

CURRENT APPROACHES TO SPINAL DEFICIENCIES FROM A PREVENTIVE AND THERAPEUTIC PERSPECTIVE

BUGHIRICĂ MAGDALENA, TÛDÖS ȘTEFAN

Abstract

Aim. The purpose of this theoretical research is to collect information from various studies, reports and literature that have had various approaches to preventing and treating spinal deficiencies. This research also aims to highlight the different ways of approaching this pathology.

Methods. In this retrospective study we collected and analyzed data from various studies, reports and literature. The data were obtained by disseminating and analyzing the results obtained by numerous specialists in the field over a long period of time. The collected data wanted to bring arguments regarding the approach to this pathology among children and adolescents.

Results. At the level of the school population in Romania, studies have shown a high frequency of this pathology. The impact of these diseases is major, as it mainly affects the young population. According to the National Institute of Public Health from 2018 on the prevalence of the first 10 categories of chronic diseases dispensed in school medical offices, the gained deformities of the spine occupy the third place. From this point of view, it is considered opportune to approach an integrated, multidisciplinary care of these patients with this pathology. In addition to the immediate physical symptoms, spinal disorders have deeper implications such as impairment of self-esteem, quality of life, family life, financial situation of the affected person (Bacîzu, 2016). Studies have shown strong correlations between physical disability in the spine and the impact on social life. The collaboration between family doctors and other specialists will improve the quality of life of these patients whose number is increasing every year.

Conclusions. An increasing number of evidences registered by specialists at national (Ciovică et al, 2016) and international level have shown that spinal deficiencies are one of the most common and complex pathologies occurring at school age, sometimes seriously affecting the health of the future adult. (Grivas, Mazioutou, Savvidou, 2013), (Kusturova, 2012).

Keywords: physical deficiencies, spine, integrative approach, etiology of the disease.

Introduction

Despite the fact that vertebrology has reached an exceptional development, the problem of early diagnosis and specialized care of children with spinal deficiencies is current at national and international level, being caused by: inopportuneness of diagnosis, inadequate methods of treatment, significant costs for treatment and social rehabilitation of the sick (Kotwicki, Chowanska, Kinel, 2013) and (Sadovoy, Sadovaya, Tsytosrina, 2011).

Studies performed on the school population in Romania have shown a high frequency of this pathology (Ciovică, Voinea, Opran, Săpoi, Kamal, Trăistaru, 2016). The impact of this pathology is major, because it mainly affects the young population. Findings made in school communities claim that 80% of schoolchildren deviate from the

ideal attitude of the body 45% of these deviations are considered mild, 25% medium and 10% accentuated (Antonescu, Obrașcu, Ovezza, 2017). According to the National Institute of Public Health regarding the prevalence of the first 10 categories of chronic diseases dispensed in school medical offices in 2018, the gained deformities of the spine occupy the third place.

During the period of growth and development, a high frequency of deviations from the correct body posture is observed, deviations that have been named as terms of vicious attitudes (deficiencies).

They are characterized by accentuated physiological curves of the spine or the appearance of abnormal curves, complemented by incorrect positions of other body structures (such as those on the head, neck, shoulders, chest, etc.). Their long-

term maintenance leads to changes in the tone and length of muscles, ligaments and the installation over time of structural deviations of the spine (Antonescu, Obraşcu, Ovezza, 2017). Once these structured deviations are installed in addition to the aesthetic damage, they prevent the proper performance of organic functions, such as: respiratory disorders, sleep disorders, anxiety, and withdrawal from social life. Most spinal disorders cause discomfort, local pain or reduced mobility that reduce physical performance and daily activity. The risk of spinal deformity is multifactorial.

In Romania the number of patients with vertebral malformations is not known, there are many children diagnosed late, even after the age of 10, when secondary structural changes and repercussions on respiratory or cardiac function are already installed (Popescu, 2018).

Currently, patients with these diseases and their doctors face challenges that include: late diagnosis, late referral to specialized centers, lack of partnership with the patient's family, lack of facilities for the complex treatment of this disease. From this point of view it is considered appropriate provision of care integrated multidisciplinary these patients. The collaboration between family doctors, parents and other specialists will improve the quality of life of these patients, whose number is increasing every year.

Methods

For the elaboration of this research I consulted the specialized literature, reports and different studies. With the collected data we wanted to bring arguments regarding the methods of approaching this pathology among children and adolescents. We discussed several approaches over a period of about 9 years. The data were obtained by disseminating and analyzing the results obtained by numerous specialists in the field. The methods of approach are presented in extensor below.

