

Language development of extremely premature infants: parental orientation

Caroline Conceição dos Santos Nascimento¹ 
Beatriz Servilha Brocchi¹ 

¹ Pontifícia Universidade Católica de Campinas - PUC/Campinas, Faculdade de Fonoaudiologia, Campinas, São Paulo, Brasil.

ABSTRACT

Purpose: to analyze the linguistic development of extremely premature children at birth, through the Initial Speech and Language Acquisition Scale, and to verify the knowledge of these children's parents about language.

Methods: the study included 21 parents of extremely premature children at birth. A booklet on the development of children's language and a questionnaire was prepared for the study, in order to investigate the efficiency of guidance to parents. Initially, the children were assessed using the Initial Speech and Language Acquisition Scale, and then, the parents received oral guidance on how to stimulate their children's language. Therefore, the questionnaire was applied to verify the impact of the guidelines on their knowledge. The data obtained through the scale were related to the answers obtained through the questionnaire applied to the parents, through descriptive percentages and Mann-Whitney test, with $p < 0.05$.

Results: most of the children performed as expected for their age in the evaluated aspects. The questionnaire showed that most parents had guidance on the general development of their children, but only half of them had knowledge about language. All participants felt contemplated with the educational material.

Conclusion: despite the extreme prematurity, most children performed as expected for their age in terms of language, and parents had moderate knowledge on language.

Keywords: Infant, Newborn; Infant, Premature; Language; Child Development; Speech, Language and Hearing Sciences

Study conducted at Faculdade de Fonoaudiologia Pontifícia Universidade Católica de Campinas, Campinas, São Paulo, Brazil.

Study conducted in the High Risk Outpatient Clinic of the Hospital at PUC-Campinas.

Financial support: Scientific Initiation Support Fund of PUC-Campinas (FAPIC- Dean's Office).

Conflict of interests: Nonexistent.

Corresponding author:

Caroline Conceição dos Santos Nascimento
Avenida Elza TerrosoAlita, 170, bloco 5, apartamento 23 - Vila Abaeté
CEP: 13052691 - Campinas, São Paulo, Brasil
E-mail: carol.santos.nascimento07@gmail.com

Received on: September 26, 2022
Accepted on: March 28, 2023



This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The beginning of the bond between the mother and the baby can already be observed from pregnancy onwards. In women, pregnancy generates expectations, dreams and plans, in addition to developing different feelings, such as the feeling of strength, power, possession and self-confidence¹. Although the mother begins to imagine what her child will be like during this period, in cases of prematurity, the baby is born more fragile, sleepy, unpredictable and immature, being very different from what was imagined during pregnancy².

Full-term birth is considered for births between 37 and 42 weeks of gestation³. In turn, every baby born before completing 37 weeks is considered premature or preterm. The World Health Organization (WHO) divides prematurity according to gestational age, as follows: borderline preterm (35 to 37 weeks), moderate preterm (31 to 34 weeks), and those born before completing 30 weeks of gestation are considered extreme preterm⁴.

Another parameter used to evaluate the baby is the weight at birth, which aims to verify the health conditions, which can be: low weight, those born with less than 2,500g; low moderate weight, between 2,499g and 1,500g; and very low birth weight, for babies weighing less than 1,500g. In combination with age at birth, this factor defines the fundamental biological conditions of the neonate, which, together with perinatal and environmental conditions, can determine how the baby will develop³.

In this context, extremely preterm infants are deprived of an important period of intrauterine growth. From a structural point of view, and depending on the gestational age (GA), premature birth can particularly affect the phases of glial multiplication, neuronal migration and its organization, which may lead to potential alteration in brain organization, which can cause functional deficits. These maturational processes are directly linked to the effect of different environmental factors, and, in the presence of prematurity, there are risks of global developmental delay with interference in the motor, cognitive, social and language areas⁵.

In this sense, the literature describes the delay in language acquisition as one of the disorders present in preterm infants, which can be both receptive and expressive^{5,6}. The frequency and extent of verbal behavior in premature babies are reduced compared to the normal range and, the lower the birth weight and gestational age, the greater the probability of delay in the various stages of communicative-linguistic development. There may be changes in pre-linguistics

milestones, in the execution of verbal commands and simple activities, lower vocabulary and ability to form sentences. It should be noted that these early changes can persist until school age and impair the child's performance throughout the learning process^{7,8}.

In addition, socio-environmental factors, such as the educational level, maternal socioeconomic level and mother-child interaction⁹⁻¹² are also aspects that are believed to affect the child development process^{8,9,12}. Mothers with low socioeconomic status seem to be less responsive and favor more negative feedback to the child. On the other hand, mothers with a higher level of education seem to stimulate more, which may favor better development¹³. The literature also shows that mothers from the upper middle class and who have completed high school or higher education tend to have a greater verbal interaction with their children, when compared to mothers from lower classes, and children from the upper classes have better language development at two years¹⁴.

