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Research Paper: Comparing Participation of Iranian Children With Cerebral Palsy in Life Activities With Participation of Typically Developing Children

Marzieh Pashmdarfard[1,2], **Malek Amini**[1*]

1. Department of Occupational Therapy, School of Rehabilitation, Iran University of Medical Sciences, Tehran, Iran.
2. Department of Occupational Therapy, Faculty of Rehabilitation, Zanjan University of Medical Sciences, Zanjan, Iran.

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ABSTRACT

Introduction: Children with Cerebral Palsy (CP) like the normal peers have the right to participate in life activities, so we aimed to study and compare the participation of Iranian 6-12 years old children with CP with the participation of their normally developing peers.

Materials and Methods: This was a cross-sectional study in which the parents of 274 children with CP and the parents of 274 of normal children completed the Children Participation Assessment Scale Parent- version. For data analysis, the Independent t test was performed in SPSS version 21.

Results: The mean age of children with CP and normal children were respectively 9.64 and 9.45 years. The results indicate a significant difference between the two groups in life activities participations (P<0.05).

Conclusion: Participation of Iranian children with CP in life activities (activities of daily living, instrumental activities of daily living, play, leisure, social participation, education, and sleep/rest) are lower than those normal peers, so the occupational therapists should pay attention to this and try to promote the participation of children with CP.

1. Introduction

Cerebral Palsy (CP) is one of the most common motor disorders, a condition in childhood that occurs due to a lesion in the developing brain. The prevalence of this disorder is approximately 2 to 2.5 out of every 1000 live births [1]. Its begins is in the early stages of life, but it affects the entire range of life of the individuals [1]. Cerebral Palsy is also the most common physical disorder in childhood [2]. The affected children may experience a range of motor-postural, coordination, sensory and intellectual disorders throughout their lives. Generally, motor and cognitive disorders are the factors

*** Corresponding Author:**
Malek Amini, PhD.
Address: *Department of Occupational Therapy, School of Rehabilitation, Iran University of Medical Sciences, Tehran, Iran.*
Tel: *+98 (912) 5424533*
E-mail: *malekamini8@gmail.com*

which limits the participation of these individuals in different life areas [3, 4].

Most people with CP have difficulties in walking and other physical activities; the common belief is that such constraints reduce the social participation of these individuals [3-5]. Children with CP are dependent on others in terms of mobility and self-care, and these limitations affect their participation in Activities of Daily Living (ADL) and subsequently their quality of life [6, 7].

The World Health Organization (WHO) definition of participation is involvement in life situations [8]. Participation in life areas is a multidimensional activity and an overall assessment of well-being in all life areas [3, 8]. The most recent studies on the rehabilitation of children with CP focus on maximizing the performance and participation of these children in life activities [9]. The International Classification of Functioning, Disability and Health, known commonly as ICF classified the factors influencing the participation into personal and environmental factors [8].

In a study, King et al. determined that among environmental and personal factors, environmental factors such as parental involvement in social activities can affect the participation of children with CP that leads to a difference in the rate of participation of these children with their normal peers [10]. Participation is a concept entirely dependent on culture, i.e., the factors influencing this concept can also vary from culture to another culture [11].

Because of personal and environmental differences in participation of children with physical disabilities, especially CP, in different life activities [6], conducting a study to compare the participation of these children with normal peers is important. In this regard, various studies have been conducted in developed countries to compare the participation of the children with CP with their normal peers [4, 5, 10]. However, participation is a culture-based concept, thus, doing such a study in developing countries such as Iran seems necessary. In a systematic review study in Iran, Pashmdarfard et al. found that many occupational therapists are not aware that the final goal in rehabilitation is the participation of children with CP in different life areas as a final, instead they focus more on the physical, sensory and cognitive components of children with CP [6].

In 2016, Hassani Mehraban et al. conducted a preliminary study about the comparison of participation of physically disabled children with normal peers in leisure activities but their sample size were small and they suggested to do this study with larger sample size and with a scale which included all life areas and based on Iranian culture [7]. Rostamzadeh et al. also conducted a study to compare the participation of 4-6 years old Iranian CP children with their normal peers and concluded that the participation of children with CP in each activity is lower than normal peers [3]. Therefore, this study was conducted to compare the participation of Iranian 6-12 years old children with CP in life areas with their normal peers. We used a culturally-relevant scale in this study which is developed in Iran according to Occupational Therapy Practice Framework (OTPF) and included all occupational areas.

