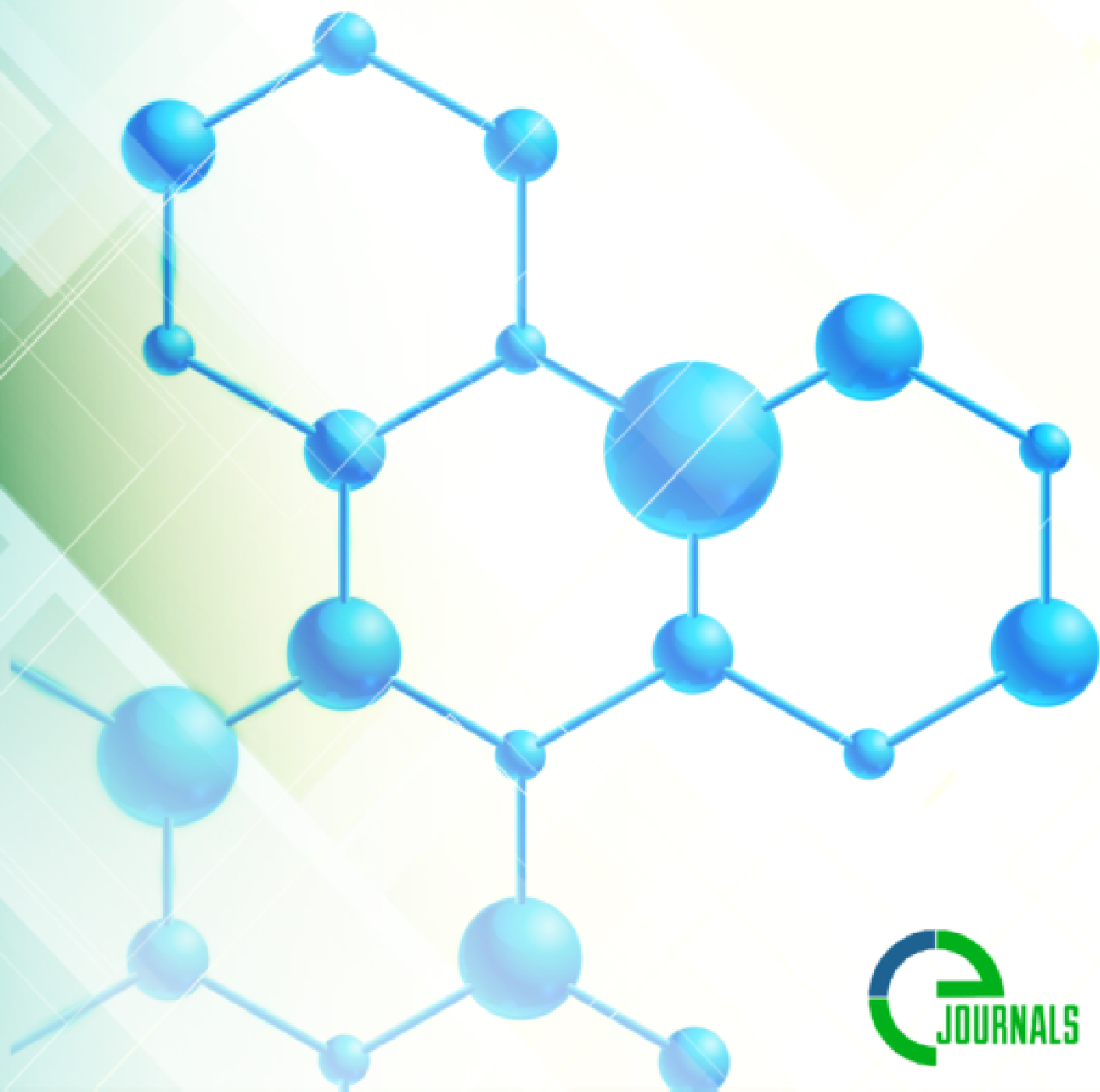


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STUDYING THE RELATIONSHIP BETWEEN THE LENGTH OF THE EXTERNAL AUDITORY CANAL AND HEARING ACUITY

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The relevance of the study devoted to the study of the relationship between the length of the external auditory canal and hearing acuity is due to the importance of accurate diagnosis and understanding of the anatomical and physiological features of the auditory system. The external auditory canal plays a key role in the transmission of sound waves to the eardrum, and its size can affect the perception of sounds of varying frequency and intensity. Studies aimed at identifying the relationship between anatomical parameters and functional characteristics of the auditory system contribute to the development of effective methods for the diagnosis and prevention of hearing disorders.

