

# The Role of Gender and Type of Hospitalization in Training Self Care Activities of Preschool Children with Cerebral Palsy

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## Abstract

This research is a part of master's thesis with the main assumption that special education program may affect the ability of manipulative skills and self-care of children with cerebral palsy (Savkovic, 2011). The aim of the research is to determine the effects of individually composed programs to ability of the child for taking food, personal hygiene and dressing/undressing activities, and identification of the correlative relationship between gender and the type of hospitalization, and achievement after the implementation of special education program. The sample was formed of 30 children aged 4 to 7 years for treatment at the Special Hospital for Cerebral Palsy and Developmental Neurology at Belgrade and separate protocol, designed specifically for this study was used for evaluation before and after the applied program, which was applied continuously for 12 weeks. On the basis of correlation analysis and by T-test it is confirmed that the program led to improved hand function and its role in prehension and manipulation of objects from everyday life and helped children with cerebral palsy in achieving independence in basic self-care activities.

**Keywords:** Children, Cerebral Palsy, Self-Care, Special Education Program.

## Introduction

### Theoretical Basis

Speaking of a hand as a blade of a mind Connolly (1998) wrote that our hand is a central part of our psyche, as its executive, research and expressive roles constantly rotate. Development of hand in the service of capturing and manipulating objects exceeds a long way and is one of the ways in which children experience a sense of loss and gain competence. Bruner (1973) has emphasized that this competence in children include not only social interaction, but also elements of domination over the facilities. Classification system that is based on clinical physiology of motor dysfunction, the number of limb involvement, and functional status of the child usually describes the patients inability, but does not provide insight into the aetiology and pathology [1]. The results of research on the relationship between the damage to his hands and manual skills of children with cerebral palsy (ABILHAND –Kids questionnaire applied to a sample of 101 children), verified that in 58% of children led to the damage of the hands of manipulative abilities and limitation to the general mobility of the dominant hand and power nondominant hand

grip good predictors of manual skills. Attempts by several comparative studies conducted in order to prove the efficiency and validity of commonly used therapeutic programs have been extremely unsuccessful [2].

### Aim of the Research

The aim of the research is to determine the effects of individually composed defectological treatment to improve handling skills and self-care of children with cerebral palsy. From this base we produced partial goals, such as determining the correlative relationship between the calendar age, gender, type of hospitalization, the distribution of motor impairment and the degree of intellectual deficits and achievements after the implementation of programs for the development of manipulative skills [3].

### Research Tasks

At the beginning of the experiment, we evaluate manipulative skills and the ability for self-care of each child with the battery of tests composed specifically for this study. We developed individual program for each child and applied it continuously during

12 weeks. After completion of the program, we used the same battery of tests, to assess manipulative skills and self-care activities, and compared the correlation with the initial assessment to determine the effects of the applied program.

### **Hypothesis**

We expected that the implemented program will improve handling capabilities of a child with cerebral palsy. We expected that the program for the development of manipulative skills will have an impact on the child's ability for self-care activities. We assumed that the distribution of motor impairment and intellectual level will significantly affect the development of manipulative skills. We expected that the calendar age will have an impact on the development of manipulative skills. We also assumed that gender will significantly influence the development of manipulative skills of children with cerebral palsy. We also assumed that the type of hospitalization will affect the development of manipulative skills of children with cerebral palsy [4].

### **Research Methodology**

The study was conducted at the Special Hospital for Cerebral Palsy and Developmental Neurology, in Belgrade during 2010 year. The study sample was consisted of children with cerebral palsy who were on full or partial hospitalization, alone or with a parent. Of the total number of children, we selected the number of thirty, and we followed criteria to form a pattern. Those criteria are that a child is aged between 4 and 7 years, regularly involved in the rehabilitation program of the institution, and have a diagnosis of cerebral palsy (children with other neurological and behavioral disorders were excluded from the sample).

### **Data Resources**

Data on the type of hospitalization, age, diagnosis, shape and form of cerebral palsy and intellectual status were obtained from medical records of the institution.

### **Variables**

The independent variables were gender, calendar age, type of hospitalization, distribution of motor impairment and the degree of intellectual deficit. The dependent variables in this study were defined as the manipulative ability, and they are expressed through: maturity/repertoire of grips, bimanual activities, eye-hand coordination and the child's ability to perform age relevant self-care activities [5].

### **The Structure of the Sample by Gender**

Outline of the respondents in relation to gender shows that the survey covered a total of 30 patients, of which 16 are females (53, 33%) and 14 (46, 66%) are males. The sample included slightly more females.

### **The Structure of the Sample by Calendar Age**

From the outline of the respondents in relation to calendar age, we see that the study included 3 patients (10%) calendar age 4 years, 3 respondents (10%) calendar age 5 years, 12 respondents (40%) calendar age 6 years and 12 respondents (40%) calendar age 7 years.

### **The Structure of Sample by Type of Hospitalization**

From the outline of the respondents compared to type of hospitalization we can see that 13 respondents (43, 33%) at the time

of the research were partially hospitalized in the clinic. In the department was stationed in 17 patients (56, 66%) of which 8 patients (26, 66%) were accompanied by a parent (mother) and 9 respondents (30%) were inpatients without a parent.

