



Artificial Intelligence in Healthcare: Applications, Evidence, and Responsible Implementation-A Narrative Review

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Abstract

Artificial intelligence (AI) is increasingly used to analyze medical images, estimate risks, support clinical decisions, draft documentation, and assist research. Yet a model that performs well on a test set does not automatically improve care in a clinic. This narrative review surveys major health applications, the strength and limits of clinical evidence, and practical requirements for safe implementation. A 2025 review of radiology practice found encouraging but context-dependent diagnostic findings and relatively few studies conducted in live pathways. A 2025 meta-analysis of generative AI diagnosis found pooled accuracy of 52.1% across 83 studies, with substantial bias concerns; this figure must not be generalized to all clinical AI. WHO emphasizes autonomy, safety, transparency, accountability, equity, and sustainability. Taken together, the literature favors clearly scoped tasks, appropriate human oversight, local validation, and ongoing monitoring rather than indiscriminate automation. [1–42].

Keywords: Artificial intelligence; healthcare; machine learning; clinical decision support; generative AI; patient safety; health equity

1. Introduction

Healthcare generates images, clinical notes, laboratory results, vital signs, and operational records. AI methods may find patterns in these data and produce classifications, predictions, summaries, or recommendations. Applications vary greatly: an image-analysis device trained for a narrow task is not equivalent to a general-purpose language model. Likewise, a model's ability to answer questions is different from its ability to change outcomes for actual patients. These distinctions matter for procurement, evaluation, and public trust. [43,75].

Review approach

This is a selective narrative review, not an original experiment or systematic review. It synthesizes institutional guidance and peer-reviewed reviews available through September 2026. Sources were selected to represent imaging, generative AI, early clinical evaluation, regulatory oversight, and ethics. Because the field changes rapidly, findings refer to the studied technologies and settings rather than guaranteeing performance after later updates.

2. Technologies and Clinical Uses

2.1 Different forms of AI

Machine-learning models learn associations from data for specified outputs, such as the probability of disease. Deep-learning systems are often applied to imaging, signals, and text. Generative models create new text or other content from prompts; large multimodal models can process more than one input type. These categories overlap but have different failure modes. A useful first question is not whether a system “uses AI,” but what it is intended to do, for whom, with what inputs, and under whose responsibility. [1,2,5]

2.2 Screening and image interpretation

In radiology, AI may highlight suspected abnormalities, prioritize images for review, or serve as a second reader. Other use cases include retinal screening and image enhancement. The US Food and Drug Administration (FDA) describes authorized AI-enabled medical devices across multiple functions, including diabetic-retinopathy detection and image processing. Authorization concerns a particular device and intended use; it should not be interpreted as proof that every deployment improves outcomes in every hospital. Clinical validation must match local patient populations, scanners, workflow, and comparator practice. [76-90]

2.3 Prediction and decision support

Models can estimate deterioration risk or identify patients for follow-up using electronic health record data. The output is a probability or alert rather than a diagnosis by itself. Even an accurate prediction is useful only if it arrives early enough, clinicians understand its meaning, and an appropriate response is available. Alert thresholds create trade-offs: increasing sensitivity can increase false alerts and workload. Evaluation must therefore examine both model discrimination and the actions the alert actually triggers. [4,6]

3. Generative AI and Operations

3.1 Documentation and communication

Generative AI may draft visit summaries, discharge instructions, patient messages, or translations. WHO identifies clerical work, clinical care, education, patient-guided use, and research among broad application areas for large multimodal models. Drafting can be attractive when clinicians face repetitive documentation, but outputs can omit facts, invent details, or misstate uncertainty. A clinician should verify the underlying record, medication details, and language before a draft becomes part of care. Patient-facing content also needs a route to a human professional when symptoms are urgent or the answer is unclear. [91-110]

3.2 Education and research

Synthetic cases and question-answering tools may help trainees practice reasoning and feedback. Researchers may use computational tools to identify patterns or generate candidate hypotheses. These uses are not equivalent to validated patient care: an educational answer can be persuasive while wrong, and a proposed research lead requires independent verification. Institutional policies should distinguish low-risk drafting from tasks that directly determine triage, treatment, or diagnosis. [1,5]

3.3 Hospital management

Operational analytics can help forecast demand, review appointment patterns, or identify bottlenecks. However, managers should define a concrete decision before selecting an algorithm: for example, whether bed demand is forecast for staffing, discharge coordination, or emergency capacity. Relevant outcomes include waiting time, resource use, staff workload, and unintended

inequities. The non-AI alternative such as a transparent scheduling rule provides an essential comparator. Not every problem requires a complex model[111-132].

