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Original article

Current records on different impairments of children and adolescents enrolled in the special education system

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Abstract

Aim. The purpose of this study is to identify the incidence of impairments in students with mental disabilities selected in the physical therapy program conducted in special schools in Bucharest.

Methods. The research sample was composed of 259 students enrolled in special education in Bucharest. The criteria for forming working groups were: mental deficiencies, the degree of disability, gender and level of education (primary or secondary).

Results. Spinal deformities are one of the major health problems for school children, with consequences for the future adult. Of the total number of subjects enrolled at primary and secondary level, 79 subjects (30.5%) were involved in the physiotherapy program. For students with mild / moderate impairment, the most common condition is lordosis and kyphos lordosis followed by kyphosis.

Conclusions. The incidence of the disease is different in students with mental disabilities enrolled in primary and secondary education. For students with severe / profound mental deficiencies, the most common condition is kypholordosis followed by kyphosis and neurological disorders.

Keywords: impairments, mental disabilities, spinal disorders, special education system.

Introduction

The school shows a favorable environment for promoting health, correct knowledge of various aspects of health and for the formation of a healthy lifestyle (Lazăr et al, 2008).

In recent years, the number of healthy school-age children has fallen sharply. Data reported by various researchers point out that in recent years, no more than 10% of students can be considered seemingly healthy. At the same time, a large number of students are placed "between health and illness". They have certain functional deficiencies, which have not reached the threshold of disease, but the increased risk of developing morbid conditions persists (Guștiuc, 2010).

According to specialized studies, more and more schooled children are detected annually with deviations from normal body posture. Spinal deficiencies are an important issue at school age, seriously affecting the health of the future adult. Over the years, the child's body is in a continuous state of development and uneven growth, alternating periods of sudden growth with slowed development. Another study shows that the most common deviation of the spine for students with hearing impairments is attitudinal and structural lordosis. Referring to gender, a significant difference occurs in the case of kypholordosis- more boys (mild/moderate hearing impairment) detected and more girls (poor/severe/profound hearing impairment) detected (Bughircă-Georgescu, Danciu, 2021).

Another study shows that of the total deficiencies of the spine, was a higher incidence of scoliosis (Powers, 1983).

School age (puberty) is the most affected of presence spinal deficiencies, followed by age (7-10 years) with a worrying percentage.

Spinal deformities in subjects with intellectual disabilities was also assessed by Momola and Czarny, who studied a group of 201 subjects with severe intellectual disability. The evaluation was focused on the posture of the body in the frontal and sagittal plane, as well as the position lower limbs (Momola, 2007)

Such results highlighted by specialists over several years should produce an alarm system about the frequency of deformities in the spine at school population, which is not just a medical problem but also a social one regarding direct costs for prevention, treatment, long-term rehabilitation. For the treatment of all spinal deformities, the goal is maintenance long-term correction (Weiss, 2010) and improve quality children's lives (Negrini et al, 2018).

Spinal disorders are characterized by varying degrees of obvious morphological changes, which occur in the shape and structure of the body, manifested by a developmental disorder or disproportionate development, by deviations, structural deformations, followed or preceded by functional disorders (Bughircă-Georgescu, 2021). In this study, we intend to present conclusive information about children and adolescents included in the special education system and what is the

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incidence of impairment that benefit from physical therapy. This study was made possible by the participation of special education schools in Bucharest that educate children and adolescents with mental deficiencies. They wanted to be included in this study by providing the required data on: the number of students in education at the level of the institution, the type and number of diseases receiving physiotherapy following annual assessments made by school physiotherapists. Physical therapy teachers perform an assessment of all students at the beginning of each school year, called the initial assessment (Horvat et al, 2007)

In Romanian secondary special schools are enrolled students with mild/moderate, severe or associated mental disabilities, students with Down syndrome, with Autism Spectrum Disorders (ASD), or with physical or neuro-motor disabilities, aged between 7 and 18 years. Depending on their diagnosis and the degree of disability, they are assigned to classes with students with mild/moderate mental disabilities, or to classes with students with severe/associated mental disabilities. The number of students in one class differs depending on the type of class: 8-12 students in the classes of students with mild/medium mental disabilities, or 4-6 students in the classes of students with severe mental disabilities.

