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Difficulties in introduction of complementary foods to breastfeeding in non-dysphagic babies: effects of speech-language pathological interference

Dificuldades na introdução de alimentos complementares ao aleitamento materno em bebês não disfágicos: efeitos da atuação fonoaudiológica

Dificultades en la introducción de alimentos complementarios a la lactancia materna en bebés no disfágicos: efectos de la actuación fonoaudiológica

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Abstract

Introduction: In the transition period from breastfeeding to pasty and/or solid food, such modification may be not well accepted by the mother and/or baby and cause subsequent feeding and/or language problems. **Objective:** To describe the effects resulting from speech and language therapy while facing the difficulties in the introduction of complementary foods *to breastfeeding* in non-dysphagic babies in

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a biopsychic approach. **Method:** studies carried out by philanthropic institution of health in accordance with ethical criteria for research with human beings. Casuistry: Five mother/baby dyads, babies from both genders over between 5 and 8 months old showing weaning difficulties to pasty food and without any diagnosis of either mechanical or neurogenic oropharyngeal dysphagia. The sampling was obtained by convenience. Procedures: Four meetings were conducted, three of home visits, in which were applied three evaluation instruments adapted from literature. After the speech-language pathological interference the last one was a reapplication for the purpose of comparing before and after. **Results:** After speech-language pathological interference, choking episodes were eliminated, meals became more pleasuring for mother/baby dyads and babies started accepting food more adequately. The results show that there was statistically significant difference between before and after speech-language pathological interference. Initially, the average was 16,0 points (dp=1,0), and end 21,2 points (dp=0,8), (p=0,001). **Conclusion:** Speech-language pathological interference in a biopsychic approach promoted benefits in the cases studied.

Keywords: Speech, Language and Hearing Sciences; Breast feeding; Case Sstudies; Mixed feeding; Feeding behavior; Deglutition disorders.

Resumo

Introdução: No período de transição do aleitamento materno para alimento pastoso e/ou sólido, tal modificação pode não ser bem aceita pela mãe e/ou pelo bebê e ocasionar problemas de alimentação e/ou de linguagem subsequentes. **Objetivo:** descrever os efeitos da atuação fonoaudiológica diante das dificuldades na introdução de alimentos complementares ao aleitamento materno em bebês não disfágicos numa abordagem biopsíquica. **Método:** Estudo realizado em instituição de saúde filantrópica, de acordo com critérios éticos estabelecidos para pesquisas com seres humanos. *Casuística*: Cinco díades mãe/bebê, bebês de ambos os gêneros, na faixa etária entre 5 e 8 meses, com dificuldades no desmame e sem diagnóstico de disfagia orofaríngea neurogênica ou mecânica. A amostragem foi obtida por conveniência. *Procedimento:* Foram realizados quatro encontros, sendo três visitas domiciliares, nos quais foram aplicados três instrumentos de avaliação, adaptados a partir da literatura. Após a ação fonoaudiológica foi reaplicado o último, para efeitos de comparação pré e pós. **Resultados:** Após a atuação fonoaudiológica, houve eliminação de episódios de engasgos, as refeições se tornaram mais prazerosas para a díade mãe/bebê e os bebês passaram a aceitar melhor os alimentos. Os resultados revelaram diferença estatisticamente significativa entre os obtidos pré e pós atuação fonoaudiológica: média inicial era de 16,0 pontos (dp=1,0) e final 21,2 pontos (dp=0,8/ p= 0,001), (p=0,001). **Conclusão:** A atuação fonoaudiológica numa abordagem biopsíquica promoveu benefícios nos casos estudados.

Palavras-chave: Fonoaudiologia; Aleitamento materno; Estudos de casos: Alimentação mista; Comportamento alimentar; Transtornos de deglutição.

Resumen

Introducción: En el período de transición de la lactancia para alimentos pastosos y / o sólidos, la modificación puede no ser bien aceptada por la madre y / o el bebé y causar problemas de alimentación y / o lenguaje subsecuentes. **Objetivo:** Describir los efectos de la actuación fonoaudiológica frente a las dificultades en la introducción de alimentos complementarios a la lactancia materna en bebés no disfágicos en un abordaje biopsíquico. **Método:** Estudio realizado en instituición de salud filantrópica de acuerdo con critérios éticos establecidos par las investigaciones con seres humanos. **Casuística:** Cinco díadas madre/bebé, bebés de ambos géneros y de edades comprendidas entre los 5 y 8 meses, con dificultades en el destete y sin diagnóstico de disfagia orofaríngea neurogénica o mecánica. La muestra fue obtenida por conveniencia. **Procedimiento:** Se han realizado cuatro encuentros, siendo tres en visitas domiciliares, en los cuales se aplicaron tres instrumentos de evaluación adaptados de la literatura. Después de la acción fonoaudiológica se reaplicó el último, a fin de comparar el antes y el después. **Resultados:** Después de la actuación fonoaudiológica, hubo eliminación de episodios de asfixia, los momentos de alimentación se hizieron más agradables para la díada madre / bebé y los bebés comenzaron a aceptar mejor los alimentos. Estos resultados revelaron diferencia estadísticamente significativa entre los datos

obtenidos antes y después de la actuación fonoaudiológica: el promedio inicial era 16,0 puntos (dp=1,0) y el final 21,2 puntos (dp=0,8/ p= 0,001), (p=0,001). **Conclusión:** En los casos estudiados, la actuación fonoaudiológica en un abordaje biopsíquico promovió beneficios.

