

SCREENING AND PROPHYLAXIS IN CHILDREN FROM URBAN AND RURAL ENVIRONMENT: 6-12 YEAR OLD

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A harmonious physical development in children is a basic component of the health status as well as the main focus in the prevention activity.

Material and method. The aim of this work was to carry out a study on a sample of 100 school children, aged 6-12 years, both in urban and in rural areas in order to observe the growth and physical development disorders and the incidence of posture disorders.

It has been carried out a general somatoscopic examination from the front, rear and profile, registering height; weight; amplitude; chest perimeter in inhalation; chest perimeter in exhalation; circumferential index; body mass index, in order to observe posture, growth and development disorders.

Results. It has been observed that posture vices are most common in older children, the spine deformations have a growing prevalence once with the increasing age of the examined subjects, with no significant differences between the provenance environments. The obesity prevalence is higher in children of elder school age, with values of over 10%, the maximum value being registered at the VIIth class in urban (18,80%). The analysis of the physical development dynamics highlights that more than 70% of evaluated children present a harmonious physical development, the proportion being slightly higher in children from rural areas.

Conclusions. Finally, the information obtained as a result of the screening reveal a favorable evolution of the harmonious physical development at children and adolescents in school communities. However, following the disharmonics it is observed that the percentage of children and adolescents with disharmony by extra weight is increasingly higher.

A harmonious physical development of children is a basic component of health and also the main objective of the prophylactic activity [1].

The general appearance of the body or the physical conformation is given by body posture or attitude, its growth and development.

The attitude is accomplished through several mechanisms contest: biomechanical, physiological and psychological. The correct posture may be described as a sum of body components that emphasize symmetrical arrangement of head, trunk, upper and lower limbs [2].

Educating and keeping the correct body attitude is not possible without the permanent participation of the nervous system through its central and peripheral segments, but especially through the specialized organs contributes to a true sense of attitude. In essence, forming the correct attitude of the body consists in forming a correct and sta-

ble reflex that can compare permanently the body posture and its segments, in relation to the cortical representation of the correct attitude [3].

In normal conditions the body is in an unstable equilibrium. This equilibrium varies in value depending on the height of the center of gravity towards the bearing surface, the support surface area and place. By adaptation, muscles, joints and bones have suffered structural and functional changes in order to maintain body attitude [4].

The equilibrium and the sense of movement inform the cortex about: verticality and body tilt, rotation and linear motion sensation by centralizing proprioceptive sensations obtained on the three levels: transversal, coronal and sagittal [5].

Educating the attitude function is based on two principles:

- forming the reflex of correct attitude through which there is performed the self-control of body posture and its segments, and in need, the recovery of the right attitude specific to the position or movements that are performed;

- developing of muscle groups as effector organs which preserves the correct attitude in various static and dynamic actions.

Forming a correct attitude can be achieved through exercise which, by their content and the way that the child utilizes them, contribute to a correct image acquisition and an a corresponding position [6].

«The growth and development represent a dynamic complex of biological and phenomena processes that the human body goes through its evolution from birth to adulthood.

Growth – is a quantitative process of cell multiplication on increasing weight, volume and dimensions of the body. It is estimated by the following measurements: height, weight, segments length, perimeters diameter.

Development – is a qualitative process of cell differentiation, which is expressed through functional changes and qualitative optimizations that mark improvement and adaptation of body organs and systems, complex evolution and their integration coordinated in a whole.

Assessing development is carried out with more difficulty [7].

Growth and development have a common ground, appearing as manifestations or aspects of the same morpho-functional evolution, that is why they will be analyzed together being influenced

by: genetic factors, geographic environmental conditions and socio-economic and cultural context.

Material and method. According to the National Health Report of Children and Young people in Romania in 2015 in terms of physical development, the population of children in school is divided into 73.6% harmonics and 26.4% disharmonic [8]. That's why I decided to take a screening in order to see if there are any differences in posture, growth and development in children from different backgrounds of provenance: children in urban areas and children in rural areas.

