

DEMAND FOR SPEECH THERAPY INTERVENTION IN NEONATAL UNIT OF A TEACHING HOSPITAL

Demanda para intervenção fonoaudiológica em uma unidade neonatal de um hospital-escola

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ABSTRACT

Purpose: the aim of the present study was to characterize the demand for speech therapy among newborns with oral feeding difficulties at a neonatal unit of a public teaching school. **Methods:** a descriptive, retrospective, cross-sectional study was carried out using data obtained from all charts of newborns interned between March 2008 and February 2010 who received at least one speech/hearing evaluation/intervention. **Results:** two hundred five newborns were treated in the study period, 104 of whom met the inclusion criteria. The sample was predominantly male, composed of premature newborns with adequate gestational age (mean: 36 weeks) and low birth weight. The most frequent diagnoses were respiratory disorder, jaundice and cardiovascular disorder. The following were the predominant reasons for requesting an evaluation by a speech therapist: abnormal oral motor behavior, evaluation of readiness for oral feeding and difficulties using a cup. Most evaluations were requested by residents when the newborns had a mean of 28 days of life. A broader set of criteria was used by the team requesting a speech therapy evaluation in comparison to criteria described in the literature. **Conclusion:** the majority of newborns receive oral feeding without a prior evaluation by a speech therapist, which can lead to situations of risk with regard to safe, efficient feeding.

KEYWORDS: Neonatology; Speech, Language and Hearing Sciences; Feeding

■ INTRODUCTION

Advances in medical and hospital technologies in the past 30 years have contributed to a reduction in neonatal mortality rates, especially in cases of infants born prematurely and/or with systemic syndromes. This population may exhibit oral feeding

difficulties^{1,2} due to the effect of prematurity, low birth weight and clinical conditions on the feeding process.

Speech and hearing therapy in the neonatal period is focused on aspects of feeding, the development of hearing and language and mother-infant interactions. The aim of assisting in the feeding process is to promote healthy, efficient feeding in terms of nutrition, weight gain and the mother-infant bond and minimize the risk of aspiration and stress^{1,3,4}. This therapy should include an evaluation, the early detection of uncoordinated sucking-swallowing-breathing and deficient or absent reflexes of the oral motor sensory system, orientation of the neonatal team regarding feeding issues, stimulation of the oral motor sensory system, outpatient follow up and the encouragement of breastfeeding⁵. The aim of motor sensory stimulation is to facilitate the dietary transition and speed up discharge from hospital in cases of intubation or prolonged use of a feeding

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Conflito de interesses: inexistente

tube as well as to improve nutritional aspects, gastrointestinal function and global maturation of the newborn⁶⁻⁸.

The literature highlights the following criteria for soliciting an evaluation by a speech therapist in neonatal units: absent or deficient oral reflexes; exacerbated vomiting reflex; severe irritability; sialorrhea; uncoordinated sucking-swallowing-breathing; oxygen desaturation; abnormal respiratory and heart rates during feeding; nasal or gastroesophageal reflux; unexplainable refusal to feed; malnutrition; dehydration; and lethargy during feeding^{5,9}.

The effectiveness of speech therapy has been demonstrated in a number of studies through the association between speech therapy and a shorter hospital stay¹. Despite the proven benefits of this type of therapy, many neonatal services do not have a speech and hearing therapist on staff and do not send this risk population for early speech therapy¹⁰.

The Prof. Dr. José Aristodemo Pinotti Women's Hospital of the Center for Integral Women's Health Care (CAISM/UNICAMP), is a public teaching hospital and tertiary reference center for women's and newborn health in the state of São Paulo, Brazil, that was accredited as a Child Friendly Hospital in November 2003. Approximately 250 children are born in the maternity ward of this hospital every month^{11,12}. The neonatal unit includes an intensive care unit, semi-intensive care unit, rooming-in, late-rooming in and specialty clinics. The team is composed of different health professionals, including two speeches and hearing therapists working on feeding and hearing, each with a weekly workload of 12 hours. The unit is part of the curriculum of undergraduate students of speech and hearing therapy of the School of Medical Sciences, Universidade Estadual de Campinas (UNICAMP), Brazil.

Newborns with abnormal feeding are sent for an evaluation by a speech therapist. Speech therapy is suggested based on oral motor control, neurophysiological maturity and clinical condition. This practice is in line with the philosophy of the Child Friendly Hospital Initiative, which describes the ten steps for successful breastfeeding aimed at ensuring exclusive breastfeeding in the first six months of life, as recommended by the World Health Organization. After discharge, children up to one year of age receive outpatient speech and hearing therapy whenever needed¹¹. This form of therapy also occurs with the Association of Parents and Family Members of Hospitalized Infants and the Neonatal Palliative Care Group (CAISM/UNICAMP).

