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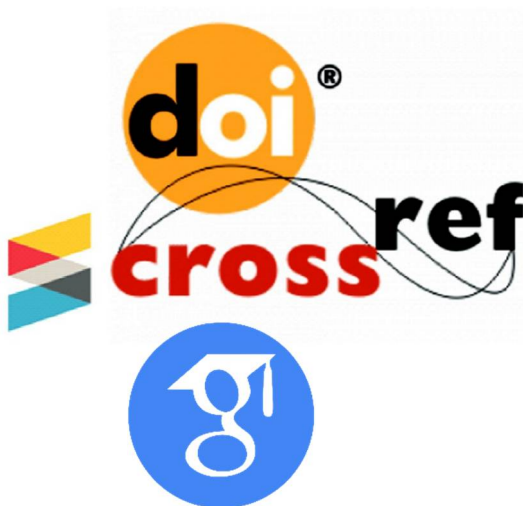
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БИОМЕДИЦИНА ВА АМАЛИЁТ ЖУРНАЛИ

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SENSORINEURAL HEARING LOSS IN TODAY'S OTORHINOLARYNGOLOGY: TRENDS AND LITERATURE INSIGHTS

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ABSTRACT

Sensorineural hearing loss is one of the most common disorders of the auditory system and represents a significant medical and social problem worldwide. According to the World Health Organization, more than 1.5 billion people globally experience some degree of hearing impairment, with a substantial proportion associated with occupational noise exposure and age-related changes. The aim of this review is to analyze current scientific data on the prevalence, risk factors, pathogenetic mechanisms, and modern approaches to the prevention, diagnosis, and rehabilitation of sensorineural hearing loss. The review is based on the analysis of recent national and international publications devoted to the epidemiology of hearing disorders, the impact of occupational noise, the role of neurosensory and neuroendocrine mechanisms, as well as the potential of digital technologies for early detection of hearing impairment. Particular attention is paid to the prospects of mobile audiometry and digital health applications for hearing screening and monitoring of auditory function. The findings indicate that the implementation of modern digital technologies and improvement of preventive programs may significantly increase the effectiveness of early diagnosis and rehabilitation of patients with sensorineural hearing loss.

Keywords: sensorineural hearing loss, occupational noise, audiometry, mobile audiometry, digital technologies, prevention, rehabilitation.

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СЕНСОНЕВРАЛЬНАЯ ТУГОУХОСТЬ В СОВРЕМЕННОЙ ОТОРИНОЛАРИНГОЛОГИИ: ТЕНДЕНЦИИ И АНАЛИЗ ЛИТЕРАТУРЫ

АННОТАЦИЯ

Сенсоневральная тугоухость является одной из наиболее распространённых патологий слухового анализатора и представляет значительную медико-социальную проблему современного общества. По данным Всемирной организации здравоохранения, более 1,5 млрд человек в мире имеют различные степени нарушения слуха, при этом значительная часть случаев связана с воздействием производственного шума и возрастными изменениями. Целью настоящего обзора является анализ современных научных данных о распространённости, факторах риска, патогенетических механизмах, а также современных подходах к профилактике, диагностике и реабилитации сенсоневральной тугоухости. Проведён анализ отечественных и зарубежных публикаций последних лет, посвящённых эпидемиологии слуховых нарушений, влиянию производственного шума, роли нейросенсорных и нейроэндокринных механизмов, а также возможностям применения цифровых технологий для раннего выявления нарушений слуха. Особое внимание уделено перспективам использования мобильной аудиометрии и цифровых медицинских приложений для скрининга слуха и мониторинга слуховой функции. Результаты анализа показывают, что внедрение современных цифровых технологий и совершенствование программ профилактики могут значительно повысить эффективность ранней диагностики и реабилитации пациентов с сенсоневральной тугоухостью.

Ключевые слова: сенсоневральная тугоухость, производственный шум, аудиометрия, мобильная аудиометрия, цифровые технологии, профилактика, реабилитация.

