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INCLUSION IN THE EDUCATION SYSTEM OF PERSONS WITH CEREBRAL PALSY, HEARING IMPAIRMENT AND OTHER ASSOCIATED DIFFICULTIES

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ABSTRACT

Due to their psychophysical and other difficulties, many persons with cerebral palsy (CP), hearing impairment and other associated difficulties are not able to attend regular educational institutions according to the regular curriculum, but are forced to attend one of the specialized institutions, depending on the type of difficulty, according to the adapted curriculum and according to special methods of teaching. ***The aim*** *of the study is to examine the involvement of persons with cerebral palsy, hearing impairment and other associated difficulties in regular and specialized schools, and to establish their curricula of education, as well as to determine whether there is a statistically significant difference between subsamples.* ***Method:*** *The study was conducted on a sample of 120 respondents with cerebral palsy from four cantons of FBiH, within the Project of the 2. Cerebral Palsy Associations of Federation of Bosnia and Herzegovina „ Functional Ability of Persons with Disabilities, the Main Factor for Improving the Quality of Life of the Whole Family". The total sample of was divided into four subsamples.* ***The results of the study showed that 65.00%*** *of persons with CP, hearing impairment and other associated difficulties are* ***included in the education system****. From baseline* ***37.50% of persons are enrolled in regular schools*** *and there is no statistically significant difference between the subsamples of respondents.* ***Specialized schools enroll 20.00% of persons*** *with CP, hearing impairment and other associated difficulties and there is no statistically significant difference between subsamples. From total* ***40.00% of persons with CP, hearing impairment and other associated difficulties are not included in the education system*** *and there is no statistically significant difference between subsamples.* ***According to the regular curriculum, 44.44%*** *of persons with CP, hearing impairment and other associated difficulties is involved in the education system attend schools, and there is no statistically significant difference between the subsamples of respondents.* ***According to the adapted curriculum, 55.56%*** *of persons with CP, hearing impairment and other associated difficulties attend schools, and there is no statistically significant difference between subsamples. According to the adapted curriculum, 18.05% of persons with CP, hearing impairment and other associated difficulties are involved in regular schools.*

Key words: cerebral palsy–hearing impairment–associated difficulties–upbringing and education–regular schools–special schools–regular curriculum–customized curriculum.

1 INTRODUCTION

Cerebral palsy is a group of permanent disorders of movement and posture development that cause limitations in the performance of activities, and are a consequence of non-progressive disorders of the immature or developing brain (Švraka, 2018).

Due to their psychophysical and other difficulties, many people with cerebral palsy (CP), hearing impairment and other associated difficulties are not able to attend regular educational institutions, according to the regular curriculum, but are forced to attend one of the specialized institutions, depending on the type of additional difficulties, according to the adapted curriculum and according to special methods of education. A large number of people with cerebral palsy have one or more associated difficulties that further complicate their educational-rehabilitation processes and educational inclusion (Salkić, 2015). The most common additional difficulties of people with CP are: speech difficulties 56.60%, intellectual disabilities 34.90%, visual impairment 32.50%, epilepsy 20.90%, hearing impairment 10.90%, behavioral disorders 7.60% and autism 2.40%. Also, 16.60% of people with CP have no associated difficulties (Salkić, Švraka, Pašalić, Pavlović, 2020).

The curriculum is the foundation of the educational process, created as a means to achieve the goals of education. The main goal of the program is to raise the level of functioning of students with disabilities, which means creating objective conditions for maximum and comprehensive development of students for easier and more equal inclusion in life and work in society (Ministry of Education, Science and Youth of Sarajevo Canton).

For persons who, due to their difficulties, are not able to master the regular curricula, the institution, or the professional staff, adjusts the curricula to their remaining abilities and skills.

The adapted curriculum is the basic document which regulates and ensures the adjustment of the school environment and teaching process to the educational needs of students, who due to their difficulties are not able to master the existing, regular curricula.

The aim of the research is to examine the involvement of persons with cerebral palsy, hearing impairment and other associated difficulties in regular and specialized schools and to establish the curricula according to which they attend schools, and to determine whether there is a statistically significant difference between subsamples.