The aim of the present study was to characterize the demand for speech therapy among newborns interned in the neonatal unit with abnormal oral

feeding behavior at the maternity ward of a public teaching hospital.

■ METHODS

A descriptive, retrospective, cross-sectional study was carried out at the Neonatal Unit of the Prof. Dr. José Aristodemo Pinotti Women's Hospital of the Center for Integral Women's Health Care, CAISM/UNICAMP, Brazil. This study received approval from the Human Research Ethic Committees of the Women's Hospital (process number 024/2010) and UNICAMP School of Medical Sciences (process number 666/2010). Since the data collection involved information from medical charts, a statement of informed consent was deemed unnecessary.

Data were obtained from the speech and hearing therapy charts of hospitalized newborns who received treatment between March 2008 and February 2010. All newborns who received at least one speech therapy evaluation/intervention in the neonatal service in this period and who had all routine data filled in on the speech therapy chart were included in the study.

The speech therapy chart contains the standard form and records of all care offered during hospitalization and outpatient follow up. The form contains data on patient identification, condition of the newborn on the day of evaluation and speech therapy evaluation and conduct. The following variables were studied:

- 1) Characterization of the population: sex, gestational age at birth, nutritional status, birth weight, Apgar index, diagnostic hypothesis and mother's age;
- 2) Condition of infant on day of evaluation: feeding route, corrected age and weight;
- 3) Speech therapy evaluation: health professional that made the request, reason for evaluation, place of internment, oral reactions, number of appointments;
- 4) Speech therapy conduct: prescribed conduct, discharge from speech therapy and feeding route upon discharge from neonatal unit and upon discharge from hospital.

For the quality control of the data, a review was performed on 10% of the 205 charts. The Epi Info 3.5.1 program was used to construct the databank and perform the statistical analysis. The data were analyzed using descriptive statistics expressed in absolute and relative frequency and represented on graphs.

■ RESULTS

Two hundred five speech therapy evaluations/interventions were performed between March 2008 and February 2010. One hundred four newborns (55 males [52.88%] and 49 females [47.11%]) fulfilled the inclusion criteria. Eight mothers (7.69%) were less

than 18 years of age, 40 (38.46%) were between 18 and 25 years, 38 (36.54%) were between 26 and 35 years and 18 (17.31%) were older than 36 years of age. Figure 1 displays the data on the infants: gestational age, nutritional status, birth weight and Apgar values.

	GA		NS		BW		APGAR 1'		APGAR 5'	
	N	%	N	%	N	%	N	%	N	%
PMNB	76	73.08								
FTNB	28	26.92								
AGA			58	55.77						
SGA			39	37.50						
LGA			07	06.73						
ELW					17	16.35				
VLW					17	16.35				
LW					39	37.50				
AW					31	29.81				
0-5							35	33.65		
6-10							69	66.35		
0-5									7	06.73
6-10									97	93.27
TOTAL	104	100	104	100	104	100	104	100	104	100

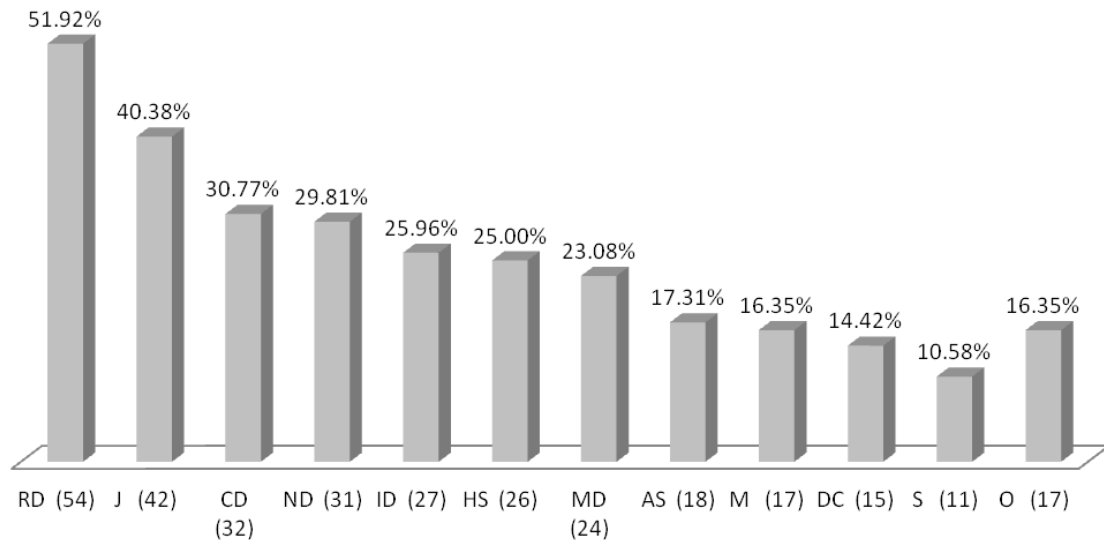
GA – Gestational Age; NS – Nutritional Status; BW – Birth Weight; APGAR 1' – Apgar in First Minute; APGAR 5' – Apgar in Fifth Minute; PMNB – Premature Newborn; FTNB – Full-term Newborn; AGA – Adequate for Gestational Age; SGA – Small for Gestational Age; LGA – Large for Gestational Age; ELW – Extremely Low Weight; VLW – Very Low Weight; LW – Low Weight; AW – Adequate Weight