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ЗАМОНАВИЙ ОТОРИНОЛАРИНГОЛОГИЯДА СЕНСОНЕВРАЛ КАТТИҚҚУЛОҚЛИК: ТЕНДЕНЦИЯЛАР ВА АДАБИЁТЛАР ТАҲЛИЛИ

АННОТАЦИЯ

Сенсоневрал каттиққулоқлик эшитиш анализаторининг энг кенг тарқалган патологияларидан бири бўлиб, замонавий жамиятда муҳим тиббий-ижтимоий муаммолардан ҳисобланади. Жаҳон соғлиқни сақлаш ташкилоти маълумотларига кўра, дунёда 1,5 миллиарддан ортиқ инсон турли даражадаги эшитиш бузилишларига эга. Уларнинг катта қисми ишлаб чиқариш шовқини таъсири, ёшга боғлиқ ўзгаришлар ва бошқа омиллар билан боғлиқ. Ушбу мақоланинг мақсади сенсоневрал каттиққулоқликнинг тарқалиши, хавф омиллари, патогенетик механизмлари ҳамда профилактика, диагностика ва реабилитациянинг замонавий ёндашувларини таҳлил қилишдан иборат. Мақолада охириги йилларда чоп этилган маҳаллий ва хорижий илмий манбалар таҳлил қилинди. Шунингдек, эшитиш бузилишларининг эпидемиологияси, ишлаб чиқариш шовқини таъсири, нейросенсор ва нейроэндокрин механизмлар ҳамда эшитишни эрта аниқлашда рақамли технологияларни қўллаш имкониятлари кўриб чиқилди. Мобил аудиометрия ва тиббий мобил иловаларни қўллаш эшитишни скрининг қилиш ва эшитиш функциясини мониторинг қилишда истиқболли

ушулардан бири ҳисобланади. Замонавий рақамли технологияларни жорий этиш сенсонеурал қаттиққулоқликни эрта аниқлаш ва реабилитация самарадорлигини оширишга хизмат қилади. **Калит сўзлар:** сенсонеурал қаттиққулоқлик, саноат шовыини, аудиометрия, мобил аудиометрия, рақамли технологиялар, профилактика, реабилитация.

The relevance of the issue. Hearing loss is one of the leading medical and social challenges facing modern society. According to WHO estimates, over 1.5 billion people (20% of the world's population) have some degree of hearing loss. Of these, 430 million people have disabling hearing loss, which severely limits their ability to communicate and function in daily life.

According to the Global Burden of Disease Study (2019), more than 1.57 billion people worldwide have some degree of hearing impairment, accounting for around 20.3% of the population, of whom over 403 million suffer from moderate to severe hearing loss. By 2050, this figure is expected to rise to 2.45 billion people, meaning that one in four people on the planet will face the problem of hearing loss.

The adult population is particularly vulnerable due to gradual age-related hearing loss, occupational risks, noise pollution and associated chronic conditions. According to a systematic review by Tao et al. (2025), the prevalence of hearing loss among adults is approximately 31%, whilst disabling hearing loss is found in 15.9%. Hearing loss in adults is directly linked to cognitive decline, depression, social isolation and loss of working capacity, which significantly increases the economic costs to society. According to WHO estimates, the annual global cost of untreated hearing loss exceeds US\$980 billion.

In countries with rapidly ageing populations, there has been a significant increase in the prevalence of hearing loss: in South Korea, for example, the prevalence rises from 7.5% among 50-year-olds to 63.9% among those aged 70 and over. These figures may also apply to Central Asian countries, including Uzbekistan, where the proportion of older people is increasing.

Sensorineural hearing loss caused by occupational noise exposure is one of the most common occupational hearing disorders worldwide and remains a significant medical and social problem, particularly among workers in noisy industries. Recent studies confirm that noise-induced hearing loss is widespread and negatively affects the physical and psychosocial well-being of workers, reducing their quality of life and productivity (9, 12).

The international scientific literature emphasises that occupational noise exposure remains a key risk factor for the development of sensorineural hearing loss, despite modern prevention programmes implemented in a number of developed countries (10, 11).