2. Materials and Methods

This was a cross-sectional study conducted in 2017. The samples were collected by convenience sampling method. The study samples included 320 children (aged 6 to 12 years old) with CP referring to exceptional physical-motor schools and 320 normal children (aged 6 to 12 years old) studying in the normal schools in Tehran, Iran. Finally according to the inclusion and exclusion criteria of the study, 274 children with CP and 274 normally developed peers participated in this study. The inclusion criteria for the CP children were their age range (6-12 years old) and confirmed diagnosis of CP by a neurologist or pediatric neurologist. Parents of children were literate enough to complete the questionnaire, and gave their consent to participate in the study. The exclusion criterion was failure to complete the questionnaires by the parents.

Study tools

The Children Participation Assessment Scale-Parent version (CPAS-P)

In order to collect information on the participation of Iranian children with CP as well as normal children aged 6-12 years old, we used The Children Participation Assessment Scale-Parent version (CPAS-P) questionnaire which was developed and validated by Amini et al. in Iran [12, 13]. CPAS-P is a 71-item questionnaire in 8 subcategories: Activity of Daily Living (ADL: 11 items), Instrumental Activity of Daily Living (IADL: 10 items), play (13 items), leisure (16 items), social participation (12 items), education (4 items), work (2 items), and sleep/rest (3 items). CPAS-P is a parent report scale which examines the participation of children aged 6-12 years old in five dimensions of diversity, frequency, with whom, level of enjoyment, and level of parent satisfac-

tion. This scale has acceptable psychometric properties among Iranian population [12, 13].

Study procedure

All data gathering process was done in exceptional and normal schools of Tehran. The introduction letter was taken from Zanjan University of Medical Sciences to present to schools principals. The study was undertaken on parents of children with CP and normal children via self-reports. The questionnaires (demographic, CPAS-P, and a consent form) were put together in a package for the children to take home.

A comprehensive explanation of how to complete the questionnaires was provided as well as the informed consent form. The parents were asked to sign their consent within 2 weeks if they agree on participation in this research, and send them back to school via their children. Packages containing the questionnaires were sent to 320 parents of children with CP and 320 parents of normal children. A total of 300 parents of children with CP and 308 parents of normal children gave their consent to participate in this study. Of 300 parents of CP children, 26 did not complete the questionnaire items correctly, and were removed from analysis.

In order to create the equal sample size between two groups, 274 children out of 308 normal peers were selected. Finally according to the inclusion and exclusion criteria of the study, the data of 274 children with CP and 274 of their corresponding normal peers were analyzed in this study. In this questionnaire, first the parent answered the questions about the child's participation in the activity with "Yes" or "No". If they answered "Yes," they should continue the other parts related to the activity in terms of diversity, frequency, with whom, level of enjoyment, and level of parent satisfaction. If the answer was "No", They should leave the other parts.

Data analysis

In order to analyze the data, SPSS V. 21 was used. Kolmogorov-Smirnov statistical test was used to determine the normal distribution of data. Then, the Independent t test was used to compare the participation between the two groups.

3. Results

The Mean±SD of children with CP and typically developing children were respectively 9.64±1.92 and 9.45±1.76 years (Table 1). Based on Kolmogorov-Smirnov results the data distribution was normal (P>0.05). Comparing the participation of normal children and children with CP showed that, except for the subtests of work and sleep/rest (P>0.05), there were significant differences between the two groups (P<0.05) (Table 2).

4. Discussion

The present study aimed to compare participation of Iranian 6-12 years old children with cerebral palsy with the participation of their normal peers. In rehabilitation interventions, especially occupational therapy, participation is known as a main outcome and the final result of rehabilitation interventions [14]. Therefore, knowing the difference between the participation of children with CP with their normal peers is important as therapists can pay more attention to the activities and participation of children with CP, and promote their level of participation n as much as possible. The results of the present study indicate significant differences between the participation of children with CP and the normal peers.

Hassani Mehraban et al. conducted a preliminary study in 2016 to compare the participation of children with CP with normal peers in leisure activities and concluded that the diversity of participation of physically disabled children is lower than that of normal peers [7]. However, the sample size of their study was very small with only 30 normal children and 30 physically disabled children were compared and their study did not cover all life areas and just about participation in leisure activities [7].