Figure 1 – Characterization of newborns according to gestational age, nutritional status, birth weight and Apgar in the first and fifth minutes

Figure 2 displays the most frequent diagnostic hypotheses. Cases with less than 10 occurrences were categorized as "others": obstetric trauma, ocular, skin, orthopedic, genital-urinary and

endocrine conditions, and tumors. The criteria used to classify the diagnostic hypotheses were based on the clinical protocol of the CAISM/UNICAMP neonatal unit.

N = 104



RD – Respiratory Disorder; J – Jaundice; CD – Cardiovascular Disorder; ND – Neurological Disorder; ID – Infectious Disease; HS – Hematological Syndrome; MD – Metabolic Disease; AS – Apnea Syndrome; M – Malformation; DC – Digestive Condition; S – Syndrome; O – Others

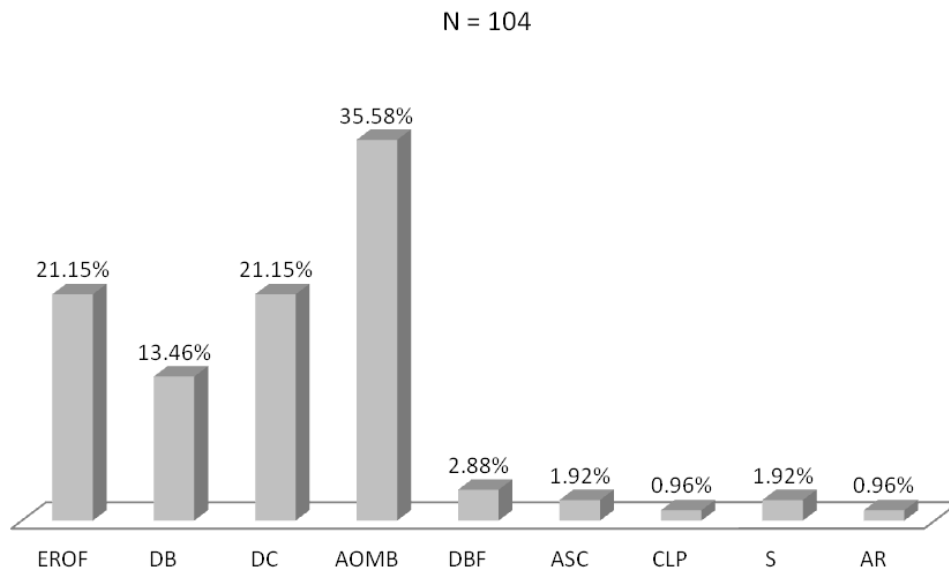
Figure 2 – Most frequent diagnostic hypotheses given by physicians

Regarding condition of the infants on the day of evaluation, 65 (62.50%) were oral fed; 27 (25.96%) received exclusive oral feeding, 39 (37.50%) made use of an enteral tube, 37 (35.58%) receive oral feeding and an enteral tube and one case made use of parenteral nutrition with oral feeding (mother's breast and cup). Among the infants who received exclusive oral feeding, 11 (10.58%) breastfed freely on the day of evaluation. Mean corrected age on the date of the evaluation was 36 weeks and five days. The infants were evaluated with a mean of 29 days of life. Mean weight on the day of evaluation was 2392.74 g.

A total 20.19% of the evaluations were requested by physicians, 59.62% were made

pediatric residents, 18.27% were made by the nursing staff and 1.92% were made by other health professionals. This separation between physicians, residents, healthcare staff and teaching staff was due to the fact that the study location is a teaching hospital. Thus, the conduct of the residents is the result of the advice of teaching staff, which would be important to the evaluation of the extent to which speech and hearing therapy is internalized by health professionals in training.