2 METHODS

2.1 *Sample*

The study was conducted on a sample of 120 respondents, persons with cerebral palsy from four cantons of FBiH, within the project of the 2.Cerebral Palsy Associations of FBiH „ Functional Ability of Persons with Disabilities, the Main Factor for Improving the Quality of Life of the Whole Family“. The total sample of respondents was divided into 4 subsamples of respondents:

1. The first subsample of respondents (N=40) consisted of persons with cerebral palsy, members of the Association of Persons with Cerebral Palsy of Sarajevo Canton (Sarajevo Canton).

2. The second subsample of respondents (N=41) consisted of persons with cerebral palsy, members of the Association of Parents of Persons with Cerebral Palsy and Other Disabilities „ Dlan“ Zenica (Zenica-Doboj Canton).

3. The third subsample of respondents (N=20) consisted of persons with cerebral palsy, members of the Association of Patients with Cerebral Palsy and Dystrophy Bosnia-Podrinje Canton Goražde (Bosnia-Podrinje Canton).

4. The fourth subsample of respondents (N=19) consisted of persons with cerebral palsy, members of the Association of Persons with Cerebral Palsy and Other Disabilities Sapna (Tuzla Canton).

2.2. Study instrument

The study used a „ Questionnaire for Exploration of the Associated Difficulties of Persons with Cerebral Palsy, Hearing Impairment and Other Associated Difficulties“. The measuring instrument consisted of 11 questions of nominal, ordinal and interval type. In the present study, the data obtained by the respondents' answers to two questions of the measuring instrument were used. The first applied question of the measuring instrument is ***"Did you, or was your child included in the system of upbringing and education in a regular or specialized school¿'***. The variables applied within this survey question are: *included in a regular school, included in a specialized school and excluded from the education system.*

The second applied question of the measuring instrument is ***„ According to which Curriculum did you (your child) attend classes¿'***. The variables applied within this survey question are: *regular curriculum and adapted curriculum.*

2.3. Statistical data processing

Based on the data obtained from the study, a database was formed. After checking the integrity of the data, a statistical analysis was performed in the software IBM SPSS Statistics v.20.0 for Windows. The data are presented in tabular form using classical descriptive statistics methods. The parametric statistics, analysis of variance (ANOVA) at the level of statistical significance of 0.05 was used to examine the statistical significance of differences between the sub-samples of the respondents.

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Table 1. Relationship between gender and age

Age	Canton Sarajevo		Zenica-Doboj Canton		Bosnia-Podrinje Canton		Canton Tuzla (Sapna)		Total			Anova (p)
	Pol		Pol		Pol		Pol					
	M (%)	Ž (%)	M (%)	Ž (%)	M (%)	Ž (%)	M (%)	Ž (%)	M (%)	Ž (%)	(%)	
0-15	3 (2.5)	1 (0.83)	15 (12.5)	8 (6.67)	1 (0.83)	3 (2.5)	3 (2.5)	3 (2.5)	22 (18.33)	15 (12.5)	37 (30.83)	0.6181
16-25	3 (2.5)	4 (3.33)	5 (4.17)	5 (4.17)	1 (0.83)	3 (2.5)	2 (1.67)	3 (2.5)	11 (9.17)	15 (12.5)	26 (21.67)	0.8350
26-35	8 (6.67)	4 (3.33)	2 (1.67)	4 (3.33)	4 (3.33)	2 (1.67)	3 (2.5)	1 (0.83)	17 (14.17)	11 (9.16)	28 (23.33)	0.3766
36-45	3 (2.5)	8 (6.67)	2 (1.67)	-	1 (0.83)	1 (0.83)	1 (0.83)	-	7 (5.83)	9 (7.5)	16 (13.33)	0.8505
46-55	2 (1.67)	2 (1.67)	-	-	1 (0.83)	2 (1.67)	1 (0.83)	-	4 (3.33)	4 (3.34)	8 (6.67)	0.8855
56-65	-	2 (1.67)	-	-	1 (0.83)	-	1 (0.83)	-	2 (1.67)	2 (1.67)	4 (3.34)	0.9091
> 65	-	-	-	-	-	-	1 (0.83)	-	1 (0.83)	-	1 (0.83)	0.9335
Total	19 (15.84)	21 (17.5)	24 (20.01)	17 (14.17)	9 (7.48)	11 (9.17)	12 (10)	7 (5.83)	64 (53.33)	56 (46.67)	120 (100)	
	40 (33.34)		41 (34.18)		20 (16.65)		19 (15.83)		120 (100)			
Anova (p)	0.8629		0.7696		0.9404		0.0331					

3 RESULTS AND DISCUSSION

An insight into the frequency and percentage distribution (Table 1) shows that 64 or 53.33% of respondents are male and 56 or 46.67% female.