The curriculum for special education is established by the legislation issued by the Ministry of Education, being different from the national curriculum for students enrolled in mainstream education, in regular schools. The curriculum for special education includes both the curricular areas encountered in regular education, but also curricular areas that include specific and compensatory therapies, used in recovery-compensation activities: speech disorder therapy, physical therapy, occupational therapy, game therapy, etc. These therapeutic activities are performed by teachers specialized in special pedagogy and/or physical therapy. The number of hours allocated to therapeutic activities differs depending on the type of the class.

The instructive - educational -recovery - compensatory activities for the students included in the classes for severe or associated mental deficiencies are established through Personalized Intervention Programs. The Personalized Intervention Program focuses on the student and his special educational needs, and all teachers who interact with that student participate in the elaboration of this type of program and form the multidisciplinary team for that student.

The multidisciplinary team jointly establishes the educational and interventional objectives for the benefit of the student, but also the activities, the didactic strategies used and the evaluation modalities, in order to record the students' progress/regression. Such a program is carried out for a period of 3 months, after which it is reviewed and,

depending on the progress made, new objectives are set, or new activities, if there is a standstill or a setback.

Therapeutic and compensatory activities are correlated with the instructive-educational activities, but also have a specific component.

The therapeutic activities for language disorders are addressed to students with dyslalia, dyslexia, dysgraphia, delayed language development, stuttering, but also to nonverbal students. Regardless of the students' diagnosis, or their age, language therapy begins with the pre-therapeutic stage, a stage for the development of psychomotor skills, which contains exercises for whole body mobility, dominant hand mobility, hand fine motor skills, exercises for training the phono articulator apparatus, and respiratory gymnastics. This stage synthesizes very well the collaboration between the speech therapy teacher and the physical therapy teacher. The student with mental deficiency, especially with severe mental deficiency, is also a motor deficient student. The therapeutic intervention activity for the correction of motor deficiencies in students with mental disabilities is very important. For example, performing exercises to develop hand motor skills as early as possible (in early childhood) will lead to good results during the child's schooling age, improving speech, reading and writing (writing precedes reading), motor skills but also leading to a mental balance, awareness of his own body, and an accommodation with the environment.

In the speech therapy office, the student, under the teacher's coordination, performs, following the teacher model, then independently, exercises that will precede the writing. Hand gymnastics exercises help to imitate the writing of letters in the air, exercises for fine motor skills of the hand, of the fingers, help to make scribbles, drawing different lines but also to write letters in the sand tray, with the finger on the bench, then in the notebook. The physical therapist teacher through specific correction, recovery and compensation exercises completes all these exercises for mobility. Physical therapy applied in the special school aims at recovering students with various locomotor, neuro-motor disorders (at the central or peripheral level), grafted on various deficiencies. Physical therapy is indispensable for medical recovery, mental rehabilitation, vocational rehabilitation and social rehabilitation

For this purpose, a fundamental role is played by the initial assessment of students, to detect those with deviations from normal, through numerous tests and measurements specific to physical therapy, in conjunction with the study of medical records, knowledge of socio-familial situation and socio-economic environment. From which the students come, discussions with the educational factors involved in the process of

recovery / integration of the students (conversations with the school doctor, the teacher, the educator, the psychologist, etc.). For maximum efficiency, the treatment can be individualized (by designing personalized intervention programs), by constantly reporting the type and severity of the disease, but also the type and degree of primary deficiency on which the motor disorder is grafted.

Materials and methods

Physiotherapy teachers evaluate all students at the beginning of each school year - an initial evaluation after which the therapy groups are established. The evaluation of the musculoskeletal system is performed - evaluation of physical growth and development by subjective methods (somatoscopy) and by objective methods (somatoscopic instrumental examination). The anamnesis is also performed with students and family members, keeping information from students' medical records. If the physiotherapy teacher detects diseases of the musculoskeletal system, he directs the students to the school doctor or to the specialist doctor to confirm the diagnosis.

Evaluation of the musculoskeletal system through which the assessment of physical growth and development is performed by subjective methods - somatoscopy -and by objective methods - somatoscopic examination instrument. To determine the incidence of the vertebral static disorders in children with mental deficiency through a detailed evaluation consisting of general somatoscopic examination and instrumental somatoscopic examination, respectively with the anthropometric symmetry framework. The anthropometric frame of symmetry (AFS) according to the parameters in the

literature (Cordun,1999): dimensions: 2m high and 1 m wide. Grading was performed horizontally from the middle, from the zero point (0) to the right and to the left, from 10 to 10 cm, and vertically from the bottom upwards, from 0 to 200 cm. Thus, the anthropometric symmetry frame is divided into squares with sides of 10 cm. The middle vertical from the zero points (00) overlaps the median line of the body. The instrumental somatoscopic examination was performed, as it is stated in the literature, from the back, face and profile. The front and back examinations provided information on the specificities of the deficiencies occurring in the frontal plane, respectively the scoliosis, and the examination revealed the specific aspects and defining characteristics for the deviations of the spine in the sagittal plane, namely the kyphosis, lordosis and their combinations (Bughircă-Georgescu, 2021).