Figure 3 displays the reasons for requesting speech therapy. Regarding place of internment, 98 (94.23%) were in the semi-intensive care unit, five (4.81%) were in the intensive care unit and one (0.96%) was under the rooming-in regimen.

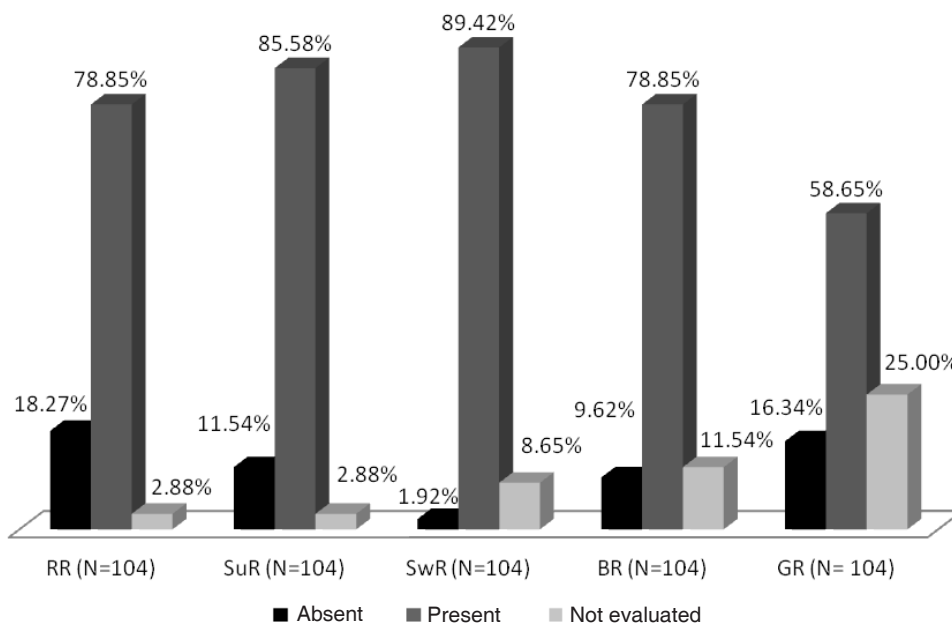


EROF – Evaluation of Readiness for Oral Feeding; DB – Difficulty Breastfeeding; DC – Difficulty Cup Feeding; AOMB – Abnormal Oral Motor Behavior; DBF – Difficulty Bottle Feeding; ASC – Altered State of Consciousness; CLP – Cleft Lip/Palate; S – Syndrome; AR – Abnormal Respiration

Figure 3 – Reason for requesting evaluation by speech therapist

The speech therapy analysis included oral reflexes, nonnutritive sucking and nutritive sucking. Figure 4 displays the findings regarding oral reactions. Nonnutritive sucking was performed in 78.85% of cases and nutritive sucking was

performed in 55.77%. The evaluation of nutritive sucking was at the mother’s breast in 62.07% of cases. The evaluation of feeding using a cup was performed in 32.69% of cases.



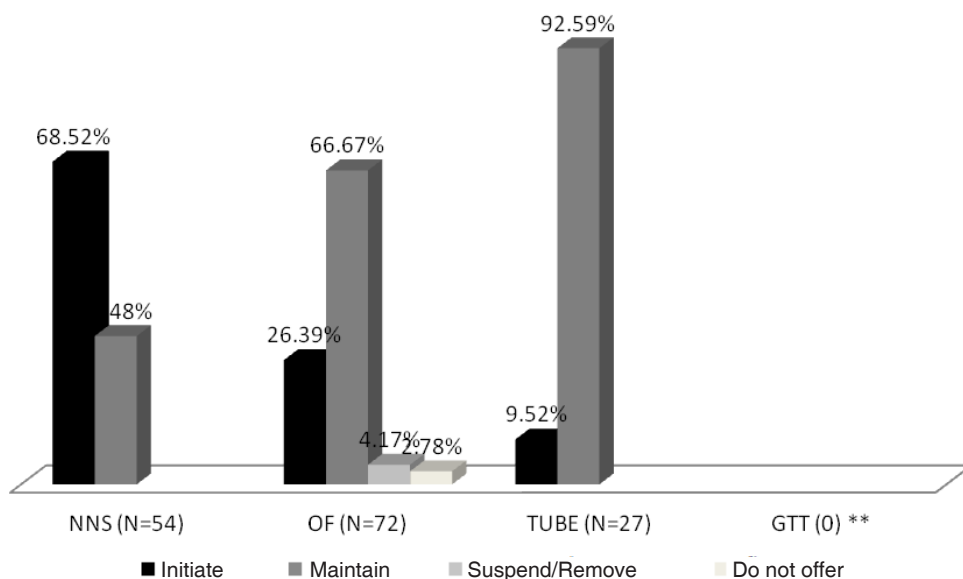
RR – Rooting Reflex; SuR – Sucking Reflex; SwR – Swallow Reflex; BR – Bite Reflex; GR – Gag Reflex