Topic addressed

The integrative approach. Current studies highlight the results of research to address the pathology of the spine through the bio-psycho-social perspective of individual health in accordance with the WHO, (World Health Organization, 2003) in which the etiological treatment is the role of secondary and tertiary prevention. The integrative approach requires the therapeutic involvement of a multidisciplinary team. In other words, it allows us to treat the root cause of the problems that patients

have and not just the symptoms. Multidisciplinary team (doctors of various specialties, physiotherapists, psychologists, parents, school, etc.) plays an important role in the follow-up of patients with this pathology throughout the stages of development. The echo of research is also widely applicable in the economic and public health spheres, in terms of opening research directions in the field of improving indicators of temporary incapacity for work, hospital bed turnover and gross domestic product (GDP), results by secondary and tertiary prophylaxis of these abnormalities.

The integrated approach allows the approach of a complete and nuanced diagnosis to guide the intervention in relation to the biological, physiological and psychological resources of the person (Gherguţ, 2011).

Approach based on understanding the etiology of the disease.

Prenatal diseases are determined at fertilization (defects and diseases of a single gene, which produce chromosomal aberrations), independent of the environment and behavior. Diseases caused prenatally by interfering with infectious and toxic factors (rubella, irradiation, iodine deficiency, etc.) cannot be controlled. Postnatal diseases due to deficiencies or aggressions of environmental risk factors (nutritional diseases-malnutrition, infectious diseases, diseases caused by defects in the body, lifestyle diseases-new technologies and social requirements), cause changes of behavior.

The approach according to the stages of life after Graham, 2002 and Ben-Shlomo, Kuh, 2002, the exposure to risks occurs with different frequency in key stages of life producing irreversible defects on health. There are critical periods of exposure (eg: poor diet - vitamin D deficiencies, Ca, in childhood), favors the appearance of vertebral static disorders. Vertebral malformative pathologies cannot be viewed independently, but in perspective, following the needs of a child in full growth process (Popescu, 2018)

In the first 5 years of a child's life, normal development and growth are essential to the development of a normal life, through the impact reflected on lung development. Any small intervention, natural or iatrogenic, on the growth of the spine can have serious repercussions on the patient's quality of life, if the effects and benefits of any surgery are not weighed, and if the importance

of this period in further development is not taken into account (Popescu, 2018). Delay in performing a treatment in case of a structured deficiency in a growing spine requires the use of either growth devices to correct secondary scoliotic curvature or the need for prolonged spinal arthrodesis, with the corresponding repercussions for each variant.

Exposure to various physical and social factors determining health during pregnancy, childbirth, childhood, adolescence, youth, adult, intensifies the risk of chronic diseases in the spine. After these periods of life, the effects of exposure are cumulative (eg, common respiratory diseases in childhood are associated with scoliosis).

Application models according to the stages of life include: annual clinical examinations at the beginning of each school year to determine growth disorders or congenital diseases; monitoring physical and mental development (response to visual and auditory stimuli, limb position, reflexes); prevention of physical deficiencies after starting school. The approach recommended by the European policy of WHO - Health 2020, specifies that health promotion actions carried out specifically during the stages of life are effective, increase the quality of life of individuals in adulthood and old age, prevent the emergence of disabilities and maintain dependence the elderly.

Approaching a preventive intervention model. The main goal of the model is to maintain health and prevent disease. The model is based on the epidemiological model of diseases (cause-effect agent).

The levels of approach are: primary prevention, primary prevention, secondary prevention, tertiary prevention.

✓ *Primordial prevention* prevents the emergence and establishment of social/ economic/cultural models of life, which are known to contribute to increasing the risk of poor interest in the spine. Strict regulations from governments/ state; intersectoral action at high institutional level.

✓ *Primary prevention* representing the decrease of the incidence of the pathology through measures intended for the healthy person. It is useful for decreasing exposure to risk factors or decreasing contact with risk factors.

✓ *Secondary prevention* includes early detection of the disease to prevent the onset of complications. Effect - reducing the prevalence by decreasing the duration of the disease and accelerating healing. The

importance of screening in the preclinical phase - easy to identify and possible to treat (example: school screening for early detection of vertebral static disorders).

✓ *Tertiary prevention* is done after a disease has already appeared. Reduces the evolution and complications of a disease (disability, handicap, sequelae). It involves principles such as restoration, remotivation, resocialization and reintegration. Promotes the adaptation of patients to the condition of an incurable disease. (Larsen syndrome that causes deformities of the spine or malformations of the cervical spine).