Thus, socioeconomic and educational levels are related to the means of determining the quality of stimuli and responses that will be given to children by parents. In this sense, the quality of this interaction becomes an indicator for cognitive development, since the way in which children parents relate to the child can mitigate social and biological differences¹³. Therefore, the development of the child can be considered a result of the interaction between biological, psychological and social factors.

Language acquisition depends on the association between a neurobiological and social apparatus, the latter being related to social interaction and the quality of stimuli received⁴. Therefore, guidance to parents about early stimulation of the newborn (NB) becomes essential for the child's development¹.

Stimulation can be defined as a set of preventive and/or therapeutic processes that ensure the child has a better interaction with the environment in which they live during early childhood. Every baby needs stimulation in order to develop their abilities and, when used preventively, it can avoid psychomotor deficits, in addition to promoting interaction between the child and their family¹⁵. Therefore, the involvement of parents in language stimulation is essential, as they play the role of sensitivity to the child's communicative intentions, seeking to give meaning to their speech, bringing their linguistic level closer to theirs. In addition, parents usually also have a special way of talking to their children, using simple, repetitive speech, grammatically

and semantically adjusted to the child's level of understanding and interest¹⁶.

In this way, guidance to parents regarding child development and early stimulation is essential, since, when they are aware of their children's growth process, they become able to identify deviations, understand the difficulties, limitations, and personal differences in rhythm and of potential among each child and to seek necessary help¹⁵.

It should also be noted that children learn a lot with the stimuli they receive from the environment in which they live and, therefore, a stimulating family environment is a factor that facilitates the development not only of language, but of the child as a whole^{13,15}. In this context, a study that aimed to develop a guidance program for parents on how to stimulate their child's language, from birth, with parents of premature children as participants, reported that, despite prematurity being seen as a biological risk factor, an adequate home environment can reduce or compensate for the adverse effects of this condition¹³.

Given the possible effects of prematurity on language acquisition and development, and bearing in mind the importance parents have in this process, this study aimed to analyze the linguistic development of extremely premature children at birth, using the Initial Speech and Language Acquisition Scale, in addition to investigating the knowledge of these children's parents about language.

METHODS

This is a cross-sectional study investigating the language development of children aged 0 to 24 months with a diagnosis of extreme prematurity at birth. This study was entitled "Language Development of Extremely Premature Infants: Parental Orientation" and is part of the research project "Assessment of the Language Development of Premature Birth Children" (Research Ethics Committee of PUC-CAMPINAS 2.326.785/2017 and CAAE 75798117.8.0000.5481).

The study included 21 parents of children diagnosed with prematurity at birth, from 0 to 24 months corrected age, who were born and were hospitalized in the neonatal Intensive Care Unit (NICU) of a teaching Hospital of a municipality in the State of São Paulo. All participants were followed up by the High Risk Outpatient Clinic of this hospital from August 2018 to June 2019.

This service is characterized by longitudinal follow-up (up to 4 years of age) of children who were admitted to the NICU, born with less than 30 weeks of gestational age and/or with birth weight equal to or less than 1,500g. In addition, infants with neurological disorders or syndromes (in this case, premature or at term) are also monitored. There is a multidisciplinary follow-up that includes pediatricians, nurses, speech-language pathologists, physiotherapists, occupational therapists and nutritionists, which is carried out monthly (until the 6th month of life), every three months (after the 6th month of life and up to 1 year of age), every four months (up to 2 years of age) and annually (after 2 years of age).

Since it is one of the criteria established by the service (all children are evaluated by the multidisciplinary team based on this), this study used the corrected age to assess the participants. Furthermore, the use of corrected age in the assessment of growth and development up to 2 years of age shows a real expectation for each child, without underestimating the preterm when comparing it with reference standards⁷.

The study included all parents and children within the defined age group (from 0 to 24 months of corrected age), diagnosed with extreme prematurity at birth, that is, who had a gestational age below 31 weeks of gestational age and who did not have neurological, auditory, visual alterations or syndromes. This information was first collected through the children's medical records, in addition to confirmation by the Neonatology Team.

This population was chosen due to the potential greater risk for development due to extreme prematurity, when compared to preterm infants of higher gestational age and those born at term⁵. The signature of the Informed Consent Form by the parents was also an inclusion criterion.

And participants who did not complete the entire proposed evaluation were excluded from the study.

Among the participants, more than half of the children were male (52.4%) and less than half were female (47.6%). On average, participating children were 4.24 months corrected age (SD=5.8).

The average weight of the children was 1,118g (maximum of 1,740g and minimum of 780g), and, according to the average weight, they could be classified as very low weight, that is, below 1,500g. As predicted in the study method, the participating children were extremely premature at birth, since the mothers had approximately 28 weeks of gestational age (Table 1).