Figure 4 – Oral reactions at time of evaluation by speech therapist

A total of 33.66% of the infants had one speech therapy session, 23.08% had two sessions, 16.35% had three sessions, 9.62% had four sessions and 17.31% had five or more sessions. The main conducts prescribed were to maintain oral feeding, initiate nonnutritive sucking and maintain the feeding tube (Figure 5). Speech therapy reevaluation was indicated in 27.88% of cases and facilitating maneuvers (submandibular support, buccinator

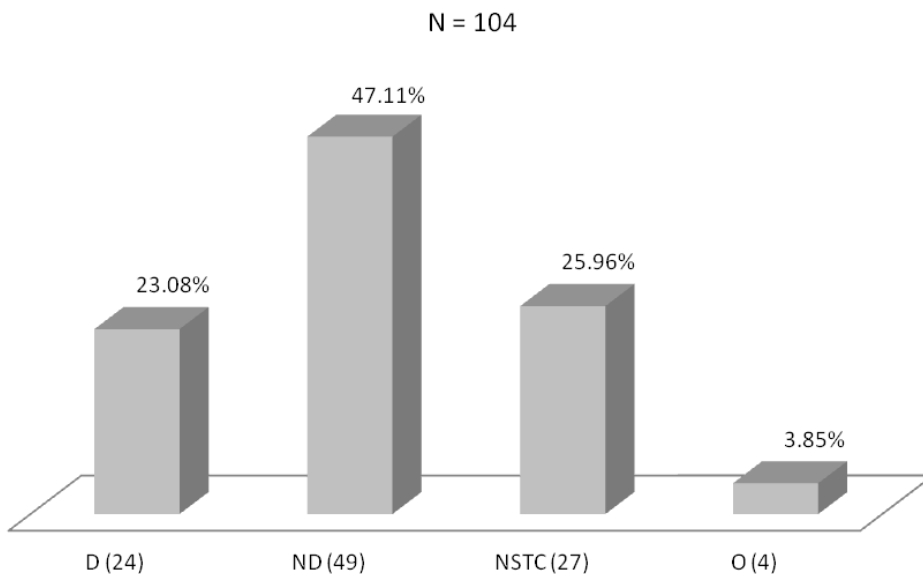
support, massaging breasts prior to breastfeeding, translactation, relactation, pauses and milk flow control) were indicated in 28.85% of cases.

Figure 6 displays the data on discharge from speech therapy. A total of 47.11% received discharge from hospital without receiving discharge from speech therapy and 23.08% received concomitant discharge from speech therapy and hospital.



NNS – Nonnutritive Sucking; OF – Oral Feeding; TUBE – Orogastric and Nasogastric Feeding Tube; GTT – Gastrostomy
 ** no cases of gastrostomy