Palabras clave: Fonoaudiología; Lactancia materna; Estudios de casos; Alimentación mixta; Conducta alimentaria; Trastornos de deglución.

Introduction

Traditionally, speech-language pathologists are called to perform the diagnosis of dysphagia in cases of swallowing disordes[1,2,3]. What is expected of the professional, in these cases, is the evaluation of the stomatognathic system and the swallowing dynamics to check the possibility of oral feeding or the need for an alternative route[2,4].

Generally, in cases of disorders in swallowing or feeding, the speech-language pathologist's work is commonly carried out to reestablish the proper functioning of the swallowing system through exercises to strengthen the musculature within this process[2,4,5,6].

When thinking about the development of early childhood, we consider the aspects related to neuroplasticity and neuropsychomotor that may depend on experiences provided to the baby through sensorial stimuli. When the baby is in an environment that does not promote opportunities for new experiences, the process of sensorial integration can be impaired[7,8,9,10].

Following this perspective, this study was developed taking into account the biopsychic factors present in the feeding scene[12,13]. We can highlight that in cases of babies who refuse weaning, the problem is not necessarily limited to organic (bio) aspects, but it involves the established interaction between mother and baby (psychic). By the way, a study describes that this refusal may represent an attempt of the baby to protect themselves from the imposition of the adult, and, thus, the acceptance or refusal of other foods will basically depend on the affective quality of the mother-baby interaction[11]. In fact, other authors point out that environmental factors, caregivers' profile, professional guidance, maternal experience or other intercurrences (such as puerperal breast) should be considered in the weaning process[14,15,16,17].

The issue of weaning is often addressed in the psychoanalytic approach. Winnicott states that, although it is necessary as it is key to the subjective constitution of the baby, the desire to wean should come from the mother, in an emotionally stable environment for both: "... it's not just about getting the baby to accept other foods or to be able to use a mug or actively use hands to eat. It includes the gradual process of demolishing illusions, which is a task for parents." (p. 94) [Free translation from Portuguese][18]

However, such a change in the transition period from breastfeeding to pasty and/or solid foods may not be well accepted by the mother and/or baby and may result in feeding and/or language problems. Hence, the need for early speech-language pathological intervention is demonstrated in the cases of infants who, even in the absence of a dysphagia base disease, present difficulties in the feeding transition process; which can lead to problems such as anemia, intestinal constipation and weight loss, as well as possible developmental disorders, including oral language issues[19,20, 21,22].

Given these considerations, the objective of this study is to describe the effects of speech-language pathology in face of difficulties when introducing complementary foods to breastfeeding in non-dysphagic babies in a biopsychic approach.

Method

Study submitted to the Ethics and Research Committee of the Pontifícia Universidade Católica de São Paulo (CAAE # 48503215.9.0000.5482) and Sociedade Beneficente Israelita Brasileira Albert Einstein – Einstein Program in the Community of Paraisópolis – the philanthropic health institution where the study was carried out. The participants in the study signed the Informed Consent Term (ICT).

Study of cases

The sample consisted of five mother-baby dyads. Three male babies and two female babies at the average age of 6.4 months, median of 7 months. Mothers at the average age of 29 years and six months. Inclusion criteria were: babies

with difficulties – according to maternal complaints – in weaning and accepting pasty food, male and female, without neurological diseases or premature babies with no neonatal complications. With regard to the exclusion criteria: babies with swallowing disorders in the consumption of thin liquid (from breast or bottle feeding) or with a dysphagia base disease; mothers who did not agree to sign the Informed Consent Form; unfeasibility of the dyad attendance at the Institution for the first evaluation; non-fulfillment of the meetings at the set time.

Sampling was gathered by convenience based upon maternal complaints described in Chart 1. None of the dyads was excluded, since all evaluated babies did not show swallowing problems, i.e., they had no difficulties in the swallowing dynamics with thin liquid (breast- or bottle-feeding). All interventions were conducted by one researcher only.

The research was carried out in a private and philanthropic outpatient health institution, with data collected between August and December 2015.

Procedures

Four meetings were held as described below:

Meeting 1: it took place in a treatment room in order to perform "Instrument I – Evaluation of Childhood Dysphagia" (Appendix 1). This instrument was adapted from a published material (Madureira, DL. Deglutição em Neonatos. In: Ferreira, LP et al. Tratado de Fonoaudiologia. 2ª edição, p.587-596, Editora Roca, São Paulo, 2004).

Materials used in the evaluation: spatula, stethoscope, gloves, oximeter, breast or bottle feeding with fine liquid consistency (Case III).

After finding no swallowing disorders, "Instrument 2 – Clinical and Food History" (Appendix 2) was carried out. On this occasion, the following aspects related to the patient's history were analyzed: Personal Data, Current Status, Social Aspects, Baby and Food History. This instrument has been adapted from published material quoted in recent scientific articles (Madureira, DL. Deglutição em Neonatos. In: Ferreira, LP et al. Tratado de Fonoaudiologia. 2ª edição, p.587-596, Editora Roca, São Paulo, 2004).

Meeting 2: after a week, a home visit was conducted in order to monitor the meal offering with pasty consistency food or other foods usually offered by mothers. "Instrument 3 – Weaning Roadmap" (Appendix 3) was used for data collection – part 1 was filled out from the researcher's observations and part 2 from information given by mothers. The questions were read to mothers by the researcher. This script was designed for this research and based on published studies (Madureira, DL. Deglutição em Neonatos. In: Ferreira, LP et al. Tratado de Fonoaudiologia. 2ª edição, p.587-596, Editora Roca, São Paulo, 2004 / Chatoor, I; Getson, P; Menvielle E; Brasseaux, X; O'Donnell, R; Rivera, Y; Mrazek, DA. A Feeding Scale for Research and Clinical Practice to Assess Mother – Infant Interactions in the First Three Years of Life. Infant Mental Health Journal, Vol. 18(1) 76-91, Michigan, 1997), with the aim of assessing the speech-language pathological intervention.