Geoffrey 's classic work, 2001, highlights the need to divide disease prevention models according to their focus both individually and at the population level.

The strategy based on the individual approach, interests the disease and the causes of the individual's disease. This approach is addressed exclusively to the individual belonging to the clinical sector. It is addressed to the sick person who presented to the doctor. Questions such as "Why did he get the disease?", "Why did you get the disease now?", and "What should you have done to prevent the disease from appearing?" It is an important strategy for medical practice in relation to the sick person.

The population strategy concerns the incidence of the disease in the population, belonging to the public health sector. It has two forms:

- The high risk strategy is aimed at the people most likely to get the disease. It requires the identification of people at high risk (screening, selection of people exposed to certain factors that determine the disease, age group, etc.).
- The ecological strategy addresses the entire population, starting from the premise that high-risk individuals are few, and those with medium and low risk, very numerous. As such, the incidence of the disease is reduced by lowering the average level of risk factors (trying to change the distribution of risk factors in the population).

Examples of preventive actions for spinal deficiencies - individual model versus population model. Table 1

Strategies based on individual approach	Population strategies
Educating patients who have risk factors for the occurrence of spinal deficiencies	Urban planning that encourages walking / cycling.
Procedures to prevent complications in patients with spinal deficiencies.	Initiatives to promote physical activity in school or at work.
	Fiscal policies that encourage the production and consumption of healthy foods.

Behavioral change approach.

Human behavior causes a large part of morbidity and mortality.

Human behavior can change.

Theories and models aim to identify the factors/mechanisms that determine behaviors and their change.

Currently, it is recommended to include in the therapy of the child with spinal deficiencies the cognitive-behavioral psychological intervention. This is achieved by the daily registration by the child or family of how the child performs his daily activity in terms of posture, physical activity, hygiene and diet. In this way the child and the family have a control over the child's behavior, easily identify the negative aspects from the point of view of the posture, ensuring the correction of mistakes.

Discussions

What is the most pertinent approach? How can we achieve this, concretely, so that this pathology does not grow every year?

During pregnancy, a balanced diet of the mother is necessary, with a natural intake of vitamins and minerals. Due attention should be paid to the early correction of deficiencies (calcium deficiency, anemia, endocrine diseases, etc.), which ensures the fetus a good start in life.

Adequate nutrition according to age, hygiene, prophylaxis of rickets or other possible diseases that may occur in the first period of life provides the child with the necessary protection in the occurrence of this pathology.

We must not forget the natural hardening of the body and age-appropriate physical activity that makes a real shield against most diseases. The child's

health depends on the correct attitude of the body which is a sign of physical and mental balance.

From birth, it is important for the specialist to detect and treat physical ailments that can cause deformities in the spine. Presenting the child at the annual assessment exams is vital.

Spinal deficiencies occur slowly and over time. The treatment of this pathology is effective only in a multidisciplinary team and is lasting if it turns into a chronic condition.

The impact of chronic diseases on society is impressive. It causes human suffering and puts a significant burden on our health systems. "Currently, between 70% and 80% of healthcare costs in the EU, ie € 700 billion, are expenditure in the field of chronic diseases." Seychelles, M., Deputy Director-General of the Directorate for Health and Food Safety in within the European Commission.

Changes of mentality are needed by applying the primary prevention that prevents the emergence and establishment of social / economic / cultural patterns of life, which are known to contribute to increasing the risk of disease. A set of strict rules from governments/state; intersectoral action at high institutional level on the prevention of this pathology.

Conclusions

At present, patients with these pathologies, as well as their doctors, face challenges that include: irregular controls, late diagnosis and late referral to specialized centers, lack of facilities for complex treatment of this pathology (comorbidities, associated conditions-respiratory disorders, disorders sleep, anxiety etc). From this point of view, it is considered opportune to set up centers dedicated to the integrated, multidisciplinary care of these patients. Collaboration between family doctors, parents and other specialists will improve the quality of life of these patients.

An increasing number of evidences registered by specialists at national level (Ciovică, Voinea, Opran, Săpoi, Kamal, Trăistaru, 2016) and internationally have shown that deficiencies in the spine is one of the most complex and common pathologies that occur in old age. they sometimes seriously affect the health of the future adult (Grivas, Maziotou, Savvidou, 2013) and (Kusturova, 2012).

