

PHYSIOTHERAPEUTIC EPIDEMIOLOGICAL PROFILE IN NEUROLOGICAL DISEASES IN CHILDHOOD

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Abstract: Introduction: Children with atypical motor development, or who present risk of delays, deserve specific attention and actions since the problems of coordination and movement control may last until adulthood. Epidemiological studies of neurological pathologies are important sources of data to help health professionals who work directly with this population, because they can positively interfere in the evolution and therapeutic success and improve the quality of care for the population studied by assessing the profile of involvement presented by patients, thus ensuring the provision of quality rehabilitation care. Based on this context, physical therapy is indicated because it has an important role in both the acute care of the patient to facilitate a faster and more efficient transition to the rehabilitation process in order to promote health throughout life. **Objectives:** To demonstrate the physiotherapeutic epidemiological profile of neurological diseases in infancy and, based on the results found, to construct and develop a booklet of guidelines and early stimulation for premature babies. **Casuality and Method:** it refers to a documental research as to the type and quantitative as to the approach, where it is a retrospective study, with analysis of 234 medical records of pediatric patients who received physiotherapy care in the pediatric neurology outpatient clinic during the years 2018 and 2019, and of these 12 records were excluded, 7 for presenting incomplete data, remaining 222 records from which demographic data and epidemiological data were collected. The collected data were stored in the EXCEL program and later analyzed through tables and compared. **Results:** it was noted that as for the clinical diagnosis most of the children 102 (45.95%) were prematurity, preterm newborn (PN) at risk for neuropsychomotor developmental delay (NPMD) followed by 46 (20.72%) of patients

with Cerebral Palsy. As for gender, the number of male patients (53.60%) showed a higher incidence than females (46.40%). Conclusion: the prevalence of the diagnosis of the children attended were premature children at risk for delayed motor development, the knowledge of these data of the epidemiological profile provided subsidies for the development of proposals aimed at improving assistance as the construction of the booklet of guidelines for the family of these children, didactic and educational material that can help many mothers and caregivers in this process of recovery and rehabilitation.

Keywords: Health Profile; Physiotherapy; Epidemiology; Infancy; Neurology.

INTRODUCTION

Motor development is considered as a sequential, continuous process related to chronological age, by which the human being acquires an enormous amount of motor skills, which progress from simple and disorganized movements to the execution of highly organized and complex motor skills.^{1,2}

It is known that the emergence of movements and their subsequent control occur in a cephalocaudal and proximate-distal direction, but this process is not linear, including periods of equilibrium and disequilibrium. Despite this, it usually follows an orderly and even predictable sequence according to age.

Infant motor development can be defined as a process of complex and interconnected changes that begins at conception and includes physical development, involving all aspects of growth and maturation of organisms' apparatuses and systems. Includes neurological maturation, motor, sensory and cognitive development^{2,5}.

According to data from the World Health Organization (WHO), 10% of the population of any country has some type of disability,

where 4.5% corresponds to the rate among those up to 5 years old who are born or acquire physical impairments, mental or sensory⁴.

Motor development is the process that is related to experiences and changes in behavior in early childhood, and these changes are mainly influenced by neuronal plasticity and maturation. This process interferes with learning and facilitating different motor acquisitions, and each child may present different changes during development.⁶

Just as the child's development can be negatively affected by several factors that occur in the pre, peri and postnatal period, increasing the probability that the child will present alterations in the acquisition of motor, psychosocial and cognitive skills. Neuropsychomotor Development (NPMD) may also be associated with several childhood conditions, resulting from factors harmful effects, such as neurological and genetic disorders, or a transient condition^{3,4}.

Neuropsychomotor delay triggers a series of repercussions on the individual, due to several impairments in the clinical picture, such as spasticity, postural changes and uncoordinated movements.⁷⁻¹⁰

The severity of these diseases has an influence on functionality, symptoms and quality of life, because in the face of this reality, several professionals, including physiotherapists, consider it important to highlight the benefits of early treatment for the development of these children, providing better stability, in addition to to enhance the child's interaction with the environment through visual, auditory and tactile stimuli, consequently leading to better responses close to normality. It is understood, therefore, that the faster the intervention of a multidisciplinary team, the lower the impact of child morbidity and mortality, considering environmental factors may overlap with genetic determinants^{4, 11, 12}.

Neurological physiotherapeutic services

aimed at caring for these patients are fundamental. Considering that rehabilitation and intervention, the earlier the better and faster the diagnosis and the greater the chance of functional gains and the lower the probability of complications secondary to the impairments¹²⁻¹⁴.

However, most authors are unanimous in the idea that for a physiotherapy service to be able to offer adequate treatment to patients, they must be characterized, tracing a clinical profile of the population served, so that, thus, their needs, limitations are better understood. and complaints, so that a program of prevention, rehabilitation and guidelines consistent with these issues can be structured^{4,5,12,15,16}.

Therefore, the aim of this study was to demonstrate the physiotherapeutic epidemiological profile of neurological diseases in childhood and based on the results found, the construction and development of a booklet with guidelines and early stimulation for premature babies.

METHOD

The present work refers to a documental research in terms of type and quantitative in terms of approach, which is a retrospective study, with analysis of 234 medical records of pediatric patients who received physiotherapy care at the pediatric neurology outpatient clinic during the years of 2018 and 2019. The following inclusion criteria were considered: Pediatric patients diagnosed with neurological diseases treated at the Physiotherapy sector of the Neurology Outpatient Clinic of a Teaching Hospital in a medium-sized city in the interior of the State of São Paulo. Exclusion criteria: the medical records because they contain incomplete data or missing data or because they do not fit the subject under study, such as non-neurological diseases.

From the inclusion and exclusion criteria, 12 records were excluded, 7 for presenting incomplete data and 5 due to the diagnosis not being neurological diseases. The diseases excluded in the present study were: 2-arthrogryposis, 1- congenital knee dislocation, 1- congenital hip dislocation and 1- congenital clubfoot. There were 222 medical records from which demographic and epidemiological data were collected. The collected data were stored in the EXCEL program and later analyzed through tables and compared.

MATERIALS

For data collection, the following instruments were used:

Demographic and Epidemiological Identification Questionnaire: developed by the researchers, with the purpose of identifying sociodemographic data, gender, age, religion, city of origin, maternal age, number of children, race, clinical diagnosis, gestational age, prenatal care, type of delivery, causes that determined the delivery, weight at birth, Apgar score, length of stay in the intensive care unit (ICU), total number of physiotherapy sessions, duration of physiotherapy treatment. (**AP index 1**).