### **The Structure of the Sample in Relation to the form of Cerebral Palsy**

For cumulative review of subjects in relation to the form of cerebral palsy, classification and codes were taken from ICD 10 (10th revision of International Classification of Diseases 1990). The largest number of children, 25 (83,33%) are with spastic cerebral palsy including 8 respondents (26,66%) with quadriplegia, 12 respondents (40%) with diplegia and 5 respondents (16,66%) with hemiparesis. Only 2 respondents (6, 66%) are with non-specific form of cerebral palsy and 1 respondent (3, 33%) is with dyskinetic form of cerebral palsy.

### **The Structure of the Sample in Relation to the Distribution of Motor Impairment/Number of Limbs which are Affected**

From the outline of the sample in relation to the distribution of motor impairment/number of limbs that are affected, we see that most kids – 13 (43, 33%) are with impairment of all four extremities, followed by children with impaired two limbs – 12 (40%). At least there were represented children with hemiplegia – 5 (16, 66%).

### **Sample Structure Depending on Intellectual Level**

From the outline of the subjects in relation to the intellectual level, it is seen that most respondents are with average intellectual abilities that fit into the broader framework of normal – 11 of them (36,66%). The limited intellectual ability, disturbed psychomotor development and unbalanced and easy lagging behind chronological age is shown in 7 cases (23,33%). Children with mild mental retardation were 8 (26,66%). With moderate mental retardation were 3 patients (10%). One child (3,33%) was with above average intelligence. From 30 patients 7 (23, 33%) have some form of epilepsy.

### **Results**

The assumption that the gender will be significantly correlated with achievement was partially confirmed, as in only 6 of 38 items evaluated the girls proved successful. In the first test which evaluates the grasps maturity in only one of 11 items, or in one of the six tested grabs (palm-grip) is shown a statistically significant effect of gender on the development of a mature catch. In second test, which assesses bimanual activities, on the retest girls showed significantly higher achievement in one of five items – dismantling and assembling small objects. In the third test that evaluates eye-hand coordination, in one of four items girls were more successful in placing the stick to the circle with both hands. In carrying out activities in the second part of the protocol. Girls were at the retest significantly better in washing hands and face and in using glasses and cups for drinking- in only three of 22 items. Our assumption that the type of hospitalization will lead to higher improvement of the manipulative ability and self-care in children, who were hospitalized without parental care, has not been confirmed. There was no statistically significant relationship between the type of hospitalization and achievements in all 16 items which evaluate manual abilities. Statistically significant correlation between the type of hospitalization and achievement after the applied program is shown

in only one activity (hair combing) of 22 tested items relating to self-care activities, when children who were stationed with mother or alone were significantly better in the re-assessment compared to children who were coming to ambulance and day hospital. The difference in achievement at the re-evaluation in relation to calendar age is shown only in using fingers for picking and eating food, where the children of older calendar age (6 and 7 years) had better achievement, but not enough to establish a statistically significant correlation ( $r=0,087$ ). Examining whether there is a statistically significant association between the distribution of motor impairments and program for developing manipulative skills, we have confirmed that there is correlation which was confirmed by retest and showed through statistically significant values, thus confirming our hypothesis that the distribution of motor impairment significantly influenced the manipulative abilities of a child with cerebral palsy. Statistically significant correlation is shown in 30 of 38 items between the degree of intellectual deficit and achievement at retest after applying the program, thus confirming our hypothesis that the level of intellectual development significantly affects hand function. Most children who have progressed are from the group of average and limited intellectual abilities.

### Conclusion

In relation to the investigated dependent variables – the maturity of the basic grips, bimanual activity, eye-hand coordination and ability to perform basic self-care activities, the results indicate the fact that most children in this survey failed in many everyday

activities because they have not been taught to use their hands. The final conclusion based on this research, could be that targeted activities at the preschool age can affect the development of manipulative skills and abilities for self-care of a child with cerebral palsy. XXI century trends focused on what children can (“focus on ability”), but despite the demolition of architectural barriers, the use of universally designed assistive resources, new communication technologies, personal assistance services, and inclusion/integration in educational processes, nothing can fully compensate the role of the hand as an organ for capturing.

### References

1. Ball, Morven, F. (2002). *Developmental Coordination Disorder: Hints and Tips for the Activities of Daily Living*. Jessica Kingsley Publishers, Philadelphia.
2. Metcalf, C., Adams, J., Burridge, J., Yule, V., & Chappell, P. (2007). A review of clinical upper limb assessments within the framework of the WHO ICF. *Musculoskeletal care*, 5(3), 160-173. ([www.interscience.wiley.com](http://www.interscience.wiley.com))
3. Bruner, J. (1973). *Going Beyond the Information Given*. Norton, New York.
4. Connolly, K.J. (1998). *The psychobiology of the hand*. Cambridge University Press. Cambridge.
5. Savkovic, N. (2011). *Influence of Special education Program for developing manipulative abilities of children with cerebral palsy*. Master thesis. Faculty of Special Education and Rehabilitation, University of Belgrade