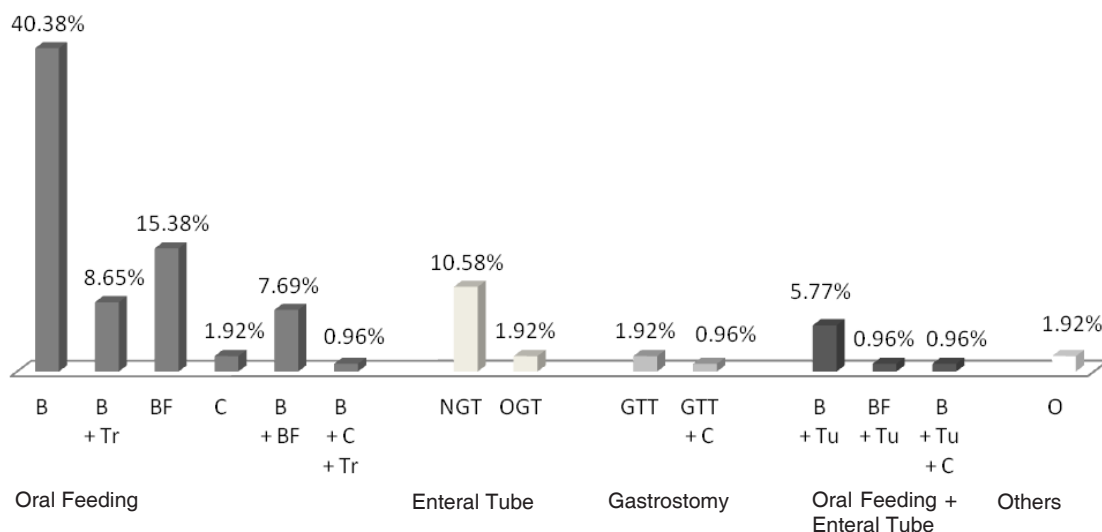
Figure 5 – Therapeutic conduct



D – Discharge from Speech Therapy; ND – Not Discharged from Speech Therapy; NSTC – Follow Up in Neonatal Speech Therapy Clinic; O – Others

Figure 6 – Data on discharge from speech therapy

N = 104



B - Breastfeeding; Tr - Translactation; BF - Bottle Feeding; C - Cup Feeding; Tu - Tube; NGT - Nasogastric Tube; OGT - Orogastric Tube; GTT - Gastrostomy; O - Others

Figure 7 - Feeding route of infants at discharge from hospital

Upon discharge from hospital, oral feeding predominated followed by mixed feeding (oral + enteral tube) (Figure 7).

DISCUSSION

The increase in the number of newborns who require neonatal care due to premature birth and diseases has led to an increase in the demand for evaluations by a speech therapist. A survey of data at a healthcare service is of the utmost important to establishing the quality of care, characterizing the population treated and determining the efficacy of the conduct employed.

The male sex was predominant among the newborns in the present investigation, which is in agreement with findings described in a previous study on the evaluation of premature newborns¹³. The most frequent age group among the mothers was 18 to 35 years, which accounted for 75% of the cases. This finding is agreement with the mean age of pregnancy among women in southeastern Brazil, which, according to the most recent census, is 26.6 years of age¹⁴.

Regarding Apgar data, 33.65% of the infants received a score of 5 or less in the first minute and 6.73% received a score of 5 or less in the fifth minute. Perinatal asphyxia (Apgar between 0 and 4 in the first minute and/or 0 to 6 in the fifth minute)

is a risk factor for feeding problems in newborns. Information obtained during the evaluation of swallowing function and breathing control during feeding can be useful for predicting significant neurological disorders in newborns¹⁵.

The majority of newborns had a gestational age of less than 37 weeks, which characterizes premature birth. Such infants are more likely to exhibit adverse health conditions that can exert a negative effect on the feeding process. Studies have suggested an association between a younger gestational age and greater risk of the development of oral motor disorders. Thus, the intervention of a speech therapists is important to the prevention and rehabilitation of correlate abnormalities and should be maintained throughout the follow up of cases during the introduction of other food consistencies^{16,17}.

The most frequent diagnostic hypotheses were respiratory disorder, jaundice and cardiovascular disorder. Some of the newborns were not in a completely stable clinical state at the time of the first feeding evaluation. Safe, efficient oral feeding involves coordinated sucking, swallowing and breathing and requires oral motor control, physical effort, cardiovascular effort, stress and adequate oxygen saturation. This underscores the importance of favoring a feeding route that does not place the clinical status of the newborn at risk and offers no risk of aspiration¹⁸.

The majority of newborns (62.50%) had initiated oral feeding without undergoing a previous evaluation by the speech therapist. This practice could place the clinical stability of the infant at risk⁵. At the neonatal service studied, most requests for evaluation by the speech therapist were made by residents of pediatrics, who are directly responsible for the care of the infants, which consequently allows the early identification of the need for specialized care. The most frequent reasons for requesting this evaluation on the part of residents were abnormal oral motor behavior, evaluation of the readiness for oral feeding, difficulty using a cup and difficulty breastfeeding. In comparison to data described in the literature⁵⁻⁹, the present findings reveal a broadening of the criteria for the referral to a speech therapist, such as the evaluation of readiness for oral feeding, difficulty breastfeeding, difficulty using a cup, abnormal oral motor behavior and difficulty bottle feeding. However, the findings also reveal a need for a greater awareness on the part of pediatric residents with regard to referring infants for the evaluation by a speech therapist prior to initiating oral feeding. In a teaching hospital, the work of speech therapists can also contribute to the interdisciplinary training of pediatricians in the field of neonatology.