4. What the Evidence Shows

4.1 Diagnostic imaging

A 2025 rapid systematic scoping review included 140 studies on AI in radiology practice. Of 53 quantitative effectiveness studies, only 23 evaluated AI in a live pathway; seven of those measured diagnostic accuracy. The review found potential improvements in sensitivity and specificity in some settings, with mixed results for time and cost. Some gains were more apparent among less experienced readers, while false positives and workflow disruptions remained concerns. These results support context-specific evaluation, not a blanket claim that AI always improves diagnostic care. [3]

4.2 Generative diagnostic performance

A 2025 systematic review and meta-analysis of 83 studies estimated pooled diagnostic accuracy of 52.1% (95% confidence interval 47.0–57.1%) for the studied generative models and tasks. Models performed significantly worse than expert physicians overall in the reported comparison. The authors rated 63 of 83 studies as high risk of bias. The pooled number combines diverse tasks, models, and study designs; it is neither a universal accuracy rate for AI nor a prediction of performance at the bedside. [5]

4.3 The evaluation gap

Offline accuracy measures how a model performs against a reference label; clinical utility concerns whether its use improves decisions or outcomes safely. The DECIDE-AI guideline focuses on early, live evaluations of AI-supported decisions and asks investigators to report clinical utility, safety, human factors, and context. For randomized evaluation, SPIRIT-AI and CONSORT-AI address clearer reporting of intended use, inputs and outputs, human-AI interaction, and error cases. Reporting standards do not by themselves establish that a study is well designed or an intervention effective. [4,6,7]

5. Ethical, Legal, and Safety Issues

5.1 Bias and equity

Training data may underrepresent certain age groups, disease severities, institutions, or languages. A model can appear accurate on average while making more errors in a subgroup. Appropriate testing requires meaningful subgroup analyses where sample sizes permit, review of missingness and access barriers, and clear plans when performance is inadequate. WHO's guidance highlights inclusion and equity alongside human autonomy and patient safety. Equal access to an inaccurate tool is not an equity solution. [133-145]

5.2 Privacy and security

AI development and deployment may involve sensitive records, third-party services, or cloud processing. A health organization should identify data flows, lawful uses, retention periods, access controls, and the contractual boundaries of any vendor. De-identification lowers some risks but may not remove all possibilities of linkage. Generative systems raise the additional risk that confidential details are entered into an unapproved service. Security review should cover the full workflow, including prompts, logs, interfaces, and incident response. Local privacy law and professional rules determine specific obligations. [146-166]

5.3 Transparency and accountability

Patients and clinicians need to understand the system's purpose and

limitations. A probability score is not an explanation of cause, and a fluent generated answer does not confirm that sources were checked. Organizations should designate who verifies outputs, who can override a recommendation, how errors are reported, and when the tool is withdrawn. WHO recommends governance and post-release assessment for large-scale uses of multimodal models. Oversight cannot be reduced to a notice that “AI was used.” [1]

6. Regulation and Implementation

6.1 Intended use and regulatory status

Regulatory rules depend on jurisdiction and intended function. In the United States, the FDA regulates medical devices, including qualifying AI-enabled devices, rather than “AI” in the abstract. The agency reported more than 1,600 AI-enabled medical devices authorized for US marketing as of September 2026. That count shows breadth of authorized products, not how many improve patient outcomes. A hospital must check the exact product, authorization, indications, version, and required user role before purchasing or expanding use. [2]

6.2 A phased deployment plan

First define the clinical problem, patient population, user, comparator, and measurable outcome. Next assess data quality and the evidence for the specific product. Then test on local retrospective data and in a supervised “silent” phase where outputs do not affect care. A limited live pilot should document clinician interactions, failures, and patient-safety signals. Expansion should depend on predefined criteria, governance approval, training, and a clear rollback plan. DECIDE-AI is particularly relevant to reporting small-scale live evaluation. [4]

6.3 Monitoring after launch

Performance can change when patient populations, clinical practice, devices, coding, or software versions change. Record version history and data dependencies; track error rates, false alerts, missing outputs, subgroup performance, user overrides, and patient outcomes. Investigate incidents rather than relying on an aggregate accuracy score. A designated clinical owner and technical owner should review results regularly. Cost analysis should include integration, support, staff time, rework from false positives, and replacement costs, not just purchase price. [2–4]

Illustrative example

Consider a proposed AI tool that flags urgent chest images. A pilot could measure time to review for urgent and non-urgent cases, missed urgent findings, false-positive burden, and effects on radiologist workload. The hospital should decide in advance who responds to the flag and what happens if the system fails. This is an implementation example, not a claim that a particular product has achieved these results.

7. Discussion, Conclusion

Discussion

The promise of AI in healthcare is task-specific. Imaging reviews show useful signals alongside limited live-pathway evidence and mixed operational effects. Studies of generative diagnosis underscore that compelling language should not be confused with expert clinical reliability. Standards for evaluation and governance converge on the same practical point: the intervention is the model plus its data, users, workflow, and monitoring process. [1,3–7]

Limitations

This review was selective and did not follow a registered search protocol. It combines sources that study different technologies, patient groups, and healthcare systems. It does not calculate a

pooled effect across AI applications, and US device regulation does not define requirements in other countries. Rapid model changes mean local assessment must be repeated after substantial updates.

Conclusion

AI can support healthcare when it solves a defined problem and is evaluated as part of a real care pathway. The safest route is to compare it with current practice, validate it locally, preserve meaningful human responsibility, protect data, assess equity, and monitor actual clinical and operational consequences after deployment.