Table 1. Classification of study participants by weight and gestational age at birth (n=21)

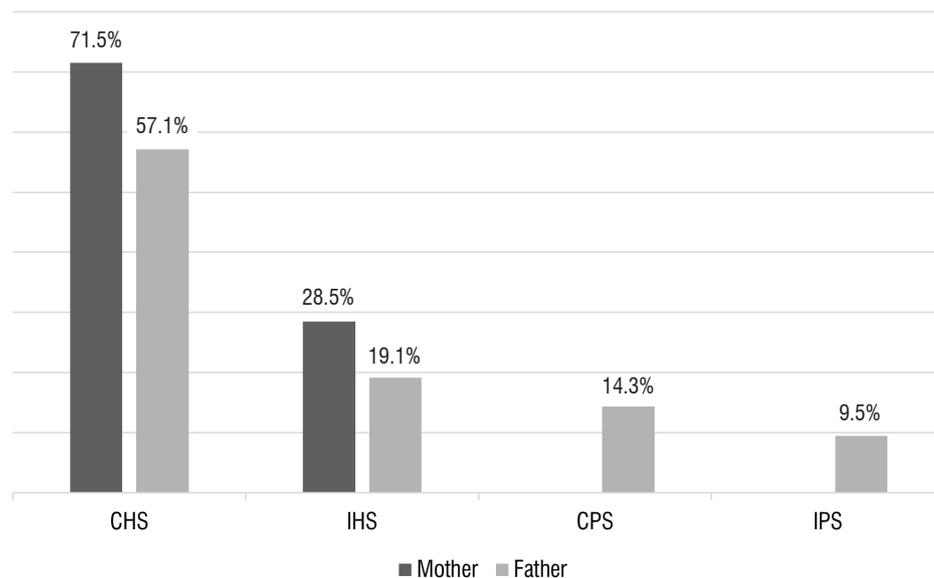
	Weight (g)	Gestational Age
Mean	1.11	28.3
Median	1.12	28.0
Minimum	780	24.0
Maximum	1.74	30.0
Standard Deviation	238.7	1.74

Caption: g = gram

Regarding birth conditions, on the Appearance, Pulse, Grimace, Activity, Respiration Scale (APGAR), the children had an average of 5.5 in the 1st minute and 8.4 in the 5th minute, with an average length of hospital stay of 63.48 days (SD=16.84), with a minimum of 30 and a maximum of 90 days.

The mothers were on average 26.52 years old

(SD=7.47), with the minimum age being 16 and the maximum age 43; the mean age of the parents was 29.60 (SD=7.39), with a minimum age of 18 and a maximum of 43 years. As for the educational level of the mothers, most had completed high school (71.5%), as did the fathers, since just over half of them also had the same level of education (57.1%) (Figure 1).



Captions: CHS = Complete High School; IHS = Incomplete High School; CPS = Complete Primary School; IPS = Incomplete Primary School

Figure 1. Educational level of parents

For the development of this study, the researchers prepared an anamnesis script, a booklet on the development of children's language and a questionnaire that sought to know about the efficiency of the guidelines given to parents.

The anamnesis script was a protocol elaborated by the authors based on the anamnesis protocol by Brocchi and Leme (2013)¹⁷. The script includes questions regarding the child's identification data (age

and date of birth), parents (age, date of birth, education and profession), address, telephone, monthly income and socioeconomic classification, in addition to questions regarding previous maternal history and hospitalization history.

The booklet on the stimulation of children's language was prepared by the authors, in eight chapters, in order to guide parents of premature children about language and its development, as well as to provide guidance

on what they can do to stimulate their children's language. The following contents were addressed in the chapters: information about the premature baby, what is language and what are the main milestones of language development, the importance of hearing for language development, how parents can help in language development and guidance/suggestions on how to stimulate language in the 0-24 month age group¹⁸.

The questionnaire developed for the study had 13 questions, with the first seven questions being closed questions and the last six being open questions, aiming to investigate the parents' view of the guidance they received. The first group of questions aimed to understand the prior knowledge of the parents, before the guidelines, and the way they stimulated their children. In this sense, the questions investigated: whether they had already received guidance on the development of the child; whether they already had some knowledge about language development; whether they played with their child; whether the child had toys; whether they had books at home and if they read to the child; if they encouraged the child to communicate and if they talked with the child. In addition to the dichotomous answers (yes and no), some of these questions offered an additional space for essay questions, for example, what guidance they had already received about the child's development, or how they encouraged their children to communicate.

Regarding the open questions, questions 8 and 9 asked the parents about their child's current development and what was the main form of communication used by the child. In questions 10 to 13, parents were asked about the guidance they had just received. They were asked to answer if they thought they had learned something from the guidelines, how they could help in the daily routine with the child, what most caught their attention during the guidelines and if they had any questions that were not addressed.