Preventing some poor attitudes in schoolchildren should be one of the main concerns of teachers and therapists. The family also has an extremely important role in preventing and controlling posture flaw, growth and development.

The aim of this work was to carry out a study in order to observe a few morph functional indices of growth and development in children of 6-12 years old and the incidence of physical deficiencies among the school-aged population in urban and rural environment and to compare them with the data in the scientific literature.

The study was conducted on a sample of 100 schoolchildren, 6-12 year old, both in urban and in rural areas, through a close collaboration with physical education teachers and teachers in primary school from «Mihai Eminescu» National College in Suceava and Secondary School also in Bosanci.

At «Mihai Eminescu» National College in Suceava there were evaluated 51 students in different classes:

- First Class – 24 children;
- Class IV C – 11 children;
- Class VII B – 16 children.

At the Secondary School in Bosanci there were evaluated 49 children:

- First Class – 13 children;
- Class IV – 17 children;
- Class VII – 19 children.

Morphofunctional indicators selected for the anthropometric examination were: height; weight; amplitude; chest perimeter in inhalation; chest perimeter in exhalation; cirtomertric index; body mass index. It was also conducted a general somatoscopic examination of front, rear and profile in order to observe vices of posture, growth and development [9].

Results and discussions. Results centralization consisted of calculating the arithmetic mean and standard deviation, as well as from the minimum values registration in each class of tested children.

After analyzing the data we can say that children in first grade in rural areas have an average height of 131, 9 cm, higher with 2,1 cm in relation to children in urban areas. The arm extent average of 130, 3 cm, with 1,5 cm higher than children in town at First Class and an average weight of 31 kg, with 0, 8 kg higher than their peers in the city.

Instead, children from Suceava had the average of abdominal perimeter of 62, 7 cm, with 2, 2 cm higher than their peers in rural areas who have an average of 60.5 cm.

In chest perimeter and cirtomertric index, children in urban areas had greater results: 68,1 cm

Table 1

Anthropometric indices obtained in First classes

Anthropometric measurements on children in First class at «Mihai Eminescu» National College.								
	Height	Weight (kg)	Amplitude	Chest perimeter inhalation	Chest perimeter exhalation	Cirto mertric index	Abdo minal perimeter	Body mass index
AVERAGE	129,8	30,2	128,8	68,1	64,4	4,1	62,7	17,8
MAX	139	53	138	90	87	6	88	27,8
MIN	123	19	122	59	55	3	50	12,2
DEVIATION S.	4,9	7,4	4,6	7,2	7,3	0,9	9,4	3,5
Anthropometric measurements on children in First Class- Secondary School no. 1 Bosanci								
AVERAGE	131,9	31	130,3	65,6	62,3	3,3	60,5	17,8
MAX	135	38	136	75	72	5	69	21,5
MIN	126	24	126	61	58	2	55	15,1
DEVIATION S.	2,6	3,6	3,5	3,5	3,6	0,7	4,3	1,9

Table 2

Anthropometric indices obtained in IVth classes

Anthropometric measurements on children in First class at «Mihai Eminescu» National College.								
	Height	Weight (kg)	Amplitude	Chest perimeter inhalation	Chest perimeter exhalation	Cirto mertric index	Abdo minal perimeter	Body mass index
AVERAGE	145,7	41,2	147,7	75,2	71,2	4	64,1	18,9
MAX	161	54	167	86	82	6	78	26,4
MIN	130	21	124	57	54	3	48	12,4
DEVIATION S.	7,6	9,1	11,9	7,9	7,8	1	7,3	3,5
Anthropometric measurements on children in First Class- Secondary School no. 1 Bosanci								
AVERAGE	142,1	36,4	143,7	73,0	69,3	3,7	63,0	17,8
MAX	150	66	158	101	100	6	93	30,5
MIN	126	24	130	62	59	1	54	14,2
DEVIATION S.	6,8	10,3	8,2	9,6	10,2	1,3	9,3	4,1

the average of chest perimeter in inhalation, 64,4 cm chest perimeter in exhalation, 4,1 cm cirtomertric index compared to only 65,6 cm – the average of chest perimeter in inhalation, 62,3 cm – the average of chest perimeter in exhalation and 3,3 cm – the average of cirtomertric index.