References

1. Panahi O, Dadkhah S. AI in der modernen Zahnmedizin. ISBN:978-620-8-74877-7.
2. Panahi O. Cellules souches de la pulpe dentaire. ISBN: 978-620-4-05358-5.
3. Omid Panahi, Faezeh Esmaili, Sasan Kargarneshad. Искусственный интеллект в стоматологии. SCIENCIA SCRIPTS Publishing. 2024.
4. Panahi O. The evolving partnership: surgeons and robots in the maxillofacial operating room of the future. J Dent Sci Oral Care. 2025; 1: 1-7.
5. Panahi O, Dadkhah S, Sztuczna inteligencja w nowoczesnej stomatologii. ISBN:978-620-8-74884-5.
6. Panahi O. The Future of Medicine: Converging Technologies and Human Health. Journal of Bio-Med and Clinical Research. RPC Publishers. 2025; 2.
7. Panahi O. The Age of Longevity: Medical Advances and The Extension of Human Life. Journal of Bio-Med and Clinical Research. RPC Publishers. 2025; 2.
8. Panahi O, Eslamlou SF. Peridontio: Estructura, función y manejo clínico. ISBN: 978-620-8-74557-8.
9. Omid Panahi, Sevil Farrokh. Building Healthier Communities: The Intersection of AI, IT, and Community Medicine. Int J Nurs Health Care. 2025; 1(1):1-4.
10. Dr Omid Panahi, Стволовые клетки пульпы зуба, ISBN: 978-620-4-05357-8.
11. Panahi O. Nanomedicine: Tiny Technologies, Big Impact on Health. Journal of Bio-Med and Clinical Research. RPC Publishers. 2025; 2.
12. Dr Omid Panahi* and Dr Amirreza Amirloo. AI-Enabled IT Systems for Improved Dental Practice Management. On J Dent & Oral Health. 8(4): 2025. OJDOH.MS.ID.000691. DOI: 10.33552/OJDOH.2025.08.000691.
13. Panahi O, Eslamlou SF. Peridontium: Struktura, funkcja i postępowanie kliniczne. ISBN: 978-620-8-74560-8.
14. Panahi, O., & Eslamlou, S. F. (2025). Artificial Intelligence in Oral Surgery: Enhancing Diagnostics, Treatment, and Patient Care. J Clin Den & Oral Care, 3(1), 01-05.
15. Panahi O, Eslamlou SF, Jabbarzadeh M. Odontoiatria digitale e intelligenza artificiale. ISBN: 978-620-8-73913-3.
16. Omid Panahi,Uras Panahi. Comparative Accuracy of Artificial Intelligence-Assisted Surgical Navigation vs. Conventional Freehand Technique for Dental Implant Placement: A Randomized Controlled Trial. Journal of Research in Nursing and Health Care, 2026: 3(1); 58-64.
17. Omid P, Soren F. (2025). The Digital Double: Data Privacy, Security, and Consent in AI Implants. Digit J Eng Sci Technol.