Rostamzadeh et al. reported that participation of 4-6 years old children with CP in all life activities is lower than that in their normal pears [3] which agrees with the

Table 1. Demographic characteristics of the study participants

Variable	Group	No.	Min	Max	Mean	SD
Age, y	CP	274	6	12	9.64	1.9
	Normal	274	6	12	9.45	1.76

Table 2. Comparison of participation of children with CP and normal peers (n=274)

Measures		Group	Mean	SD	Mean Difference	Sig. (2-Tailed)
Total score	Parent satisfaction	CP	102.7409	51.93235	-64.10949	0.000
		Normal	166.8504	40.79480	-64.10949	
	Enjoyment	CP	122.9708	61.76684	-61.25997	0.000
		Normal	184.2308	47.80561	-61.25997	
	With whom	CP	67.9708	32.47223	-23.31387	0.000
		Normal	91.2847	25.79461	-23.31387	
	Frequency	CP	137.7445	63.51315	-61.77007	0.000
		Normal	199.5146	40.38616	-61.77007	
	Diversity	CP	33.9854	15.13286	-14.15693	0.000
		Normal	48.1423	9.88050	-14.15693	
ADL	Diversity	CP	8.1569	3.18551	-1.80292	0.000
		Normal	9.9599	0.93870	-1.80292	
	Frequency	CP	42.9745	18.09406	-11.89051	0.000
		Normal	54.8650	6.90490	-11.89051	
	With whom	CP	14.7993	6.81518	2.86496	0.000
		Normal	11.9343	2.25224	2.86496	
	Enjoyment	CP	26.6934	12.06063	-6.32847	0.000
		Normal	33.0219	7.60660	-6.32847	
	Parent satisfaction	CP	23.8978	10.85218	-10.51460	0.000
		Normal	34.4124	5.53854	-10.51460	
IADL	Diversity	CP	4.8504	3.06514	-2.85766	0.000
		Normal	7.7080	1.98404	-2.85766	
	Frequency	CP	22.0182	15.01537	-13.92336	0.000
		Normal	35.9416	10.70296	-13.92336	
	With whom	CP	9.3102	6.33920	-3.40876	0.000
		Normal	12.7190	4.10992	-3.40876	
	Enjoyment	CP	17.7336	11.94823	-9.83212	0.000
		Normal	27.5657	8.71219	-9.83212	
	Parent satisfaction	CP	14.8212	10.20203	-10.90146	0.000
		Normal	25.7226	8.18399	-10.90146	

Measures		Group	Mean	SD	Mean Difference	Sig. (2-Tailed)
Play	Diversity	CP	5.2701	3.60708	-3.61314	0.000
		Normal	8.8832	2.77235	-3.61314	
	Frequency	CP	18.3796	14.85442	-13.06204	0.000
		Normal	31.4416	12.23452	-13.06204	
	With whom	CP	11.8869	9.11616	-11.64234	0.000
		Normal	23.5292	9.52580	-11.64234	
	Enjoyment	CP	19.7372	14.31297	-17.71533	0 .000
		Normal	37.4526	12.45591	-17.71533	
	Parent satisfaction	CP	15.8978	11.32166	-15.39051	0.000
		Normal	31.2883	10.82329	-15.39051	
Leisure	Diversity	CP	7.7409	3.92634	-2.30657	0.000
		Normal	10.0474	3.27516	-2.30657	
	Frequency	CP	25.1533	14.94502	-8.81387	0.000
		Normal	33.9672	13.08450	-8.81387	
	With whom	CP	15.5949	8.73208	-4.49635	0.000
		Normal	20.0912	8.04491	-4.49635	
	Enjoyment	CP	29.5803	16.41079	-11.54380	0.000
		Normal	41.1241	15.19106	-11.54380	
	Parent satisfaction	CP	23.7263	13.64308	-11.82117	0.000
		Normal	35.5474	13.01618	-11.82117	
Social participation	Diversity	CP	4.5839	2.95173	-1.79562	0.000
		Normal	6.3796	2.78571	-1.79562	
	Frequency	CP	11.4927	8.59519	-4.76642	0.000
		Normal	16.2591	8.51601	-4.76642	
	With whom	CP	10.2044	6.93786	-4.50365	0.000
		Normal	14.7080	7.08469	-4.50365	
	Enjoyment	CP	17.3650	12.43466	-8.64969	0.000
		Normal	26.0147	12.16068	-8.64969	
	Parent satisfaction	CP	14.1752	10.16126	-8.14599	0.000
		Normal	22.3212	10.55037	-8.14599	