PROCEDURE

For the execution of this research, the ethical principles adopted in accordance with Resolution n.º466/12 of the National Health Council (CNS) of the Ministry of Health (MS), in which the research must be carried out in order to predict and avoid possible harm to the participants. The project was submitted to the Ethics and Research Committee, in the Faculty of Medicine of São José do Rio Preto - FAMERP and approved, under opinion number: 4,297,676.

The study was carried out in Physiotherapy sector of the Neurology Outpatient Clinic of a teaching hospital, in which the survey of

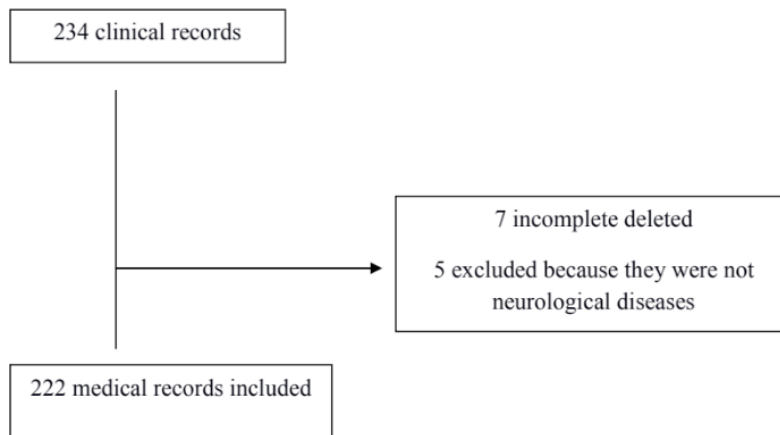


FIGURE 1- Diagram of sample selection of study participants.

Variables		Frequency	percentage%
Gender	Masculine	119	53.60
	Feminine	103	46.40
Age (months)	Average	7.77	...
	median	3.87	...
	Standard deviation	15.51	...
	< Minor	0.59*	...
	> Greater	116.63	...
Religion	Not declared	58	26.13
	catholic	95	42.79
	spiritist	4	1.80
	Evangelical	65	29.28
City of Origin	SJ Rio Preto	84	37.84
	Cities in the region	138	62.16
Maternal Age (Years)	Average	28.17	...
	median	28.00	...
	Standard deviation	6.46	...
	< Minor	14.00	...
	> Greater	42.00	...
Number of children	Average	2.42	...
	median	2.00	...
	Standard deviation	1.27	...
	< Minor	1.00	...
	> Greater	7.00	...

Race	White	210	94.59
	brown	9	4.05
	black	3	1.35

0.59* = 18 days

TABLE 1 - Sociodemographic characteristics of participants (N=222) 2018 and 2019.

Variables		Frequency	percentage
clinical diagnosis	RNPT/ADNPM	102	45.95
	Cerebral Palsy	46	20.72
	Neurological Diseases	43	19.37
	genetic syndromes	31	13.96
Gestational Age	Average	34.84	...
	median	35.00	...
	Standard deviation	4.37	...
	< Minor	26.00	...
	> Greater	43.00
Pre Christmas realization	Yes	190	85.59
	No	10	4.50
	Incomplete Pre Christmas	22	9.91
Type of Delivery	cesarean section	189	85.14
	Normal	33	14.86
Causes that determined the birth	Maternal Causes	123	55.41
	baby causes	75	38.78
	without cause	24	10.81
Weight at Birth (Grams)	Average	2123.12	...
	median	2033.00	...
	Standard deviation	879.24	...
	< Minor	440.00	...
	> Greater	4500.00	...
Apgar 1 minute	Average	7.32	...
	median	8.00	...
	Standard deviation	1.74	...
	< Minor	0.00	...
	> Greater	10.00	...
Apgar 5th minute	Average	8.77	...

	median	9.00	...
	Standard deviation	1.24	...
	< Minor	3.00	...
	> Greater	10.00	...
Length of stay in the ICU (Days)	Average	22.59	...
	median	13.00	...
	Standard deviation	29.14	...
	< Minor	0.00	...
	> Greater	202.00	...
Time of Invasive Mechanical Ventilation and Non-Invasive (Days)	No IOT	122	54.95
	IOT	100	45.05
Total Session Physiotherapy (Days)	Average	78.16	...
	median	60.00	...
	Standard deviation	66.23	...
	< Minor	2.00	...
	> Greater	402.00	...
Total Treatment Time (months)	Average	17.19	...
	median	13.00	...
	Standard deviation	14.37	...
	< Minor	1.00	...
	> Greater	72.00	...

PTNB: preterm newborn, ADNPM: delayed neuropsychomotor development, ICU: intensive care unit, MV: mechanical ventilation, OTI: orotracheal intubation.

TABLE 2 - Descriptive and inferential analysis of participants (N=222) 2018 and 2019.

Crossings	Obtained p value
Weight at birth X Gestational age	0.000*
Age X Gender	0.598
Maternal age X Gestational age	0.257
Prenatal performance X Causes that determined the delivery	0.813
Total treatment X Main diagnosis	0.000*
Length of stay in the ICU X Main diagnosis	0.012*

ICU: intensive care unit

*level of significance

TABLE 3 - Cross Descriptive and Inferential 2018

demographic data and epidemiological data of children attended at the physiotherapy outpatient clinic in the child neurology sector took place during 2018 and 2019. The collection was carried out through electronic medical records (PEP), the medical record software SisHOSP's electronic system is a fundamental part of the Hospital, further improving the functionality and practicality of the medical records

STATISTICAL ANALYSIS:

After tabulating the data collected in this work, two statistical analysis functions were carried out: descriptive and inferential. Then, in a descriptive way, the profile of the studied sample was traced, contemplating the analyzed variables and their consequences. The data were replicated in absolute and relative form in this step.

In the inferential scope, the analysis of independence and prediction between the variables proposed in the scope of the work was traced as a statistical objective. For this, the Mann-Whitney U test and Spearman Correlation were used, within the expected standards. It is worth mentioning that the results of independence between the proposed variables were given through analysis between the values of P (0.05).

Finally, all analyzes were obtained using the SPSS Statistics Software (Version 23) linked to the functionality of the Excel tool (version 2016).