At mean values of body mass index, both classes of children had the same value as follows: 17.8.

If at First class, children from rural areas have registered bigger results in height, weight and arms extent, the IVth classes in the urban areas had higher results at all anthropometric measurements namely: in height the average was 147,7 cm, with 3.6 cm higher; at arm extent the average was 147,7 cm, 4 cm higher; weight registered an average of 41,2 kg with 4.8 kg higher; the abdominal perimeter had an average of 64,1, with 1,1 cm higher; chest perimeter in inhalation – 75,2 cm, with 2,2 cm larger; chest perimeter in exhalation-71,2 with 1,9 cm larger, the cirtomertric index had an average of 4 cm, with 0,3 cm higher and the body mass index was higher by 1,1 cm (18,9 cm).

As in the IVth classes, at VIIth classes the results have been recorded, with a higher average among children from «Mihai Eminescu» with one exception: the average of cirtomertric index was higher in children coming from urban areas (3.7 cm) with 0,1 cm.

At the average of chest perimeter the difference was 7,2 cm, valued 73,6 cm compared to 67,4 cm; children in urban area had an average weight of 58,2 kg with 9,4 kg more than those in rural areas, the amplitude average was 164,3 cm in urban areas with higher 8,3 cm; in thoracic perimeter averages there were recorded differences of 3,9 cm in inhalation and 4,1 cm in exhalation with a body mass index by an average of 20,9 compared to 19,8 for rural children and a 165,3 cm height av-

erage, with 13,6 cm higher than their counterparts in rural areas.

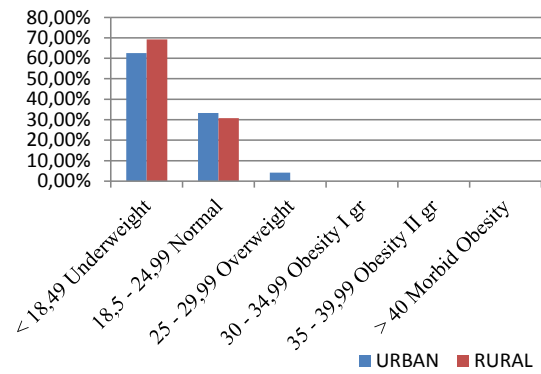


Fig. 1. Body mass index in First Class

After the body mass index measurements, we discovered that in urban areas, 62,5% are underweight, 33,3% are normal and 4,2% being overweight, compared to rural areas where 69,2% are underweight and 30,8% normal.