In recent years, the issue of sensorineural hearing loss has been viewed not only as a clinical problem, but also as a significant medical, social and economic challenge. Recent studies emphasise that occupational sensorineural hearing loss, caused by exposure to industrial noise, ranks among the leading causes of occupational hearing disorders and continues to be highly prevalent even where standard occupational health and safety programmes are in place (10).

Foreign epidemiological studies and systematic reviews show that prolonged exposure to noise leads not only to progressive hearing loss, but also to the development of persistent functional and neurosensory disorders, accompanied by cognitive decline, emotional disorders and social maladjustment (9, 14, 17). A number of studies emphasise that occupational hearing loss is associated with an increased risk of depression, anxiety disorders and a reduced quality of life, which exacerbates the socio-economic burden of the condition.

In recent years, research has been conducted in Uzbekistan into sensorineural hearing loss in children (8); methods for the comprehensive diagnosis of sensorineural hearing loss have been studied and surgical techniques for its treatment have been refined (2, 3), factors contributing to the development of sensorineural hearing loss in young children following exposure to aminoglycosides have been identified (4), methods for the comprehensive management of patients with vascular and infectious acute sensorineural hearing loss have been developed (1), comprehensive methods for the diagnosis and treatment of sensorineural hearing loss in cases of toxoplasmosis and cytomegalovirus infection have been studied (6).

Methods for the treatment and prevention of cerebral changes in occupational hearing loss have been developed (5), and clinical and functional changes in occupational sensorineural hearing loss, along with the specific features of its diagnosis and treatment in workers exposed to noise and vibration, are currently the subject of active discussion (7).

Uzbekistan is characterised by a lack of systematic data on the prevalence of hearing loss among the adult population. There are studies and government programmes on universal audiological screening of newborns, but the epidemiology and prevention of hearing disorders in adults remain virtually unexplored. According to sociological surveys, 34.3% of people with hearing loss in Uzbekistan experience constant difficulties in daily life and social adaptation, which confirms the limited access to diagnosis and rehabilitation. Global clinical and public health guidelines emphasise that hearing care should encompass not only the prevention and early detection of hearing loss, but also comprehensive rehabilitation for people with sensorineural hearing loss, aimed at restoring their functional abilities and ensuring their social and professional integration (WHO, 2021–2025). The World Health Organisation's work on hearing issues encompasses the development of technical guidelines for Member States on improving ear and hearing care systems, including the implementation of hearing aid programmes, communication training and support for patients in their daily lives (WHO).

At the same time, the rapid proliferation of smartphones and the development of mobile health applications are opening up the technical possibility of mass hearing screening (audiometry). The inclusion of mobile applications in early hearing loss detection schemes can: increase screening coverage in remote and rural areas; reduce the time to detection and referral to a specialist; reduce the burden on primary care facilities by using remote patient selection algorithms for face-to-face examinations; improve the monitoring of changes in hearing function and the effectiveness of prevention programmes (including educational activities on safe listening).

Recent international studies confirm the high diagnostic value of mobile audiometry for hearing screening. A meta-analysis of 25 studies ($n = 4,470$) showed that smartphone audiometry has a sensitivity of approximately 89% and a specificity of approximately 93%, with an AUC of 0.96, confirming its accuracy even in resource-limited settings. More recent reviews indicate that mobile applications demonstrate a sensitivity of 91–94% and a specificity of 87–90% for detecting mild and moderate hearing loss, confirming their suitability for mass screening outside specialist clinics (PubMed ID: 36862527; Springer, 2024). Digital technologies therefore represent a promising tool for the early diagnosis and prevention of hearing loss.

In recent years, the Republic of Uzbekistan has been pursuing a targeted policy aimed at the digitalisation of the healthcare system and the improvement of specialist medical care, which creates favourable conditions for the introduction of digital tools for early diagnosis. Thus, a number of regulatory acts of the President of the Republic of Uzbekistan provide strategic support for the digitalisation of healthcare and measures to develop otorhinolaryngological care: Presidential Decree No. PP-140 of 1 May 2023 'On Additional Measures for the Digitalisation of the Healthcare System', Decree No. PP-415 of 28 December 2023 'On Additional Measures to Accelerate the Digitalisation of the Healthcare System and the Introduction of Advanced Digital Technologies'. These documents explicitly provide for measures for the early detection and prevention of hearing disorders and encourage the introduction of digital solutions into medical practice.