The Early Language Milestone Scale (ELM) was also applied in this study. This scale has been used as a screening tool, being a quick and reliable way to assess language development in children aged 0 to 36 months. The scale consists of 41 items divided into three parts, which assess the auditory-receptive, auditory-expressive and visual auditory-receptive areas related to language. In the first years of the child's life, each function seeks to assess the following skills: auditory-receptive function - child alert to people's voices, turning head sideways to the voice, recognizes

certain sounds, turning head to a bell, laterally and diagonally, if the child inhibits the command of "no" and follows orders of a command without gesture; auditory-expressive function - the child chirps, performs reciprocal vocalization, smiles, babbles monosyllables and polysyllables, makes unspecific and, later, correct use of "mama", "papa", and begins to speak the first words; visual receptive function - the child smiles, recognizes parents, responds to facial expressions, follows an object visually, blinks, imitates gestural games, follows commands and initiates gestural games, and points to the desired object¹⁸.

The history provided by the parents must be evaluated before starting the test using the ELM scale. When the response obtained is not satisfactory, testing continues directly or with incidental observation, when permitted. Thus, this scale makes it possible to assess whether the child has adequate or altered performance for their corrected age, thus evaluating the language development of NBs¹⁹.

Data collection was carried out between August 2018 and June 2019, taking place on Wednesday mornings, at the pediatric outpatient clinic of a teaching hospital in the State of São Paulo. Thus, the family was welcomed and guided about the research project in the waiting room for pediatric care during the pediatric evaluation routine at the High Risk Outpatient Clinic. Subsequently, the parents were asked to read and, in case of agreement, to sign the Informed Consent Form.

After the term was signed, the child's language was assessed using the ELM. First, the researchers calculated the corrected age and, from this, the protocol was applied with the questions for that age at which the child was, questioning all the behaviors expected for the age. The behaviors were evaluated through the parents' responses and, if the child was awake, they could also be observed. The answers were noted as 'yes' or 'no'.

After assessing the children, parents received oral guidance on how to stimulate their children's language. The guidelines were based on the previously elaborated booklet and, at the end of this stage, on the same day, the questionnaire was applied by the researcher (the researcher asked the questions and concomitantly wrote down the answers) with the parents or caregiver, aiming to investigate the parents' knowledge had before the guidelines on language development and the knowledge that parents absorbed about the content covered in the guidelines.

The entire process, including reception, language assessment, guidance and completion, lasted 20/30 minutes. The survey was conducted individually with each participant, in a reserved manner, and could be before or after the consultation with the Neonatologist. Even with the completion of the process in the waiting room, this environment does not seem to have had a negative influence on the results, since all participants reported feeling comfortable answering the questions, as well as interacting during the orientations, exposing their doubts and comments. If the child was called by the doctor during the collection procedure, it was interrupted and, after the medical consultation, it was completed.

The data collected from the questionnaire were analyzed together with the variables resulting from

ELM, maternal age and education, using descriptive percentages. Given the number of study participants, it is not possible to perform statistical analyzes for all variables. In this sense, only question 2 of the instrument (Q2) showed the necessary incidence for the application of a statistical test, in which the Mann-Whitney U test was applied, considering significant p when less than 5%.

RESULTS

Performance in the ELM Scale

As shown in Table 2, most of the children participating in the research performed as expected for their age in all aspects assessed in the ELM (global, auditory-expressive, auditory-receptive and visual).

Table 2. Children's performance according to the Initial Speech and Language Acquisition Scale

	No	%	Yes	%	Mean	SD
Global Expectations	1	4.8	20	95.2	12.76	8.54
Auditory-Expressive Expectations	2	9.5	19	90.5	4.29	3.16
Auditory-Receptive Expectations	3	14.3	18	85.7	3.62	2.97
Visual Auditory Receptive Expectations	1	4.8	20	95.2	4.86	2.73

Caption: % = percentage for the number of responses given; SD = Standard Deviation.

In terms of global expectations, the mean score for the children was 12.76 (SD=8.54), with a minimum score of 4 and a maximum of 33. In the auditory-expressive (AE), the average was 4.29 (SD=3.16), with a minimum score of 1 and a maximum score of 12. In turn, the average for the auditory-receptive (AR) was 3.62 (SD=2.97), with a minimum score of 1 and a maximum of 11. Finally, the average for the expected visual (V) was 4.86 (SD=2.73), with a minimum score of 2 and a maximum score of 10.

Questionnaire Answers

The application of the questionnaire with the parents showed that 90.5% of the participants answered that they had already received guidance regarding the baby's global development. As shown in Table 3, the most commonly reported guidelines were related to the child's general development (47.6%), followed by how they could stimulate the child (19.0%).

Table 3. Parents' answers about what guidance they received regarding the child's global development

Guidelines	N	%
The participant did not know how to answer	4	19.0
Care	2	9.5
Development in general	10	47.6
Stimulation	4	19.0
The participant did not remember	1	4.8
Total	21	100

Caption: N = Number of answers; % = percentage for the number of responses given

Although most parents have received guidance on the overall development of the child, when asked question 2 (Q2) (Did you already have any knowledge about language development?), just over half of them (52.4%) informed that he had already received some kind of guidance regarding this aspect. In this question (Q2), the Mann-Whitney U test allowed verifying that there was a relationship between the percentile of the ELM scale and Q2, indicating that the report of having received guidance on language development was

related to the best percentile and standard score of the children in the ELM test, with $p=0.016$. Guidance on language development by parents was related to better language performance in children.