Each variable of Instrument III received a rating and a score, namely: FDB = frequent desirable behavior, 2 marks; SB = sporadic behavior, 1 mark; FUB = frequent undesirable behavior, zero mark. In the evaluation of the speech-language pathologist/researcher, the script responses were indicated with the abbreviations FDB, SB and FUB. Regarding the questions asked to the mother, the answers were classified as "always", "sometimes" or "never" and in their analysis were considered those with frequent desirable behavior (FDB), sporadic behavior (SB) and frequent undesirable behavior (FUB). As an example, it was considered a FDB when the mother answered "yes" to "mealtimes are provided with a quiet place". However, when she answered "yes" to "the baby coughed" it was considered a FUB. The more FDB responses (2 marks) the better the expected result. In the second part of this instrument, the responses for frequent desirable behaviors were marked as a model.

Meeting 3: after a week, the speech-language therapy took place based on the results of instruments 2 and 3. The actions carried out were specific to each case study, involving aspects relevant to:

1) Setting up the environment for mealtimes.
2) Placing of the offer.
3) Baby's interest in the food offered.
4) Type of supply utensils.
5) Speed of offers.
6) Food consistency.
7) Mother/baby interaction during mealtimes.

Chart 1. Speech-language therapy carried out as per each case demands.

Subjects	Speech-language therapy for each Case
Case I	• Enable the child to have contact with food, favoring their sensory perception. • Adjust the speed of offers (wait the child to swallow to offer the next spoon); • Create a peaceful environment at mealtimes; • Properly place baby during mealtimes; • Avoid using toys during mealtimes as they can function as dispersers; • Reduce breastmilk offers, especially before mealtimes; • Watch for signs of baby's satiety and then cease the offer.
Case II	• Enable the child to have contact with food, favoring their sensory perception; • Increase food diversity so as to stimulate the palate; • Properly place the baby during mealtimes (in the feeding chair); • Avoid dispersers: keep the TV set switched off during mealtimes; • Reduce breastmilk offers, especially after mealtimes.
Case III	• Enable the child to have more contact with food, favoring their sensory perception. Create more opportunities for the baby to carry the food to his mouth, providing more independence and pleasure at mealtimes; • Create a peaceful environment at mealtimes; • Properly place the baby during mealtimes, allowing interaction; • Watch for baby's satiety and then cease the offer; • Wait at least 30 minutes to give water to the baby after meals.
Case IV	• Enable the child to have more contact with food, favoring their sensory perception; • Have meals with the baby to provide them with experience of seeing other people feeding themselves; • Adjust the speed and amount per offer: always wait the child to swallow to offer the next spoon; • Create a peaceful environment at mealtimes (switch off the TV set); • Do not use toys during mealtimes as they can compromise the baby's attention; • Reduce breastmilk offers, especially before mealtimes.
Case V	• Have meals with the baby to provide them with experience of seeing other people feeding themselves; • Create a peaceful environment at mealtimes (switch off the TV set); • Reduce breastmilk offers, especially before mealtimes.

Meeting 4: after 15 days, a household visit to the dyad was conducted to implement again "Instrument 3 – Weaning Roadmap" (Appendix 3) to compare the results achieved at Meeting 2. The re-evaluation was carried out with the same foods offered at Meeting 2.

Note: the procedure described above can be seen in Figure 1.

Result analysis

Instruments I and II: a descriptive data analysis was carried out using absolute and related frequencies, average, standard deviation and 95% confidence intervals.

Instrument III: the score was used to generate two scores, calculated by the sum of the values given to each variable as follows: for Instrument III, of the items answered by the speech-language pathologist, the index ranged from 0 to 22 marks, and the answers given by mothers, from 0 to 18 marks.

To compare before and after the interference of the speech-language pathologist, according to scores, the normal distribution was firstly verified by the Komolgorov-Smirnov test, and since they had adherence, the paired t-student parametric test was put into place.

A descriptive level of 5% ($p < 0.05$) was accepted for statistical significance. The data was entered in Excel and analyzed using the Statistical Package program for Social Sciences version 22.0 for Windows.