Decree of the President of the Republic of Uzbekistan No. PP-255 of 1 August 2023 "On measures to improve and expand the coverage of otorhinolaryngological services" includes the following provisions: the development of a network of specialised ENT clinics and audiological services in the regions; strengthening measures for the prevention of hearing disorders and their early detection; the introduction of modern digital technologies and diagnostic methods, including screening programmes; improving access to medical care for patients with hearing impairments; the organisation of educational and awareness-raising activities among the population.

Given the legislative support for the digitalisation of healthcare in the Republic of Uzbekistan and the scale of the global problem of hearing loss, the scientific evaluation and adaptation of mobile

applications for home audiometry appears to be a timely and practically significant task for the national healthcare system.

The results of meta-analyses and systematic reviews confirm the high diagnostic accuracy of mobile audiometry and digital hearing assessment tools, making them promising for use in occupational health programmes and the prevention of hearing loss among workers in noisy environments (14). At the same time, the need to adapt such technologies to national conditions, linguistic characteristics and the specific nature of occupational risks is emphasised.

Despite the existence of occupational health and safety regulations and measures to reduce noise levels in the workplace, the prevalence of occupational sensorineural hearing loss remains a pressing issue in many industrial sectors. This is due to the late detection of early forms of hearing impairment, the insufficient effectiveness of standard preventive measures, and the lack of an individualised approach to occupational risk assessment and the restoration of hearing function (CDC/NIOSH, 2024).

Furthermore, systematic reviews indicate that workplace hearing protection programmes can reduce the risk of hearing loss progression, but require further optimisation and assessment of their long-term effects.

The current literature devotes particular attention to the pathogenic mechanisms of sensorineural hearing loss. It has been established that damage to the auditory system caused by noise exposure is underpinned by processes of oxidative stress, mitochondrial dysfunction and neuroinflammation, as confirmed by experimental and clinical studies in recent years (15, 16, 18). It is emphasised, however, that standard therapeutic approaches often fail to take into account the individual pathogenetic characteristics of patients, which limits their effectiveness.

In recent years, there has been growing interest in studying the role of neuroendocrine mechanisms in the development of sensorineural hearing loss. Studies show that chronic stress, characteristic of workers in noisy environments, is accompanied by activation of the stress response system and changes in cortisol secretion, as well as disruption of the regulation of indoleamine neurohormones — melatonin and serotonin — which are involved in neuroprotection, regulation of circadian rhythms and antioxidant defence (13,19). However, in the available literature, data on a comprehensive assessment of neurohormonal status in workers in noisy environments with sensorineural hearing loss are sporadic and fragmentary.

Current clinical guidelines and reviews emphasise that the effectiveness of prevention and rehabilitation for sensorineural hearing loss increases significantly with the early detection of initial forms of hearing impairment and the ongoing monitoring of hearing function (WHO, 2021–2025; 21). In this regard, there is active discussion regarding the use of digital and mobile technologies, which enable the expansion of screening coverage, improve access to audiological care, and ensure long-term monitoring of patients outside specialist centres (20).

Thus, there are objective grounds for further in-depth study of the mechanisms of development, prevention and personalised rehabilitation of sensorineural hearing loss in noisy industrial environments. Given the high prevalence of hearing loss among workers exposed to high noise levels, its socio-economic consequences, the lack of systematic data in Uzbekistan, and the state's strategic focus on the digitalisation of healthcare, the research topic is particularly relevant. It addresses contemporary challenges, national healthcare priorities and global scientific trends, and its findings have the potential to significantly enhance the effectiveness of prevention and personalised rehabilitation of sensorineural hearing loss in our country.