We must look globally at the child with this pathology, not only analytically, not only regarding for example scoliosis from the point of view of some exercises, or from the point of view of wearing the corset or the operation. We must look at children with this pathology as a bio-psycho-social being and find the right means to satisfy all the child's needs in his recovery.

Changing the role of family medicine in the medical system must come not only through new

health policies, but also by taking on a role in research, innovation and collaboration with specialists. The fragmentation of medical care within the system, between primary care-specialists-hospital is to the detriment of the patient. This partnership must be rethought, as well as the patient-office and office-specialist relationship. On the other hand, all patients must have access to the same basic care - regardless of whether we are referring to prevention, acute conditions, hospitalization for chronic diseases (Moşnegu, 2017).

Bibliography

- Antonescu D, Obraşcu C, Ovezza A, *Spine correction*, Medical Publishing House, Bucharest, 2017, pages 7-9.
- Bacîzu E, *Mathematical models regarding occupational morbidity due to vertebral static disorders*, Abstract Doctoral thesis, University of Medicine and Pharmacy of Craiova, 2016, pp. 2 -22.
- Ben-Shlomo Y, Kuh D, A life course approach to chronic disease epidemiology: conceptual models, empirical challenges and interdisciplinary perspectives, *International Journal of Epidemiology*, Volume 31, Issue 2, April 2002, Pages 285–293, <https://doi.org/10.1093/ije/31.2.285>
- Cioviacă C, Voinea C, Opran T, Săpoi V, Kamal D, Trăistaru R. *The importance of evaluating postural alignment at scholars*, Journal of School and University Medicine, 2016, pag.5.
- Geoffrey R, *Sick individuals and sick populations*, *International Journal of Epidemiology*, Volume 30, Issue 3, June 2001, Pages 427–432, <https://doi.org/10.1093/ije/30.3.427>
- Gherguţ A, *Evaluation and psychoeducational intervention. Educational, recuperative and compensatory therapies*, Polirom Publishing House, Iaşi, 2011, page 15.
- Grivas TB, Mazioutou C, Savvidou OD, et al. The pendulum swings back to scoliosis screening: screening policies for early detection and treatment of idiopathic scoliosis - current concepts and recommendations. In: *Scoliosis*, 2013, nr.8, pp.16-21.
- Graham H, *Building an inter-disciplinary science of health inequalities: the example of lifecourse research*, PMID: 12406467 DOI: 10.1016 / s0277-9536 (01) 00343-4, 2002.
- Kotwicki T, Chowanska J, Kinel E., Optimal management of idiopathic scoliosis in adolescence. In: *Adolesc Health Med Ther*, 2013, no. 23 (4), pp. 59-73
- Kusturova A, *Epidemiological aspects of spinal deformities in children in Chisinau*. In: *Scientific Annals of USMF "Nicolae Testemitanu"*. 13th edition. Chisinau, 2012, vol.4, pp.185-190.
- Mosneagu LD, The integrated approach to inflammatory bowel diseases, *Revista -Viaţa medicală*, <https://www.viata-medicala.ro/ars-medici/abordarea-integrata-a-bolilor-intestinale-inflamatorii-13841>, 2017.
- Pan American Health Organization Population and Individual Approaches to the Prevention and Management of Diabetes and Obesity Washington, DC: PAHO, 2011.
- Popescu G, *Congenital scoliosis, Diagnosis and treatment variants by hemivertebra resection and segmental fusion*. Doctoral thesis summary, "Carol Davila" University of Medicine and Pharmacy Bucharest, 2018, p. 5 -22
- Sadovoy MA, Sadovaya TN, Tsytsorina IA, 2013, Organization of specialized orthopedic care for children with spinal deformities, In: *Spinal surgery*, 2011, No. 3, pp. 99-105.
- Seychell, M., For better prevention and anagement of chronic diseases, *Electronic Health Bulletin Health-EU*. https://ec.europa.eu/health/newsletter/169/focus_newsletter_ro.htm
- World Health Organization, 2003. <https://umfcd.ro/wp-content/uploads/2018/10/C-6-Promovarea-sanatatii-10.10.-2018-1.pdf>
- <https://www.romedic.ro/sindromul-larsen>
- <https://www.romedic.ro/sindromul-larsen>
- <https://insp.gov.ro/sites/cnepss/wp-content/uploads/2018/02/RSC-2017.pdf>, pag.22
- https://ec.europa.eu/health/newsletter/169/focus_newsletter_ro.htm
- <https://www.viata-medicala.ro/ars-medici/abordarea-integrata-a-bolilor-intestinale-inflamatorii-13841>