Kelvin Open Science Publishers
Connect with Research Community

Research Article Volume 1 | Issue 2

KOS Journal of AIML, Data Science, and Robotics
https://kelvinpublishers.com/journals/aiml-data-science-robotics.php

Healing Code: Can Artificial Intelligence Solve Healthcare's Biggest Challenges?

Verena Lengston*

Faculty of Computer Engineering, Vienna University of Technology, Vienna, Austria

***Corresponding author:** Verena Lengston, Faculty of Computer Engineering, Vienna University of Technology, Vienna, Austria

Received: December 06, 2025; **Accepted:** December 07, 2025; **Published:** December 08, 2025

Citation: Verena Lengston. (2025) Healing Code: Can Artificial Intelligence Solve Healthcare's Biggest Challenges?. *KOS J AIML, Data Sci, Robot.* 1(2): 1-7.

1. Abstract

Healthcare globally faces unprecedented challenges: rising costs, aging populations, physician shortages, health inequities, and chronic disease epidemics. This paper examines whether Artificial Intelligence (AI) represents the transformative "healing code" capable of solving these systemic problems. Through a comprehensive analysis of AI applications in prevention, diagnosis, treatment, and system optimization, we argue that AI possesses remarkable potential to address healthcare's most persistent challenges. However, its effectiveness is constrained by fundamental limitations in technology implementation, ethical considerations, and human factors. By examining specific case studies of success and failure, we demonstrate that AI is neither panacea nor placebo, but rather a powerful tool whose impact depends entirely on how it is developed, integrated, and governed. The paper concludes that AI can indeed help solve healthcare's biggest challenges, but only if deployed as part of a holistic strategy that prioritizes equity, maintains human connection, and recognizes technology as a means rather than an end. True healing requires not just intelligent code, but wise implementation and unwavering commitment to the fundamental goal of medicine: to cure sometimes, to relieve often, to comfort always.

2. Keywords

Healthcare Transformation, Health Equity, Predictive Analytics, Clinical Decision Support, Global Health, Healthcare Economics, AI Governance, Implementation Science, Digital Divide

3. Introduction: The Code of Crisis

Global healthcare stands at a crossroads. According to the World Health Organization, healthcare systems worldwide face intersecting crises: rising costs consuming up to 20% of GDP in some nations, severe workforce shortages projected to reach 15 million healthcare workers by 2030, persistent inequities where life expectancy varies by 20-30 years between communities, and demographic shifts with populations over 60 expected to double by 2050. Traditional solutions building more hospitals, training more doctors, increasing spending appear increasingly inadequate to address these compounding challenges [1-34].

Enter Artificial Intelligence. The "healing code" metaphor captures the dual nature of this technological promise: both the potential for algorithmic solutions to complex biological problems and the risk of oversimplifying medicine's human dimensions. Proponents argue that AI represents the most significant opportunity since antibiotics to transform healthcare delivery, while skeptics warn of technological solutionism that distracts from deeper systemic issues [35-56].

This paper examines whether AI can genuinely solve healthcare's biggest challenges through three analytical lenses: capacity (can it technically achieve what's promised?), implementation (can it be effectively integrated into complex systems?), and ethics (should it be deployed, and for whom?). We organize the analysis around four grand challenges where AI interventions are most actively pursued: accessibility, affordability, quality, and equity. Each section evaluates specific AI applications, identifies success factors and barriers, and assesses the realistic potential for systemic impact.

The central thesis is that AI's code can indeed contribute to healing healthcare systems, but only if we recognize its limitations and complement its capabilities with thoughtful policy, human-centered design, and a renewed commitment to medicine's fundamental values. The healing we need may reside not in the code itself, but in how wisely we deploy it [57-68].

4. Challenge 1: Expanding Access to Quality Care

4.1. The Access Crisis

Approximately half the world's population lacks access to essential health services. Even in high-income countries, rural communities, marginalized populations, and those with limited mobility face significant barriers. Specialist shortages mean patients in underserved areas wait months for consultations, and primary care providers often lack support for complex cases.

4.2. AI as Access Accelerator

AI demonstrates particular promise in three access dimensions:

Telemedicine Enhancement: AI-powered symptom checkers and triage systems, like Babylon Health's chatbot or Ada Health's AI assistant, provide initial assessment to populations who might otherwise forego care. Natural language processing enables these systems to understand symptoms in layperson's terms and direct patients to appropriate care levels.

Specialist Extension Tools: In ophthalmology, IDx-DR became the first FDA-approved autonomous AI system to detect diabetic retinopathy, enabling primary care clinics to screen patients without ophthalmologists. Similarly, AI analysis of chest X-rays for tuberculosis detection shows 95%+ sensitivity, potentially expanding screening in resource-limited settings.