All parents reported playing with their children, and the games varied between using toys, music, whether singing or dancing, or playing hide-and-seek (Figure 2). Most children (90.5%) had toys at home; being dolls and toy cars the most prevalent (23.8%), followed by plush toys (15.1%), rattles and teethers (9.5%).

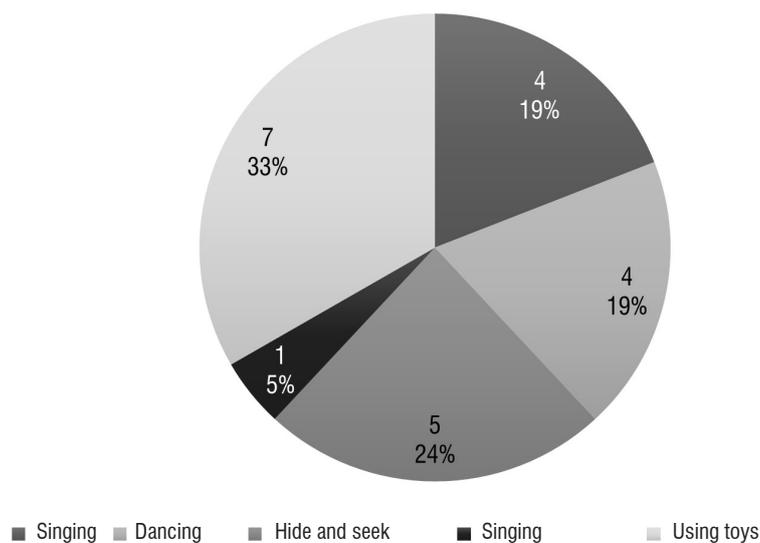


Figure 2. Main games used by parents to stimulate their children

Regarding question 5, which sought to know “Do you have books at home? If so, do you read it to the child?”, 52.4% of parents reported using children’s books to interact with their children. The children of mothers who read to their children were over 6 months of corrected age.

All parents reported talking to their children and almost all (95.2%) reported encouraging their children to communicate. Of these, 80.9% reported that they do so through conversation.

According to reports of the mothers, 76.2% believe that their children are developing well, 14.3%

considered their baby’s development to be excellent, one mother reported that she believed that her child’s development was slow (4.8%) and one mother could not answer.

Regarding the form of communication used by the children, the parents pointed out only one form that the child used. Crying was the method most used by children (28.6%), followed by speech and gestures, such as pointing (19%). Screaming and babbling were used by 14.3% of the babies and only one child used the look as a form of communication (Table 4).

Table 4. Forms of communication reported by parents

Forms of communication	N	%
Crying	6	28.6
Pointing to something	4	19
Speaking	4	19
Screaming	3	14.3
Babbling	3	14.3
Looking at something/someone	1	4.8

Caption: N = Number of answers; % = percentage for the number of responses given

Regarding the impressions that the mothers had about the guidelines given, all of them answered that they learned from the guidelines. Just over half (52.4%)

reported that the information provided by the booklet will help in their daily routine, as to how they can stimulate their children (Table 5).

Table 5. Perception of parents regarding the guidelines provided through the booklet

Help with daily routine	N	%
Stimulation	11	52.4
Child care	5	23.8
Improve the development	3	14.3
The participant did not know how to answer	2	9.5
What caught your attention the most in the guidelines?		
Stimulation	6	28.6
Guidance on what to do	6	28.6
How guidance was provided	4	19
How the guidelines were explained	2	9.5
Everything	3	14.3

Abbreviation: N = Number of answers; % = percentage for the number of responses given

Regarding the question “What caught your attention the most among the guidelines?”, 28.6% of the mothers reported that it was the information on how to stimulate their child and the guidelines on what they should do to stimulate, in addition to other factors, such as the way the instructions were given (19%). In this way, all participants felt contemplated with the educational material prepared and the way in which the information was provided, which, according to them, will help to stimulate their children in their daily routine.

DISCUSSION

Given that prematurity is one of the main biological and social risk factors for the NB, which can influence the acquisition and development of language and recognizing the importance of early stimulation, it is essential that parents be guided regarding the

importance of stimulation. It should be noted that stimulation, in addition to helping to reduce the risks of developmental delays, encourages the relationship between the baby and the family^{15,20}.

Thus, the authors prepared material in the form of a booklet to guide parents of premature children, more specifically, extremely premature children, on how to stimulate their children’s language, which can be applied in the family’s daily life. This is in line with reports in the literature, since when parents are aware of their child’s development process, they become able to identify characteristics regarding what is expected in this process¹³. All information contained in the booklet was considered relevant to better inform parents, thus increasing their knowledge.