Research sample.

Students with mental disabilities (aged 6-18). A total of 259 subjects enrolled in two schools (Secondary Special School No.2 and Secondary Special School No.3) that offer special education services for students with mental disabilities were involved in conducting this study. The group of subjects with mild / moderate degree of deficiency included 140 subjects and 119 subjects with poor/severe/profound/and or associated degree. We mention that the evaluation of the subjects was performed during the physiotherapy program (initial evaluation) at the beginning of the 2020-2021 school year. The group of subjects included all students with mental disabilities impairments enrolled in the two special schools in Bucharest (Table 1)

Table 1. Distribution of subjects according to degree of disability and levels of education

Educational institution	Total enrolled subjects (Class P-X)	Total enrolled subjects MD	Total enrolled subjects SD	Level of education	
				Class P-IV	Class V-X
Gymnasium Special No.2 School.	110	64	46	44	66
Special School Nr. 3 Gymnasium	149	76	73	67	82
Total	259	140	119	111	148

Abbreviations:

MD - subjects with mild/moderate degree of deficiency

MS - subjects with severe degree of deficiency

P-IV - subjects enrolled in the preparatory class - 4th grade

V-X - subjects enrolled in the 5th to 10th grade

Table 2. Distribution of subjects with mental deficiencies involved in physiotherapy activities in the special education system in Bucharest

Educational institution	Enrolled students	No. of kinesiotherapy lessons	No. of involved students
Gymnasium School. Special No.2	110	20	28
Special Gymnasium School Nr. 3	149	25	51
Total	259	45	79

Results and discussions

The data presented in this study were centralized following the evaluations performed on students by special school physiotherapists included in the study. We present the main diseases encountered in students with mental disabilities depending on gender, level of education and degree of disability. (Table 3).

From the data introduced in table 2 we can see that those with 259 students with intellectual disabilities evaluated at the beginning of the school year 79

students are involved in a number of 45 physiotherapy activities.

The conduct and organization of the physiotherapy program are different in terms of the number of students in a working group, depending on the type and degree of disability. Of the 259 enrolled subjects, 79 (30.50%) were diagnosed with various diseases that benefit from physical therapy.

The highest incidence of the total diseases detected is represented by the deviations of the spine 67 subjects (26%) (Table 3).

Table 3. Number of subjects involved in the physiotherapy program by degree of deficiencies, gender, level of education and type of disease.

Type of deficiency	MD				Total MD	SD				Total MS
	School level					School level				
	Class P-IV		Class V-X			Class P-IV		Class V-X		
	M	F	M	F		M	F	M	F	
Kyphosis	2	1	2	2	7	1	2	5	2	10
Lordosis	1	2	2	3	8	2	-	2	1	5
Kypho-lordosis		2	4	2	8	3	1	3	4	11
Scoliosis C	-	1	1	4	6	-	-	3	4	7
Scoliosis S	-	-	1	1	2	-	-	1	-	1
Kypho-scoliosis	-	-	1	-	1	1	-	-	-	1
Neurological diseases	-	-	-	-	-	3	-	3	2	8
Other diseases	-	1	-	-	1	1	-	1	1	3

Abbreviations:

MD - subjects with mild/moderate degree of deficiency
 P-IV - subjects enrolled in the preparatory class - 4th grade

MS - subjects with severe degree of deficiency
 V-X - subjects enrolled in the 5th to 10th grade

Analyzing the data contained in table no. 3 we can see that out of the 79 subjects included in the physiotherapy program 67 subjects (84.81%) were detected with deviations of the spine, 8 subjects (10,12%) were detected with neurological disorders and 4 subjects (5,06 %) have other

diseases (flat foot, knee condition). The most common deformities in the spine that benefit from physiotherapy in the order of percentage are: kypholordosis, kyphosis, lordosis, neurological disorders, scoliosis C, scoliosis S and kyphoscoliosis.