Based on the results of the Anova test, it can be concluded that, at the set level of statistical significance of 0.05, ***there is a statistically significant difference in the gender of the Tuzla Canton respondents*** (p=0.0331). For ***Canton Sarajevo*** (p=0.8629), ***Zenica-Doboj Canton*** (p=0.7696) and ***Bosnia-Podrinje Canton*** (p=0.9404), ***no statistically significant difference was observed in the gender of the respondents***.

The largest number of respondents was at age up to 15 years, 37 or 30.83% (22 or 18.33% male and 15 or 12.5% female). The second most frequent are respondents at age group 26-35 years, 28 or 23.33% (17 or 14.17% male and 11 or 9.16% female). The respondents in the age group from 16-25 years are in third place by frequency, 26 or 21.67% (11 or 9.17% male and 15 or 12.5% female). The respondents from 36 to 45 years of age are represented by 16 or 13.33%, (7 or 5.83% male and 9 or 7.5% female), and the respondents aged 46 to 55 with 8 or 6.67% of respondents (4 or 3.33 both sexes). Quite a small number of respondents at age group 56-65 years, 4 or 3.34% (2 or 1.67 male and 2 or 1.67 female). There are the least number of respondents over 65 years of age, 0.83% or 1 male respondent at age of 68 years.

Based on the results of the Anova test, it can be concluded that at the set level of statistical significance of 0.05, ***there is no statistically significant difference in age at all age groups between the sub-samples of the respondents***.

3.1. Analysis of inclusion in regular and specialized schools

Table 2 shows the distribution of frequencies and percentages of participation in regular and specialized institutions, by cantons, subsamples of respondents.

Based on the distribution of frequencies and percentages of respondents' responses, it can be stated that respondents in all four cantons are in the highest percentage included in regular schools.

From baseline, 77.50% of persons with cerebral palsy, hearing impairment and other associated difficulties are included in the education system in Sarajevo Canton. There is little difference in enrollment in regular and specialized schools. 40% of respondents attended regular schools, and 37.5% attended specialized schools. Given the fact that there are 5 specialized institutions in Sarajevo Canton, the percentage of respondents who are not included in the education system is not negligible, 22.5% of them did not attend either regular or specialized school.

Involvement in the education system in Zenica-Doboj Canton is 48.78%. 29.27% attended regular schools, and 19.51% attended specialized schools for persons with cerebral palsy, hearing impairment and other associated difficulties. The percentage of respondents who were not included in the education system is worrying. The majority of respondents, 51.22%, did not attend either regular or specialized school. We can correlate this data with the fact that these are persons with severe disabilities and that there is only one specialized institution in the area of this Canton.

Based on the distribution of frequencies and percentages of respondents' responses, it can be stated that 65% of respondents in the Bosnian-Podrinje Canton are included in

Table 2. Representation of inclusion in regular and specialized schools by cantons (subsamples)

No.	Variables	Canton Sarajevo		Zenica-Doboj Canton		Bosnia-Podrinje Canton		Canton Tuzla (Sapna)	
			%		%		%		%
1.	Included in regular schools	16	40.0	12	29.27	9	45.00	8	42,10
2.	Included in a specialized school	15	37.5	8	19.51	4	20.00	0	0,00
3.	Excluded from the education system	9	22.5	21	51.22	7	35.00	11	57,90
Total		40	100	41	100	20	100	19	100

the education system. The majority of persons with cerebral palsy, hearing impairment and other associated difficulties involved in the education system attended regular school, 45% of them, and specialized school 20%. More than one third, or 35% of respondents did not attend either regular or specialized school. We can correlate this data with the fact that there are no specialized schools in the area of this canton. Persons involved in specialized institutions attended schools outside this Canton.