The application of the questionnaire showed that most parents reported that they received guidance regarding the overall development of the baby, but

just over half of them received guidance regarding the development of speech and language. This finding can be explained, since the main concern of parents during the hospitalization period is related to the baby's survival and post-discharge demands²¹. A study²² also reported that the information provided to families at the time of discharge is related to food, hygiene, bathing, airway secretion, way to pick up the baby, affective bond, and signs and symptoms of risk. In addition, families are also advised on returning to outpatient clinics, using vitamins, administering medications, vaccination schemes, growth and development, possible complications and sequelae²². Thus, most information provided to parents is related to care in general, while language is rarely addressed. In addition, most of these guidelines are provided by nurses, who are the professionals who spend more time with the NB and the family during hospitalization in the Neonatal Intensive Care Unit (NICU). This finding proves the importance of speech-language pathologists in the NICU, so that they can guide families on aspects related to speech-language pathology, such as food, hearing and especially in relation to language and speech development²³.

Regarding contact with their children, all mothers answered that they play with their babies and that they have toys. Playing is considered by many authors as a child's own language, and, through this act, children develop their entire motor, sensory, cognitive, social and emotional repertoire. In addition, games consolidate children's knowledge, through repetitions and their realizations, and are also a form of stimulation. In this sense, when mothers play with their children, they perform sensorimotor stimulation, stimulate vision and motor steps such as rolling over, sitting and grasping²⁴.

With regard to shared reading, only part of the participants reported encouraging their children through reading; those who said they didn't do that explained that they believed their children were too young and wouldn't understand. This finding shows the importance of guiding parents regarding reading, as this is a potentially rich opportunity for development. In addition to the stories having contextual clues that help to decipher the meaning of unknown words, they also fulfill the sociocultural function, as they help children to order lived experiences, as well as stimulate creativity through the invention of imaginary stories¹⁷. Help from parents to introduce the first reading actions with babies is fundamental for the formation of future readers¹³.

All parents reported encouraging the stimulation of their children's language, with conversation being

the most used form. According to the literature, this form used by mothers helps not only the development of good social skills and prevention of behavioral problems, but also helps in a good linguistic development¹⁷.

Most parents reported that their children are developing well. The parents' opinion regarding the development of their babies is fundamental, as it expresses that they are attentive to their child's health, showing themselves to be active and aware of their child's evolution. Crying was the form of communication most used by children, followed by speech and gesture. These different forms of communication can be explained by the fact that the study included premature children aged 0 - 24 months, and each baby expresses a form of communication according to the age group they are in²⁵⁻²⁷. These various forms of communication can be considered as language milestones, which are acts and actions that precede the acquisition of speech, and can be observed during the first 12 months of the child's life²⁵.

Parents had positive impressions about the guidelines provided, since all responded that they had learned from the guidelines, and just over half reported that the information will help in their daily routine, as to how they can stimulate their children, and the information on how to stimulate the child were precisely what most caught their attention. This finding also reaffirms the importance of guidance.

Although it was not possible to perform a statistical analysis to compare the findings of the questionnaire with the Scale, due to the number of subjects, and despite the children in this study being extremely premature and with very low weight, in general, they performed as expected for their age in all aspects assessed on the ELM scale. This fact contradicts reports in the literature, which claim that prematurity associated with low weight causes babies to have results below expectations for their age in relation to language^{1,6,28,29}. A study that sought to investigate the performance of 20 premature and low birth weight children in terms of receptive auditory, expressive auditory and visual areas, assessed by the ELM scale, found that all of them had alterations in these areas³⁰.

The study also allowed observing that the statistical tests allow us to analyze the association between the ELM scale and question 2. Although the mothers had little knowledge about language, they had knowledge about the child's development in general, which seems to have influenced the children's performance in the

test, in which the children who were better had parents who were well oriented regarding development.

The children participating in this study were monitored fortnightly at the High Risk Outpatient Clinic, where they were comprehensively examined not only by doctors, but by a whole multidisciplinary team, including a speech-language pathologist. The entire team advised mothers on the development of their child, as well as clarifying doubts. In this context, studies show that the performance of the multidisciplinary team is fundamental for the PTNB^{1,4,24}, and the early multidisciplinary intervention produces significant benefits in relation to the baby's development. The team must be attentive to child development, observing the child as a whole and not in a fragmented way or in isolated areas, in addition to providing psychosocial and educational support for parents^{1,4}.

The study also found a high adherence of parents in monitoring their children, who are regulars in care services. This fact provides greater participation in the care of their babies, as well as greater knowledge, since they are constantly guided and become able to identify possible deviations in the expected development, as well as to recognize and consider the individuality and potential of their child, and stimulate them^{13,31}.

The good performance of the children in this study can also be explained by the average age of the mothers, 26 years old, and the fact that most of them have completed high school. Studies show that maternal age and education level can affect mothers' knowledge about their children's development, as well as the amount of stimuli offered by them^{4,13}. A study also showed that mothers with a higher level of education tend to provide greater and more varied stimuli when interacting with their children, and the children had better development¹³. In this way, both factors may have influenced the findings of this study, since all children who had results within the expected range on the ELM scale had mothers with complete high school.