- 2(1):105.
18. Panahi O, Eslamlou SF, Jabbarzadeh M. Medicina dentária digital e inteligência artificial. ISBN: 978-620-8-73915-7.
19. Panahi O. Stammzellen aus dem Zahnmark. ISBN: 978-620-4-05355-4.
20. Panahi O. (2025). AI-Enhanced Case Reports: Integrating Medical Imaging for Diagnostic Insights. *J Case Rep Clin Images*. 8(1):1161.
21. Panahi O. (2025). Navigating the AI Landscape in Healthcare and Public Health. *Mathews J Nurs*. 7(1):5.
22. Dr Omid Panahi* and Dr Masoumeh Jabbarzadeh. The Expanding Role of Artificial Intelligence in Modern Dentistry. *On J Dent & Oral Health*. 8(3): 2025. OJDOH.MS.ID.000690. DOI: 10.33552/OJDOH.2025.08.000690.
23. Panahi, O. (2025). Wearable Sensors and Personalized Sustainability: Monitoring Health and Environmental Exposures in Real-Time. *European Journal of Innovative Studies and Sustainability*, 1(2), 1-19. [https://doi.org/10.59324/ejiss.2025.1\(2\).02](https://doi.org/10.59324/ejiss.2025.1(2).02)
24. Dr Leila Ostovar, Dr Kamal Khadem Vatan, Dr Omid Panahi, (2020). Clinical Outcome of Thrombolytic Therapy, Scholars Press Academic Publishing. ISBN: 978-613-8-92417-3.
25. Omid P, Sevil Farrokh E. Bioengineering Innovations in Dental Implantology. *Curr Trends Biomedical Eng&Biosci*. 2025; 23(3): 556111. DOI: 10.19080/CTBEB.2025.23.5560111
26. Omid Panahi. Artificial Intelligence: A New Frontier in Periodontology. *Mod Res Dent*. 8(1). MRD. 000680. 2024.DOI: 10.31031/MRD.2024.08.000680.
27. Panahi O, Melody FR, Kennet P, Tamson MK. Drug induced (calcium channel blockers) gingival hyperplasia. *JMBS* 2011;2(1):10-2.
28. Dr Omid Panahi* and Dr Amirreza Amirloo. AI-Enabled IT Systems for Improved Dental Practice Management. *On J Dent & Oral Health*. 8(4): 2025. OJDOH.MS.ID.000691. DOI: 10.33552/OJDOH.2025.08.000691.
29. Omid P, Reza S. How Artificial Intelligence and Biotechnology are Transforming Dentistry. *Adv Biotech & Micro*. 2024; 18(2): 555981. DOI: 10.19080/AIBM.2024.17.555981.
30. Panahi, O., & Zeinaldin, M. (2024). AI-Assisted Detection of Oral Cancer: A Comparative Analysis. *Austin J Pathol Lab Med*, 10(1), 1037.
31. Omid Panahi, Sevil Farrokh. USAG-1-Based Therapies: A Paradigm Shift in Dental Medicine. *Int J Nurs Health Care*. 2024;1(1):1-4.
32. Omid Panahi, Sevil Farrokh. Can AI Heal Us? The Promise of AI-Driven Tissue Engineering. *Int J Nurs Health Care*. 2024; 1(1):1-4.
33. Maryam Gholizadeh, Dr Omid Panahi, (2021), Investigating System in Health Management Information Systems, Scholars Press Academic Publishing. ISBN: 978- 613-8-95240-4.
34. Omid Panahi. "AI Ushering in a New Era of Digital Dental-Medicine". *Acta Scientific Medical Sciences* 8.8 (2024): 131-134.
35. Panahi, O., & Farrokh, S. (2025a). The use of machine learning for personalized dental-medicine treatment. *Global Journal of Medical and Biomedical Case Reports*, 1, 001.
36. Maryam Gholizadeh, Dr Omid Panahi, (2021), Sistema de investigación en sistemas de información de gestión sanitaria, NUESTRO CONOC, MENTO Publishing. ISBN: 978-620-3-67047-9.
37. Maryam Gholizadeh, Dr Omid Panahi, (2021), Untersuchungssystem im Gesundheitsmanagement Informations systeme, Unser wissen Publishing. ISBN: 978-620-3-67046-2.
38. Panahi O, Zeinaldin M. Digital Dentistry: Revolutionizing Dental Care. *J Dent App*. 2024; 10 (1):1121.
39. Omid P, Evil Farrokh E. Beyond the Scalpel: AI, Alternative Medicine, and the Future of Personalized Dental Care. *J Complement Med Alt Healthcare*. 2024; 13(2): 555860. DOI: 10.19080/JCMAH.2024.12.555860.
40. Panahi, O. (2024). Dental Implants & the Rise of AI. *On J Dent & Oral Health*, 8(1), 2024.
41. Maryam Gholizadeh, Dr Omid Panahi, (2021), Indagare il sistema nei sistemi informativi di gestione della salute, SAPIENZA Publishing. ISBN: 978-620-3-67049-3.
42. Panahi O, et al. (2025). Smart Robotics for Personalized Dental Implant Solutions. *Dental*. 7(1):21.
43. Dr Omid Panahi, Dr Sevil Farrokh Eslamlou, Dr Masoumeh Jabbarzadeh, Medicina dentária digital e inteligência artificial, ISBN: 978-620-8-73915-7.
44. Panahi O. AI in Surgical Robotics: Case Studies. *Austin J Clin Case Rep*. 2024; 11(7): 1342.
45. Omid Panahi*and Reza Safaralizadeh. AI and Dental Tissue Engineering: A Potential Powerhouse for Regeneration. *Mod Res Dent*. 8(2). MRD. 000682. 2024.DOI:10.31031/MRD.2024.08.000682.
46. Maryam Gholizadeh, Dr Omid Panahi, (2021), Systeemonderzoek in Informatiesystemen voor Gezondheidsbeheer, ONZE KENNIS Publishing. ISBN: 978-620-3-67050-9.
47. Maryam Gholizadeh, Dr Omid Panahi, (2021), Sistema de Investigação em Sistemas de Informação de Gestão de Saúde, NOSSO CONHECIMENTO Publishing. ISBN: 978-620-3-67052-3.
48. Maryam Gholizadeh, Dr Omid Panahi, (2021), System badawczy w systemach informacyjnych zarządzania zdrowiem, NAZSA WIEDZA Publishing. ISBN: 978-620-3-67051-6.
49. Panahi O, Panahi U (2026) Application of Machine Learning and Computer Vision in Oral Surgery and Implant Outcome Prediction. *SunText Rev Dental Sci* 7(1): 192.
50. Panahi O, Panahi U (2026) Computer-Aided Implant Planning and Placement Using AI and Machine Learning: A General Framework for Surgical Guidance. *SunText Rev Med Clin Res* 7(5): 266.
51. Omid P, Uras P. Self-Learning AI Implant with Dynamic Fibrointegration and Real-Time Ligament Tension Adjustment: The World's First Closed-Loop Smart Implant That Moves Like a Natural Tooth. *J Surg Pract Case Rep*. 2026;2(2):1-5.
52. Omid P, Uras P. AI-Designed, Fibrointegrated, Circumferential Root Ring Implant: The First Surgery That Recreates the Natural Periodontal Ligament Without Any Human Intraoperative Decision. *J Surg Pract Case Rep*. 2026;2(2):1-5.
53. Sanaz Farhadi, Uras Panahi. A Federated Learning-Based