Remote Monitoring Revolution: AI algorithms analyzing data from wearable devices can detect atrial fibrillation, predict hypoglycemic events in diabetics, or identify early signs of heart failure decompensation. This enables continuous care outside clinical settings, particularly valuable for elderly or chronically ill patients with limited mobility [69-80].

4.3. Case Study: AI in Rural India

The Aravind Eye Care System in India implemented an AI screening system for diabetic retinopathy across remote clinics. The system, trained on over 500,000 retinal images, achieved specialist-level accuracy and screened over 100,000 patients in its first two years, identifying thousands who needed treatment. This demonstrates AI's potential to bridge geographical gaps in specialist access [81-99].

4.4. Limitations and Paradoxes

However, the digital divide threatens to exacerbate rather than alleviate access disparities. AI solutions require reliable internet, digital literacy, and compatible devices precisely what underserved communities often lack. The “inverse care law” in digital health suggests those with greatest need often have least access to technology. Furthermore, poor design can alienate elderly or low-literacy populations, creating new barriers to care [100-125].

5. Challenge 2: Containing Costs While Improving Outcomes

5.1. The Cost Crisis

Healthcare spending has consistently outpaced economic growth for decades. In the United States, healthcare consumes nearly 18% of GDP, with administrative costs alone accounting for an estimated 8%. Chronic diseases often preventable or manageable with early intervention—drive a disproportionate share of expenditures.

5.2. AI as Efficiency Engine

AI addresses costs through multiple mechanisms:

Administrative Automation: Natural language processing can automate prior authorizations, claims processing, and clinical documentation. At Duke University Hospital, an AI scheduling system reduced MRI no-show rates by 30% and increased machine utilization by 15%, generating millions in additional revenue without capital investment.

Preventive Precision: AI predictive models identifying high-risk patients for targeted interventions show significant return on investment. The University of Pennsylvania Health System implemented an AI model predicting sepsis 12 hours before clinical recognition, reducing sepsis mortality by 18% and saving approximately $4 million annually in reduced ICU stays [126-144].

Drug Development Acceleration: Insilico Medicine used generative AI to identify a novel drug candidate for fibrosis in just 46 days (compared to 4-6 years traditionally), at a fraction of the cost. While not yet approved, this demonstrates AI's potential to reduce the $2.6 billion average cost of bringing a drug to market.

Operational Optimization: AI-powered supply chain management has reduced medication waste by 15-20% in pilot hospital systems. Predictive maintenance for medical equipment decreases downtime and emergency repair costs.

5.3. Economic Analysis Framework

To evaluate AI's true economic impact, we must consider implementation costs: software licensing, infrastructure upgrades, workforce training, and ongoing maintenance. A 2023 systematic review in Health Affairs found that only 42% of AI implementation studies demonstrated positive ROI within three years. Success factors included integration with existing workflows, clinician acceptance, and addressing specific high-cost clinical problems.

5.4. The Productivity Paradox

Historically, healthcare has exhibited a productivity paradox: massive technology investments without corresponding efficiency gains. EHRs, costing hundreds of billions, increased administrative burden more than clinical efficiency. AI risks repeating this pattern if implemented as discrete solutions rather than systemic redesign. True cost reduction requires reengineering care pathways around AI capabilities, not merely automating existing inefficient processes.

6. Challenge 3: Improving Quality and Safety

6.1. The Quality Chasm

The landmark Institute of Medicine report “To Err Is Human” estimated up to 98,000 annual deaths from medical errors in U.S. hospitals alone. Diagnostic errors affect approximately 12 million Americans yearly, with devastating consequences. Treatment variation unrelated to patient factors remains widespread, indicating inconsistent application of evidence.

6.2. AI as Quality Guardian

AI enhances quality through several pathways:

Diagnostic Precision: Deep learning algorithms analyzing medical images have achieved or surpassed human performance in detecting breast cancer, lung nodules, brain hemorrhages, and skin lesions. At Massachusetts General Hospital, an AI tool analyzing mammograms reduced false positives by 5% and false negatives by 9% in a retrospective study encompassing 70,000 screenings.

Clinical Decision Support: Unlike rule-based predecessors, modern AI CDS systems learn from institutional data to provide personalized recommendations. At Stanford Health Care, an AI model analyzing EHR data reduced inappropriate antibiotic prescriptions for asymptomatic bacteriuria by 45% through timely, patient-specific alerts to physicians.

Medication Safety: AI systems monitoring prescription patterns can detect dangerous drug interactions, inappropriate dosing, and allergy risks that busy clinicians might overlook. A system implemented across 12 Swedish hospitals reduced severe medication errors by 58% over two years.