Table 4. Incidence of diagnoses in school subjects.

The type of disease	Degree of disability	
	TOTAL MD	TOTAL SD
Kyphosis	5 %	8,40 %
Lordosis	5,71%	4,24%
Kypho-lordosis	5,71 %	9,24%
Scoliosis C	4,28 %	5,88 %
Scoliosis S	1,42	0,48 %
Kypho- scoliosis	0,71 %	0,48%
Neurological diseases	-	6,72%
Other diseases	0,71 %	2,52%

Spinal deformities are one of the major health problems for school children, with consequences for the future adult. Given that the correct and deficient body attitude are determined by reflexes that can maintain constant intersegmental relationships, it is necessary that the process of correcting the body

attitude should begin in childhood (after the age of 5), once the process of myelination of fibers is completed nervous. After completing this process we can form a correct posture reflex, stable, and by educating the posture can adjust muscle tone.

Table 5. The type of disease at the level of the spine

The type of disease	Degree of disability	
	TOTAL MD	TOTAL SD
Kyphosis	22,87 %	28,57 %
Lordosis	25%	14,28%
Kypho-lordosis	25 %	31,42%
Scoliosis C	18,75%	20 %
Scoliosis S	6,25%	2,85 %
Kypho- scoliosis	3,12 %	2,85%

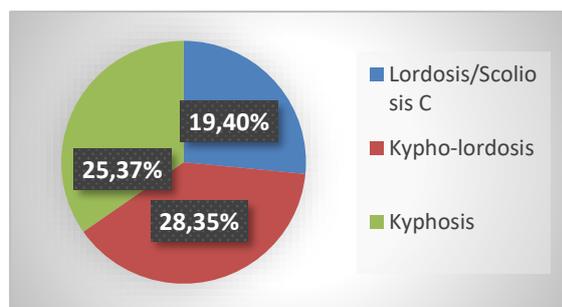


Figure 1. The first three conditions encountered in students with hearing impairments. Of the total deformities of the spine, the most common condition is kypho-lordosis 19 cases (28.35%) with very small differences between men (10 cases) and women (9 cases), followed by kyphosis 13 cases (25.37%) and the third place with the same number of cases is lordosis and scoliosis in C with 13 cases (19.40%)

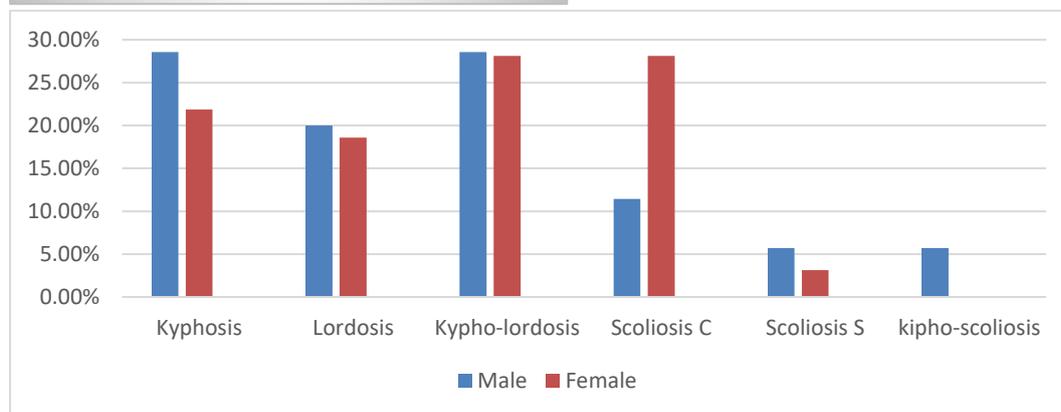


Figure 2. Distribution of spinal deformities according to the gender of the subjects

Reporting the gender of the subjects, the distribution of the deficiencies of the spine looks like this:

- ✓ in boys, it shows that most have sagittal deformities, respectively kyphosis and kypholordosis in the same percentage 28.57%, at the lowest percentage of scoliosis with curves in C and S 5.71%.
- ✓ in females it shows that most of them have chypholordosis and scoliosis in C in the same percentage 28.57%, at the lowest percentage of scoliosis is 5.71%.