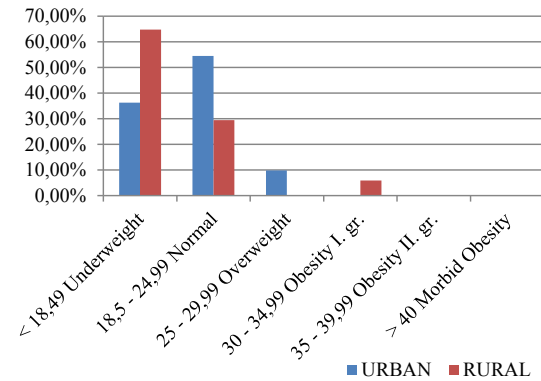


Fig. 2. Body mass index in IVth Class

Table 3

Anthropometric indices obtained in VIIth classes

Anthropometric measurements on children in First class at «Mihai Eminescu» National College.								
	Height	Weight (kg)	Amplitude	Chest perimeter inhalation	Chest perimeter exhalation	Cirtomertric index	Abdo minal perimeter	Body mass index
AVERAGE	165,3	58,2	164,3	87,1	83,5	3,6	73,6	20,9
MAX	178	84	179	107	101	6	95	29,4
MIN	151	40	150	65	63	1	60	15,9
DEVIATION S.	7,5	11,6	8,8	10,3	9,9	1,3	10,2	4,0
Anthropometric measurements on children in First Class – Secondary School no. 1 Bosanci								
AVERAGE	151,7	48,8	156	83,2	79,4	3,7	67,4	19,8
MAX	166	65	165	93	91	7	85	24,9
MIN	146	38	144	73	66	1	61	16,2
DEVIATION S.	5,8	7,8	5,7	6,9	7,3	1,4	6,4	2,5

Table 4

Body mass index at tested classes

Body mass index	First Class urban	First Class rural	IV th Class urban	IV th Class rural	VII th Class urban	VII th Class rural
< 18.49 Underweight	62.50%	69.20%	36,30%	64,70%	25,00%	47,30%
18,5-24,99 Normal	33,30%	30,80%	54,50%	29,40%	56,20%	52,70%
25-29.99 Overweight	4.20%	0	9.80%	0	18,80%	0
30-34.99 Obesity I. gr.	0	0	0	5,90%	0	0
35-34.99 Obesity II. gr.	0	0	0	0	0	0
> 40 Morbid Obesity	0	0	0	0	0	0

After the body mass index measurements, we discovered that in urban areas, 36,3% are underweight, 54,5% are normal and 9,8% being overweight, compared to rural areas where 64,7% are underweight, 29,4% are normal and 5,9% suffering of first grade obesity.

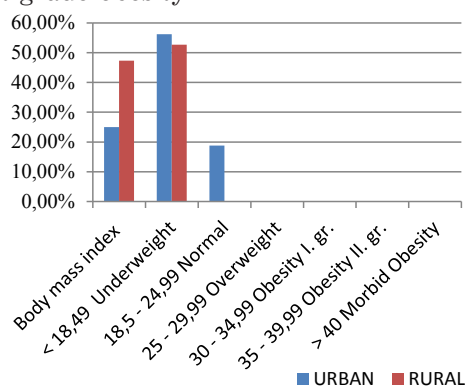


Fig. 3. Body mass index in VIIth Class

After the body mass index measurements, we discovered that in urban areas, 25% are underweight, 56,2% are normal and 18,8% being overweight, compared to rural areas where 47,3% are underweight and 52,7% are normal.

Discussion. The prevalence of obesity is higher in children of school age, with values of over 10%, the maximum value being registered in VIIth class urban (18,80%), but it is followed by a value of 9.80% in the IVth class, the obtained data being in accordance with the scientific literature [10].

We can say that once with increasing age, the urban children are gaining weight because of sedentary and easier access to the latest technolo-

gies which encourages static activities, compared to those in rural areas, which make much more physical effort.

It has been observed that the posture vices are most common in older children, the spine deformations have a growing prevalence once with the increasing age of the examined subjects, starting from the First grade until the VIIth class, with no significant differences between the provenance environments.

The analysis of the physical development dynamics highlights that more than 70% of evaluated children present a harmonious physical development, the proportion being slightly higher in children from rural areas.

Conclusions. Finally, the information obtained as a result of the screening reveal a favorable evolution of the physical harmonious development of children and adolescents from school communities. However, following the disharmonics it is observed that the percentage of children and adolescents with disharmony by extra weight is increasingly higher. Continuing and expanding the activity of health surveillance in children and youth through screening exams, including children in rural communities will allow early identification of unfavorable trends and planning curative and adequate interventions.

A very important thing is the prophylaxis of posture disorders, growth and development abnormalities, by setting up a healthy lifestyle consisting of a balance between sleep and activity hours, a healthy eating and practicing physical exercise at least three times a week since «today's children are tomorrow's adults and they deserve to inherit a safer, fairer and healthier world».

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