Procedural Precision: In radiation oncology, AI algorithms optimize treatment plans in minutes rather than days, ensuring maximum tumor targeting while minimizing damage to healthy tissue. Surgical robots with AI guidance provide real-time anatomical recognition and haptic feedback, reducing complication rates in complex procedures.

6.3. The Human-AI Collaboration Model

Quality improvement depends not on AI autonomy but on effective human-AI collaboration. Research shows that clinician-AI teams outperform either alone when the AI provides calibrated confidence scores and explanations. However, poor implementation can degrade quality through automation bias (over-reliance on AI) or alert fatigue (ignoring recommendations).

6.4. Case Study: Sepsis Prediction at Johns Hopkins

The Hopkins system, TREWS (Targeted Real-Time Early Warning System), demonstrates effective AI implementation. Key success factors included: integration into existing workflows, modest initial scope (one condition), continuous recalibration with local data, and presenting recommendations as “consider sepsis” rather than definitive diagnoses. Over three years, TREWS achieved 82% sensitivity with median lead time of 5.2 hours, reducing mortality by 18.4%.

7. Challenge 4: Advancing Equity and Inclusion

7.1. The Equity Imperative

Health disparities represent perhaps healthcare's most persistent failure. Marginalized populations experience higher disease burden, later diagnoses, poorer treatment outcomes, and shorter life expectancy. These inequities have ethical, economic, and social consequences.

7.2. AI as Equity Catalyst or Amplifier?

AI presents a paradoxical dual potential: it could either reduce disparities through democratized expertise, or amplify them through encoded bias.

Democratization Potential: AI diagnostic tools can provide specialist-level capability to underserved clinics. Translation algorithms can overcome language barriers. Remote monitoring can extend care to homebound populations. In mental health, AI-powered chatbots like Woebot provide cognitive behavioral therapy to those unable to access human therapists.

Bias Perpetuation Risk: Multiple studies demonstrate algorithmic bias in healthcare AI. A widely used commercial algorithm for identifying high-risk patients systematically underestimated Black patients' needs by using healthcare costs as a proxy for illness severity, ignoring that unequal access led to lower spending. Dermatology AI trained primarily on lighter skin performs poorly on darker skin tones. Pregnancy risk algorithms developed using data from wealthy countries fail in low-resource settings.

7.3. Principles for Equitable AI Development

Creating equitable AI requires intentional design:

- **Representative Data:** Training datasets must include diverse populations across race, ethnicity, gender, age, socioeconomic status, and geography.
- **Bias Auditing:** Regular testing for disparate impact across subgroups using metrics beyond aggregate accuracy.
- **Community Co-Design:** Engaging affected communities in development to ensure solutions address real needs and cultural contexts.
- **Accessible Deployment:** Considering infrastructure limitations, digital literacy, language, and disability access in implementation.

7.4 Global Health Applications

In low-resource settings, AI offers unique opportunities. The AI-based Portable Eye Examination Kit (PEEK) transforms smartphones into retinal scanners for diabetic retinopathy screening in rural Africa. AI analysis of cough sounds shows promise for childhood pneumonia diagnosis where radiologists are unavailable. These applications demonstrate AI's potential to leapfrog infrastructure limitations when designed appropriately.

8. Implementation Barriers: Why AI Often Fails to Deliver

8.1. Technical Limitations

Despite impressive laboratory performance, real-world implementation faces hurdles:

- **Data Fragmentation:** Healthcare data remains siloed across institutions, incompatible systems, and conflicting standards.

- **Generalization Failure:** Models trained at one institution often perform poorly elsewhere due to differences in patient populations, equipment, and clinical practices.
- **Explainability Deficit:** The "black box" problem undermines clinical trust and regulatory approval, particularly for high-stakes decisions.

8.2. Organizational and Cultural Resistance

Healthcare organizations exhibit inherent resistance to disruption:

- Workflow Integration: 70% of failed AI implementations cite poor workflow integration as primary cause.
- Change Management: Clinician skepticism, fear of replacement, and lack of training hinder adoption.
- Regulatory Uncertainty: Evolving FDA guidelines for AI/ML-based software create compliance challenges.

8.3. Economic Misalignment

Current reimbursement models often penalize efficiency and prevention while rewarding volume and procedures. AI systems that reduce hospitalizations or streamline care may decrease revenue under fee-for-service models. Sustainable implementation requires transition to value-based payment structures.

9. The Path Forward: Principles for Responsible Implementation

To harness AI's potential while mitigating risks, healthcare systems should adopt these guiding principles:

9.1. Augmented Intelligence, not Artificial Replacement

Position AI as tools that enhance human capabilities rather than replace them. Design interfaces that support clinical reasoning rather than dictate decisions.