REFERENCES| ЧОҚКИ | IQTIBOSLAR:

1. Abdullaev, U.P. Improving treatment methods for sensorineural hearing loss of various aetiologies: abstract of a PhD thesis – Tashkent, 2025. – 58 pp.
2. Amonov A.Sh. A comprehensive approach to the surgical treatment of sensorineural hearing loss in children: abstract of PhD thesis – Tashkent, 2018. – 38 pp.

3. Amonov A.Sh. Improving the clinical and radiological diagnosis and surgical treatment of sensorineural hearing loss: abstract of a thesis ... Doctor of Medical Sciences (DSc) – Tashkent, 2021. – 52 pp.
4. Ibragimova A.U. Factors contributing to sensorineural hearing loss in young children following aminoglycoside exposure: abstract of doctoral thesis ... PhD – Tashkent, 2023. – 51 pp.
5. Ismadiyarova Z.D. Occupational hygiene in the mining industry, treatment of cerebral changes in occupational cochlear neuritis, and development of preventive measures: Abstract of PhD thesis – Tashkent, 2018. – 58 pp.
6. Karimova M.M. Comprehensive diagnosis and treatment of sensorineural hearing loss in children against a background of cytomegalovirus and toxoplasmosis: abstract of PhD thesis – Samarkand, 2025. – 66 pp.
7. . Raupova K.M. Improving the diagnosis and treatment of sensorineural hearing loss caused by noise and vibration: abstract of PhD thesis ... Doctor of Philosophy (PhD) – Samarkand, 2025. – 45 pp.
8. Khaydarova G.S. Development of diagnostic criteria and rehabilitation methods for children with sensorineural hearing loss: abstract of a doctoral thesis ... Doctor of Medical Sciences (DSc) – Tashkent, 2016. – 73 pp.
9. Blazer DG. Hearing Loss: The Silent Risk for Psychiatric Disorders in Late Life. *Clin Geriatr Med*. 2020 May;36(2):201-209. doi: 10.1016/j.cger.2019.11.002. PMID: 32222296.
10. Brown CS, Emmett SD, Robler SK, Tucci DL. Global Hearing Loss Prevention. *Otolaryngol Clin North Am*. 2018 Jun;51(3):575-592. doi: 10.1016/j.otc.2018.01.006. Epub 7 March 2018. PMID: 29525388.
11. Chen H, Shi L, Liu L, Yin S, Aiken S, Wang J. Noise-induced Cochlear Synaptopathy and Signal Processing Disorders. *Neuroscience*. 21 May 2019;407:41-52. doi: 10.1016/j.neuroscience.2018.09.026. Epub 27 September 2018. PMID: 30267832.
12. De Rosa MA, Bernardi MT, Kleppe S, Walz K. Hearing Loss: Genetic Testing, Current Advances and the Situation in Latin America. *Genes (Basel)*. 29 January 2024;15(2):178. doi: 10.3390/genes15020178. PMID: 38397168; PMCID: PMC10888486.
13. Di Stadio A, Hamiter MJ, Roccamatysi D, Lalwani AK. Hearing Loss and Alzheimer's Disease. *Curr Top Behav Neurosci*. 2025;69:129-147. doi: 10.1007/7854_2024_526. Erratum in: *Curr Top Behav Neurosci*. 2025;69:C3. doi: 10.1007/7854_2025_577. Erratum in: *Curr Top Behav Neurosci*. 2025;69:C3. doi: 10.1007/978-3-031-84920-6_577. PMID: 39436630.
14. Gustafson SJ, Corbin NE. Pediatric Hearing Loss Guidelines and Consensus Statements-Where Do We Stand? *Otolaryngol Clin North Am*. 2021 Dec;54(6):1129-1142. doi: 10.1016/j.otc.2021.07.003. Epub 2021 Sep 15. PMID: 34535279.
15. Lv X, Yang C, Li X, Liu Y, Yang Y, Jin T, Chen Z, Jia J, Wang M, Li L. Ferroptosis and hearing loss: from molecular mechanisms to therapeutic interventions. *J Enzyme Inhib Med Chem*. 2025 Dec;40(1):2468853. doi: 10.1080/14756366.2025.2468853. Epub 2025 Feb 24. PMID: 39992186; PMCID: PMC11852237.
16. Pan X, Li Y, Huang P, Staecker H, He M. Extracellular vesicles for developing targeted hearing loss therapy. *J Control Release*. 2024 Feb;366:460-478. doi: 10.1016/j.jconrel.2023.12.050. Epub 2024 Jan 11. PMID: 38182057.
17. Roesch S, O'Sullivan A, Zimmermann G, Mair A, Lipuš C, Mayr JA, Wortmann SB, Rasp G. Mitochondrial Disease and Hearing Loss in Children: A Systematic Review. *Laryngoscope*. 2022 Dec;132(12):2459-2472. doi: 10.1002/lary.30067. Epub 2022 Feb 21. PMID: 35188226; PMCID: PMC9790539.
18. Samocha-Bonet D, Wu B, Ryugo DK. Diabetes mellitus and hearing loss: A review. *Ageing Res Rev*. 2021 Nov;71:101423. doi: 10.1016/j.arr.2021.101423. Epub 2021 Aug 9. PMID: 34384902.
19. Shapiro SB, Noij KS, Naples JG, Samy RN. Hearing Loss and Tinnitus. *Med Clin North Am*. 2021 Sep;105(5):799-811. doi: 10.1016/j.mcna.2021.05.003. Epub 2021 Jul 12. PMID: 34391534.

