3. Yan L. L., Liu K., Matthews K. A., Daviglus M. L., Ferguson T. F., Kiefe C. I. Psychosocial factors and risk of hypertension. The Coronary Artery Risk Development in Young Adults (CARDIA) Study. *JAMA*. 2003. N 290 (16). P. 2138–2148. doi:10.1001/jama.290.16.2138

4. Kuzeytemiz M., Kanat B. B. The relationship of depression-anxiety inspection and hypertension in newly diagnosed young hypertensive patients. *Turkish Journal of Clinics and Laboratory*. 2022. N 2. P. 176–181. doi.org/10.18663/tjcl.873503

DOI https://doi.org/10.30525/978-9934-26-514-3-15

ANALYSIS OF TRENDS IN THE USE OF ARTIFICIAL INTELLIGENCE IN RELATION TO THE MAIN RADIOLOGICAL DIAGNOSTIC METHODS IN DENTISTRY

АНАЛІЗ ТЕНДЕНЦІЙ ВИКОРИСТАННЯ ШТУЧНОГО ІНТЕЛЕКТУ СТОСОВНО ОСНОВНИХ РЕНТГЕНОЛОГІЧНИХ МЕТОДІВ ДІАГНОСТИКИ В СТОМАТОЛОГІЇ

Symonenko R. V.
Candidate of Medical Sciences, Associate Professor, Associate Professor at the Department of Prosthetic Dentistry Bogomolets National Medical University Kyiv, Ukraine

Симоненко Р. В.
кандидат медичних наук, доцент, доцент кафедри ортопедичної стоматології, Національний медичний університет імені О. О. Богомольця м. Київ, Україна

Mirzoiev Z.
Student at the Faculty of Dentistry Bogomolets National Medical University Kyiv, Ukraine

Мірзоєв З.
студент стоматологічного факультету Національний медичний університет імені О. О. Богомольця м. Київ, Україна

Fedianovych K. D.
Student at the Faculty of Dentistry Bogomolets National Medical University Kyiv, Ukraine

Федянович К. Д.
студентка стоматологічного факультету Національний медичний університет імені О. О. Богомольця м. Київ, Україна

Introduction. One of the most important and dynamic areas of modern medicine is diagnostics. According to experts, modern diagnostic problems and errors arise due to the lack of certain experience among dentists, limited time for analyzing radiographs and laboratory indicators, low patient compliance, and high research costs, which affects the quality and effectiveness of treatment. Artificial intelligence (AI) can be considered the most modern trend in the diagnostic process in dentistry [1, p. 2; 2, p. 7]. This technology offers huge opportunities to improve diagnostics in the field of medicine and dentistry. The latest achievements of technological progress inspire a constant search for new methods of detecting and predicting the course of dental diseases [3, p. 46; 4, p. 230]. The introduction of artificial intelligence (AI) in dentistry is leading to a shift from a hardware-oriented approach to a software-oriented approach. Scientists assume that this will lead to increased efficiency and improved educational and clinical outcomes. Dental radiography, such as computed tomography (CT) and panoramic radiography (orthopantomography – OPTG), provides large data sets for the development of AI-based software [5, p. 337; 6, p. 818–821]. Therefore, determining the level of interest of scientists in this area is a very relevant issue.

The aim of the study: To statistically summarize and analyze the available literature sources using descriptive statistics to determine current trends, directions of research of the main modern radiological diagnostic methods in dentistry

Materials and methods. The literature search was carried out in the electronic database PUBMED/MEDLINE using the keywords "orthopantomography, dentistry and artificial intelligence" and "computed tomography, dentistry and artificial intelligence" for the period of publication from January 2019 to December 2024.

The search parameters included human clinical trials, case reports, and systematic reviews. The results were evaluated using descriptive statistics and time series analysis.

To identify general trends in the development of X-ray examination methods in dentistry using artificial intelligence, the number of available literature sources in the PUBMED/MEDLINE electronic database for 60 months was analyzed on a quarterly basis (15 quarters – 4 quarters (Q1, Q2, Q3, Q4) per year).

Results. The results of the search showed that during the experimental period there were 1.4 times more scientific sources for the keywords "computed tomography, dentistry and artificial intelligence" than for the keywords "orthopantomography, dentistry and artificial intelligence", which indicates a greater interest of scientists in the first search direction. Evaluation of the patterns of development directions and identification of trends in X-ray methods of examination of patients in dentistry by time

series analysis over the past 5 years on a quarterly basis showed an exponential increase in the number of sources for the keywords "computed tomography, dentistry and artificial intelligence", from the first quarter of 2023 (01.2023–03.2023). Although at the beginning of 2019 (first quarter – 01.2019–03.2019), the number of scientific sources in both search areas was the same. The number of scientific sources for the last quarter of 2024 (10.2024–12.2024) increased 13 times compared to the first quarter of 2019 (01.2019–03.2019) and amounted to 52 and 4, respectively. For comparison, the increase in the number of sources for the keywords "orthopantomography, dentistry and artificial intelligence" was logarithmic, i.e. The number of scientific sources for the last quarter of 2024 (10.2024–12.2024) increased 7.75 times compared to the first quarter of 2019 (01.2019–03.2019) and amounted to 31 and 4, respectively.

Conclusions. The conducted analysis of literature sources using descriptive statistics methods has emphasized the interest of the scientific community in the use of artificial intelligence in X-ray diagnostics in dentistry. The results of the analysis showed a rapid increase in the number of scientific sources on the use of artificial intelligence in relation to CT in dentistry.

Bibliography:

1. Bindushree V, Sameen R J, Vasudevan V, Shrihari T G, Devaraju D, Mathew N S. Artificial intelligence in modern dentistry. *J Dent Res Rev* 2020; **7:** 27–31. https://www.researchgate.net/publication/342802168_ Artificial_intelligence_In_modern_dentistry

2. Ossowska A, Kusiak A, Świetlik D. Artificial intelligence in dentistry-narrative review. Int *J Environ Res Public Health*. 2022;19:3449. doi: 10.3390/ijerph19063449. https://pubmed.ncbi.nlm.nih.gov/35329136/

3. Blue C, Henson H. Millennials and dental education: utilizing educational technology for effective teaching. *J Dent Hyg.* 2015 Feb;89 Suppl 1:46–47. https://pubmed.ncbi.nlm.nih.gov/25691028/

4. Robinson SW, Speidel TM, Isaacson RJ, Worms FW. Soft tissue profile change produced by reduction of mandibular prognathism. *Angle Orthod*. 1972;42:227–235. https://pubmed.ncbi.nlm.nih.gov/4504540/

5. Sun, M.; Chai, Y.; Chai, G.; Zheng, X. Fully automatic robot-assisted surgery for mandibular angle split osteotomy. *J. Craniofac. Surg.* 2020, 31, 336–339. https://pubmed.ncbi.nlm.nih.gov/31232983/

6. Uribe, S.E.; Innes, N.; Maldupa, I. The global prevalence of early childhood caries: A systematic review with meta-analysis using the WHO diagnostic criteria. Int. *J. Paediatr. Dent.* 2021, 31, 817–830. https://pubmed.ncbi.nlm.nih.gov/33735529/