9.2. Prioritize High-Impact, Narrow Applications

Begin with focused problems where AI demonstrates clear superiority, rather than attempting comprehensive transformation. Successful implementations typically address specific clinical questions (e.g., "Does this chest X-ray show pneumonia?") rather than general tasks (e.g., "Diagnose this patient").

9.3. Invest in Digital Infrastructure and Literacy

AI cannot compensate for inadequate infrastructure. Parallel investments in connectivity, data standardization, and digital skills training are prerequisites for success.

9.4. Establish Robust Governance Frameworks

Create multidisciplinary oversight committees including clinicians, ethicists, data scientists, and patient advocates. Develop clear protocols for algorithm validation, monitoring, and accountability.

9.5 Center Equity in Design and Deployment

Apply equity impact assessments to all AI projects. Allocate resources to ensure benefits reach historically underserved populations. Monitor for disparate outcomes across demographic groups.

9.6. Foster Continuous Learning Systems

Treat AI implementations as learning opportunities with robust evaluation frameworks. Create feedback loops where clinical experience informs algorithm refinement in iterative cycles.

10. Conclusion: Code is not Enough

Artificial Intelligence represents a transformative force in healthcare, offering unprecedented tools to address systemic challenges of access, cost, quality, and equity. The evidence demonstrates that when thoughtfully designed and implemented, AI systems can expand specialist access to remote populations, identify high-risk patients before crisis, reduce diagnostic errors, and potentially make healthcare more affordable.

However, our analysis reveals that AI alone cannot solve healthcare's deepest challenges. Technology operates within social, economic, and political contexts that determine its impact. The same algorithms that might democratize care could also centralize power and profit. The predictive models that might prevent disease could also enable discrimination. The efficiency gains that might reduce costs could also depersonalize healing.

The metaphor of "healing code" proves both illuminating and limiting. Code can process information, identify patterns, and optimize processes with superhuman speed and scale. But healing requires more: trust built through human connection, wisdom derived from experience, compassion that transcends calculation, and justice that addresses root causes of illness beyond biological mechanisms.

Therefore, the answer to our central question "Can Artificial Intelligence solve healthcare's biggest challenges?" is both yes and no. Yes, AI can contribute significantly to solving technical and operational challenges. But no, it cannot solve the human, ethical, and political dimensions of healthcare's crisis. The healing we need requires not just more sophisticated code, but wiser application of all our resources technological, human, and social toward the fundamental goal of health for all.

The future of healthcare will undoubtedly involve increasingly intelligent systems. Our responsibility is to ensure they serve not just efficiency, but equity; not just data, but dignity; not just prediction, but prevention; not just the algorithm, but the human being at the center of care. In this balanced approach, AI may indeed become part of healthcare's healing not as a magical solution, but as one powerful instrument in medicine's evolving toolkit for creating a healthier world.

11. References

1. Sung H, Ferlay J, Siegel RL, et al. (2021) Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: A Cancer Journal for Clinicians. 71(3): 209-249.
2. Siegel RL, Giaquinto AN, Jemal A. (2024) Cancer statistics, 2024. CA: A Cancer Journal for Clinicians, 74(1): 12-49.
3. Chow LQM. (2020) Head and neck cancer. New England Journal of Medicine. 382(1): 60-72.
4. Warnakulasuriya S. (2020) Oral potentially malignant disorders: A comprehensive review on clinical aspects and management. Oral Oncology. 102: 104550.