Thus, this work shows the importance of guidance to parents, especially of premature children, in relation to global stimulation of the NB, in particular language stimulation. A limitation of this study was the number of participants, since the number of extremely preterm infants was limited. In this context, providing the guidelines contained herein for not only parents, but also caregivers and health professionals who work with preterm newborns (PTNBs) is a challenge and an objective that will be pursued. This will allow for more integrated care for the baby, and the development of

longitudinal studies that may contribute to verifying the information contained herein in the long term.

CONCLUSION

The findings show that, despite being extremely premature and of very low birth weight, most of the children in this study performed as expected for their age in terms of language. Furthermore, although most parents had knowledge about the child's general development, just over half of them had some knowledge about language development. The booklet addressed the main points of language development in an accessible way and had an immediate satisfactory impact on the information provided.

REFERENCES

1. Carniel CZ, Furtado MCC, Vivente JB, Abreu RZ, Tarozzo RM, Cardia SETR et al. Influence of risk factors on language development and contributions of early stimulation: an integrative literature review. *Rev. CEFAC*. 2017;19(1):109-18. <https://doi.org/10.1590/1982-0216201719115616>.
2. Almeida J, Rocha J. Caracterização do perfil pragmático de crianças em idade pré-escolar e escolar. *Cadernos de Comunicação e Linguagem*. 2009;1(2):69-86.
3. Rechia IC, Oliveira LD, Crestani AH, Biaggio EPV, Souza APR. Effects of prematurity on language acquisition and auditory maturation: a systematic review. *CoDAS*. 2016;28(6):843-54. <https://doi.org/10.1590/2317-1782/20162015218>. PMID: 28001276.
4. Soares ACC, Silva K, Zuanett PA. Risk factors for language development associated with prematurity. *Audiol., Commun. Res*. 2017;22:e1745. <https://doi.org/10.1590/2317-6431-2016-1745>.
5. Ribeiro CC, Lamônica DAC. Communicative abilities in premature and extreme premature infants. *Rev. CEFAC*. 2014;16(3):830-9. <https://doi.org/10.1590/1982-021620143813>.
6. Lamônica DAC, Picolini MM. Habilidades do desenvolvimento de prematuros. *Rev. CEFAC*. 2009;11(Supl2):145-53. <https://doi.org/10.1590/S1516-18462009005000019>.
7. Rugolo LMSS. Crescimento e desenvolvimento a longo prazo do prematuro extremo. *J. Pediatria*. 2005;81(1):101-10. <https://doi.org/10.1590/S0021-75572005000200013>.
8. Zerbeto AB, Cortelo FM, Filho ÉBC. Association between gestational age and birth weight on the language development of Brazilian children: a systematic review. *J. Pediatr*. 2015;91(4):326-32. <https://doi.org/10.1016/j.jpmed.2014.11.003>. PMID: 25913048.
9. Perissinoto J. Atuação fonoaudiológica com o bebê prematuro: acompanhamento do desenvolvimento. In: Andrade CRF, editor. *Fonoaudiologia em berçário normal e de risco*. São Paulo, Lovise; 1996. p.129-48.
10. Rodrigues OMPR, Bolsoni-Silva AT. Efeitos da prematuridade sobre o desenvolvimento de lactentes. *Rev. bras. crescimento desenvolv. hum*. 2011;21(1):111-21.
11. Fraga DA, Linhares MBM, Carvalho AEV, Martinez FE. Desenvolvimento de bebês prematuros relacionado a variáveis maternas. *Psicologia em Estudo*. 2008;13(2):335-44. <https://doi.org/10.1590/S1413-73722008000200016>.