Conclusions and discussion

1. Spinal deformities are one of the major health problems for school children, with consequences for the future adult.
2. Of the total number of subjects enrolled at primary and secondary level, 79 subjects (30.5%) were involved in the physiotherapy program.
3. The incidence of diseases is different in students with mental disabilities enrolled in primary and secondary education depending on the degree of disability. For students with mild / moderate impairment, the most common condition is lordosis and kyphosalordosis followed by kyphosis. For students with severe / profound deficiency, the first three conditions found are: kypholordosis followed by kyphosis and neurological disorders.
4. The most common deformity of the spine in students with mental disabilities is kypholordosis
5. In terms of gender, kypholordosis ranks first in both genera.
6. There are currently no official statistics to quantify the number of children and young people with vertebral static disorders grafted on different types of disabilities enrolled in special education.
7. It is important to educate the child for his own health. The multidisciplinary team jointly establishes the educational and interventional objectives for the benefit of the student, but also the activities, the didactic strategies used and the evaluation modalities, in order to record the students' progress/regression.
8. In order to reduce the number of spinal deformities in the school population, it is necessary to implement national prophylactic programs and for this purpose an essential role for their prophylaxis / treatment children have physiotherapy, which will take into account age and the child's level of development

9. Physical therapy applied in schools for children with disabilities aims for the recovery of students with locomotor and neuro-motor disorders (central or peripheral), grafted on severe, deep and / or associated mental deficiencies or background sensory impairments (hearing, sight shortcoming).
10. Assessing the level of physical development and health, based on medical examinations performed on children in school communities is of major importance. To this end, the initial assessment of students by physiotherapists, through various tests and measurements specific to physiotherapy, has a key role in detecting those with diseases (Lafond et al, 2007).
11. The current topic of detecting, preventing and correcting spinal deficiencies among the school population is a current concern for parents, teachers, therapists who raise and educate these age groups.

Bibliography

- Bughirică-Georgescu M, Danciu CR, 2021, Study on the incidence of spine deviations in hearing deficiency students. In: Știința Culturii Fizice. 2021, nr. 37(1), pp. 175-181. ISSN 1857-4114.10.52449/1857-4114.2021.37-1.13
- Bughirică-Georgescu M, 2021, The Incidence of Vertebral Static Disorders at Children Aged 11-14 Years. BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 2021: 11(4Sup1), p.30-45. <https://doi.org/10.18662/brain/11.4Sup1/154>
- Cordun M, 1999 Medical kinetology. Axxa Publishing House, Bucharest, 60-63
- Guștiuc V, 2010, Assessing the perception's level of a necessity for method of health education introduction in the pre-university educational institution's curriculum, In: Anale Științifice ale USMF "Nicolae Testemițanu". Ed. a 11-a. Chișinău: CEP Medicina, 2010, vol.
- Horvat M, Block ME, Kelly LE, 2007, Developmental and Adapted Physical Activity Assessment, Human Kinetics, 137-157.
- Lazăr A, Bîtea Z, Sonea NC, Dinescu C, Suciuc R, 2008, Aspects regarding the perception of teachers in Bihor County about health education in schools, Journal of Hygiene and Public Health; 58 (2): 90-96
- Lafond D, Descarreaux M, Normand MC & Harrison DE, 2007, Postural development in school children: a cross-sectional study. Chiropractic & Manual Therapies, 15, 1. <https://doi.org/10.1186/1746-1340-15-1>



- Momola I, 2007, Somatic development, body posture and motor abilities in mentally disabled girls. 1st ed. Rzeszów (PL): University of Rzeszów Publishers; [Google Scholar]
- Negrini S, Donzelli S, Aulisa AG, Czaprowski D, Schreiber S, de Mauroy JC, Diers H, Grivas TB, Knott P, Kotwicki T, Lebel A, Marti C, Maruyama T, O'Brien J, Price N, Parent E, Rigo M, Romano M, Stikeleather , Wynne J, Zaina F, 2016, SOSORT guidelines: orthopaedic and rehabilitation treatment of idiopathic scoliosis during growth. Scoliosis and spinal disorders, 2018; 13, 3. <https://doi.org/10.1186/s13013-017-0145-8>
- Powers TA, Haheer TR, Devlin VJ, Spencer D, Millar EA, 1983, Abnormalities of the spine in relation to congenital upper limb deficiencies. Journal of Pediatric Orthopedics, 3(4), 471-474. <https://doi.org/10.1097/01241398-198309000-00010>
- Weiss HR, 2010, Spinal deformities rehabilitation - state of the art review. Scoliosis, 5, 28, <https://doi.org/10.1186 / 1748-7161-5-28>