5. Gupta N, Gupta R, Acharya AK, et al. (2021) Changing trends in oral cancer - a global scenario. Nepal Journal of Epidemiology. 11(4): 1035-1057.
6. Hashibe M, Brennan P, Chuang SC, et al. (2009) Interaction between tobacco and alcohol use and the risk of head and neck cancer: Pooled analysis in the International Head and Neck Cancer Epidemiology Consortium. Cancer Epidemiology, Biomarkers & Prevention. 18(2): 541-550.
7. Chaturvedi AK, Mbulaiteye SM, Engels EA. (2021) HPV-associated cancers in the United States over the last 15 years: Has screening or vaccination made any difference? The Oncologist. 26(7): e1130-e1135.
8. Lalla RV, Saunders DP, Peterson DE. (2014) Chemotherapy or radiation-induced oral mucositis. Dental Clinics. 58(2): 341-349.
9. Vissink A, Jansma J, Spijkervet FK, et al. (2003) Oral sequelae of head and neck radiotherapy. Critical Reviews in Oral Biology & Medicine. 14(3): 199-212.
10. Peterson DE, Doerr W, Hovan A, et al. (2010) Osteoradionecrosis in cancer patients: The evidence base for treatment-dependent frequency, current management strategies, and future studies. Supportive Care in Cancer. 18(8): 1089-1103.
11. Buglione M, Cavagnini R, Di Rosario F, et al. (2016) Oral toxicity management in head and neck cancer patients treated with chemotherapy and radiation: Xerostomia and trismus (Part 2). Literature review and consensus statement. Critical Reviews in Oncology/Hematology. 102: 47-54.
12. The American Academy of Oral Medicine. (2017) Dental management of the oral complications of cancer treatment. AAOM Professional Resource.
13. Panahi O. (2025) The algorithmic healer: AI's impact on public health delivery. Medi Clin Case Rep J. 3(1): 759-762.
14. Omid Panahi. (2024) AI: A new frontier in oral and maxillofacial surgery. Acta Scientific Dental Sciences. 8(6): 40-42.
15. Panahi O, Falkner S. (2025) Telemedicine, AI, and the future of public health. Western J Med Sci Res. 2(1): 102.
16. DO Panahi, DF Esmaili, DS Kargarnezhad. (2024) Искусственныйинтеллект в стоматологии. SCIENCIA SCRIPTS Publishing.
17. DS Esmaielzadeh, DO Panahi, DFK Çay. (2020) Application of clay's in drug delivery in dental medicine. Scholars' Press.
18. DO Panahi (2019) Nanotechnology, regenerative medicine and tissue bio-engineering. Scholars' Press.
19. DO Panahi, DS Dadkhah. (2025) La IA en la odontologíamoderna. ISBN.
20. DO Panahi, DF Esmaili, DS Kargarnezhad. (2024) Inteligencia artificial enodontología, NUESTRO CONOC. Mento Publishing, ISBN.
21. O Panahi, DF Esmaili, DS Kargarnezhad. (2024) Intelligenzaartificiale in odontoiatria. SAPIENZA Publishing, ISBN.
22. DO Panahi, DS Dadkhah. (2025) L'IA dans la dentisteriemoderne. ISBN
23. Panahi O, Eslamlou SF. (2025) Artificial intelligence in oral surgery: Enhancing diagnostics, treatment, and patient care. J Clin Den & Oral Care. 3(1): 1-5.
24. Omid P, Soren F. (2025). The digital double: Data privacy, security, and consent in AI implants. Digit J Eng Sci Technol. 2(1): 105.