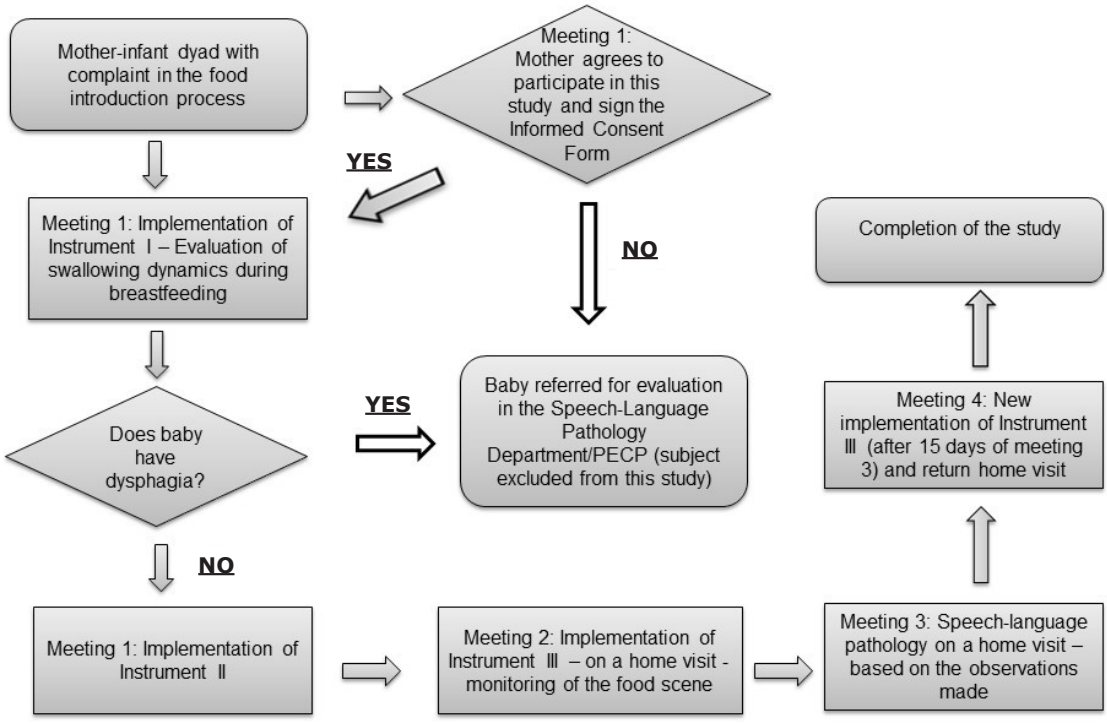

Figure 1. Procedure flowchart.

Results

All infants who participated in this study had adequate tonus, as well as alignment and control of the head and pelvic and trunk stability, adequate bilateral nauseous reflex, phasic bite and tongue protrusion. During swallowing dynamics, they presented adequate age-related lip sealing and suction when consuming thin liquid from a bottle or during breastfeeding. (Adequate use of bottle or maternal breast, food preparation and oral transit time; cervical auscultation remained negative for laryngeal penetration/tracheal aspiration before, during and after swallowing; absence of coughing/choking and breathing disorders, heartbeat and O2 saturation were compared before and after swallowing; absence of clinical signs of aspiration such as coughing and nausea.) These data showed that none of the subjects presented disorders in the stomatognathic system and in swallowing.

All mothers reported their babies had difficulties in accepting food during the introductory phase. The complaints were related to the restricted amount consumed by the baby, which caused concerns about the nutritional aspect.

The interruption of breastfeeding occurred early in Case III, as the mother believed she "produced little milk". As a result, she started offering her child infant formula on a bottle when her baby was two and a half months old. In other cases (IV and V), infants weaning was initiated only at 6 months of age.

Predominant food consistencies were liquid and pasty, however, two mothers offered also some soft solid foods in Cases I and V. It is worth highlighting the search of all mothers for guidelines to make their children accept the food, as all mothers attended the "Baby Kitchen Group" of the Institution where they are cared-for and some sought clarification about the matter on internet websites. In addition, mothers were willing to offer their children other experiences, which provided more interaction and independence to their babies, as they were encouraged to eat on their own with their mothers' supervision, stimulating tactile sensory integration.

It is worth mentioning that, except for Case III, all mothers reported an issue related to feeding

Chart 2. Description of the dyads regarding age, gender and maternal complaints.

Subjects	Mother's age	Baby's age	Gender	Maternal complaints
Case I	20 years-old	7 months	Male	Difficulties in accepting meals, "He only wants to be breastfed"
Case II	35 years-old	8 months	Female	"Everything [food] I give her, she blocks... Normally she does not eat anything!"
Case III	34 years-old	5 months	Female	"Eats little."
Case IV	34 years-old	6 months	Male	"He does not chew or swallow; he remains with food in his mouth until it falls from his mouth." The baby does not eat at all", "He just wants to be breastfeed all the time."
Case V	23 years-old	7 months	Male	The baby "only accepts to be breastfed," he can keep the food in his mouth for up to four minutes: "I even timed it and there was nothing that would make him swallow."

their firstborn child. In Case V, the mother stated her eldest son received nutritional monitoring due to metabolic alteration (increase in bad cholesterol): "He ate a lot of junk food." In the remaining cases, all mothers stated the resistance of their firstborn babies to accept weaning and the inclusion of pasty foods.

Figure 2 and 3 show the results of the execution of instrument III, before and after the speech-language therapy. Chart 1 reports the observations of the speech-language pathologist and Table 1 shows the responses of mothers during the feeding scenario.

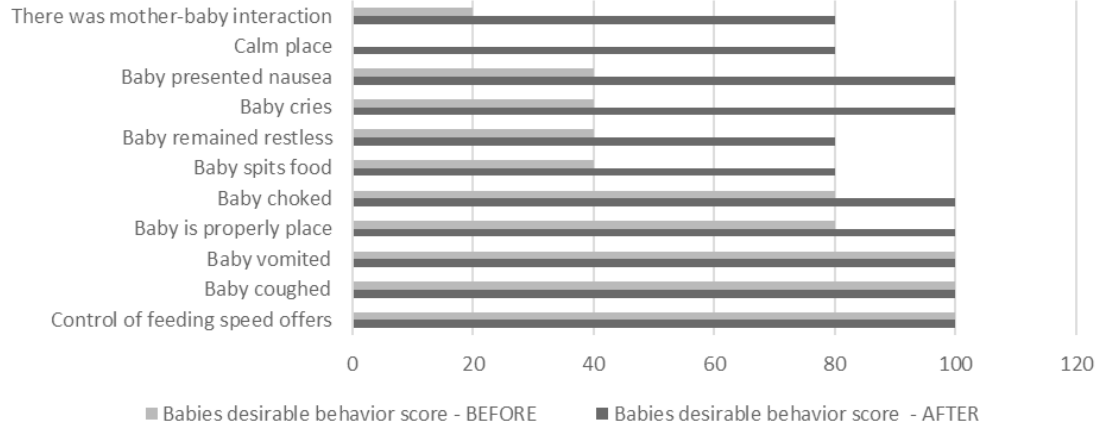

Figure 2. Result of the accomplishment of Instrument III during food offerings before and after speech-language therapy took place, the higher the score the better.