The methods chosen to approach the analyzes of variation of the results between the groups analyzed, aiming, in short, to verify the relationship between them, where one of the variables is parameterized as being DEPENDENT and the other as INDEPENDENT, aiming at the prediction analysis between both. All the analyzes performed, the result was obtained through the value (p), where being <0.05 , it

characterizes significance between the studied groups. All tests include an alpha error of 5% and a reliability of 95%.

RESULTS

222 medical records of patients were part of the study, 53.60% of which were male, the average age was 7.77 months with the smallest age 0.59 (18 days) and maximum 9.7 years. The predominant religion was Catholic with 42.79% followed by Evangelical 29.28% of the sample. Regarding the city of origin, the cities in the region of São José do Rio Preto predominated, being 62.16%. As for the maternal characteristic, the median age was 28 years old, having 2 children on average. Most children were declared white, corresponding to 94.59%, as described in table 1.

As noted in the table From 1 to 2 there was a prevalence of clinical diagnosis by preterm Newborns / Delay in neuropsychomotor development (PTRN/ADNPM), followed by cerebral palsy corresponding to 45.95% and 20.72% respectively. The neurological diseases found in the treatments corresponded to 19.37 and the main ones were microcephaly, hydrocephalus, myelomeningocele, toxoplasmosis, meningitis and tumors of the brain and spine. As for the Syndromes that were treated, they correspond to 13.96%, mainly children with Down Syndrome. The average gestational age was 35 months, with prenatal care being performed by 85.59% of the sample and cesarean section predominated, being 85.14%. Among the possible causes that determined natural or cesarean delivery, the causes resulting from maternal problems stood out, representing 55.41% and 10.81% without apparent causes.

With regard to the length of stay in the ICU, the average was 22.59 days, of which 54.95% did not require orotracheal intubation (OTI). As for the total number of physiotherapy sessions, the maximum performed was 402

and the smallest required only 2 sessions, since the total duration of treatment obtained an average of 17.19 months.

The results of the study brought a detailed survey of the patients seen at the neuropsychiatry outpatient clinic, and it is very important to highlight that the prevalence of the diagnosis of the children seen was prematurity with risks for delay in motor development 102 (45.95%), in second place as shown in the chart, we have children with Cerebral Palsy totaling 46 (20.72%), followed by other neurological diseases comprising 43 (19.37), of these, among the main ones we can highlight microcephaly, hydrocephalus, myelomeningocele, toxoplasmosis, meningitis and tumors of the brain and spine. And as a minority among the consultations, but no less important, we have Genetic Syndromes that make up 31 (13.96) of our survey.

When carrying out the descriptive and inferential crossings, the Kolmogorov - Smirnov normality test and the Spearman correlation statistical test were used with a significant p reference value. An analysis of the year 2018 was first carried out, which was presented in a qualification exam (Table 3). The choice to keep this analysis in the work is linked to the analysis of significance in variables such as birth weight and gestational age of the mother, time of treatment and diagnosis, length of stay in the ICU and diagnosis. When entering the 2019 data, these differences did not show significance, remaining only the mother's birth weight and gestational age.

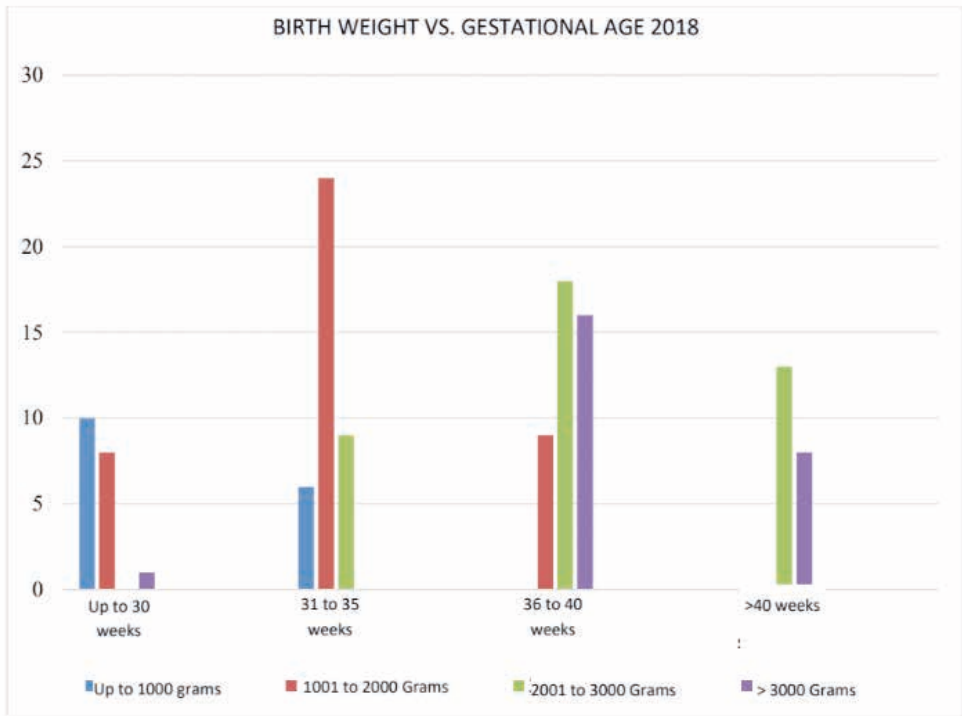
When birth weight was crossed with gestational age, we found that the gestational age phase that most predominated was 31 to 35 weeks with a weight of 1000 to 2000g, as shown in graph 1. From the statistical analysis, it was verified There is a relationship between birth weight and gestational age, which means that the lower the gestational age, the lower

the birth weight.