- Intrusion Detection Framework for Zero-Day Attacks in Smart Healthcare Networks Integrating IoMT Devices. *Journal of Medicine Care and Health Review* 3(2).
54. Sanaz Farhadi, Uras Panahi, Blockchain-Anchored Adaptive Authentication for Real-Time Medical Data Streams in AI-Driven Smart Grid-IoMT Converged Networks. *Journal of Medicine Care and Health Review* 3(1).
 55. Omid P, Uras P. The AIoT-Based Remote Care Network: Integrating Smart Implants and Edge Computing for Post-Operative Monitoring in Otolaryngology. *Glob J Otolaryngol*, 2026; 29(1): 556252.
 56. Omid P, Uras P. AI-Driven Optimization of Cochlear Implant Fitting: Machine Learning Models for Personalized Hearing Rehabilitation. *Glob J Otolaryngol*, 2026; 29(1): 556253.
 57. Panahi, U. (2026). Exploiting Delay for Stealth: A Delay-Aware False Data Injection Framework for Wireless Sensor Networks. *Gazi Üniversitesi Fen Bilimleri Dergisi Part C: Tasarım Ve Teknoloji, Advanced Online Publication*. <https://doi.org/10.29109/gujsc.1934738>
 58. Panahi P (2010) The feedback based mechanism for video streaming over multipath ad hoc networks. *Journal of Sciences, Islamic Republic of Iran* 21(2).
 59. Omid Panahi, Shabnam Dadkhah (2025) Transforming Dental Care: A Comprehensive Review of AI Technologies. *J Stoma Dent Res* 3(1): 1-5.
 60. Panahi O, Eslamlou SF, Jabbarzadeh M. *Digitale Zahnmedizin und künstliche Intelligenz*. ISBN: 978-620-8-73910-2.
 61. Panahi O. (2024). Dental Implants & the Rise of AI. (1):2024.
 62. Omid P, Evil Farrokh E. (2024). Beyond the Scalpel: AI, Alternative Medicine, and the Future of Personalized Dental Care. *J Complement Med Alt Healthcare*. 13(2):555860.
 63. Panahi, O., & Panahi, U. (2026). AI-Driven Detection of Inferior Alveolar Nerve Loop Variation Preventing Iatrogenic Injury During Mandibular Implant Surgery: A Case Report. *Review of Medical Case Reports*, 1(1), 1–3. [https://doi.org/10.59324/ermcr.2026.1\(1\).01](https://doi.org/10.59324/ermcr.2026.1(1).01)
 64. Panahi, O., & Panahi, U. (2026). Early AI-Assisted Diagnosis of Peri-Implant Mucositis in a Diabetic Patient: A Multidisciplinary Case Report Bridging Dentistry and Internal Medicine. *Review of Medical Case Reports*, 1(1), 4–7. [https://doi.org/10.59324/ermcr.2026.1\(1\).02](https://doi.org/10.59324/ermcr.2026.1(1).02)
 65. Panahi, U. Assessing the strength of machine learning and deep learning models for network anomaly detection: insights from multi-dataset cybersecurity analysis. *J Supercomput* **82**, 399 (2026). <https://doi.org/10.1007/s11227-026-08556-9>
 66. Omid Panahi, Uras Panahi. Artificial Intelligence for Predicting Emergency Department Overcrowding Using Real-Time Patient Flow Data: A Machine Learning-Based Predictive Model. *Journal of Research in Nursing and Health Care*, 2026; 3(2); 01-08.
 67. Omid Panahi, Uras Panahi. IoT-Enabled Periodontitis Detection with Edge/Cloud AI. *Int J Tumor Res*. 2026; 2(1): 1-6.
 68. Panahi P, Maragheh HK, Abdolzadeh M, et al. A novel schema for multipath video transferring over ad hoc networks. *UBICOMM*. 2008; 77-82.