Although the speech therapists attend the intensive care unit, semi-intensive care unit, rooming-in and late rooming-in, the work occurred predominantly in the semi-intensive care unit (94.23%). This finding may be related to the limited workload of the speech therapists at the neonatal services (12 hours a week), which implies predominantly rehabilitation actions already near the time of discharge from hospital. Thus, there is an evident need to broaden the scope of the action of speech therapists to other areas of the neonatal service, focusing on the prevention of abnormalities related to the oral motor sensory system. Early care on the part of the speech therapist while the newborn is still in the intensive care unit could contribute toward faster progress in the feeding process and consequently earlier discharge from hospital⁸.

The oral reactions encountered differ from those reported in a study on the readiness of premature newborns to initial oral feeding, which found the sucking reflex present, albeit weak, in all subjects evaluated¹³. In the present study, 11.54% of the newborns did not exhibit the sucking reflex. This finding may be explained by the fact that the CAISM is a reference hospital for the care of high-risk newborns, the population of which has more serious diagnoses that can interfere in the feeding process. The rooting reflex was absent in 55% of the newborns evaluated in the study cited¹³, which

differs significantly from the findings of the present study, in which this reflex was absent in 18.27%.

The main actions prescribed by the speech therapist were to maintain the feeding tube and initiate the stimulation of nonnutritive sucking. The former underscores the importance of the evaluation by a speech therapist prior to determining the feeding route and the latter underscores the importance of stimulating nonnutritive sucking for the benefits this practice offers and to diminish internment time. Studies have shown that the stimulation of nonnutritive sucking and oral stimulation can contribute to accelerating the onset of oral feeding by assisting in oral motor development and maturation of the newborn, thereby improving breastfeeding rates upon discharge¹⁹⁻²². Breastfeeding provides a number of advantages and should therefore be initiated as soon as possible, favoring the transition of the feeding route, the production of mother's milk and the mother-infant bond^{23,24}.

Reevaluation from the speech therapist was prescribed in 29.76% of the cases, since it was not always possible to define the proper conduct after a single evaluation. In some cases, the use of other utensils, such as a cup, was necessary. In others, the decision was made to evaluate the newborn when he/she was more alert or more stable, with no clinical complications. In 24.39% of cases, facilitating maneuvers (submandibular support, buccinator support, massaging breasts prior to breastfeeding, translactation, relaxation, pauses and milk flow control) were indicated.

A review study suggests the favorable influence of cup use in the transition to breastfeeding in full-term newborns, those submitted to cesarean birth and those at the time of discharge²⁵. None of the three studies in the review found a statistically significant difference in the duration of breastfeeding following discharge. The first study analyzed 471 full-term infants of mothers who planned to stay in the hospital for five days after childbirth and breastfeed for at least three months. Breastfeeding frequencies were analyzed in the first five days as well as at two, four and six months of life, comparing the use of different complements, cup/spoon and bottle/pacifier. No significant differences in breastfeeding frequency were found between groups. The second study analyzed the effects of the use of an artificial nipple, cup and bottle in 686 full-term and premature newborns comparing the use of a cup and bottle as the form of supplementation and whether there was an associated habit of early or late pacifier sucking, analyzing the duration of exclusive breastfeeding, mixed feeding and total breastfeeding time. No significant differences were found between the use of a cup or bottle. The third study involved 303

premature newborns with a gestational age less than 34 months and mothers who wanted to breastfeed and compared the use of a cup and bottle with or without the use of a pacifier. The prevalence and proportion of exclusive breastfeeding and mixed feeding were determined at three and six months and no statistically significant differences were found between groups. The use of a cup significantly increased the prevalence of exclusive breastfeeding upon discharge, but had no effect on the duration. Another review study demonstrated that infants who use a cup have better results with regard to physiological stability (heart rate and oxygen saturation) and the impact on exclusive breastfeeding upon discharge from hospital²⁶. However, the authors also suggest that further studies on this issue are needed. Despite the divergent data, the use of a cup as feeding transition method is a common practice at the neonatal service studied herein and is in line with the recommendations of the Child Friendly Hospital Initiative, which discourages the use of artificial nipples.

The data on the feeding route upon discharge demonstrate the benefits of speech therapy, which allowed an increase from 10.58% to 40.38% in the rate of exclusive breastfeeding. However, this result is below the recommendations of the World Health Organization (exclusive breastfeeding until six months of age). The rate of exclusive oral feeding upon discharge from hospital was 74.98%, with 40.38% exclusive breastfeeding, 17.30% breastfeeding complemented with translactation, cup use or bottle use, 15.38% bottle use and 1.92% cup use. These data are similar to those reported in a previous study carried out at the tertiary level Ribeirão Preto University Hospital (state of São Paulo, Brazil), in which 28.4% of premature newborns were discharged with exclusive breastfeeding, 48.3% with mixed breastfeeding and 23.2% with artificial feeding. A total of 76.7% were breastfeeding upon discharge with or without a formula complement²⁷. In premature newborns with a weight greater than 1500 g, Czechowski and Fujinaga²⁰ found a 58.3% rate of exclusive breastfeeding upon discharge, which is higher than the rate reported herein.