The majority of respondents, 57.90%, are not included in the education system in Sapna, which is a worrying fact. 42.10% of respondents attended regular schools, and there are no respondents included in specialized schools. We can correlate these results with the fact that there is no specialized school in this municipality and that the nearest specialized institution is territorially remote, and with the fact that families are in poor socioeconomic status and are not able to provide the necessary costs of education in remote specialized institutions. All persons with disabilities, who are included in the education system, are included in the local regular school.

Table 3 shows the distribution of frequencies and percentages of enrollment in regular and specialized schools of the total sample of respondents.

Based on the distribution of frequencies and percentages of enrollment in regular and specialized schools, it can be stated that *persons with cerebral palsy, hearing impairment and other associated difficulties are enrolled in a higher percentage in regular than in specialized schools. Most respondents are included in the education system; however, a large percentage of respondents are not included in the education system.*

From total, 37.50% or 45 respondents of persons with cerebral palsy, hearing impairment and other associated difficulties are included in regular schools as a form of upbringing and education. The largest number of respondents involved in regular schools is in the Sarajevo Canton, 16 or 13.33%. This is followed by Zenica-Doboj Canton with 12 respondents included, which is 10% of the total sample. In the Bosnia-Podrinje Canton, 9 or 7.50% of respondents are included in regular schools, while in Sapna, 8 respondents, or 6.67%, attend regular schools.

Based on the results of the ANOVA test, it can be concluded that, at the set level of statistical significance of 0.05, ***there is no statistically significant difference between the cantons for the variable inclusion in regular schools as a form of upbringing and education*** (p=0.5671).

From total, 22.50% or 27 respondents of persons with cerebral palsy, hearing impairment and other associated difficulties are included in specialized schools as a form of upbringing and education. The largest number of respondents involved in specialized schools is in Sarajevo Canton, 15 or 12.50%. This is followed by Zenica-Doboj Canton with 8 respondents included, which is 6.67%. In the Bosnia-Podrinje Canton, 4 respondents or 3.33% are enrolled in specialized schools, while in Sapna there are no respondents enrolled in specialized schools.

Based on the results of the ANOVA test, it can be concluded that, at the set level of statistical significance of 0.05, ***there is no statistically significant difference between the cantons for the variable inclusion in specialized schools as a form of education*** ($p = 0.6352$).

Of the total sample of respondents, ***48 or 40.00% of persons with cerebral palsy, hearing impairment and other associated difficulties are not included in the education system***. The largest number of respondents who are not included in the education system is in Zenica-Doboj Canton, 21 or 17.50%. This is followed by Sapna with 11 or 9.17%. In Sarajevo Canton, 9 or 7.50% of respondents are not included in the education system, and in Bosnia-Podrinje Canton, 7 or 5.83% of respondents are not included in the education system.

Based on the results of the ANOVA test, ***it can be concluded that, at the set level of statistical significance of 0.05, there is no statistically significant difference between the cantons for the variable of non-inclusion in the education system*** (p=0.0746).

3.2. Analysis of the curricula representation

Table 4 shows the distribution of frequencies and percentages of curricula used by persons with cerebral palsy, hearing impairment and other associated difficulties involved in the education system.

Based on the distribution of frequencies and percentages, it can be stated that ***32 or 44.44% of respondents attend school according to the regular curriculum***. The largest number of respondents, who attend school according to the regular curriculum, is in the Sarajevo Canton, 14 or 19.44% of the total sample of respondents. In Zenica-Doboj Canton, according to the regular curriculum, 8 or 11.11% of respondents. In the Bosnia-Podrinje Canton, according to the regular curriculum, 7 or 9.72% of respondents attend school, while in the Tuzla Canton (Sapna), according to the regular curriculum, 3 or 4.17% of respondents attend school in the total sample. It can also be stated that, out

Table 3. Representation of inclusion in regular and specialized schools of the total

No.	Variables	Canton Sarajevo		Zenica-Doboj Canton		Bosnia-Podrinje Canton		Canton Tuzla (Sapna)		Total		ANOVA (p)
			%		%		%		%		%	
1.	Included in regular schools	16	13.33	12	10.00	9	7.50	8	6.67	45	37.50	0.5671
2.	Included in a specialized school	15	12.50	8	6.67	4	3.33	0	0.00	27	22.50	0.6352
3.	Excluded from the education system	9	7.50	21	17.50	7	5.83	11	9.17	48	40.00	0.0746

Table 4. Representation of curricula of respondents included in regular and specialized schools

No.	Variables	Canton Sarajevo		Zenica-Doboj Canton		Bosnia-Podrinje Canton		Canton Tuzla (Sapna)		Total		ANOVA (p)
			%		%		%		%		%	
1.	Regular curriculum	14	19.44	8	11.11	7	9.72	3	4.17	32	44.44	0.2066
2.	Adapted curriculum	17	23.61	12	16.67	6	8.33	5	6.94	40	55.56	0.2845

of 45 respondents included in regular schools, 32 respondents follow regular curriculum, and that 13 respondents or 18.05% follow the adapted curriculum.

