EDUCATED PARENT AS A KEY MEMBER OF REHABILITATION TEAM

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SUMMARY – Involvement of children with minor motor impairments in early intervention programs is becoming a positive trend. Rehabilitation of young children is usually performed in family environment with continuous monitoring by a team of experts including a physiatrist, speech therapist, psychologist, and rehabilitator. For this reason, it is important to educate parents in proper procedures designed to encourage the child's global and language development. Parental competence in encouraging the child's language development and providing home learning environment is associated with the level of parental education. We performed a retrospective analysis of data on 50 children aged 1-3 years, hospitalized during 2010 at Department of Pediatric Rehabilitation, University Department of Rheumatology, Physical Medicine and Rehabilitation, Sestre milosrdnice University Hospital Center in Zagreb. The aim was to determine the percentage of children included in an early intervention program according to the level of parental education and to assess the impact of the program on the children's language development. The results showed a higher percentage of parents to have high school education and a smaller percentage of parents to have university degree. These data indicated the need of educational programs for parents on the procedures of encouraging child development, including language development.

Key words: *Language development; Parents; Education; Rehabilitation*

Introduction

Language is a skill that is obtained by hearing others and imitating the speech of the environment[1]. Previous studies of the interaction of genetics and environmental influences on development have confirmed that "experience molds the development, and that is what includes new insights into the importance of parental care and early intervention programs"[2]. Language and communication in the children's surrounding may play an important role in the prevention of language difficulties, and many intervention programs work with parents to help them achieve optimal communication with their child[1]. Language acquisition does not require formal learning, but listening to the spoken language is essential for language development[3,4]. The manner in which a child in critical age for language acquisition (from birth to age of 5) is exposed to a language input determines the path the language development takes, and the most important learning context is the child's family and home learning environment[4,5].

When adults speak to a child, they use a language that is shaped differently than the one they use to speak with other adults. Parents are usually completely focused on the child's development. They are sensitive to small changes in the child's abilities, so it is usual that their sensitivity is reflected in their speech.

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With over-adjustment of his speech to the child's age, the parent can slow the child's language development. The linguistic competence of conversational partner is very important and it is crucial for language development[6].

Language development can be divided in many subcomponents that include the knowledge of phonological development (sounds and sound patterns), lexical development (words), the development of syntax and morphology (grammar), and the development of communication competence (language in use). Gradual development of these components is crucial and any step back could be devastating in the future development[7].

In neurophysiological aspects, speech is the culmination of a complex sensorimotor structure in which specific cortical centers of speech (motor, auditory, visual) are interconnected as a creative part, and their bound with the speech muscles is being performed by corticonuclear tract. Corticonuclear tract innervates facial muscles, tongue, palate, larynx and pharynx that allow the formation and pronunciation of words in terms of articulation and phonation. That is the executive part of the neurophysiological organization of speech. The speech depends on the interpretation of auditory and visual images, which reach up to consciousness, and their association with motor centers that control expression. Understanding a spoken expression requires motor activity and the ability of reception and interpretation of speech symbols, their retention, memory, and visualization. An important part of the cortical brain functions is associated with the ability to understand speech and written word and gesture, recognizing the importance of different sensory stimuli, and the ability of individual expression of words, writing, gestures, and execution of complex movements of gesticulation. Cortical speech centers are developed after birth and are placed in the dominant, left hemisphere. Motor speech center (Broca's area) is located in the rear of the third frontal gyrus, and receptive or sensory speech center (Wernicke's area) is located in the upper temporal gyrus[8].

A damage to the central nervous system leads to the occurrence of various types and degrees of deficit. Sensory and motor deficits cause difficulties or disability of vocal communication, reading and writing, but can be compensated by proper intervention procedures, optimally within three years after the occurrence of the damage. The level of functioning disturbance of the central nervous system refers to the connection between cerebral function and intelligence, emotions and behavior. Minimal cerebral dysfunction is composed of a set of characteristics that are associated with developmental delays in functions such as speech, motor coordination or perception[9].

According to the DSM IV classification, communication disorders, or expressive language disorders and mixed receptive-expressive language disorders often occur after injury of the central nervous sistem[9].

Patients and Methods

This retrospective analysis included data on 50 children aged 1-3 years that were involved in the rehabilitation program conducted at Department of Pediatric Rehabilitation, University Department of Rheumatology, Physical Medicine and Rehabilitation, Sestre milosrdnice University Hospital Center in Zagreb, Croatia, between April and September 2010. There were 27 male and 23 female children. During hospital stay, the children were treated by a team of specialists consisting of a physiatrist, speech therapist, psychologist, and rehabilitator. The children included in the study had minor motor impairments. They were included in the process of team interventions. The data collected were analyzed according to parental activities for the child's language development. The milestones of language development were followed as described

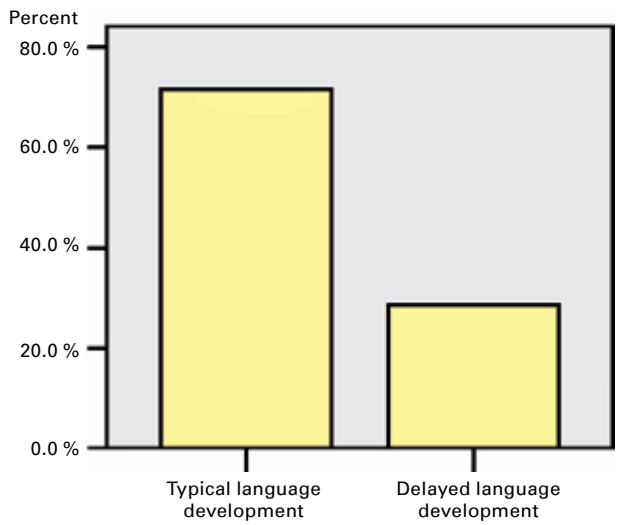

Fig. 1. Level of language development.

Table 1. Maternal level of education

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Elementary school	3	6.0	6.1	6.1
	High school	35	70.0	71.4	77.6
	University degree	11	22.0	22.4	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

by Hoff[7]. The level of parental education was also analyzed. Study results were expressed as parameters of descriptive statistics, frequency and percentage.

Results and Discussion

According to the developmental milestones identified in the literature[7], we assumed that language development proceeded correctly in 70% of the children, whereas delayed language development was observed in 28% of the children (Fig. 1). Analysis of parental educational level showed most parents to have high school education (66% of fathers and 70% of mothers); 24% of fathers and 22% of mothers had university education, and 6% of parents had only elementary school education (Tables 1 and 2).

Previous studies have shown the level of parental education to correlate with child language development[10,11] and frequency of language difficulties[12]. In children from families with a lower level of parental education, development of speech and language skills as well as other cognitively related abilities is progressing slowly in early childhood[13].

Neurological studies have shown connection of the processing of auditory stimuli and recognition of irregular syntax structures in children whose parents have lower levels of education[10]. The level of parental education is associated with the child's linguistic, intellectual and social achievements. However, the child's achievements are related to the quality of home learning environment[11,14,15].

When parents communicate with disabled child they often cannot assess the child's[14], and their own abilities either[2]. During communication with children, parents spontaneously change their way of interacting, but in situations of ongoing stress and anxiety for the child's development, parents lose the spontaneity that is essential for dealing with the child's problems. When parents are aware of their own potential and have self-confidence, it will always show a favorable effect on the child's development. If parents do not fulfill their potential, they are more likely to literally follow the given instructions, and then the child is not getting appropriate encouragement. There is more direct interaction, stimulation and predominant

Table 2. Paternal level of education

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Elementary school	3	6.0	6.3	6.3
	High school	33	66.0	68.8	75.0
	University degree	12	24.0	25.0	100.0
	Total	48	96.0	100.0	
Missing	System	2	4.0		
Total		50	100.0		

parental role[2]. Parents of a disabled child are leaders and they control their children. They initiate a smaller number of awards in communication and provide less feedback and encouragement[6].

Maternal speech is an influential variable in language development. The difference between language development in children of parents with high and lower educational level is also associated with differences in maternal speech[15,16]. It is not considered to be associated with the level of education, but this provides some basis for further analysis and development of educational programs[16].

Several education programs for parents from other countries show that parent educational programs for the child's development and their own capabilities have a favorable effect on the child's language development[14,15,17]. Some results show that good encouragement of a child, when provided by educated parents, yields results similar to the work of professionals. However, it should be noted that they should be extremely cautious in this process because of the reduced consistency in the quality of encouragement at individual level, which affects the nature of the child's linguistic profiles[17].

Cooperation between parents and specialist in the planned intervention program has many specific advantages for the child's development. By involving parents in the rehabilitation program, we have the ability to develop different life skills in daily, real context[18]. International experience shows that active parental participation in daily social interactions reduces the onset of potential disorders in the child. This parental participation can be achieved through parental educational programs, consulting, early diagnoses and early intervention[2]. In addition, parental educational programs can be targeted for early child's cognitive development[10].

A favorable impact on the home learning environment and child's development can be achieved by educating parents on how to improve the environment in which the child is growing up, and how to properly communicate with the child. International experience in parent educational programs shows positive progress in the parent-rehabilitator cooperation. Involving the parents and children in education programs and early intervention programs promotes awareness of the possibilities for each person as an individual, and enables parents to directly participate in the rehabilitation of the child. Based on these results, developing a pilot program for educating parents of children with minor motor difficulties by a team of experts in rehabilitation (physiatrist, speech therapist, psychologist, rehabilitator, physiotherapist) is a modern rehabilitation model which is in process of development that leaves opportunities for further research and design of individual rehabilitation programs.

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Sažetak

OBRAZOVANI RODITELJ KAO KLJUČNI ČLAN REHABILITACIJSKOG TIMA

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Uključenost djece s blažim motoričkim oštećenjima u programe rane intervencije postaje pozitivan trend. Rehabilitacija djece u najranijoj dobi najvećim dijelom se odvija u obiteljskom okruženju uz kontinuirano praćenje stručnog tima, uključujući specijalista fizijatra, logopeda, rehabilitatora i psihologa. Iz tog razloga potrebno je obrazovati roditelje o pravilnim postupcima za poticanje kako cjelokupnog tako i jezičnog razvoja djeteta. Kompetentnost roditelja u poticanju jezičnog razvoja i poticajnost obiteljske okoline povezana je s razinom obrazovanja roditelja. U ovom radu provedena je retrospektivna analiza podataka djece u dobi od 1. do 3. godine života koja su bila hospitalizirana tijekom 2010. godine na Odsjeku za dječju rehabilitaciju Klinike za reumatologiju, fizikalnu medicinu i rehabilitaciju Kliničkog bolničkog centra Sestre milosrdnice. Cilj je bio odrediti učestalost djece uključene u rani rehabilitacijski program prema razini obrazovanja roditelja, te procjena jezičnog razvoja djeteta. Rezultati su pokazali da najveći postotak roditelja ima srednju stručnu spremu, a najmanji broj roditelja nižu stručnu spremu. Rezultati ukazuju na potrebu programa izobrazbe roditelja o postupcima poticanja sveopćeg djetetova razvoja, pa tako i jezičnog.

Ključne riječi: Jezik, razvoj; Roditelji; Obrazovanje; Rehabilitacija