 69. Panahi O. (2025). The Role of Artificial Intelligence in Shaping Future Health Planning. *Int J Health Policy Plann*. 4(1):01-05.
 70. Panahi O, Falkner S. (2025). Telemedicine, AI, and the Future of Public Health. *Western J Med Sci & Res*. 2(1):10.
 71. Panahi O, Azarfardin A. Computer-Aided Implant Planning: Utilizing AI for Precise Placement and Predictable Outcomes. *Journal of Dentistry and Oral Health*. 2(1).
 72. Panahi O. (2025). AI in Health Policy: Navigating Implementation and Ethical Considerations. *Int J Health Policy Plann*. 4(1):01-05.
 73. Panahi O, Eslamlou SF, Jabbarzadeh M. *Stomatologia cyfrowa i sztuczna inteligencja*. ISBN: 978-620-8-73914-0.
 74. Panahi O. (2025). Innovative Biomaterials for Sustainable Medical Implants: A Circular Economy Approach. *European Journal of Innovative Studies and Sustainability*. 1(2):1-5.
 75. Panahi O (2024) Bridging the Gap: AI-Driven Solutions for Dental Tissue Regeneration. *Austin J Dent* 11(2): 1185.
 76. Panahi O, Eslamlou SF, Jabbarzadeh M. *Dentisterie numérique et intelligence artificielle*. ISBN: 978-620-8-73912-6.
 77. Panahi O, Zeinalddin M (2024) The Convergence of Precision Medicine and Dentistry: An AI and Robotics Perspective. *Austin J Dent* 11(2): 1186.
 78. Omid P, Mohammad Z (2024) “The Remote Monitoring Toothbrush for Early Cavity Detection using Artificial Intelligence (AI)”, *IJDSIR* 7(4): 173-178.
 79. Omid P (2024) Modern Sinus Lift Techniques: Aided by AI. *Glob J Oto* 26(4): 556198.
 80. Panahi O (2024) The Rising Tide: Artificial Intelligence Reshaping Healthcare Management. *S J Public Hlth* 1(1) :1-3.
 81. Panahi P (2008) Multipath Local Error Management Technique Over Ad Hoc Networks. In 2008 International Conference on Automated Solutions for Cross Media Content and Multi-Channel Distribution pp187-194.
 82. Panahi O, Eslamlou SF, Jabbarzadeh M. *Digitale Zahnmedizin und künstliche Intelligenz*. ISBN: 978-620-8-73910-2.
 83. Panahi U. (2025). AD HOC Networks: Applications, Challenges, Future Directions, Scholars' Press. ISBN: 978-3-639-76170-2.
 84. Koyuncu, B., Gokce, A., & Panahi, P. (2015, November). The use of the Unity game engine in the reconstruction of an archeological site. In 19th Symposium on Mediterranean Archaeology (SOMA 2015) (pp. 95–103).
 85. Koyuncu, B., Meral, E., & Panahi, P. (2015). Real time geolocation tracking by using GPS+GPRS and Arduino based SIM908. *IFRSA International Journal of Electronics Circuits and Systems (IJECS)*, 4(2), 148–150.
 86. Panahi O. Smart Materials and Sensors: Integrating Technology into Dental Restorations for Real-Time Monitoring. *J Dent Oral Health*. 2025 Mar;2(1). doi:10.61415/JD004/2025/NAR0271-0833.
 87. Omid Panahi, Mohammad Zeinalddin. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). *IJDSIR*. 2024;7(4):173-178.
 88. Artificial Intelligence in Dentistry, Unser wissen Publishing <https://www.blackwells.co.uk/bookshop/product/Knstliche...>, 2024.
 89. Panahi O. (2025). Deep Learning in Diagnostics. *Journal of Medical Discoveries*. 2(1).
 90. Panahi O. (2025). Algorithmic Medicine. *Journal of*