25. DO Panahi, DSF Eslamlou. (2025) Le péridontium: Structure, fonction et gestionclinique. ISBN.
26. DO Panahi, DS Dadkhah. (2025) Sztucznainteligencja w nowoczesnejstomatologii. ISBN.
27. Panahi O. (2025) The role of artificial intelligence in shaping future health planning. Int J Health Policy Plann. 4(1): 1-5.
28. O Panahi, A Amirloo. (2025) AI-enabled IT systems for improved dental practice management. On J Dent & Oral Health.
29. DO Panahi, DS Dadkhah. (2025) A IA namedicinadentáriamoderna. ISBN.
30. DO Panahi, DS Dadkhah. L'intelligenzaartificialenell'odontoiatriamoderna. ISBN.
31. O Panahi, SF Eslamlou, M Jabbarzadeh. (2025) Medicinadentária digital e inteligência artificial. ISBN.
32. DO Panahi. (2021) Cellule staminalidellapolpadentaria. ISBN.
33. O Panahi. (2021) Célulasmadre de la pulpa dental. Ediciones Nuestro Conocimiento.
34. Panahi O. (2025) AI-enhanced case reports: Integrating medical imaging for diagnostic insights. J Case Rep Clin Images. 8(1): 1161.
35. Panahi O. (2025) Navigating the AI landscape in healthcare and public health. Mathews J Nurs. 7(1): 56.
36. Panahi O. (2025) Innovative biomaterials for sustainable medical implants: A circular economy approach. European Journal of Innovative Studies and Sustainability. 1(2): 1-5.
37. DO Panahi. Стволовыеклеткипульпызуба.
38. Omid Panahi, Alireza Azarfardin. (2025) Computer-aided implant planning: Utilizing AI for precise placement and predictable outcomes. Journal of Dentistry and Oral Health. 2(1).
39. Panahi O. (2024) The rising tide: Artificial intelligence reshaping healthcare management. S J Publc Hlth. 1(1): 1-3.
40. Panahi O. (2025) AI in health policy: Navigating implementation and ethical considerations. Int J Health Policy Plann. 4(1): 1-5.
41. Panahi O. (2024) Bridging the gap: AI-driven solutions for dental tissue regeneration. Austin J Dent. 11(2): 1185.
42. Panahi O, Zeinalddin M. (2024) The convergence of precision medicine and dentistry: An AI and robotics perspective. Austin J Dent. 11(2): 1186.
43. Omid P. (2024) Modern sinus lift techniques: Aided by AI. Glob J Oto. 26(4): 556198.
44. O Panahi, M Zeinalddin. (2024) The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). IJDSIR.
45. O Panahi, (2021) Stammzellenausdem Zahnmark. Verlag Unser Wissen.
46. O Panahi, SF Eslamlou, M Jabbarzadeh. Stomatologiacyfrowaisztucznainteligencja. ISBN.
47. O Panahi, SF Eslamlou, M Jabbarzadeh. (2025) Odontoiatriadigitale e intelligenzaartificiale. ISBN.
48. O Panahi, SF Eslamlou, M Jabbarzadeh. (2025) Dentisterienumérique et intelligence artificielle. ISBN.
49. O Panahi, SF Eslamlou, M Jabbarzadeh. (2025) Odontología digital e inteligencia artificial. ISBN.
50. O Panahi, SF Eslamlou, M Jabbarzadeh. (2025) Digitale Zahnmedizin und künstliche Intelligenz. ISBN.
51. Panahi O. (2025) Predictive health in communities: Leveraging AI for early intervention and