20. Taher T, Wu F. Hearing Loss: Unmet Needs in a Digital Age. *Prim Care*. 2025 Mar;52(1):71-85. doi: 10.1016/j.pop.2024.09.009. Epub 2025 Jan 3. PMID: 39939092.
21. Tsai Do BS, Bush ML, Weinreich HM, Schwartz SR, Anne S, Adunka OF, Bender K, Bold KM, Brenner MJ, Hashmi AZ, Keenan TA, Kim AH, Moore DJ, Nieman CL, Palmer CV, Ross EJ, Steenerson KK, Zhan KY, Reyes J, Dhepyasuwan N. Clinical Practice Guideline: Age-Related Hearing Loss. *Otolaryngol Head Neck Surg*. 2024 May;170 Suppl 2:S1-S54. doi: 10.1002/ohn.750. PMID: 38687845.
22. Polatova Djamil, Madaminov Ahmad, Raximov Nodir . Significance of expression PD-L1 and p53 proteins in human papillomavirus-associated oropharyngeal squamous cell carcinoma// *Journal of Biomedicine and Practice*. 2022, vol . 7, issue 4, pp . 144-151
23. Abdurakhmonov F. R., Rakhimov N. M., Abdurakhmonova F. F. Special choices for the treatment of complications of the soft tissue injuries of the facial region //The American Journal of Medical Sciences and Pharmaceutical Research. – 2023. – Т. 5. – №. 10. – С. 24-26.
24. Imamov O. S., Rizaev J. A., Toxtayev G. S. A SURVEY OF BULLOUS DISEASES CLINICOEPIDEMIOLOGICAL CHARACTERISTICS //Central Asian Journal of Medicine. – 2025. – №. 2. – С. 65-70.
25. Alimdjanovich R. J., Ugli T. N. K. CLINICAL AND ANATOMICAL FEATURES OF NASAL DEFORMITY IN PATIENTS WITH UNILATERAL CLEFT LIP AND PALATE AFTER CHEILOPLASTY //The American Journal of Medical Sciences and Pharmaceutical Research. – 2023. – Т. 5. – №. 08. – С. 13-22.
26. Фаттаева Д., Ризаев Ж., Рахимова Д. ОСОБЕННОСТИ КЛИНИЧЕСКОГО ТЕЧЕНИЯ ХРОНИЧЕСКОГО ГАЙМОРИТА ПРИ БРОНХО-ЛЕГОЧНОЙ ПАТОЛОГИИ //SCIENTIFIC IDEAS OF YOUNG SCIENTISTS. – 2021. – С. 28.

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