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SOMATOSCOPY – AN EASY WAY TO IDENTIFY SCHOOL AGED SUBJECTS AT HIGH RISK TO DEVELOP SCOLIOSIS

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Abstract

In Romania, scoliosis is a formidable health issue among children and youth, its current incidence being at 2-3%. We consider that this condition is but underdiagnosed, many scoliotic postures remaining unnoticed in early stages, when, using only conservative methods, such as kinesiology supported by orthotics (i.e. wearing a corset adapted to the respective spine deviation), its evolution can be stopped or even reversed – the deviation angle displaying a considerable, in some instances, decrease. Through this paper we aim to point out the importance of regular screenings in school aged children (both in primary and secondary school) in order to identify cases displaying scoliotic deficiencies with a potential for aggravation. The experiment – conducted in May 2012 – consisted in the somatoscopic evaluation of 105 subjects aged 9-11, studying in the IVth grade in a primary school in Bucharest. The sample consisted of the IVth grade students that were present at school during the day – the subjects were screened at location by the author following faculty and parental approval in order to identify scoliotic tendencies and the types thereof. Following collection and data analysis, we identified a total of 67 students with scoliotic postures, of which 32 with double curvature. Gender-wise, we observed a higher incidence of scoliosis in female subjects, although the differences were not very large. Instead, a significantly higher number of dual curve scoliotic deviations in females was noted.

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Keywords: Somatoscopy, children, scoliosis.



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1. Introduction

Scoliosis is the most formidable deviation of the spine considering its biomechanical impact, such as respiratory, cardiovascular, aesthetic, psychological, etc.

In Romania, scoliosis is a formidable health issue among children and youth, its current incidence being at 2-3%. We consider that this condition is but underdiagnosed, many scoliotic postures remaining unnoticed in early stages, when, using only conservative methods, such as kinesiology supported by orthotics (i.e. wearing a brace adapted to the respective spine deviation), its evolution can be stopped or even reversed – the deviation angle displaying a considerable, in some instances, decrease.

Scoliosis can be classified by several criteria: cause, age of incipience, deviation size, the number of curves, severity evolution etc. (Baaj, 01.20.2017, Lenke, L.G.2001).

Since minor spine deviations on the side of the dominant upper limb will occur ubiquitously, only deviations exceeding 10° will be considered as scoliosis. (Asher, Burton, 2006).

In 90% of cases, the disease is idiopathic or primary, without an identifiable cause or a trigger mechanism. "The remaining 2-3% of cases occur from birth due to malformations of the vertebrae or ribs and 6-7% are due to other causes - neuromuscular disease, neurofibromatosis, cerebral palsy" (Jianu, 2014, 2001).

2. Problem Statement

Through this paper we aim to point out the importance of regular screenings in school aged children (both in primary and secondary school) in order to identify cases displaying scoliotic deficiencies with a potential for aggravation.

3. Research Questions

Which is the incidence of scoliosis in children in Romania?

Which are the most affected subjects by scoliosis?

4. Purpose of the Study

The aims of this evaluation are the following:

- To assess general and segmental alignment of the body,
- To assess the proportionality of body segments,
- Observe deviations from normal posture,
- To establish the objectives of the recovery and physical therapy treatment,
- After starting the recovery therapy, to observe the issue's evolution and the therapy's effectiveness.

5. Research Methods

Somatoscopy is the visual examination of the human body (Cordun, 1999), in frontal, posterior and lateral incidences, at rest and in motion. „The importance of visual observations cannot be undermined in the study of somatometry. Although these visual observations are not very accurate, still they are indispensable in somatometry” (Sarkar, 2016).

Directly derived from inspection - a method belonging to medical clinical examination, somatoscopy has been challenged in recent years with the advent of a more precise diagnostic methods for spine bias assessment. We believe that somatoscopy retains its value in screening-type investigations, where a large number of subjects is to be evaluated, but cannot be moved to a specialized laboratory.

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Once a spinal deviation is observed, complex both instrumental and radiological tests will be conducted (Tyagur, 2014).

Early diagnosis of scoliosis is of the utmost importance, as there are correlations between its presence and vascular, cardiovascular and kidney disorders. Noting the curves of over 10° in children under ten, or over 20° in children 10 years or older, requires further investigation and monitoring (Janicki&Alman, 2007).

The main drawback of the somatoscopic method is being unable to tell the severity of the spinal deviation and to highlight the magnitude of vertebral rotation.

The experiment – conducted in May 2012 – consisted in the somatoscopic evaluation of 105 subjects aged 9-11, studying in the IVth grade in a primary school in Bucharest. The sample consisted of the IVth grade students that were present at school during the day – the subjects were screened at location by the author following faculty and parental approval in order to identify scoliotic tendencies and the types thereof.

6. Findings

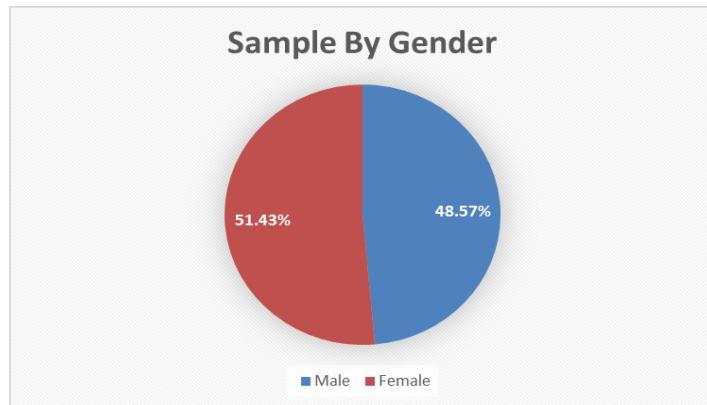


Figure 01. Sample by Gender

The evaluated group was comprised of 54 girls (51.4%) and 51 boys (48.6%) (figure 01). Of the 105 evaluated subjects, a total of 67 displayed upper spine deviations, of which 36 girls and 31 boys.