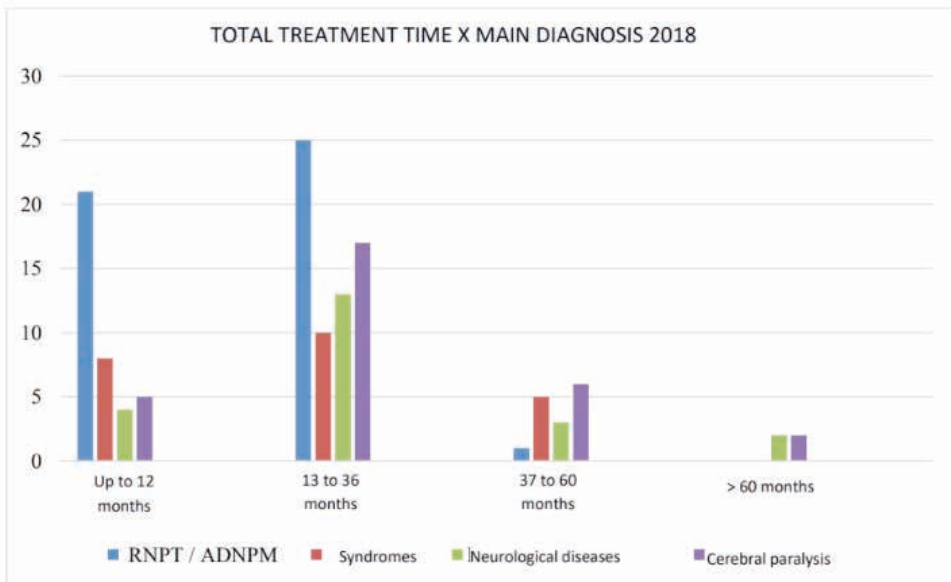
When crossing the total treatment time with the main Diagnosis, statistical significance was observed, that is, (p) being <0.05 , there was a predominance of treatment time of 21.83 months, and the shortest treatment time obtained was 01 month and the longest lasted 72 months. As shown in Graph 3, the greatest correlation was the predominance of treatment time with the main Diagnosis, which predominated PTNB (Preterm Newborn) with ADNPM (Delay in Neuropsychomotor Development) being 48 patients, with a total of 39, 34%. Most children with this main clinical diagnosis required up to 38 months to undergo complete physiotherapeutic rehabilitation. While other diagnoses such as the cerebral palsy and other neurological diseases such as microcephaly, myelomeningocele, hydrocephalus, toxoplasmosis, meningitis, and tumors of the brain and spine they even took more than 60 months to carry out the rehabilitation, which could reach 72 months, as shown in graph 2.

With the analysis of the length of stay in the ICU X main clinical diagnosis, an average of 27.60 days was found, although the shortest ICU time was one day and the longest was 202 days. In this case, the predominance was also of the main clinical diagnosis of PTNB with ADNPM, highlighting the great importance up to 30 days of hospitalization and even the highest admissions were of PTNB, however, the children who stayed longer in the ICU, as shown in graph 3, were those with cerebral palsy and other neurological diagnoses, when associated with these two aggravating factors.

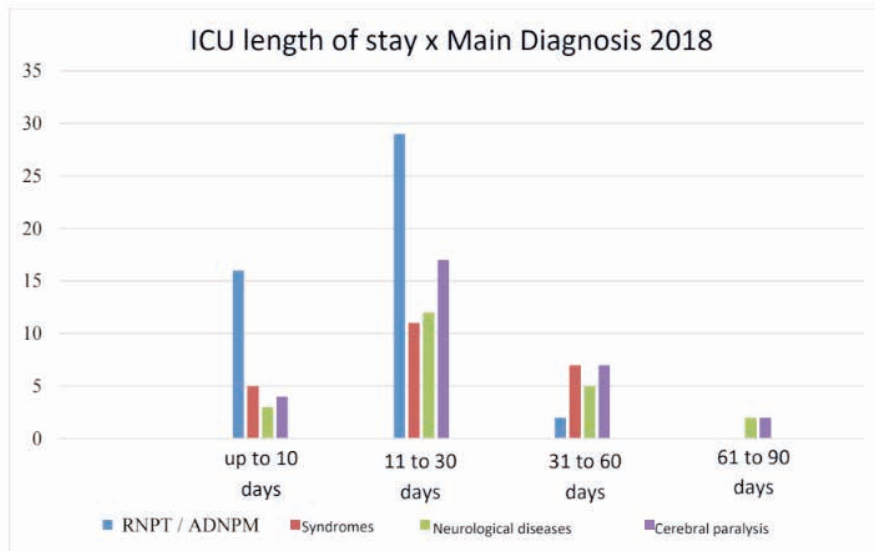
With the development of the work, data from the year 2019 were inserted in the analyzes, and in disagreement with 2018, only the relationship between birth weight and gestational age shown in table 04 and graph 04 was statistically significant in the comparisons.



Graph 01 - Weight at birth X Gestational age 2018.



Graph 02 - Total treatment time X Main diagnosis



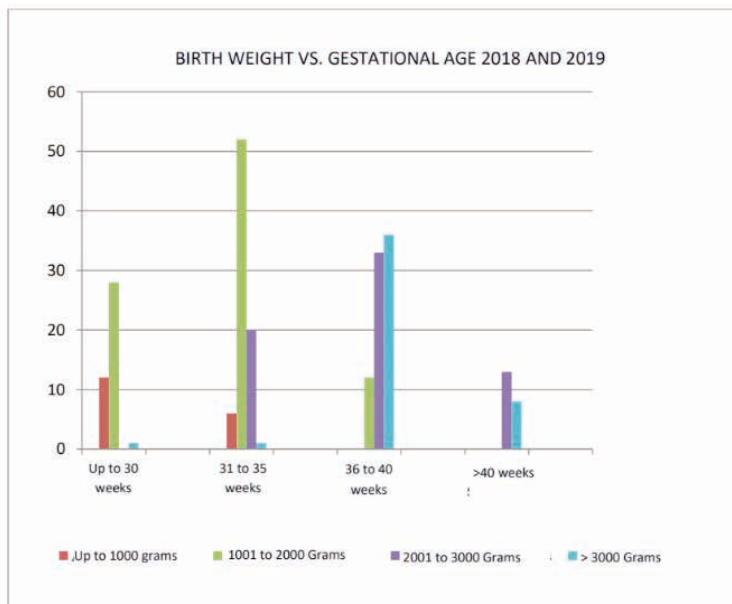
Graph 03:Length of stay in the ICU X Main clinical diagnosis 2018.

Crossings	Obtained p value
Weight at birth X Gestational age	0.000*
Age X Gender	0.857
Maternal age X Gestational age	0.303
Prenatal performance X Causes that determined the delivery	0.397
Total treatment X Main diagnosis	0.121
Length of stay in the ICU X Main diagnosis	0.662

ICU: intensive care unit

* significance level

TABLE 4 - Crossing descriptive and inferential 2018 and 2019



Graph 04: Weight at birth X Gestational age 2018 and 2019.

Based on knowledge of the epidemiological profile of this study, especially regarding the main diagnosis of the children attended, what stood out the most and was of great relevance for the study was prematurity associated with the risk of delay in neuropsychomotor development, which provided subsidies for the construction of a material educational program aimed at the neuropsychomotor development of the child.