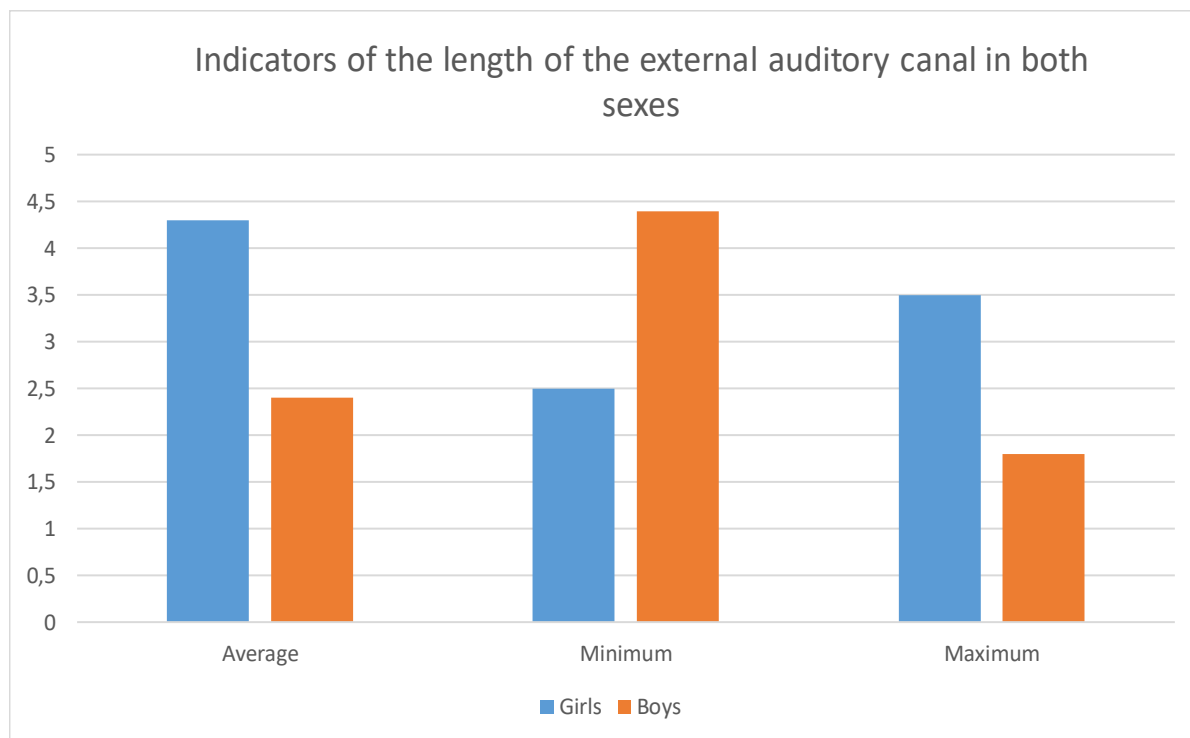
This direction is especially relevant in the context of early diagnosis of hearing disorders in children, adolescents and the elderly, whose auditory function may change under the influence of various factors such as age-related changes, environmental conditions, as well as pathological processes. Also, this study may have an impact on improving prosthetics and tuning of hearing aids, which in turn will improve the quality of life of patients with hearing impairments.

Keywords: length of the external auditory canal, hearing acuity, audiometry, auditory disorders, hearing physiology, correlation of hearing and anatomy, age-related hearing features.

The materials and methods of the study were the results of a study of hearing acuity and an endoscopic examination of the length of the external auditory canal in 244 healthy school children.

The results of the study: The external auditory canal (meatus acusticus externus) is a tubular structure connecting the auricle with the eardrum. Its length in children varies depending on age and individual anthropometric indicators. The average length of the auditory canal in children at this age is 2.5-3 cm. As they grow older, it increases, taking on a more curved shape in adolescents. In children, the external auditory canal is an important element in the processes of hearing adaptation, since its morphological changes directly affect the development of hearing acuity during growth.