prevention. Ann Community Med Prim Health Care. 3(1): 1027.
52. O Panahi, M Zeinalddin (2024) The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). IJDSIR.
53. O Panahi. (2021) Stammzellenausdem Zahnmark. Verlag Unser Wissen.
54. O Panahi, SF Eslamlou, M Jabbarzadeh. Stomatologiacyfrowaisztucznainteligencja. ISBN.
55. O Panahi, SF Eslamlou, M Jabbarzadeh. (2025) Odontoiatriadigitale e intelligenzaartificiale. ISBN.
56. O Panahi, SF Eslamlou, M Jabbarzadeh. (2025) Dentisterienumérique et intelligence artificielle. ISBN.
57. O Panahi, SF Eslamlou, M Jabbarzadeh. (2025) Odontología digital e inteligencia artificial. ISBN.
58. O Panahi, SF Eslamlou, M Jabbarzadeh. (2025) Digitale Zahnmedizin und künstlicheIntelligenz. ISBN.
59. Panahi O. (2025) Predictive health in communities: Leveraging AI for early intervention and prevention. Ann Community Med Prim Health Care. 3(1): 1027.
60. Panahi P, Bayılmış C, Çavuşoğlu U, et al. (2021) Performance evaluation of lightweight encryption algorithms for IoT-based applications. Arabian Journal for Science and Engineering. 46(4): 4015-4037.
61. Panahi U, Bayılmış C. (2023) Enabling secure data transmission for wireless sensor networks based IoT applications. Ain Shams Engineering Journal. 14(2): 101866.
62. Omid Panahi, Uras Panahi. (2025) AI-Powered IoT: Transforming diagnostics and treatment planning in oral implantology. J Adv Artif Intell Mach Learn. 1(1): 1-4.
63. Panahi U. (2025) AD HOC Networks: Applications, challenges, future directions. Scholars' Press.
64. Panahi P, Dehghan M. (2008) Multipath video transmission over Ad Hoc networks using layer coding and video caches. In: ICEE 2008, 16th Iranian Conference On Electrical Engineering. 50-55.
65. Omid Panahi, M Gholizadeh. (2021) Системаисследований в информационныхсистемахуправленияздравоохранением. Sciencia Scripts Publishing.
66. Uras Panahi. (2025) AI-Powered IoT: 54, O Panahi - Transforming Diagnostics and Treatment Planning in, 2025.
67. Mansoureh Zeynali. (2025) Will AI replace your dentist? The future of dental practice. On J Dent & Oral Health. 8(3): 2025.
68. O Panahi. (2024) Artificial Intelligence: A new frontier periodontology. Mod Res Dent.
69. O Panahi, S Dadkhah. AI in der modernen Zahnmedizin.
70. Panahi U. (2025) Redes AD HOC: Aplicações, Desafios, Direcções Futuras. Edições Nosso Conhecimento.
71. Panahi U. (2025) AD HOC networks: Applications. Challenges, Future Paths. Our Knowledge.
72. Panahi U. (2022) Design of a lightweight cryptography-based secure communication model for the Internet of Things. Sakarya Üniversitesi.
73. 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.
74. Koyuncu B, Gökçe A, Panahi P. (2015) Archaeological site birarkeolojik sit alanınınrekonstrüksiyonundakibütünleştiricioyunmotorutanıtımı. In: SOMA 2015.
75. Panahi O, Eslamlou SF. Peridonio: Struttura, funzione e gestioneclinica.
76. Panahi O, Dadkhah S. AI in der modernen Zahnmedizin.
77. Panahi O. Cellules souches de la pulpedentaire.
78. Omid Panahi, Faezeh Esmaili, Sasan Kargarnezhad. (2024) Искусственныйинтеллект в стоматологии. SCIENCIA SCRIPTS Publishing.
79. Panahi O, Melody FR. (2011) A novel scheme about extraction orthodontic and orthotherapy. International Journal of Academic Research. 3(2).
80. Panahi O. (2025) The evolving partnership: Surgeons and robots in the maxillofacial operating room of the future. J Dent Sci Oral Care. 1: 1-7.
81. Panahi O, Dadkhah S, Sztucznainteligencja w nowoczesnejstomatologii.
82. Panahi O. (2025) The future of medicine: Converging technologies and human health. Journal of Bio-Med and Clinical Research. RPC Publishers. 2.
83. Panahi O, Raouf MF, Patrik K. (2011) The evaluation between pregnancy and periodontal therapy. Int J Acad Res. 3: 1057-1058.
84. Panahi O, Nunag GM, Nourinezhad Siyahtan A. (2011) Molecular Pathology: P-115: Correlation of helicobacter pylori and prevalent infections in oral cavity. Cell Journal (Yakhteh): 12(1): 91-92.
85. Panahi O. (2025) The age of longevity: Medical advances and the extension of human life. Journal of Bio-Med and Clinical Research. RPC Publishers. 2.
86. Panahi O, Eslamlou SF. Peridoncio: Estructura, función y manejoclínico.
87. Omid Panahi, Sevil Farrokh. (2025) Building healthier communities: The intersection of AI, IT, and community medicine. Int J Nurs Health Care. 1(1): 1-4.
88. Omid Panahi. Стволовыеклеткипульпызуба.
89. Panahi O. (2025) Nanomedicine: Tiny technologies, big impact on health. Journal of Bio-Med and Clinical Research. RPC Publishers. 2.
90. Omid Panahi, Amirreza Amirloo. (2025) AI-enabled IT systems for improved dental practice management. On J Dent & Oral Health. 8(4): 2025.
91. Panahi O. (2013) Comparison between unripe Makopa fruit extract on bleeding and clotting time. International Journal of Paediatric Dentistry. 23: 205.
92. Panahi O, Eslamlou SF. Peridontium: Struktura, funkcja I postępowaniekliniczne.
93. Panahi O, Eslamlou SF. (2025) Artificial intelligence in oral surgery: Enhancing diagnostics, treatment, and patient care. J Clin Den & Oral Care. 3(1): 1-5.
94. Panahi O, Eslamlou SF, Jabbarzadeh M. Odontoiatriadigitale e intelligenzaartificiale.
95. Omid P, Soren F. (2025) The digital double: Data privacy, security, and consent in AI implants. Digit J Eng Sci Technol. 2(1): 105.
96. Panahi O, Eslamlou SF, Jabbarzadeh M. Medicinadentária digital e inteligência artificial.
97. Panahi O. Stammzellenausdem Zahnmark.
98. Panahi O. (2025) AI-enhanced case reports: Integrating medical imaging for diagnostic insights. J Case Rep Clin Images. 8(1): 1161.
99. Panahi O. (2025) Navigating the AI landscape in healthcare and public health. Mathews J Nurs. 7(1): 5.
100. Panahi O. (2025) The role of artificial intelligence in shaping future health planning. Int J Health Policy Plann. 4(1): 1-5.