The potential factors affecting exclusive breastfeeding in a high-risk nursery are related to healthcare services (number of prenatal appointments, Child Friendly Hospital Initiative), hospital practices (use of a feeding tube, translactation) and biological aspects, such as low weight. All these factors hamper exclusive breastfeeding in these infants²⁸ and help explain the indices found at the CAISM neonatal service.

The largest portion of the infants (33.66%) had only one evaluation from the speech therapist,

which occurred at a mean of 28 days of life, with a corrected age of 36 weeks and six days. It is fundamental to perform evaluations throughout internment to monitor the development of oral motor function. A previous study also found that premature newborns began the transition of the feeding route at a mean of 36 weeks of corrected age⁶.

In order for discharge from both speech therapy and hospital to coincide, the request for the evaluation should be made as early as possible⁵. However, evaluations were requested late at the neonatal service studied. As a result, the majority of newborns 53.66% had not been discharged from speech therapy prior to discharge from hospital. This seems to be related to the restricted workload of the therapist, which consequently limits early therapy and an evaluation prior to the onset of oral feeding. While the work of the speech therapist has increased at the neonatal service, it could be broadened further. It is therefore fundamental for hospitals to have speech therapists in neonatal services with a workload that is compatible with the needs of the infants. As residents and nursing staff request evaluations by a speech therapist more, actions should be developed to broaden awareness on the objectives of speech therapy at neonatal services, thereby contributing to the training of these and other health professionals who work with newborns.

■ CONCLUSION

The population studied was predominantly male and had been born prematurely, with a mean gestational age of 36 weeks and low birth weight, but adequate for the gestational age. The predominant diagnosis was respiratory disorder. The majority of infants began oral feeding with no prior evaluation by the speech therapist, which may place safe, efficient feeding at risk and have repercussions on the clinical stability of the infant.

In comparison to data reported in the literature, the present findings reveal a broadening of the criteria for the referral to a speech therapist, such as the evaluation of readiness for oral feeding, difficulty breastfeeding, difficulty using a cup, abnormal oral motor behavior and difficulty bottle feeding.

The speech therapists worked predominantly in the semi-intensive care unit and the main conducts prescribed were to maintain oral feeding, initiate nonnutritive sucking and maintain the orogastric feeding tube.

The limited workload of a speech therapist at a neonatal service compromises the effectiveness of this health professional, especially with regard to preventive actions.

RESUMO

Objetivo: caracterizar a demanda e intervenção fonoaudiológicas realizadas em recém-nascidos e lactentes que apresentaram alterações no processo de alimentação por via oral, na Unidade Neonatal de um hospital-escola de caráter público. **Métodos:** trata-se de um estudo retrospectivo, descritivo e de corte transversal. Foi realizada a coleta de dados por meio de consulta a todos os prontuários fonoaudiológicos de recém-nascidos e lactentes internados no período entre março de 2008 e fevereiro de 2010, que receberam ao menos uma avaliação/intervenção fonoaudiológica. **Resultados:** foram atendidos nesse período 205 recém-nascidos e lactentes internados. Destes sujeitos, 104 atenderam aos critérios de inclusão na pesquisa. A população predominante foi do sexo masculino, composta de recém-nascidos pré-termo, adequados para idade gestacional, baixo peso ao nascimento, em média com 36 semanas de idade gestacional, com diagnósticos mais frequentes de distúrbio respiratório, síndrome icterícia e/ou distúrbio cardiovascular. Dentre os motivos de encaminhamento para avaliação fonoaudiológica predominaram: alteração no comportamento motor oral, avaliação da prontidão para alimentação por via oral e dificuldades no uso do copo. As avaliações foram solicitadas, em sua maioria, por médicos residentes quando os recém-nascidos estavam, em média, com 28 dias de vida. Verificou-se ampliação dos critérios de encaminhamento da equipe para avaliação fonoaudiológica, quando comparados aos critérios descritos na literatura. **Conclusões:** esse trabalho permitiu caracterizar a população, a demanda e a intervenção fonoaudiológicas em uma unidade neonatal. Verificou-se que a maioria dos recém-nascidos e lactentes ainda recebe alimentação por via oral sem avaliação fonoaudiológica prévia, o que pode gerar situações de risco para uma alimentação segura e eficiente.

DESCRIPTORIOS: Neonatologia; Fonoaudiologia; Alimentação

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