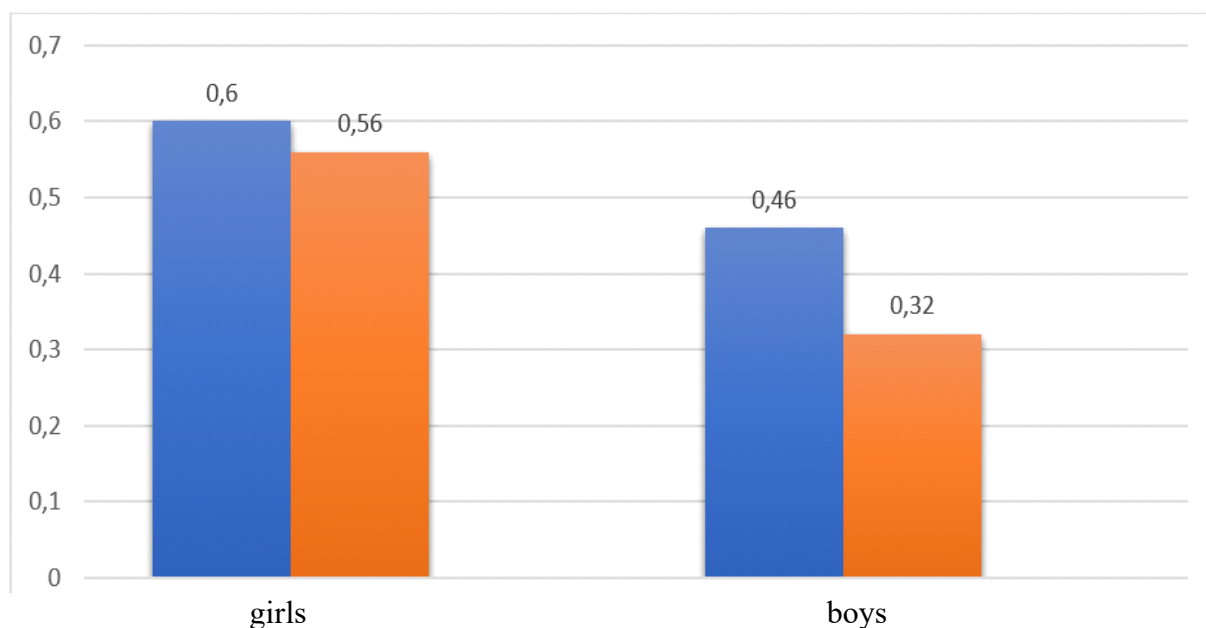
Chart 1.



The table shows that the average length of the external auditory canal in girls was 26.5 mm, and in boys - 26.8 mm. At the same time, the minimum and maximum values in this age group turned out to be the same and amounted to 22 mm and 31 mm, respectively.

Chart 2.

The results of the correlation analysis of the length of the external auditory canal and hearing acuity in healthy school children



Blue is the external auditory canal and hearing acuity on the right, red is the external auditory canal and hearing acuity on the left

The diagram shows the presence of a statistically significant relationship between the

length of the external auditory canal and hearing acuity, while this dependence is more pronounced in the right ear, and in girls it is more pronounced.

Discussion: The results of the study confirmed the presence of a statistically significant relationship between the length of the external auditory canal and hearing acuity in school-age children. This indicates that the anatomical features of the hearing aid can play an important role in the development of auditory function, especially at the stage of growth and development of the body. A more pronounced correlation in the right ear, as well as a strong manifestation of this dependence in girls, may be due to both the peculiarities of physiological development and possible environmental factors.

It is interesting to note that, despite minor differences in the average length of the auditory canal between boys and girls, these differences have a significant impact on hearing acuity, which indicates the need for a more detailed study of gender differences in anatomical and physiological parameters of the auditory system. These studies can become the basis for the development of new methods for the diagnosis of hearing disorders and their prevention, which is especially important for the early detection of pathology in children and adolescents.

The results also confirm that the length of the external auditory canal is an important indicator that should be taken into account when setting up hearing aids and other hearing correction devices. This opens up prospects for further research in the field of auditory prosthetics, allowing to improve the quality of sound perception in patients with hearing impairments.

In conclusion, the study confirms the importance of taking into account the anatomical parameters of the auditory system in the diagnosis and treatment of hearing disorders, and also emphasizes the need for further research to better understand the interaction of anatomy and hearing function, especially in the context of age and gender differences.

Conclusion: The study revealed a statistically significant relationship between the length of the external auditory canal and hearing acuity in school-age children. Anatomical features of the hearing aid, especially in the context of age and gender differences, have an impact on auditory function. The obtained data emphasize the importance of taking these parameters into account in the diagnosis and treatment of hearing disorders, and also open up prospects for improving hearing replacement and prevention of hearing disorders.

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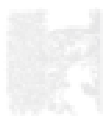
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