12. Foster-Cohen S, Edgin JO, Champion PR, Woodward LJ. Early delayed language development in very preterm infants: evidence from the MacArthur-Bates CDI. *J Child Lang.* 2007;34(3):655-75. <https://doi.org/10.1017/s0305000907008070>.
13. Nascimento FM, Rodrigues MB, Pinheiro AMV. Programa de orientação: como estimular a linguagem das crianças nascidas pré-termo. *Psicologia: Teoria e Prática.* 2013;15(2):155-65.
14. Escarce AG, Camargos TV, Souza VC, Mourão MP, Lemos SMA. Escolaridade materna e desenvolvimento da linguagem em crianças de 2 meses à 2 anos. *Rev. CEFAC.* 2012;14(6):1139-45. <https://doi.org/10.1590/S1516-18462011005000144>.
15. Navajas AF, Caniato F. Estimulação precoce/essencial: a interação família e bebê pre-termo (premature). *Cad. De Pós-Graduação em Distúrbios do Desenv.* 2003;3(1):59-62.
16. Borges LC, Salomão NMR. Aquisição da linguagem: considerações da perspectiva da interação social. *Psicologia: Reflexão e Crítica.* 2003;16(2):327-36. <https://doi.org/10.1590/S0102-79722003000200013>.
17. Brocchi BS, Leme MIS. Relation between mother-child interaction upon the development of oral language of the preterm newborn. *Audiol., Commun. Res.* 2013;18(4):321-31. <https://doi.org/10.1590/S2317-64312013000400014>.
18. Nascimento CCS, Brocchi BS. Estimulação da linguagem de crianças prematuras: manual para pais: cartilha destinada à estimulação de crianças prematuras. Ribeirão Preto, Book Toy; 2020.
19. Lima MCMP. Avaliação de fala em lactentes no período pré-linguístico: uma proposta para triagem de problemas auditivos [Thesis]. Campinas (SP): Faculdade de Ciências Médicas, Universidade Estadual de Campinas; 1997.
20. Hernandez AM. Atuação Fonoaudiológica com o sistema estomatognático e a função de alimentação. In: Hernandez AM, editor. *O Neonato.* São José dos Campos: Pulso; 2003. p.47-78.
21. Cunha ACB, Smith JAB, Akerman LPF, Souza VO. Discutindo sobre estresse e enfrentamento da prematuridade por cuidadores. *Temas em Educ. e Saúde, Araraquara.* 2017;13(1):41-58. <https://doi.org/10.26673/rtes.v13.n1.jan-jun2017.4.9605>.
22. Chiodi LC, Aredes NDA, Scochi CGS, Fonseca LMM. Educação em saúde e a família do bebê prematuro: uma revisão integrativa. *Acta Paul Enferm.* 2012;25(6):969-74. <https://doi.org/10.1590/S0103-21002012000600022>.
23. Pinheiro JVL, Oliveira NM, Júnior HVM. Procedimentos fonoaudiológicos em recém-nascidos de alto risco. *RBPS.* 2010;23(2):175-80. <https://doi.org/10.5020/2012>.
24. Mendes MN. Desenvolvimento de bebês prematuros: análise de experiências maternas [Dissertation]. São Luis (MA): Universidade Federal do Maranhão; 2006.
25. Northem JL, Downs MP. *Audição na infância.* Rio de Janeiro: Guanabara Koogan; 2005.
26. Mousinho R, Schmid E, Pereira J, Lyra L, Mendes L, Nóbrega V. Aquisição e desenvolvimento da linguagem: dificuldades que podem surgir neste percurso. *Rev. Psicopedagogia.* 2008;25(78):297-306.
27. Hage SRV, Pinheiro LAC. Desenvolvimento típico de linguagem e a importância para a identificação de suas alterações na infância. In: Lamônica DAC, Britto DBO, editors. *Tratado de linguagem: perspectiva contemporâneas.* 1ª ed. Ribeirão Preto/SP, Booktoy; 2017. p.31-6.
28. Oliveira LN, Lima MCMP, Gonçalves VMG. Acompanhamento de lactentes com baixo peso ao nascimento: aquisição de linguagem. *Arq Neuropsiquiatr.* 2003;61(3-B):802-7. <https://doi.org/10.1590/S0004-282X2003000500019>.
29. Lamônica DAC, Carlino FC, Alvarenga KF. Avaliação da função auditiva receptiva, expressiva e visual em crianças prematuras. *Pró-Fono R. Atual. Cientif.* 2010;22(1):19-24. <https://doi.org/10.1590/S0104-56872010000100005>.
30. Araújo ES, Lima FS, Alvarenga KF. Monitoring of children with risk indicators for hearing loss. *Rev. CEFAC.* 2013;15(2):305-13. <https://doi.org/10.1590/S1516-18462012005000077>.
31. Martinez CMS, Joaquim RHVT, Oliveira EB, Santos IC. Suporte informacional como elemento para orientação de pais de pré-termo: um guia para o serviço de acompanhamento do desenvolvimento no primeiro ano de vida. *Rev. bras. fisioter.* 2007;11(1):73-81. <https://doi.org/10.1590/S1413-35552007000100012>.

Author contributions:

CCSN: data collection and analysis, article writing and conception;

BSB: study conception, data analysis, and guidance on data collection and article writing.

APPENDIX

Questionnaire

Name:

Age:

Educational level:

Declarant:

Have you already received guidance regarding the development of the child?

No Yes: Please describe. _____

Did you already have any knowledge regarding language development?

No Yes Do you play with your child?

No Yes: Please describe. _____

Does the child have toys?

No Yes: Please describe. _____

Do you have books at home? If so, do you read it to the child?

I have and I read I have and I read it sometimes I have but I don't read I don't have

Do you encourage your child to communicate?

No Yes: Please describe. _____

Do you talk to your child?

No Yes

How do you think your child is developing?

What is the main form of communication used by the child?

Do you think you learned something from the guidance?

How do you think the guidelines can help you in your daily routine with the child?

Please mention what caught your attention the most during the guidelines.

Do you have any questions that were not addressed during the orientations?