- Medical Discoveries. 2(1).
91. Panahi O. (2025). The Future of Healthcare: AI, Public Health and the Digital Revolution. *MediClin Case Rep J.* 3(1):763-766.
 92. Omid P. Artificial Intelligence in Oral Implantology, Its Applications, Impact and Challenges. *Adv Dent & Oral Health.* 2024; 17: 555966.
 93. Omid P. (2011). Relevance between gingival hyperplasia and leukemia. *Int J Acad Res.* 3:493-494.
 94. Panahi O. Teledentistry: Expanding Access to Oral Healthcare. *Journal of Dental Science Research Reviews & Reports.* J Dental Sci Res Rep. 2024; 6: 2-3.
 95. Panahi O, Ezzati A. (2025). AI in Dental-Medicine: Current Applications & Future Directions. *Open Access J Clin Images.* 2(1):1-5.
 96. Panahi O (2025) Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care* 3: 1027.
 97. Inteligencia artificial en odontología, NUESTRO CONOC, [DO Panahi](#), DF Esmaili, DS Kargarneshad - 2024 - Mento Publishing. ISBN
 98. Kevin Thamson, Omid Panahi (2025) Challenges and Opportunities for Implementing AI in Clinical Trials. *J. of Bio Adv Sci Research*, 1(2):1-08. WMJ/JBASR-113.
 99. Ethical Considerations and Future Directions of AI in Dental Health—care, K Thamson, [O Panahi](#) - *J. of Bio Adv Sci Research*, 2025.
 100. Bridging the gap: AI, data science, and evidence-based dentistry, K Thamson, [O Panahi](#) - *J. of Bio Adv Sci Research*, 2025.
 101. Bridging the gap: AI as a collaborative tool between clinicians and researchers, K Thamson, [O Panahi](#) - *J. of Bio Adv Sci Research*, 2025.
 102. Omid Panahi, Shabnam Dadkhah. Transforming Dental Care: A Comprehensive Review of AI Technologies. *J Stoma Dent Res.* 2025. 3(1): 1-5. DOI: doi.org/10.61440/JSDR.2025.v3.16.
 103. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care.* 2025; 3(1): 1028.
 104. Research system in health management information systems, M Gholizadeh, [O Panahi](#) - 2021 - Scienica Scripts Publishing.
 105. Omid Panahi., et al. "Robotics in Implant Dentistry: Current Status and Future Prospects". *Scientific Archives Of Dental Sciences* 7.9 (2025):55-60.
 106. Omid P. Empowering Dental Public Health: Leveraging Artificial Intelligence for Improved Oral Healthcare Access and Outcomes. *JOJ Pub Health.* 2024; 9(1): 555754. DOI: 10.19080/JOJPH.2024.09.555754.
 107. Dr Omid Panahi.(2021). Система исследований в информационных системах управления здравоохранением, M Gholizadeh - SCIENTIA SCRIPTS Publishing.
 108. Panahi O. (2025). Smart Implants: Integrating Sensors and Data Analytics for Enhanced Patient Care. *Dental.* 7(1):22.
 109. Dr. Omid Panahi. Forging a Healthier Future Through Responsible AI in Families and Communities. *Archives of Community and Family Medicine.* 2025; 8(1): 21-30.
 110. Periodontium: Structure, [O Panahi](#), SF Eslamlou - Function and Clinical Management.
 111. Dr. Omid Panahi. Health in the Age of AI: A Family and Community Focus. *Archives of Community and Family Medicine.* 2025; 8(1): 11-20.
 112. Omid Panahi* and Zahra Shahbazzpour. Healthcare Reimagined: AI and the Future of Clinical Practice. *Am J Biomed Sci & Res.* 2025 27(6) AJBSR.MS.ID.003617, DOI: 10.34297/AJBSR.2025.27.003617.
 113. AI in modern dentistry, [O Panahi](#), S Dadkhah - 2025 – ISBN.
 114. Panahi O (2025) Robotic Surgery Powered by AI: Precision and Automation in the Operating Room. *SunText Rev Med Clin Res* 6(2): 225.
 115. Omid Panahi. Smart Materials and Sensors: Integrating Technology into Dental Restorations for Real-Time Monitoring. *Journal of Dentistry and Oral Health.* 2(1). <https://doi.org/10.61615/JDOH/2025/MAR027140331>.
 116. Koyuncu, B., Uğur, B., & Panahi, P. (2013). Indoor location determination by using RFIDs. *International Journal of Mobile and Adhoc Network (IJMAN)*, 3(1), 7–11.
 117. Uras Panahi. Redes AD HOC: Aplicações, Desafios, Direções Futuras. *Edições Nosso Conhecimento.* 2025.
 118. Panahi, P., & Dehghan, M. (2008, May). Multipath Video Transmission Over Ad Hoc Networks Using Layer Coding And Video Caches. In *ICEE2008, 16th Iranian Conference On Electrical Engineering, (May 2008)* (pp. 50-55).
 119. Panahi DU. HOC A Networks: Applications. Challenges, Future Directions. *Scholars' Press.* 2025.
 120. Panahi O, Esmaili F, Kargarneshad S. (2024). Artificial Intelligence in Dentistry. *Scholars Press Publishing.* ISBN: 978-620-6772118.
 121. Omid P. (2011). Relevance between gingival hyperplasia and leukemia. *Int J Acad Res.* 3:493-49.
 122. Panahi O. (2025). Secure IoT for Healthcare. *European Journal of Innovative Studies and Sustainability.* 1(1):1-5.
 123. Panahi O. (2025). Deep Learning in Diagnostics. *Journal of Medical Discoveries.* 2(1).
 124. Omid P. Artificial Intelligence in Oral Implantology, Its Applications, Impact and Challenges. *Adv Dent & Oral Health.* 2024; 17(4): 555966. DOI: 10.19080/ADOH.2024.17.555966.
 125. Omid Panahi (2024) Teledentistry: Expanding Access to Oral Healthcare. *Journal of Dental Science Research Reviews & Reports.* SRC/JDSR-203.
 126. Omid P. Empowering Dental Public Health: Leveraging Artificial Intelligence for Improved Oral Healthcare Access and Outcomes. *JOJ Pub Health.* 2024; 9(1): 555754. DOI: 10.19080/JOJPH.2024.09.555754.
 127. Kevin Thamson, Omid Panahi (2025) Bridging the Gap: AI as a Collaborative Tool Between Clinicians and Researchers. *J. of Bio Adv Sci Research*, 1(2):1-08. WMJ/JBASR-112.
 128. Panahi O. (2025). Algorithmic Medicine. *Journal of Medical Discoveries.* 2(1).
 129. Panahi O. (2025). The Future of Healthcare: AI, Public Health and the Digital Revolution. *MediClin Case Rep J.* 3(1):763-766.
 130. AI-Powered IoT: Transforming Diagnostics and Treatment Planning in Oral Implantology, UP Omid Panahi - *J AdvArtifIntell Mach Learn*, 2025.
 131. Periodontium: Structure, O Panahi, SF Eslamlou - Function