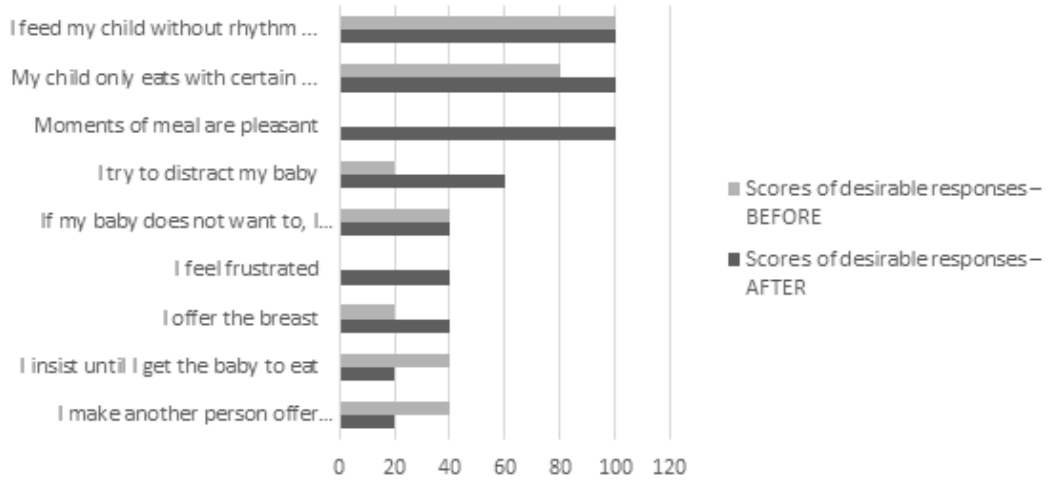

Figure 3. Results of Instrument III – Perceptions of mothers in the feeding scene before and after speech-language therapy had taken place, the higher the score the better.

Table 1. Descriptive analysis of scores before and after the speech and language therapy had taken place (n=5).

Variable	average	(dp)	p*
During mealtimes with pasty food (from the researcher's observations)			
Score			
Before	16.0	(1.0)	0.001
After	21.2	(0.8)	
During mealtimes with baby food (carried out by researcher together with the babies' mothers)			
Score			
Before	9.6	(3.8)	0.199
After	12.8	(3.8)	

* paired *t-student* test.

Table 2. Results of Instrument III: observation of the feeding scenario during mealtimes with pasty food, before and after the speech and language therapy had taken place.

Case	Meals are offered at a peaceful place.	Baby is properly placed during food offerings.	Food offerings provided by the mother at controlled speed.	Mother-baby interaction during food offerings.	The baby spits food.	The baby remains restless.	The baby cries.	Baby showed nausea problems.	The baby choked.	The baby coughed.	The baby threw up.
I											
Before	FUB	FDB	FDB	FDB	SB	SB	SB	FDB	FDB	FDB	FDB
After	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB
II											
Before	FUB	FDB	FDB	SB	SB	FDB	FDB	FUB	SB	FDB	FDB
After	SB	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB
III											
Before	SB	FUB	FDB	SB	SB	FDB	FDB	FDB	FDB	FDB	FDB
After	FDB	FDB	FDB	FDB	SB	SB	FDB	FDB	FDB	FDB	FDB
IV											
Before	FUB	FDB	FDB	SB	FDB	SB	FUB	SB	FDB	FDB	FDB
After	FDB	FDB	FDB	SB	FDB	FDB	FDB	FDB	FDB	FDB	FDB
V											
Before	FUB	FDB	FDB	SB	FDB	SB	SB	SB	FDB	FDB	FDB
After	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB	FDB
% FDB Before	0.0	80.0	100.0	20.0	40.0	40.0	40.0	40.0	80.0	100.0	100.0
% FDB After	80.0	100.0	100.0	80.0	80.0	80.0	100.0	100.0	100.0	100.0	100.0

NOTE: FDB = frequent desirable behavior; SB = sporadic behavior; FUB = frequent undesirable behavior, the higher the percentage the better.

Table 3. Results of Instrument III: mothers' accounts on mealtimes with pasty food, before and after the speech and language therapy had taken place.