Based on the results of the ANOVA test, it was found that, at the set level of statistical significance of 0.05, ***there is no statistically significant difference between the cantons for the variable regular curriculum*** (p=0.2066).

According to the adapted curriculum, 55.56% or 40 respondents, persons with cerebral palsy, hearing impairment and other associated difficulties involved in the education system. The largest number of respondents, those who attend school according to a customized curriculum, is in the Sarajevo Canton; 17 or 23.61% of the total sample of respondents. In Zenica-Doboj Canton, according to the adapted curriculum, 12 or 16.67% of respondents attend school. In Bosnia-Podrinje Canton, according to the adapted curriculum, 6 or 8.33% of respondents, and in Tuzla Canton (Sapna), according to the adapted curriculum, 5 or 6.94% of respondents attend school in the total sample.

Based on the results of the ANOVA test, it can be concluded that, at the set level of statistical significance of 0.05, ***there is no statistically significant difference between the cantons for the variable adapted curriculum*** (p=0.2845).

4 SIMMILAR STUDIES

According to the data of the Federal Ministry of Education and Science in 2015, 306 children with disabilities attended regular primary schools in Tuzla Canton. 379 children with some kind of disability are enrolled in regular primary schools in Zenica-Doboj Canton. In the Bosnia-Podrinje Canton, there were 111 children with disabilities in regular primary schools, and 1953 children in the Sarajevo Canton.

In Montenegro, 1,591 children with disabilities were enrolled in regular primary schools in 2008. According to the regular curriculum, 1490 children attended schools, and according to the adapted 101 children. 443 students (Ministry of Education and Science of Montenegro) attended specialized schools in Montenegro.

Study from the Krapina-Zagorje County of the Republic of Croatia shows that most children with disabilities are included in regular primary schools in local areas, a total of 550 children. Of these, 387 children attend schools according to the adapted curriculum, 139 according to the regular curriculum, with the adjustment of methods and content, and 24 children in special classes of regular schools. Due to multiple difficulties, 78 children are educated in specialized institutions. There is a tendency of increasing involvement and support for children with disabilities in their home schools in local communities, and the number of children in specialized schools is constantly declining (Belošević, 2010).

The study conducted on a sample of 25 respondents, both sexes, from the second to the sixth grade of primary school, who attend classes in the regular educational system, according to an individually tailored program in Sarajevo Canton, found that the support of the professional team and individually tailored program significantly contributes to educational inclusion of children with developmental disabilities (Babić, Delić, Redžić, 2013).

5 CONCLUSIONS

1. In regular schools as a form of upbringing and education is included 37.50% of persons with CP, hearing impairment and other associated difficulties. There is no statistically significant difference between cantons in inclusion in regular schools as a form of upbringing and education.

2. In specialized schools as a form of upbringing and education is included 22.50% of persons with CP, hearing impairment and other associated difficulties. There is no statistically significant difference between cantons in inclusion in specialized schools as a form of upbringing and education.

3. In the education system is included 40.00% of persons with CP, hearing impairment and other associated difficulties. There is no statistically significant difference between the cantons for the variable non-inclusion in the education system.

4. According to the regular curriculum, 44.44% of persons with CP, hearing impairment and other associated difficulties involved in the education system attend schools. There is no statistically significant difference between cantons in the prevalence of the use of regular curricula.

5. According to the adapted curriculum, 55.56% of persons with CP, hearing impairment and other associated difficulties involved in the education system attend schools. There is no statistically significant difference between cantons in the prevalence of the use of customized curricula.

6. According to the adapted curriculum, 18.05% of persons with CP, hearing impairment and other associated difficulties involved in regular schools attend schools.

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