significant.

Before six month of life, child is not physiologically prepared to digest solid food. Furthermore, there is a neurological maturity to swallow non liquid food, evidenced by the presence of the tongue reflex protrusion, through which the child pushes

objects approximated to their lips and because of it, they reject food which are offered by a spoon. Furthermore, chewing movements, effectively begin around this age, time in which it is recommended the introduction of thicker foods^{8,9}.

Thus, according to the Child Book Nutrition of the Ministry of Health⁸, the first infant meals must occur after six months, with small amounts of food and should increase as the child grows. It must contain the following food groups: grains, tubercles, leguminous, meat and vegetables (green and vegetables). The consistency should be thick from the beginning-smashed and not liquefied, offered with a spoon not with a bottle- and the consistency should be gradually increased until achieve the family diet, in order to stimulate the tongue lateralization, the development of the muscles face in the chewing process, allowing the child to distinguish consistencies, flavor and colors of the new foods. Besides, thicker meals provides higher energy density, an important factor toward the gastric capacity of child during the introduction of new food.

The early introduction of supplementary food can be so harmful to the child development as its late offer, so that, in the first case, can influence the breastfeeding duration, interfering in the nutrient absorption, increasing the risk of contamination and allergic reaction, and in second, can lead to delayed development of the stomatognathic system, slowing growth, increasing the risk of malnutrition and the micronutrient deficiency^{8,9,28}.

In the present research, most mothers opted to start offering solid and semisolid with fruits, on average in the fifth month of life, followed by vegetables soup at five months and seven days, both at a early stage if compared to the guidelines of national and international public health agencies^{8,9,28}. The texture predominantly offered was mashed, 98.9% in fruits and 84% in soup, respecting the recommended.

The findings of this study indicated a significant association between increasing age and increasing consistency in the "meat" and "cookies" group ($=p0.0026$) and ($p=0.001$) respectively. The diet consistency evolution it's an expected result, since throughout aging, children develop orofacial structures that allows chewing more solid consistencies. In a similar research¹⁷ it was verified an association of fruit and vegetable soup consistency, It was identified, however, that while the median for the meat introduction for the children of the study aforementioned was of seven months, the current study was of six months, thus respecting the guidelines of the Ministry of health for the period of introduction of this food.

Another concerning finding in the current study was the increasing consumption of food not recommended to the age group. By analyzing the introduction of soft drinks, it was observed that of the 88 children, 71 (80.7%) consume it and 10 (11.3%) started to receive it before or equal than 6 months. Front this numbers, it's important to mention the OMS²⁸ recommendation, which discusses the ten steps to practice good nutrition for children until two years of age. The step number eight, refers to avoid soft drinks, because they are not considered good for nutrition, competing with nutritive food. In addition, sugar should be offered moderately in the first years of life, preferably starting from the first year. Therefore, this practice shows to be inadequate in the sample studied.

Snack introduction was also earlier and highly prevalent, whereas, of the 88 children analyzed, 67 (76.0%) consumed it, with an average introduction of 11 months. Such result its contrary to the health agencies guidelines^{1,9,28}, which recommend the introduction of harmless and appropriate supplementary food, that can fulfill the child necessity of energy, proteins, vitamins and minerals. It is also worth to emphasize that the diverse and healthy supplementary feeding is an opportunity for the child to be exposed to a wide range of foods, which were form the foundation for future healthy habits²⁹.

National and international researches²⁹⁻³¹ have been calling attention about the inappropriate feeding practices in children under two years. The early introduction of high sodium and high sugar food, poor of nutrients are increasing, and are related to the increasing risk of developing chronic diseases and childhood obesity, which is seen as a public health concern.

When questioning mothers about the importance of changing the consistency offer, it was verified that 79.0% answered it was to "increase the nutritional offer" and 17.0% answered it was to "learn how to chew and/or be adapt do different kind of food", other answers was to "not getting sick", "not to be sucking all the time", amounting 2.0%, which demonstrate that mother knowledge it's still limited by beliefs not always reliable. A recent research conducted in health professional sites on the internet³² revealed that health professionals themselves seem to use the use the food guideline for children under two years of age in an incipient form²⁸. This fact may justify the misconception or lack of information, especially in a time there is an increase seeking in the worldwide web to obtain education and to learn.

Different from the study carried out in Canoas-RS¹⁷, the present research found that most of the mothers received information about food introduction and consistency changes from

the pediatrician medical assistant (47.7%), followed by known people (43.2%) and nurse (6.8%). This findings doesn't mean, however, that the health professional orientation have been followed, so there is extensive literature that discuss the strong influence of the maternal experience, family and known people in the infants diet²²⁻²⁹.

Another factor worth mentioning is the bottle usage frequency, which is considered to be a harmful oral habit. Of the 88 participants, 82 (93.2%) used it by the time of collection. The Ministry of Health discourage bottle usage, because of it association to early weaning and increasing of infant morbidity and mortality rates. This recommendation is supported by the current research which identified a strong positive correlation ($r= 0.720$; $p=0.000$) between weaning and bottle introduction, so 55.7% of the sample didn't receive breastfeeding at the time of the interview, with weaning occurring on average at the fifth month. Regarding improper holes, it was found lower index when compared to Canoas study (47.0%)¹⁷. This result can be related to the high index of children which have already been taking cup, representing 72.7% of the sample. Nevertheless, it should be noted that facilitating sucking causes improper function of the stomatognathic structures, which may cause dental arch malformation and oral sagging muscles, besides of facilitating gagging³³.

It was also observed high frequency of pacifier use (61.4%). Although in the present study, It was not verified significant association between pacifier use and shorter period of maternal exclusive breastfeeding or early weaning, several authors^{3,5,20}, emphasize the negative influence of this object, especially regarding to growth and development of the child's oral sensory motor structures.

It is known that food practices are formed predominantly in childhood, transmitted by parents, relatives and caregivers and maintained by culture, values and beliefs.¹ So, in a big country as Brazil, it is expected that different food habits, especially observing the rural influence of the municipality studies, since rural communities have more traditional habits, where a large number of mothers starts breastfeeding and maintain it longer, but introduce earlier supplementary food²⁷.

The authors are unanimous in pointing the necessity of creating public health policies focused not only in breastfeeding promotion until six months, but also focused on the adequate supplementary food introduction, respecting the recommended period and consistency. In this way, the speech pathologist- unknown by 42.0% of the interviewed, possible because it is not inserted in public health service of the municipality studied-should act in during pregnancy and postpartum care¹⁴, contributing to the process of health education in order to answer question, clarify myths and beliefs, as well as, their influence on breastfeeding and supplementary feeding of the infant.

It should be emphasized that this study has limitations, such as the number of participants in order to generalize findings and that data collection about feeding in the first semester was about retrospective information, therefore, interpretation of this data should be taken with caution.

■ CONCLUSION

The results demonstrated that although the exclusive maternal breastfeeding is upper than the estadual average, the exclusive maternal breastfeeding was little practiced. In the same way, the supplemented breastfeeding presented lower index of duration, demonstrating to be far from the Pan American health organization and Ministry of health recommendation. There was high incidence of early introduction of supplementary feeding, in which predominant liquids like water and tea, which were correlated to a shorter breastfeeding period. About food preparation, it was verified that most of the children were receiving the adequate consistency. It was also found a earlier and inappropriate introduction of soft drinks and snack foods. Regarding harmful oral habits, it was found that most of the sample was using pacifier, as well as bottle, which showed a strong correlation with early weaning. From the data collected, it was possible to verify a great participation of laity in the provision of information about food transition, although most interviewers received such information from healthcare professionals.

RESUMO

Objetivo: caracterizar a alimentação de crianças entre seis e 24 meses de município do RS. **Métodos:** estudo descritivo e transversal. A coleta de dados foi realizada no período de julho a setembro de 2012 e a amostra compreendeu 88 crianças. Foi realizada entrevista com os responsáveis. **Resultados:** verificou-se que 86% das crianças receberam aleitamento materno exclusivo com duração média de três meses e meio. Houve introdução precoce de líquidos aos quatro meses, em média, com correlação positiva com menor período de amamentação. A oferta de pastosos foi precoce, com mediana de introdução no quinto mês; a consistência estava adequada na idade atual. Refrigerantes e salgadinhos eram consumidos por 80,7% e 76,1% das crianças. A mamadeira era utilizada por 93,2% e o uso esteve correlacionado com menor período de aleitamento materno. A chupeta era usada por 64%. Dos responsáveis, (47,7%) receberam informações sobre introdução dos alimentos do pediatra. **Conclusão:** constatou-se que tanto a prática do aleitamento materno exclusivo quanto complementado se dá em período menor que o recomendado. Foi predominante a introdução precoce de líquidos e pastosos. Verificou-se elevado uso de mamadeira e chupeta. Identificou-se participação de leigos nas orientações sobre alimentação, não obstante, o pediatra foi o mais citado.

DESCRITORES: Saúde Pública; Aleitamento Materno; Alimentação; Criança

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