Case	I can see mealtimes are pleasant.	I insist until I make him eat the whole meal, even if he does not want to.	I feed my baby without rhythm or schedule (including when he is sleeping).	My baby only eats specific foods with specific utensils.	If my baby does not want to eat, I try to give him another type of food.	I feel frustrated I cannot get my baby to eat.	I make someone else offer the food in my place.	I try to entertain my baby with toys or games to induce him to eat.	I cannot bear to see my baby without eating so I then offer him the breast.
I									
Before	SB	FDB	FDB	FDB	FUB	FUB	FUB	FUB	FUB
After	FDB	SB	FDB	FDB	SB	SB	SB	SB	SB
II									
Before	SB	FUB	FDB	FDB	FDB	FUB	FDB	FUB	FUB
After	FDB	FUB	FDB	FDB	FUB	FUB	SB	FUB	FUB
III									
Before	SB	SB	FDB	FDB	SB	SB	FDB	FDB	SB
After	FDB	FUB	FDB	FDB	SB	SB	FDB	FDB	SB
IV									
Before	FUB	FUB	FDB	FUB	SB	SB	SB	FUB	FUB
After	FDB	FUB	FDB	FDB	FDB	FDB	SB	FDB	FDB
V									
Before	SB	FDB	FDB	FDB	FDB	SB	SB	SB	FDB
After	FDB	FDB	FDB	FDB	FDB	FDB	SB	FDB	FDB
% FDB Before	0.0	40.0	100.0	80.0	40.0	0.0	40.0	20.0	20.0
% FDB After	100.0	20.0	100.0	100.0	40.0	40.0	20.0	60.0	40.0

NOTE: FDB = frequent desirable behavior; SB = sporadic behavior; FUB = frequent undesirable behavior, the higher the percentage the better.

When analyzing the scores, a statistically significant difference was observed in the results achieved before and after the speech-language therapy using Instrument III. The initial average was 16 marks (dp = 1), increasing to 21.2 marks (dp = 0.8) after the speech-language therapy (p = 0.001).

Discussion

The difficulties arising from the weaning process are little discussed in speech-language pathological studies. This period, which involves the mother-baby dyad, determines an essential phase in the development of the baby. Through a case report, the authors have demonstrated that the weaning phase may cause difficulties for the baby to accept other foods (from industrial milk given on a bottle or other foods) and causes in the mother-child bond, due to the imposition of parents concerned about nutrition of their baby during mealtimes. This case has evolved into diseases such as gastroesophageal reflux and feeding refusal with the need of an alternative feeding route[19]. It is necessary to take into account that failure of weaning can have harmful consequences, ranging from nutritional disorders to problems in language development[21,22,23].

In Cases I and V, mothers offered their babies foods of other consistencies. This shows that these mothers were willing to offer their children other experiences, which provided more interaction between them and independence to their babies, since they were encouraged to eat on their own with supervised independence, allowing greater sensory integration.

Babies presented gagging problems during pasty or soft solid meals, according to maternal reports. However, during the mealtimes follow-up, the researcher evaluated that these complaints were related to nauseous episodes, which may occur in this phase of adaptation of the baby to the new food consistency and/or utensils[19,20,24]. After the speech-language therapy, mothers did not highlight this issue.

Another fact worth mentioning is that the mothers were attentive to the needs of their children and sought information in guidance groups (they attended the Baby Kitchen Group of the institution) or other means of communication (as researches about the subject on websites). However, such information did not enable them to consider aspects related to the dynamics of mother-baby interaction during the daily food scene, as suggested by the literature[11,12,13].

It is noteworthy that, except for Case III, all mothers reported an issue related to feeding their firstborn son. In the remaining cases, mothers complained about the resistance of their firstborn babies to accept weaning and pasty foods. This may reveal that the difficulties faced by these mothers on their previous weaning experience may have influenced the weaning process of their current child. In fact, the authors affirm that the moment of detachment between the mother's and the child's bodies, which is typical of weaning, can cause estrangement to the baby against new sensations of pleasure/displeasure associated with taste, odor, texture and food temperature[20].

Besides, some mothers offered food with the baby on their lap (cases II, III and IV), often with the baby with their back to them. The feeding scene in these cases did not provide effective interaction between the mother and her baby. Only in Case I, the mother included the baby in family mealtimes, placing the feeding chair near the table. In the other households, this was not possible due to lack of furniture or limited space. Providing the baby with experiences that favor their proper positioning, own schedules and routine regarding family mealtimes can increase the baby's responses and development[24]. However, in the supervised cases, guidance was needed to adapt these experiences to the families' realities.

Another aspect to bring to light is related to maternal needs to return to work, which triggers the introduction of new foods due to the need to send the baby to a day care center or stay at home with a caregiver. Moreover, studies point out the main reasons for the introduction of complementary foods: medical orientation, professional commitments, maternal inexperience associated with concerns about the possibility of their milk being "weak"[16, 25,26,27].

In the case of mothers observed in this study, in general, "eating well" meant the baby should accept enough food to meet nutritional needs. Statements such as "Sweetheart, I cannot believe you're not going to eat what Mommy made for you" (Case IV), exemplify frustrated maternal expectations before the prevalence of baby's unwillingness to respond. Even in the face of these mothers' ac-

counts, they all reported that mealtimes became more pleasurable and there was an increase in the baby's acceptance of food after the speech-language therapy intervention.

Thus, the interference of the speech-language pathologist/researcher was to intermediate the interaction between the dyad by promoting favorable situations during feeding times, aiming at progressive weaning and introduction of new food consistencies[16].

The results achieved with the average of the accomplishment of Instrument III (before and after the speech-language pathological interference) demonstrated a statistically significant difference. They also emphasize that the speech-language pathological intervention in these cases should consider aspects related to the interaction of the mother-baby dyad during feeding times in a way to step in early on so that the effects of a troubled weaning process do not disrupt child development. For this purpose, it is essential that the training of speech-language pathologists working on swallowing issues enables the investigation of biopsychic factors that can affect the feeding.

Conclusion

In the studied dyads, the biopsychic approach, which guided the speech and language therapy in the cases, promoted benefits. We suggest future studies on the topic with extended case studies aiming at theoretical and methodological generalizations.