Measures		Group	Mean	SD	Mean Difference	Sig. (2-Tailed)
Education	Diversity	CP	0.5146	0.92669	-0.87226	0.000
		Normal	1.3869	1.14032	-0.87226	
	Frequency	CP	1.5985	2.97600	-3.67518	0.000
		Normal	5.2737	4.51147	-3.67518	
	With whom	CP	1.1460	2.35663	-1.91971	0.000
		Normal	3.0657	3.30989	-1.91971	
	Enjoyment	CP	1.7737	3.26036	-3.79562	0.000
		Normal	5.5693	4.86792	-3.79562	
	Parent satisfaction	CP	1.5474	2.94260	-3.55109	0.000
		Normal	5.0985	4.31385	-3.55109	
Work	Diversity	CP	0.7482	0.54680	-0.22263	0.000
		Normal	0.9708	0.25510	-0.22263	
	Frequency	CP	4.0182	2.94822	-1.58029	0.000
		Normal	5.5985	1.43458	-1.58029	
	With whom	CP	1.4489	1.21617	-0.02555	0.773
		Normal	1.4745	0.81722	-0.02555	
	Enjoyment	CP	2.4672	2.02747	-0.89416	0.000
		Normal	3.3613	1.32216	-0.89416	
	Parent satisfaction	CP	2.2190	1.80035	-1.04380	0.000
		Normal	3.2628	1.15958	-1.04380	
Sleep/Rest	Diversity	CP	2.1204	1.04658	-0.68613	0.000
		Normal	2.8066	0.44782	-0.68613	
	Frequency	CP	12.1095	6.32997	-4.05839	0.000
		Normal	16.1679	2.98364	-4.05839	
	With whom	CP	3.5803	2.09546	-0.18248	0.227
		Normal	3.7628	1.35547	-0.18248	
	Enjoyment	CP	7.6204	4.25063	-2.55474	0.000
		Normal	10.1752	3.13295	-2.55474	
	Parent satisfaction	CP	6.4562	3.60808	-2.86496	0.000
		Normal	9.3212	2.60159	-2.86496	

Abbreviations: CP: Cerebral Palsy; ADL: Activity of Daily Living; IADL: Instrumental Activity of Daily Living.

current study results. However, they did not compare the participation of work and sleep/rest items between two groups. The results of the present study indicate no any significant differences between two groups regarding the work item that maybe because of the age of participants (6-12 y). King et al. in their study concluded that among environmental and personal factors, environmental factors such as parent participation in social activities can affect the participation of children with CP, and the extent of participation of these children with their peers is different [10]. However, King et al. study focused more on the social participation activities and we focused on all life activities.

Majnemer et al. concluded that the factors influencing the participation of children with CP included individual factors related to the child, as well as individual factors related to the parent's child, which can change the rate of participation of children with CP compared with normal children [15]. They reported factors that affected the participation of the children with CP but did not report the activities which the children were not successful on them. However, in our study, we focused on the participation of the activities in which the children with CP were lower than their normal peers. Based on Amini et al. study results, the type of CP, level of manual ability and cognitive level are the strongest predictors of level of participation of children with CP in different life activities [16].

The results of the present study indicate significant differences between two groups in sleep activity. This result agrees with the study of Dalvand et al. [17]. In the present study, we concluded that the participation in ADL and IADL activities of children with CP are lower than those in their normal peers. Pashmdarfard et al. reported that children with CP with different level of GMFCS (Gross Motor Function Classification system) had different levels of participation in ADL and IADL activities. In addition, the children with higher gross motor function had higher ability in performing ADL and IADL activities [18]. The results of this study indicate that the participation of Iranian 6-12 years old children with CP in life activities is different from their normal peers. We suggest that in future studies the researchers assess other factors which influence the level of participation of these children such as GMFCS, intellectual level, and so on.

In order to promote the participation of children with CP in life, occupational therapists should pay attention to the activities that children with CP cannot do independently. According to this study, the participation of children with CP in comparison with their normal peers are lower, thus occupational therapists should focus more on the occupational performances (ADL, IADL, work, play, leisure, social participation, education, and rest/sleep) and their interventions on the sensory, motor, cognitive, psychosocial, and other components should be coordinated to promote occupational performances.

Some of the limitations is as follows: We did not gather enough information about parents, siblings and environment of children with cerebral palsy. Also, we did not collect the complementary information about CP children such as their intellectual or GMFCS levels, too.

Ethical Considerations

Compliance with ethical guidelines

The research project was approved by Zanjan University of Medical Sciences (code of ethics: ZUMS.REC.1396.80).

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Authors contributions

The authors contributions is as follows: Methodology: Malek Amini, Marzieh Pasjmdarfard; Investigation: Malek Amini, Marzieh Pasjmdarfard; Writing and Original Draft: Malek Amini, Marzieh Pasjmdarfard; Writing, Review and Editing: Malek Amini, Marzieh Pasjmdarfard; and Funding Acquisition: Malek Amini, Marzieh Pasjmdarfard.

Conflict of interest

The authors declared no conflict of interest.

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