In the female group, the following were identified:

- 15 simple curvature deviations with reduced amplitude - 8 right and 7 left;
- 21 double curvature deviations, of which 15 right and 6 left, 3 of them being grave, with vertebral rotation determining costal imbalance (figure 02).

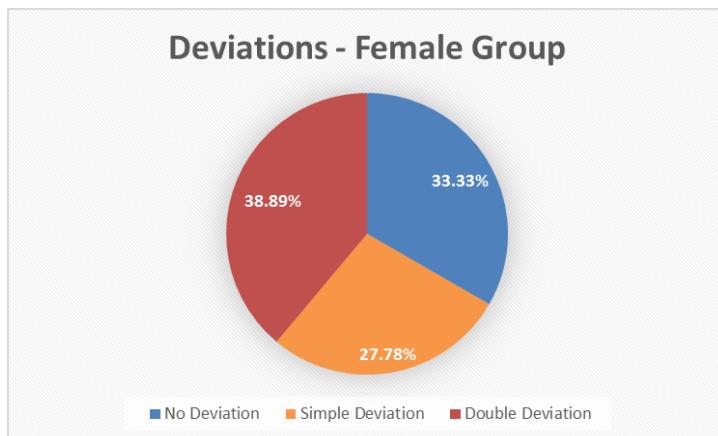


Figure 02. Deviations – Female Group

In the male group, the following were identified:

- 20 simple curvature deviations, 2 right and 18 left;
- 11 double curvature deviations with 8 right and 3 left; only in 1 case a coastal imbalance (curved back) was observed (figure 3).

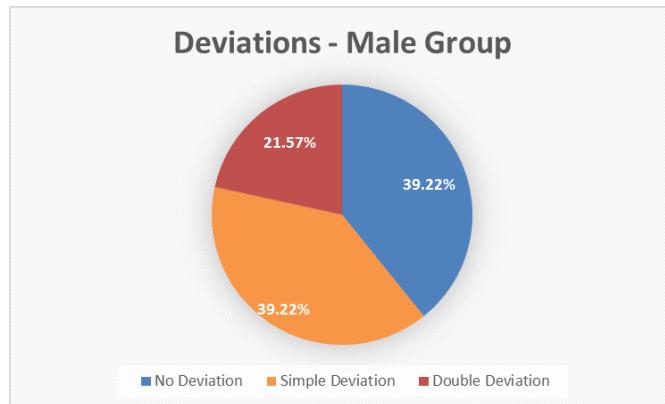


Figure 03. Deviations – Male group

The group was comprised of 54 girls, representing 51.4% and 51 boys, representing 48.6%. (Fig. no 1)

36 cases of spinal deviation was observed in females, of which 21 (58%) that could evolve into more serious forms.

31 cases of spinal deviation was observed in males, of which 11 (35%) that could evolve into more serious forms.

The total number of subjects who spinal deviations is 67, representing 63%.

The number of serious cases, with vertebral rotation is 3 in the girls' group and 1 in the of boys' group.

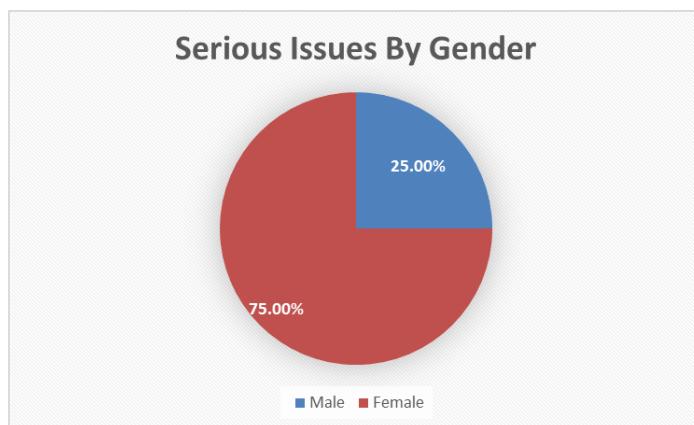


Figure 04. Serious Issues by Gender

7. Conclusion

In the 9-11 years age group, in which the sample is included, many children have small amplitude spine deviations, known as scoliotic attitudes.

By comparing groups of girls with boys, there is a greater number of disorders with higher risk of development in the female group (figure 04).

In the female group we encountered 3 cases of structural scoliosis, which have already initiated the process of vertebral rotation, which means a rate of 5.76% of all girls.

In the male group a single case of structural scoliosis was found, which accounts for 1.96%.

The number of cases of structural scoliosis is 4, which means 3.8% in respect to the total number of evaluated students, a value which, unfortunately, is near the official statistics (2-3%), which ranks Romania first in Europe for the incidence of scoliosis.

We want the study to reveal the need for this type of screening at school cycles' ends, in order to detect early any possible cases with increased risk of evolution, so that kinetic treatment, as a mean to prevent scoliosis, could be started.

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