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Appendix 1

Instrument I

Childhood Dysphagia Assessment

Adapted from: MADUREIRA, DL., Deglutição em Neonatos. [Deglutition in Neonates] In: FERREIRA, LP. Et al., 2nd ed. 2004 Tratado de Fonoaudiologia. [Speech Language Pathology Treatise] São Paulo: Editora Roca. pp. 587-596

Patient Examination:

General posture/tonus control
Global muscle tonus: ☐ Normal ☐ Hypotonic ☐ Hypertonic ☐ Variable
Head/neck/trunk alignment: ☐ Yes ☐ No Describe:_____
Independent head control: ☐ Yes ☐ No Describe: _____
Pelvic stability: ☐ Yes ☐ No Describe: _____
Trunk stability: ☐ Yes ☐ No Describe: _____

Breathing status
☐ Within normal limit _____ Breath per minute
☐ Difficult/noisy
☐ Stridor
☐ Oral breather
☐ Apnea: describe _____

Abnormal Respiratory Patterns
☐ Expansion of the rib cage
☐ Inverted breathing
☐ Irregular/shallow
☐ Sternum depression
☐ Abdominal breathing

Aspiration history
Tracheostomy ☐ Yes ☐ No Type_____ Size _____

Motor-oral cranial nerve assessment
Primitive oral reflexes: + = adequately present; - = inadequately present; 0 = absent.

Marks	Reflex	Stimulus	Decreases by about
	Gag	Touching the back of the tongue	Mantains
	Phasic Bite	Touching gum	9-12 months
	Transverse tongue	Tapping on the sides of the tongue	6 months
	Tongue protrusion	Touching tip of tongue	6 months
	Search	Touching cheeks or edges of the mouth	3 months
	Suckling/sucking	Touching the hard palate and/or tongue	6-24 months

Sorting of cranial pair nerves

	Cranial pair	Symptoms
	V (Trigemial)	Reduction of mandibular movements
	VII (Facial)	Facial asymmetry, reduction of facial movements, insufficient lip seal
	X (Vagus)	Vocal fold paralysis, weak crying, hypernasality, nasal leakage
	XII (Hypoglossal)	Reduction of tongue movements, weak suction

Swallowing/feeding assessment
Ways of feeding

Maternal breast/bottle
Type of bottle: Type of liquid: • Liquid ☐ • Thickened liquid ☐ Type of nipple: Reference time: Positioning: Comments:_____ _____

Physiological status

	BM	AM
Breathing		
Heartbeat		
O^2 saturation		

BM = before mealtimes AM = after mealtimes

Warning stages	BM	AM	Coloring	BM	AM
Stage 1			Normal		
Stage 2			Cyanotic		
Stage 3			Rosy		
Stage 4			Darkened		
			Perioral		
			Periorbital		
Stage 5			Grey		
Stage 6			Paleness around nostrils		
			Scattered spots		
			Redness		

Signs of stress at mealtimes

	Stare
	Terrified, worried
	Quiet/weak weeping
	Startle
	Nap
	Floating eye
	Glazed eye
	Let out a smile

Motor aspect

	Faces
	Contractions
	Hyperextension of neck, arms, hands or legs
	Tonicity varying from normal to flaccid
	Hypertonicity (arching, enlarged fingers, closed hands)
	Exceeding diffuse movements

Autonomous system change: moderate degree

	Gasp
	Sigh
	Sneeze
	Transpire
	Hiccup
	Shake

Autonomous system change: severe degree

	Cough
	Nausea
	Reflux
	Change in color
	Respiratory pause
	Irregular breathing

Oral motor pattern
B = breast; BTT = bottle; STR = straw; GL = glass; SPO = spoon; ALL = all of them.

	Lip and cheek movement	Tongue movement	Jaw movement	Swallowing and cervical auscultation
Liquids	( ) Maintain lip seal ( ) Insufficient lip seal ( ) Bite/chew ( ) Actively pull nipple ( ) Constrained ( ) Contracted ( ) One-way escape ( ) Bilateral escape ( ) Dribble	( ) Posterior ( ) Anterior ( ) Sucking with delay ( ) Reduced mobility ( ) Reduced cupping ( ) Proper sucking ( ) Waste ( ) Intense salivation ( ) Projection ( ) Retraction ( ) Cleanses the lips ( ) OTT	( ) Mandibular excursion ( ) Projection ( ) Bite reflex ( ) Locking ( ) Bruxism ( ) Opening grading ( ) Lack of anticipatory mouth-opening movement ( ) Biting the nipple ( ) Masticatory movements	( ) PSD ( ) No PS ( ) Swallows by chunks ( ) Wet vocal quality before swallowing ( ) Wet vocal quality after swallowing ( ) Coughs before swallowing ( ) Coughs during swallowing ( ) Coughs after swallowing

OTT = oral transit time PSD = Pharyngeal swallowing delay

Appendix 2

Instrument II

Clinical and Food History [1]

Adapted from: MADUREIRA, DL., Deglutição em Neonatos. [Deglutition in Neonates] In: FERREIRA, LP. Et al., 2nd ed. 2004 Tratado de Fonoaudiologia. [Speech Language Pathology Treatise] São Paulo: Editora Roca. pp. 587-596

Child History

Child's name _____
BD: _____ Chronological age: _____
Mother's name: _____ Age: _____
Education level: _____
Father's name: _____ Age: _____
Education level: _____
Address: _____