- and Clinical Management.
132. AI in dental-medicine: Current applications & future directions. *Open Access Journal of Clinical Images*, 2 (1), 1–5, O Panahi, A Ezzati - 2025.
 133. Mitigating aflatoxin contamination in grains: The importance of postharvest management practices. *Advances in Biotechnology & Microbiology*, 18 (5), O Panahi, S Dadkhah - 2025.
 134. Empowering Dental Public Health: Leveraging Artificial Intelligence for Improved Oral Healthcare Access and Outcomes, O Panahi - *JOJ Pub Health*, 2024.
 135. Nano Technology, P Omid, KC Fatmanur - *Regenerative Medicine and, Tissue Bio-Engineering*, 2023.
 136. Panahi O. The Algorithmic Healer: AI's Impact on Public Health Delivery. *Medi Clin Case Rep J* 2025;3(1):759-762. DOI: doi.org/10.51219/MCCRJ/Omid-Panahi/197.
 137. Omid Panahi. "AI: A New Frontier in Oral and Maxillofacial Surgery". *Acta Scientific Dental Sciences* 8.6 (2024): 40-42.
 138. Panahi O and Falkner S (2025) Telemedicine, AI, and the Future of Public Health. *Western J Med Sci & Res* 2(1): 102.
 139. Panahi, O., & Eslamlou, S. F. (2025). Artificial Intelligence in Oral Surgery: Enhancing Diagnostics, Treatment, and Patient Care. *J Clin Den & Oral Care*, 3(1), 01-05.
 140. Omid P, Soren F. (2025). The Digital Double: Data Privacy, Security, and Consent in AI Implants. *Digit J Eng Sci Technol*. 2(1):105.
 141. Panahi, O. (2025). The Role of Artificial Intelligence in Shaping Future Health Planning. *Int J Health Policy Plann*, 4(1), 01-05.
 142. AI-enabled IT systems for improved dental practice management. O Panahi, A Amirloo - *On J Dent & Oral Health*, 2025.
 143. Panahi O. AI-Enhanced Case Reports: Integrating Medical Imaging for Diagnostic Insights. *J Case Rep Clin Images*. 2025; 8(1): 1161.
 144. Panahi O. (2025). Navigating the AI Landscape in Healthcare and Public Health. *Mathews J Nurs*. 7(1):56.
 145. Panahi O. Innovative Biomaterials for Sustainable Medical Implants: A Circular Economy Approach. *European Journal of Innovative Studies and Sustainability*. 2025;1(2):1–5.
 146. Omid Panahi, Alireza Azarfardin. Computer-Aided Implant Planning: Utilizing AI for Precise Placement and Predictable Outcomes. *Journal of Dentistry and Oral Health*. 2(1). <https://doi.org/10.61615/JDOH/2025/MAR027140329>.
 147. Panahi O. The Rising Tide: Artificial Intelligence Reshaping Healthcare Management. *S J Public Hlth*. 2024 ;1(1) :1-3. DOI : 10.51626/sjph.2024.01.00002.
 148. Panahi, O. (2025). AI in Health Policy: Navigating Implementation and Ethical Considerations. *Int J Health Policy Plann*, 4(1), 01-05.
 149. Panahi O. Bridging the Gap: AI-Driven Solutions for Dental Tissue Regeneration. *Austin J Dent*. 2024; 11(2): 1185.
 150. Panahi O, Zeinalddin M. The Convergence of Precision Medicine and Dentistry: An AI and Robotics Perspective. *Austin J Dent*. 2024; 11(2): 1186.
 151. Omid P. Modern Sinus Lift Techniques: Aided by AI. *Glob J Oto*, 2024; 26 (4): 556198. DOI:10.19080/GJO.2024.26.556198.
 152. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). [O Panahi](#), M Zeinalddin - *IJDSIR*, 2024.
 153. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care*. 2025; 3(1): 1027.
 154. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). [O Panahi](#), M Zeinalddin - *IJDSIR*, 2024.
 155. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care*. 2025; 3(1): 1027.
 156. Panahi, P., Bayılmış, C., Çavuşoğlu, U., & Kaçar, S. (2021). Performance evaluation of lightweight encryption algorithms for IoT-based applications. *Arabian Journal for Science and Engineering*, 46(4), 4015-4037.
 157. Omid Panahi, and Uras Panahi. AI-Powered IoT: Transforming Diagnostics and Treatment Planning in Oral Implantology. *J Adv Artif Intell Mach Learn*. 2025; 1(1): 1-4.
 158. Panahi U. (2025). *AD HOC Networks: Applications, Challenges, Future Directions*, Scholars' Press. ISBN: 978-3-639-76170-2.
 159. Panahi, P., & Dehghan, M. (2008, May). Multipath Video Transmission Over Ad Hoc Networks Using Layer Coding And Video Caches. In *ICEE2008, 16th Iranian Conference On Electrical Engineering, (May 2008)* (pp. 50-55).
 160. Uras Panahi. AI-Powered IoT: 54, O Panahi - *Transforming Diagnostics and Treatment Planning in*, 2025.
 161. Dr Mansoureh Zeynali. Will AI Replace Your Dentist? The Future of Dental Practice. *On J Dent & Oral Health*. 8 (3): 2025, DO Panahi, DA Ezzati - *OJDOH*. MS. ID.
 162. Panahi, U. (2025). *Redes AD HOC: Aplicações, Desafios, Direções Futuras*. Edições Nosso Conhecimento. ISBN 978-620-8-72962-2.
 163. Panahi, U. (2025). *AD HOC networks: Applications. Challenges, Future Paths*. Our Knowledge.
 164. Koyuncu, B., & Panahi, P. (2014). Kalman filtering of link quality indicator values for position detection by using WSNs. *International Journal of Computing, Communications & Instrumentation Engineering*, 1.
 165. Koyuncu, B., Gökçe, A., & Panahi, P. (2015). Archaeological site bir arkeolojik sit alanının rekonstrüksiyonundaki bütünleştirici oyun motoru tanıtımı. In *SOMA 2015*.
 166. Panahi O, Eslamlou SF. *Peridonio: Struttura, funzione e gestione clinica*. ISBN: 978-620-8-74559-2.