DISCUSSION

The sample studied was constituted in a documentary research in terms of type and quantitative in approach, which is a retrospective study, with analysis of 222 medical records of pediatric patients who received physiotherapy care at the pediatric neurology outpatient clinic during the years 2018 and 2019.

The results demonstrate through the demographic data considering the distribution of the sample in this study by gender, it was contacted that 119 children were male, corresponding to (53.60%) and presented the highest demand for assistance and the female gender 103, corresponding to a (46.40%). This percentage is in accordance with the study carried out by Mélo et al.¹⁷ (2012), in which it was possible to observe on the profile of children in neuropediatric physiotherapy services that, as in this work, the percentage of male patients was predominant, 147 children, with 55.5% and the female of 118, with 44.5%.

Also according to the study by Silva et al.¹⁸ (2020) that carried out an analysis of the clinical profile of children with cerebral palsy treated at a school clinic, the results showed a predominance of cases in male children, also similar to the study by Toledo et al.¹⁹ (2015) once again in agreement with the results obtained in the present study.

According to Guimarães et al.²⁰ (2014) characterized the clinical profile of children

treated at a physiotherapy school clinic. They carried out a survey of 70 medical records, where they observed a predominance of males and a higher topographic incidence of spastic quadriplegia, and 30% of these patients did not perform any functional activity independently. They concluded that tracing the clinical and epidemiological profile provide data for evaluation strategies and more optimized physiotherapeutic intervention.

As for the age of the children assisted, the average was 7.77 months, the youngest child attended was 18 days and the oldest 116.63 months, corresponding to 9 years and 7 months. According to this characterization of age in the study of Gonçalves et al.²¹ (2020) who analyzed the socioeconomic, demographic and clinical profile of children treated at a reference service in neurodevelopment, the median age was 5.9 years, with a minimum age of 2 months and a maximum of 12 years, in our study this average of 7.77 months is related to early referral, that is, as soon as these children are discharged from the neonatal ICU, they are referred to the neurology physiotherapy outpatient clinic, after which they undergo an evaluation to verify the need for carry out rehabilitation.

Regarding maternal age, in the study of Mélo et al.¹⁷ (2012), the average age was 33.8, ranging from 17 to 65 years, although this study includes the profile of caregivers of these children undergoing rehabilitation, which could be the mother or grandmother according to the study. In this study, only maternal age was established, which presented an average of 28.17, a median of 28.00 and a standard deviation of 6.46, with the lowest age being 14 and the highest being 42 years.

The evaluated children were 210 white (94.59%), followed by brown 9 (4.05%) and only 3 (1.35%) were black, these data were similar and equivalent to the study by Santos et al.²² (2019), in which patients were also

predominantly white 21 (70.0%), brown 8 (26.7%) and black 1 (3.3%). While in the study by Gonçalves et al.²¹ (2020), referring to skin color, there was a predominance of brown skin color, however, 65% of the medical records did not contain the identification of the patient's color, this data can be an aggravating factor, taking into account considering that these data are extremely important in the field of public health.

Regarding clinical data, the results showed that there was a prevalence of children with PTNB/ADNPM. According to Mélo et al.¹⁷ (2012), there was a prevalence of children aged three years or less with a primary diagnosis of cerebral palsy (29.6%), followed by microcephaly (19.1%). In contrast, in studies of Gonçalves et al.²¹ (2020), demonstrated that the main diagnoses were Autism Spectrum Disorder (ASD) followed by Intellectual Disability, it is believed that the predominance of males in this population studied may be related to the prevalence of ASD diagnosis, being the majority in this population. These findings are not consistent with our study, which also aimed to characterize the diagnostic profile of children, with the predominant diagnosis being PTNB children with risks for ADNPM 102 (45.95%), followed by cerebral palsy 46 (20.72%).

Ramos et al.²³ (2012) carried out a study in which they reviewed 60 medical records of children and adolescents treated at a teaching clinic to outline the clinical profile of these patients. They concluded the relevance among neurological diseases mainly in the age group between 0 and 2 years among the patients treated at the teaching clinic.

The variable gestational age, in relation to the length of gestation, presented an average of 34.84, and all newborns with gestational age less than 37 completed weeks of gestation belong to the classification of prematurity, being the lowest age at birth in this study it

was a 26 week baby and the older one at 43 weeks. According to Ramos et al.²⁴ (2009) it is estimated that, in the world, annually, 13 million children are born prematurely, yet in this study the predominance of gestational age was 74% of newborns from 32 to 36 weeks, corroborating with the data from our study.

Several authors suggest that both adolescents and women over 35 years old need special attention, as they are more susceptible to perinatal problems and even harmful consequences for maternal and fetal health, increasing even more risks of prematurity and low birth weight newborn related the increase in infant and maternal morbidity and mortality rates Gravena et al.²⁵ (2014), Gesser et al.²⁶ (2019).

The study shows that most families performed prenatal care and the most prevalent delivery was cesarean section. This demonstrates that they are concerned about general health and possible interurrences during the gestational period, but our health system recommends cesarean delivery, as was also observed in the study by Gravena et al.²⁵ (2014) that the cesarean delivery rate was predominant and increased according to maternal age, with another important fact being that younger pregnant women had incomplete prenatal care, the main reason reported being forgetting to attend appointments.

There was variation related to the causes that determined the birth with the reasons that may explain the higher incidence of cesarean section, such as diseases, arterial hypertension, diabetes, kidney disease, sexually transmitted diseases and also the obstetric indications that are the factors responsible for some labor disorders Gravena et al.²⁵ (2014).

With regard to birth weight, the mean was 2,123 kilograms and a median of 2,033 kilograms, with the smallest newborn having a weight of 440 grams. According to Ramos et

al24 (2009), birth weight means the risk factor with the greatest influence on child survival and further demonstrated in their study that 78% had low birth weight (LBW) and 54% had very low birth weight (MBPN). As for birth weight, the World Health Organization (WHO) defines LBW as a newborn with a birth weight of less than 2,500g, regardless of gestational age. LBW was detected as an important determining factor that interferes and greatly influences the child's growth and development, and may have repercussions on neuropsychomotor development delay.

The Apgar between the 1st. minute showed an average of 7.32 and in the 5th. Minute an average of 8.77. The score is based on measures of heart rate, respiratory effort, skin color, muscle tone and reflex irritability. A total score of 7 to 10 is considered adequate, and a lower Apgar score indicates depressed vitality. This means that in this sample, the average of the children had an Apgar score considered adequate. However, in detailed analyses, we had children with Apgar 0 in the first minute and 3 in the 5th. Minute, thus demonstrating how much degree of global impairment some children had. Secondalso the study by Ramos et al.24 (2009) regarding the Apgar score revealsthat 79% had a satisfactory Apgar score, but that some preterm infants, a percentage of 17% had an unsatisfactory Apgar score in the fifth minute of life with the need for more complex care and greater chances of complications and sequelae.

Still regarding the Apgar score, a very important study that broughtconclusive information was the research by Gravena et al.25 (2014) which demonstrated that newborns of adolescents had a 1.44-fold risk of having an Apgar score lower than seven in the fifth minute. The study also verified the association between very low and low Apgar scores in the fifth minute in the adolescents' maternal age. This index is an important

indicator for long-term perinatal outcomes, in addition to being considered an excellent predictor of infant prognosis.

Studies indicate that the longer the length of stay in the intensive care unit (ICU), as well as the length of stay, interferes with the repercussion of motor development, since the impact of the length of hospital stay generates excess procedures, such as orotracheal intubation (IOT), passage of probes and catheters, in short, many manipulations that favor stress and inadequate sensory stimulation, with continuous and extensive exposure to nociceptive stimuli, generating stress and pain that impair adequate neuropsychomotor development, affecting morbidityAraújo et al.27 (2013).

The authorsGiachetta et al.28 (2010) reported alterations in newborns' self-regulation systems and an increase in the incidence of damage and motor delays, as there are many risk factors at birth that cause imbalance in development, interfere with primitive reflexes, tonus muscle and acquisition of neuromotor components in the first months of life.

Regarding treatment time, our study shows that research participants 65 (53.2%) of the children remained in rehabilitation in the period from 13 to 36 months followed by 38 (31.1%) up to 12 months, being considered a high treatment time. In the study ofMélo et al.17 (2012), the same findings were observed, 55.5% of the children were in rehabilitation for more than 12 months.

According toLuna et al.29(2018) carried out an experience report through the observation of care provided in the physiotherapy sector of the Núcleo de Apoio à Saúde da Família (NASF) to show the importance of carrying out structural changes, the sample consisted of 17 patients with deficits in motor development, under 12 years. It was observed that there was progress or stagnation in motor development,

thus carrying out an intervention proposal designed to provide improvements in the services offered. They concluded that patients who had Cerebral Palsy sequelae need continuous physiotherapeutic treatment, as they require intensive care, even in relation to the work of preventing new sequelae in this population.

When performing the descriptive and inferential crossings among all the analyzes carried out only for the year 2018, three crossings showed significance between the groups, as shown in table 3. Birth weight and gestational age are among the main risk factors for child development. Many studies have pointed to the strong association between these two variables and designate that the lower the gestational age and birth weight, the greater the risks for the development of these children Zerbeto et al.³⁰ (2015), Chermont et al.³¹ (2019).

Research by Chermont et al.³¹ (2019) showed that gestational age was significant for the occurrence of low birth weight, specifically in premature newborns. This fact was also observed in the study by Nascimento, Barbosa & Correa 2019, in which it was found that fetal weight gain is greater at the end of pregnancy, in the third trimester, especially after 34 weeks of gestational age, which further reinforces the association between the occurrence of gestational age and weight at birth. Low birth weight is identified as one of the main public health problems according to several authors. Chermont et al.³¹ (2019); Nascimento et al.³² (2019), Zerbeto et al.³⁰ (2015).

The correlation of these outcomes are important and compatible with the results found here, which showed a statistically significant association between this crossing of birth weight with gestational age in the two crossings performed referring both to the year 2018 and also when we increased the data

inserted in the work referring to 2018 and 2019.

The crossing of the total treatment time with the main diagnosis obtained a statistically significant difference related to the analysis referring to the 2018 data, regarding the main diagnosis, it was shown that prematurity was a factor strongly associated with the outcome of this study. According to Araújo et al.²⁷ (2013) this fact is justified because these children end up needing longer treatment due to their own prematurity.

As for the length of stay in the ICU, this study observed an average of 17.19 days, mainly due to prematurity, since both variables are associated with the result of this crossing. Still according to Araújo et al.²⁷ (2013) a longer ICU stay can compromise the neuromotor development of preterm children as it exposes the child to excessive stimulation, influencing several procedures and changes that can be considered predictors of delay damage. in motor development.

However, when we added the data for the year 2019, only one of the three crossings remained significant, which was the crossing of birth weight with gestational age, in graph 5, we obtained $P < 0.000$, it was observed how relevant this data was because even after the analysis referring to the two years of 2018 and 2019 this data crossing remained with $P = 0.000$.

We can observe how much prematurity interferes with the risk of delay in motor development, premature children are more biologically vulnerable, consequently generating greater risks that influence motor development, considering the study by Moreira et al.³³ (2014) we can say that according to the evidence presented that preterm infants are more susceptible to developmental impairments, mainly in the motor area.

Epidemiological surveys such as knowledge

of the clinical profile of children with neurological disorders have as determining factors identifying data that can collaborate and help in deepening the child's family and social context, which is of great relevance in proposals for strategies for rehabilitation. Oliveira et al.³⁴ (2018). Checking the demand of patients is very important for the organization, it helps in the structure and references within the service. This information can also help with therapies and psychological care for these families, involving the entire multidisciplinary team, reinforces the study by Batista et al.³ (2014).

Based on knowledge of the epidemiological profile of this study, especially regarding the main diagnosis of the children attended, what stood out the most and was of great relevance for the study was prematurity associated with the risk of delay in neuropsychomotor development, which provided subsidies for the construction of a material educational program aimed at the neuropsychomotor development of the child.

An educational booklet was built with the main objective of facilitating and assisting parents and/or caregivers of premature babies at risk for delay in neuropsychomotor development, with the proposal of stimuli that help in motor development. Content relevant to the topic addressed and elaborated based on scientific literature. For the distribution of the booklet to the babies' mothers, digital and/or electronic means were chosen for easier dissemination between mothers and the health team, seeking to use language that was easy to understand. If it is necessary to socialize the knowledge found and acquired, and the construction of the booklet with the guidelines for mothers and/or caregivers in association with current information technologies are important,

Bearing in mind another important epidemiological data that the study showed was

in relation to families residing in other cities, as it comprises the vast majority 138 (62.16%), this makes it even more opportune to prepare an educational booklet on guidelines with premature infants for mothers, who come to favor and facilitate the family's participation in the treatment, aiming at comprehensive care, more interesting, stimulating and challenging for the family.

The creation of the booklet proposes physiotherapeutic guidelines with the management of the child focused on the performance of exercises and activities for the early stimulation of the baby, with the objective that the mothers feel stimulated and committed to the faster recovery of their children and achieve the development regular engine.

Studies that carried out the evaluation and analysis of educational materials aimed at the development of the child revealed that these booklets have a positive return as an adequate proposal to help families, parents and caregivers, as well as health professionals to further optimize the treatment regarding the evolution of the child Silva et al.³⁵ (2017).

The availability of adequate epidemiological information allows a change in the clinical profile of actions, intervening directly with the care processes and meeting the current needs of health services and in the search for better therapeutic quality, it is of great importance to know the studied population, that is, trace the clinical profile of children assisted in the sector of child neurology describing the characteristics of the patients, where the most appropriate care can be planned, and can minimize or reduce clinical complications.

Mainly because motor delays are often associated with secondary psychological and social damage, such as low self-esteem, isolation, hyperactivity, among others, which make it difficult for children to socialize and perform at school. Physical therapy, as an

area of knowledge, has the responsibility of contributing to research involving child development, especially those related to the evolution of motricity, both in healthy infants and those exposed to risk factors, also taking into account the importance of neuroplasticity process.

This process, according to Haase et al.³⁶ (2004) and Borella et al.³⁷ (2009), called neuroplasticity, refers to the reorganization of brain structures, that is, the ability of the brain to modify its structures according to the information acquired from the external environment, since neural plasticity is greater in childhood and gradually decreases, refers to the adaptability capacity of the nervous system, especially that of neurons. The human brain is always undergoing changes, such as the regulation of neuroplasticity after injury, so we conclude how important early treatment is, because with early intervention and the guidelines in the booklet, it is possible to achieve a shorter treatment time and an improvement in quality of life for these children.

Among the limitations of this research, the lack of some data regarding the sociodemographic profile (such as family income, mother's education level, assessment of the mother's or caregiver's quality of life), makes it difficult to better understand the factors that aim to improve health care and family.

The process of development and acquisition of appropriate motor milestones occurs dynamically and can be highly susceptible according to the stimuli and the environment provided, thus, the socioeconomic structure of the family is an important factor in the development of the child and are the object of studies. in many populations, as children from low-income families are more vulnerable to inequalities and injuries and offer losses, compromising the development of children

Delgado et al.³⁸ (2020).

The family and educational environment interfere in all stages of the child's motor development, so it is important to be able to develop actions and strategies in these environments, providing greater capacity for interaction with the family, possibilities for social exchanges, protection, optimizing and influencing even more in the quality of the stages of development according to Correa et al.³⁹ (2018).

CONCLUSION

The results of the study provided a detailed survey of patients treated at the neuropediatrics outpatient clinic, also offering the scientific community a description of the profile of the child neurology sector of a teaching hospital, which cares for children with neurological diseases.

It is important to highlight that the prevalence of the diagnosis of the children attended were premature children at risk for delay in motor development, the knowledge of these data from the epidemiological profile provided subsidies for the development of proposals that aim to improve the assistance, such as the construction of the booklet of guidelines for the families of these children, didactic and educational material that can help many mothers and caregivers in this process of recovery and rehabilitation.

This type of study must be carried out with the aim of forming a database about the physiotherapeutic health service, thus demonstrating the importance of this service to society.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest

REFERENCES

1. Haywood KM, Getchell N. Desenvolvimento motor ao longo da vida. 3ª ed. Porto Alegre: Artmed; 2004.
2. Wilson PH et al. Cognitive and neuroimaging findings in developmental coordination disorder: new insights from a systematic review of recent research. *Developmental Medicine & Child Neurology*. 2017; 59(11): 1117-29.
3. Batista AJ, Torres JR, Schwind RTF, Peternella FN, Mende FV. Perfil epidemiológico do setor de neurologia da clínica escola de fisioterapia da faculdade Ingá no ano de 2013. *Revista uninga*. 2014; 17(2): 11- 15.
4. Arantes MSS, Manfrim PB, Klebis LO, Silva EAL, Carmo EM, Chagas EF. Perfil de usuários do serviço de fisioterapia em uma unidade básica de saúde. *Colloquium Vitae*. 2016; 8(especial): 180-185.
5. Malkes NFDA, Albuquerque PL, Mendonça MMV, Mendonça YMS. Aspectos atuais da fisioterapia nas disfunções sensório-motoras em crianças com síndrome de Charcot-Marie-Tooth. *Brazilian Journal of Health Review*. 2019; 2(4): 3147-3163.
6. Machado D, Pereira KRG, Muller AB, Valentini NC. Desenvolvimento motor, cognição e linguagem em lactentes que frequentam creches. *Sci Med*. 2017; 27(4).
7. Korupolu R, Gifford JM, Needham D. Early Mobilization of Critically Ill Patients: Reducing Neuromuscular Complications After Intensive Care. *Contemporary Critical Care*, Baltimore. 2009; 6(9).
8. Mancini MC et al. Avaliação do desenvolvimento infantil: uso de testes padronizados. Desenvolvimento da criança em risco neuropsicomotor Fortaleza: Expressão Gráfica. 2012; 128-169.
9. Kwon TG, et al. Relationship between gross motor function and daily functional skill in children with cerebral palsy. *Annals of rehabilitation medicine*. 2013; 37(1): 41-49.
10. Souza DML, Maia LCS, Zêgo ZDF, Jaeger GP, Maciel WS. Prevalência de prematuridade e fatores associados no estado do Rio Grande do Sul. *Brazilian Journal of Health Review*. 2019; 2(5): 4052-4070.
11. Tacani PM, Kasawara KT, Tacani RE, Machado AFP, Montezello D, Góes JCGS. Perfil clínico dos pacientes atendidos em um ambulatório de fisioterapia em oncologia do município de São Paulo. *O Mundo da Saúde*. 2014; 38(4): 439-447.
12. Meireles NFP et al. Perfil sociodemográfico familiar e clínico de crianças com disfunções neurológicas atendidas no programa de intervenção precoce. *Archives of Health Investigation*. 2017; 6(10): 495- 499.
13. Medeiros JKB, Zanin RO, Alves KS. Perfil do desenvolvimento motor do prematuro atendido pela Fisioterapia. *Revista da Sociedade Brasileira de Clínica Médica*. 2009; 1(7): 367-372.
14. Needham DM, Truong AD, Fan E. Technology to enhance physical rehabilitation of critically ill patients. *Critical Care Medicine*: Baltimore. 2009; 37(10): 436-441.
15. Zwicker JG, Harris SR, Klassen AF. Quality of life domains affected in children with developmental coordination disorder: A systematic review. *Child: Care, Health and Development*. 2013; 39(4): 562-580.
16. Cameron S, et al. Early mobilization in the critical care unit: A review of adult and pediatric literature. *Journal of Critical Care*. 2015; 30(4): 664-72.
17. Melo Neto JS, Mendes AP, Aragão IG, Alves AS, Corrêa PR, Romano EM. Perfil dos pacientes atendidos no setor de fisioterapia cardiorrespiratória de uma clínica escola de São José do Rio Preto- SP. *Arquivos de Ciência da Saúde*. 2012; 19(4): 108-13.
18. Silva AR, Tavares MRS, Filgueira VGB. Análise do perfil clínico de crianças com paralisia cerebral atendidas em uma clínica escola. *Revista Científica Multidisciplinar Núcleo do Conhecimento*. 2020; 8(4): 115-128.
19. Toledo CAW, Pereira CHCN, Vinhaes MM, Lopes MIR, Nogueira MARJ. Perfil epidemiológico de crianças diagnosticadas com paralisia cerebral atendidas no Centro de Reabilitação Lucy Montoro de São José dos Campos. *Revista Acta Fisiátrica*. 2015; 22(3): 118-122.
20. Guimarães CL, Pizzolato TCO, Coelho ACS, Freitas STT. Aspectos clínicos epidemiológicos de crianças com paralisia cerebral assistida pela clínica escola de fisioterapia UNIP - São José dos Campos. *Journal Health sci inst*. 2015; 32(3):281-285.

21. Gonçalves JE, Junior FACP, Lima MK, Gomes LS, Silva LNM, Souza MA, Silva ATM. Perfil socioeconômico, demográfico e clínico de crianças atendidas em um serviço de referência em neurodesenvolvimento no município de Vitória de Santo Antão-PE. *Brazilian Journal of Health Review*. 2020; 3(2): 1553-1565.
22. Santos RA, Da-Silva VR, Dos Santos JP, Siqueira A. Perfil epidemiológico e assistência à saúde de crianças e adolescentes com paralisia cerebral em um município do ES. *Revista Residência Pediátrica*. 2019; 9(3).
23. Ramos KR, Botelho SM, Amorim CR. Perfil das crianças e adolescentes atendidos na clínica escola de fisioterapia da UESB. *Revista Baiana de Saúde Pública*. 2012; 36(2): 386-395.
24. Ramos HAC, Cuman RKN. Fatores de risco para prematuridade: pesquisa documental. *Esc. Anna Nery*. 2009; 13(2).
25. Gravena AAF, Paula MG, Marcon SS, Carvalho MDB, Pelloso SM. Idade materna e fatores associados a resultados perinatais. *Acta Paul enferm*. 2013; 26 (2).
26. Gesser AGP, Vargas D, Arcoverde TL, Saorim A, Steingraber FA, Stinghen GY, Giacomini G, Hoeller AA. Perfil epidemiológico de recém-nascidos atendidos em uma maternidade de alto risco no Sul do Brasil. *Vitalle- Revista de Ciências da Saúde*. 2019; 31(2),25-31.
27. Araújo ATC, Eickmann SH, Coutinho SB. Fatores associados ao atraso do desenvolvimento motor de crianças prematuras internadas em unidade de neonatologia. *Revista Bras. Saúde Mater.infant*. 2013; 13(2).
28. Giachetta L, Nicolau CM, Costa APBM, Zuana AD. Influência do tempo de hospitalização sobre o desenvolvimento neuromotor de recém- nascidos pré- termo. *Fisioter Pesqui*. 2010; 17(1).
29. Luna MMA, Lucena PL, Farias AEM, Melo VFC. O acompanhamento fisioterapêutico de crianças com sequelas de paralisia cerebral atendidas no NASF do município de Alagoa Nova. *Revista e Pesquisa cuidado é Fundamental Online*. 2018; 10(3): 70-73.
30. Zerbeto AB, Cortelo FM, Filho Élio BC. Associação entre idade gestacional e peso ao nascimento no desenvolvimento linguístico de crianças brasileiras: revisão sistemática. *J.Pediatr*, 2015; 91(4).
31. Chermont A, Miralha AL, Souza Filho LEC, Cunha KC. Fatores associados ao baixo peso ao nascer em uma maternidade pública. *Pará Research Medical Journal*. 2019; 3(1).
32. Nascimento RC, Barbosa MCR, Correa MM. Baixo peso ao nascer: estudo de fatores associados em um hospital terciário da grande Vitória, ES, Brasil. *Demetra*. 2019; 14(4): 1-18.
33. Moreira RS, Magalhães LC, Alves CRL. Efeito do nascimento prematuro no desenvolvimento motor, comportamento e desempenho de crianças em idade escolar: revisão sistemática. *J. Pediatr*. 2014; 90(2).
34. Oliveira JC, Calles AC, Santos RPMC, Monteiro FT. Perfil Epidemiológico dos pacientes atendidos em uma clínica-escola de fisioterapia na cidade de Maceió-AL. *Interfaces Científicas- Saúde e Ambiente*. 2018; 6(2): 85-94.
35. Silva HL, Bezerra FHG, Brasileiro IC. Avaliação de materiais educativos direcionados para o desenvolvimento neuropsicomotor da criança. *Revista Bras Promoção Saúde*. 2017; 30(3): 1-6.
36. Haase VG, Lacerda SS. Neuroplasticidade, variação interindividual e recuperação funcional em neuropsicologia. *Periódicos Eletrônicos em Psicologia*. 2004; 12(1).
37. Borella MP, Sacchelli T. Os efeitos da prática de atividades motoras sobre a neuroplasticidade. *Rev.Neurocienc*. 2009; 17(2): 161- 169.
38. Delgado DA, Michelon RC, Gerzson LR, Almeida CS, Alexandre MG. Avaliação do desenvolvimento motor infantil e sua associação com a vulnerabilidade social. *Fisioter.Pesqui*. 2020; 27(1).
39. Correa W, Minetto MF, Crepaldi M.A. Família como promotora do desenvolvimento de crianças que apresentam atrasos. *Pensando Fam*. 2018; 22(1): 44-58.