Social aspects
Who is the child living with? _____
Names and ages of siblings: _____
Did the siblings have any food difficulties? _____
Who are the main caregivers? _____
Who usually feeds the child? _____

Medical History
Pregnancy and labor data
Problems occurring during pregnancy: _____
Problems occurring during labor:_____
APGAR notes _____

Infant's data
Has the child needed ventilatory support at birth? ☐ Yes ☐ No
What medications is the child currently taking? _____
Has the child ever had any surgery? ☐ Yes Describe:_____ ☐ No

Has the child ever had any of the following diseases?
☐ Ear infections ☐ Seizures ☐ Allergy/Asthma ☐ Fever Peaks ☐ Pneumonia
☐ Frequent infections of the upper respiratory tract ☐ Other infections
Does the child have frequent constipation? _____

Feeding history
Is your baby being or have they breastfed? ☐ Yes ☐ No
For how long? _____
Any difficulties? _____
Does your baby use the bottle or has used it? ☐ Yes ☐ No
For how long? _____
Average mealtime duration:
☐ Less than 10 minutes
☐ 10-20 minutes
☐ 10-30 minutes
☐ More than 30 minutes
Approximate daily amount of food consumed: _____
Does the baby consume pasty foods? ☐ Yes ☐ No
For how long? ☐ less than 2 weeks ☐ a month ☐ more than a month[2]
How is the child usually positioned during mealtimes?
☐ On the lap ☐ Infant chair ☐ "Big chair" ☐ Lying down ☐ High chair
☐ Adapted chair ☐ Chair on the table ☐ Other _____
What utensils are usually used and at what age were they introduced?
Bottle _____ Glass _____ Glass and a straw _____ Other _____
What kind of food does your baby consume most of the time?
☐ Breast milk ☐ Formula ☐ Sieved infant food
☐ Pasty ☐ Other _____
How do you know when your baby is hungry? _____
How do you know when your baby has had enough? _____

[1]. The following aspects of the original instrument were disregarded: some factors of Current Status; Medical History; Motor and Language/Communication Development and Feeding History.
[2]. Data entered by me (*)

During mealtimes, have you observed any of the items listed below?

- ☐ Suffocation
- ☐ Food comes out through the nose
- ☐ Eats too much
- ☐ Difficulties in swallowing
- ☐ Difficulties in breathing
- ☐ Sleeps
- ☐ Food refusal
- ☐ Baby throws head back (hyperextension)
- ☐ Nausea
- ☐ Cry
- ☐ Eats too little
- ☐ Reflux during or after meals
- ☐ Excitement
- ☐ Food falls from the mouth
- ☐ Body becomes hard (stiffening)

Noisy breathing: before, during or after meals? _____

Does the baby have difficulty gaining weight? ☐ Yes ☐ No

Does the baby use a pacifier? ☐ Yes ☐ No

Does the baby dislike being touched around the mouth? ☐ Yes ☐ No

What seems to help (or not help) the child during mealtimes? _____

Appendix 3

Instrument III

Weaning Roadmap

Adapted from: MADUREIRA, DL., Deglutição em Neonatos. [Deglutition in Neonates] In: FERREIRA, LP. Et al., 2nd ed. 2004 Tratado de Fonoaudiologia. [Speech Language Pathology Treatise] São Paulo: Editora Roca. pp. 587-596

Adapted from: Chatoor, I; Getson, P; Menvielle E; Brasseaux, X; O'Donnell, R; Rivera, Y; Mrazek, DA. A Feeding Scale for Research and Clinical Practice to Assess Mother – Infant Interactions in the First Three Years of Life. Infant Mental Health Journal, Vol. 18(1) 76-91, Michigan, 1997.

Factors to be assessed by the speech-language pathologist regarding baby's behavior during mealtimes with pasty food, with questions addressed to the mother (Meetings 3 and 4):
Note: each variable received a rating and a score, namely: FDB = frequent desirable behavior, 2 marks; SB = sporadic behavior, 1 mark; FUB = frequent undesirable behavior, zero mark.

1 – During mealtimes with pasty foods:

	FDB	SB	FUB
Meals are offered at a peaceful place.			
Baby is properly placed during food offerings.			
Food offerings provided by the mother at controlled speed.			
Mother-baby interaction during food offerings.			
Baby spits food.			
The baby remains restless			
The baby cries.			
Baby showed nausea problems.			
The baby choked.			
The baby coughed.			
The baby threw up.			

To learn more about the reasons why your baby does not accept pasty foods, we have listed some factors that may be related to it. Please give your answers taking into consideration what actually happens during mealtimes with pasty food (baby food).
When answering the questionnaire, consider how often these situations occur during feeding times. In other words: **always, sometimes or never**.

Note: each variable received a rating and a score, namely: FDB = frequent desirable behavior, 2 marks; SB = sporadic behavior, 1 mark; FUB = frequent undesirable behavior, zero mark. Marked with 'X' – frequent desirable behaviors.

2 – During my baby's mealtimes with baby food, I:

	Always	Sometimes	Never
I can see mealtimes are pleasant.	X		
I insist until I make him eat the whole meal, even if he does not want to.			X
I feed my baby without rhythm or schedule (including when he is sleeping).			X
My baby only eats specific foods with specific utensils.			X
If my baby does not want to eat, I try to give him another type of food.			X
I feel frustrated I cannot get my baby to eat.			X
I make someone else offer the food in my place.			X
I try to entertain my baby with toys or games to induce him to eat.			X
I cannot bear to see my baby without eating so I then offer him the breast.			X

Is there any other aspect besides the ones stated above you would like to point out? Please describe: