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The Relationship between Language Disorders and Motor Development in Children with Epilepsy

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ABSTRACT

Objective: The purpose of this study was to determine the relationship between language disorders and motor development in children with epilepsy. Population in this research consisted of 50 elementary female students with epilepsy in Tabriz City. Persian Aphasia Test (FAT) and Lincoln-Oseretsky Scale and one-way analysis of variance (one-way ANOVA) were utilized to measure children's language disorders and describe the relationship between variables, respectively. **Results:** Findings showed that there is not a significant relationship between language disorders and motor development in children with epilepsy. **Conclusion:** Therefore, physical education centers are required to establish institutions to provide children suffering from motor problems and perceptual-motor deficiencies with proper training.

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INTRODUCTION

Motor development is one of the various aspects of human growth that its potential impact on other aspects of development has been investigated in different studies. Early perspective on development in recent decades was that basic motor skills emerge as children grow older (Sharon *et al.*, 2010). Motor development as a factor affected by the nervous system is of the utmost importance which begins prior to birth and continues in adulthood. Child development is influenced by internal and external factors (Mohammadi Nejad, 1999). Psychomotor development caused by cognitive function of the brain in normal children is associated with children's environmental skills and activities (Amizadeh *et al.*, 2003). Children with motor development problems have coordination difficulty when learning new motor skills (Vaez Mousavi *et al.*, 2005). According to researches, not much activity restrictions are needed for patients with epilepsy (Hoseini pour, 2009, Nicolai *et al.*, 2006). Epilepsy is associated with language disorders. Language dysfunction is sometimes just a symptom of a seizure. Language dysfunction or linguistic deficits in epilepsy patients occurs during their health period (when attacks do not happen). Differences in language functions in epilepsy patients can be due to multiple reasons.

Several types of language impairments have been diagnosed in epilepsy patients. Language disorders may involve aspects of labeling, mentality, speech, understanding, reading or writing and expressive language (Sharon *et al.*, 2010). There is a significant negative relationship between reading and verbal intelligence with nocturnal seizures. A study on 48 children with rolandic epilepsy (RE) showed that language disorders in some cases increased rolandic epilepsy. On the other hand, language disorders increased after epilepsy, which indicates that both of these cases have been caused by a basic syndrome, or generated during the acquisition process of seizure (Ebus *et al.*, 2011). The relation between language disorders and motor development showed reading disabilities in children with rolandic epilepsy, and that their reading of sentences was more impaired than reading of words; besides, there was a significant relationship between motor development deficiencies and language disorders (Geke *et al.*, 2011). According to researchers, language was particularly found to be more

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impaired in children with atypical rolandic epilepsy and normal IQ (Nicolai *et al.*, 2009). Samples showed a medium or severe language disorders and grammatical problems. Treatment of children with higher vulnerability, who had experienced delays acquiring language skill, had no effect on language disorders (Monjauze *et al*, 2005). Due to the importance of the fact that patients with epilepsy, especially children, need more attention, therefore, an adequate investigation of learning disorders (language, reading, speech) and motor development problems can be a great help to disabled children, their parents, and relevant organizations including psychotherapy centers, Welfare Department, Department of Education, etc. However, so far, no researches in this regard have been carried out in Iran. The importance of motor development in children from different aspects, and that both motor development and language disorders are affected by nervous system, and considering that children with epilepsy are prone to stimulations and neurological disorders led the researcher to investigate whether there is a relationship between language disorders and motor development in children with epilepsy.

Metodology:

This is a descriptive-correlational and practical research. This study was conducted on all elementary female students with epilepsy who referred to the Tabriz city. Due to the low number of population, the sample size and population were equal in numbers, that is, 50 elementary female students with epilepsy. Persian Aphasia Test was used to measure language disorders. It includes 427 questions in 30 sub-tests that the patients are to be asked in 2 or 3 sessions. The test has been produced, arranged and standardized in different languages by Michel Paray from McGill University in Canada, and translated into Persian by Nilipour in Iran. The modified form of Lincoln-Oseretsky Test was utilized to measure children's motor development. Lincoln Oseretsky Test consists of 6 sub-scales and 36 sub-tests each assessing the different aspects of perceptual-motor skills of children ages 5.5-14.5. It includes: 1- Body balance, 2- Bilateral motor coordination, 3- Motor precision, 4- Running speed, 5- Agility, 6- Visual motor integration. Oseretsky Scale is a motor scale which was made by Oseretsky. Oseretsky Reliability Coefficient for boys 96% and for girls is 97%. Descriptive statistics was used to describe the demographic characteristics of the subjects, frequency distribution, average data, diagramming, and standard deviation; and Pierson Correlation Coefficient was used to explain the relationship between variables at a significance level of 0.05. All analyzes were carried out using SPSS 18 software.

Results:

Table 1: The Mean and Standard Deviation for Language Disorders and Oseretsky Subscales

Raw	variable	SD	Mean
1	Read sentences	0/40	0/52
2	Read words	0/30	0/83
3	Body balance	5/15	17/96
4	Bilateral motor coordination	5/08	14/80
5	Carefully move	3/40	15/36
6	Speed	5/81	16/06
7	agility	4/17	15/26
8	Visual motor integration	5/00	15/40

The results of table 1 showed that highest average belongs to body balance and the lowest average to running speed.

Table 2: The Relationship between Language Disorders and Motor Development in Children with Epilepsy

variable	significant	Correlation to	Correlation of	Type correlation
Read sentences	0/435	positive	0/02	Pierson
Read words	0/892	positive	0/00	Pierson

The results of table 2 showed that there was no significant relationship between language disorders and motor development in children with epilepsy.

Conclusion:

The results of the study indicated that there is not a relationship between language disorders and motor development in children with epilepsy. In fact, patients with epilepsy may have movement disorder but do not have language disorder and vice versa. The results of this study are not consistent with the findings of previous researchers. Contradiction between the findings could be due to the influence of Rolandic epilepsy on the patients' verbal spots. According to the study, the average age of language disorders is 10 years of age, and they usually improve as children grow older. Language disorders can be affected with the start of school-age. In fact, Rolandic epilepsy has been considered in most researches since it is related to verbal spots seizure. Findings show that there is not a relationship between language disorders and motor development in patients with epilepsy. So that, no movement restrictions are required for epileptic patients.

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