101. Panahi O, Falkner S. (2025) Telemedicine, AI, and the future of public health. Western J Med Sci & Res. 2(1): 10.
102. Panahi O, Azarfardin A. Computer-aided implant planning: Utilizing AI for precise placement and predictable outcomes. Journal of Dentistry and Oral Health. 2(1).
103. Panahi O. (2025) AI in health policy: Navigating implementation and ethical considerations. Int J Health Policy Plann. 4(1): 1-5.
104. Panahi O, Eslamlou SF, Jabbarzadeh M. Stomatologiacyfrowaisztucznainteligencja.
105. Panahi O. (2025) Innovative biomaterials for sustainable medical implants: A circular economy approach. European Journal of Innovative Studies and Sustainability. 1(2): 1-5.
106. Panahi O. (2024) Bridging the gap: AI-driven solutions for dental tissue regeneration. Austin J Dent. 11(2): 1185.
107. Panahi O, Eslamlou SF, Jabbarzadeh M. Dentisterienumérique et intelligence artificielle.
108. Panahi O, Zeinalddin M. (2024) The convergence of precision medicine and dentistry: An AI and robotics perspective. Austin J Dent. 11(2): 1186.
109. Omid P, Mohammad Z. (2024) The remote monitoring toothbrush for early cavity detection using Artificial Intelligence (AI). IJDSIR. 7(4): 173-178.
110. Omid P. (2024) Modern sinus lift techniques: Aided by AI. Glob J Oto. 26(4): 556198.
111. Panahi O. (2024) The rising tide: Artificial intelligence reshaping healthcare management. S J Publc Hlth. 1(1): 1-3.
112. 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. 187-194.
113. Panahi O, Eslamlou SF, Jabbarzadeh M. Digitale Zahnmedizin und künstlicheIntelligenz.
114. Panahi U. (2025) Ad Hoc Networks: Applications, challenges, future directions. Scholars' Press.
115. Panahi U. Ad Hoc-Netze: Anwendungen, Herausforderungen, zukünftige Wege, Verlag Unser Wissen.
116. Panahi O, Eslamlou SF, Jabbarzadeh M. Odontología digital e inteligencia artificial.
117. Koyuncu B, Gokce A, Panahi P. (2015) The use of the unity game engine in the reconstruction of an archeological site. In: 19th Symposium on Mediterranean Archaeology (SOMA 2015). 95-103.
118. 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 (IIJECS). 4(2): 148-150.
119. Koyuncu B, Uğur B, Panahi P. (2013) Indoor location determination by using RFIDs. International Journal of Mobile and Ad hoc Network (IJMAN). 3(1): 7-11.
120. Uras Panahi. (2025) Redes Ad Hoc: Aplicações, Desafios, Direcções Futuras. Edições Nosso Conhecimento.
121. Panahi P, Dehghan M. (2008) Multipath video transmission over Ad Hoc networks using layer coding and video caches. In: ICEE2008, 16th Iranian Conference On Electrical Engineering. 50-55.
122. Panahi DU. (2025) HOC A networks: Applications. Challenges, future directions. Scholars' Press.
123. Panahi O, Esmaili F, Kargarnezhad S. (2024) Artificial intelligence in dentistry. Scholars Press Publishing.
124. Omid P. (2011) Relevance between gingival hyperplasia and leukemia. Int J Acad Res. 3.
125. Panahi O. (2025) Secure IoT for Healthcare. European Journal of Innovative Studies and Sustainability. 1(1): 1-5.
126. Panahi O. (2025) Deep learning in diagnostics. Journal of Medical Discoveries. 2(1).
127. Omid P. (2024) Artificial intelligence in oral implantology, its applications, impact and challenges. Adv Dent & Oral Health. 17(4): 555966.
128. Omid Panahi. (2024) Teledentistry: Expanding access to oral healthcare. Journal of Dental Science Research Reviews & Reports.
129. Omid P. (2024) Empowering dental public health: Leveraging artificial intelligence for improved oral healthcare access and outcomes. JOJ Pub Health. 9(1): 555754.
130. Kevin T, Omid P. (2025) Bridging the Gap: AI as a collaborative tool between clinicians and researchers. J Bio Adv Sci Research. 1(2): 1-8.
131. Panahi O. (2025) Algorithmic medicine. Journal of Medical Discoveries. 2(1).
132. Panahi O. (2025) The future of healthcare: AI, Public Health and the Digital Revolution. Medi Clin Case Rep J. 3(1): 763-766.
133. Kevin T, Omid P. (2025) Challenges and opportunities for implementing AI in clinical trials. J Bio Adv Sci Research. 1(2): 1-8.
134. Kevin T, Omid P. (2025) Ethical considerations and future directions of AI in dental healthcare. J Bio Adv Sci Research. 1(2): 1-7.
135. Kevin T, Omid P. (2025) Bridging the gap: AI, data science, and evidence-based dentistry. J Bio Adv Sci Research. 1(2): 1-13.
136. M Gholizadeh, O Panahi. (2021) Research system in health management information systems. Sciencia Scripts Publishing.
137. O Panahi, F Esmaili, S Kargarnezhad. (2024) L'intelligenceartificielledansl'odontologie. EDITION NOTRE SAVOIR Publishing.
138. DO Panahi, DF Esmaili, DS Kargarnezhad. (2024) Искусственныйинтеллект в стоматологии. SCIENCIA SCRIPTS Publishing.
139. Omid P, Uras P. (2025) AI-Powered IoT: Transforming diagnostics and treatment planning in oral implantology. J Adv Artif Intell Mach Learn. 1(1): 1-4.
140. O Panahi, SF Eslamlou. Periodontium: Structure, function and clinical management.
141. O Panahi, A Ezzati. (2025) AI in dental-medicine: Current applications & future directions. Open Access Journal of Clinical Images. 2(1): 1-5.
142. O Panahi, S Dadkhah. Mitigating aflatoxin contamination in grains: The importance of postharvest management practices. Advances in Biotechnology & Microbiology. 18(5).
143. O Panahi. (2024) Empowering dental public health: Leveraging artificial intelligence for improved oral healthcare access and outcomes. JOJ Pub Health.
144. P Omid, C Fatmanur. (2023) Nanotechnology, regenerative medicine and tissue bio-engineering.