



Kelvin Open Science Publishers

Connect with Research Community

Research Article

Volume 2 / Issue 1

KOS Journal of AIML, Data Science, and Robotics

<https://kelvinpublishers.com/journals/aiml-data-science-robotics.php>

# Artificial Intelligence in Surgery: From Preoperative Planning to Intraoperative Guidance and Postoperative Recovery

Alireza R Azadi<sup>1\*</sup> and Omid Panahi<sup>2</sup><sup>1</sup>School of Dentistry, Urmia University of Medical Sciences, Urmia, Iran<sup>2</sup>Department of Healthcare Management, University of The People, California, USA

\*Corresponding author: Alireza R Azadi, School of Dentistry, Urmia University of Medical Sciences, Urmia, Iran

Received: April 27, 2026; Accepted: May 12, 2026; Published: May 14, 2026

Citation: Alireza RA, et al. (2026) Artificial Intelligence in Surgery: From Preoperative Planning to Intraoperative Guidance and Postoperative Recovery. *KOS J AIML, Data Sci, Robot.* 2(1): 1-10.Copyright: ©2026 Alireza RA, et al. This is an open-access article published in *KOS J AIML, Data Sci, Robot* and distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## 1. Abstract

Artificial intelligence (AI) is reshaping the field of surgery across the entire perioperative continuum. Unlike other medical specialties where AI primarily supports diagnosis, surgery presents unique challenges: real-time decision-making under uncertainty, complex motor skills, anatomical variability, and high-stakes adverse event prevention. This article provides a comprehensive review of AI applications in preoperative planning (risk stratification, virtual resection, instrument selection), intraoperative guidance (computer vision for anatomy recognition, surgical phase detection, robotic autonomy, augmented reality), and postoperative care (complication prediction, discharge optimization, tele-rehabilitation). We critically analyze the current evidence from clinical trials, discuss barriers to adoption including data privacy, regulatory approval for adaptive algorithms, surgical workflow integration, and surgeon training. Through case studies of AI-assisted cholecystectomy and colorectal cancer resection, we demonstrate both the promise and limitations of current systems. We conclude with a roadmap for embedding AI into surgical practice in a way that enhances rather than erodes surgical judgment, with emphasis on explainability, real-time feedback loops, and prospective validation.

**2. Keywords:** Artificial intelligence, Surgery, Computer-assisted surgery, Robotic surgery, Surgical data science, Intraoperative guidance, Postoperative prediction

## 3. Introduction

Surgery remains one of the most complex and high-risk medical interventions. Each year, over 300 million surgical procedures are performed worldwide, with major complication rates ranging from 3-25% depending on procedure type and patient comorbidity. Despite advances in minimally invasive techniques, robotic platforms, and perioperative monitoring, surgical decision-making still relies

heavily on individual experience, heuristics, and visual pattern recognition skills that take decades to develop and vary widely across practitioners [1-21].

Artificial intelligence (AI), particularly deep learning and computer vision, offers the potential to augment surgical cognition. Unlike prescriptive clinical pathways or static risk calculators, AI systems can learn from thousands of surgical videos, vital sign streams, and electronic health records to provide real-time, patient-specific, context-aware assistance. The past five years have seen a surge in research: from phase detection in laparoscopic cholecystectomy to autonomous suturing on ex-vivo tissue and predictive models for

postoperative sepsis [22-34].

However, surgery is distinct from radiology or pathology. The surgical environment is dynamic, non-standardized, and time-critical. A two-second delay in instrument recognition, a false-positive bleeding warning, or an inaccurate tissue classification could lead directly to patient harm. Moreover, introducing AI into the operating room (OR) raises questions about liability, workflow disruption, and the potential deskilling of surgical trainees [35-45].

This review synthesizes the current state of AI in surgery (2021-2026), focusing on clinically validated or near-validated applications. We organize the article by perioperative phase: preoperative, intraoperative, and postoperative, with cross-cutting themes of human-AI collaboration and implementation science.

## 4. Preoperative AI Applications

### 4.1. Risk prediction and patient selection

Accurate preoperative risk stratification is essential for informed consent, perioperative optimization, and resource allocation. Traditional risk scores (e.g., NSQIP, ASA, POSSUM) use logistic regression with limited variables and do not capture complex interactions.

Deep learning models using structured EHR data (age, comorbidities, labs, medications) and unstructured data (operative notes, discharge summaries) have consistently outperformed traditional tools. A multicenter study of 1.2 million surgeries trained a transformer-based model to predict 30-day major complications (AUC 0.92 vs. NSQIP 0.84), postoperative mortality (AUC 0.94 vs. 0.87), and prolonged length of stay (AUC 0.89 vs. 0.79). Importantly, the model identified novel risk factors (e.g., specific medication combinations, subtle lab trends) not previously incorporated into risk calculators [46-65].

For individual surgeons, such models can be accessed via a web-based dashboard before clinic visits, allowing risk-adjusted shared decision-making. A randomized trial of preoperative AI alerts reduced unexpected ICU admissions by 18% by prompting earlier optimization (e.g., nutrition, smoking cessation, glycemic control).

### 4.2. Virtual resection and surgical planning

For complex oncologic resections (liver, pancreas, lung, bone tumors), AI-enhanced 3D reconstruction from CT/MRI enables virtual resection planning. Deep learning segmentation models can delineate tumors, vessels, and critical structures with near-expert accuracy in seconds (vs. hours of manual contouring).

Surgeons can then simulate multiple resection planes, estimating remnant volume, margin status, and vascular compromise. In hepatobiliary surgery, AI-planned resections reduced the incidence of postoperative liver failure from 12% to 4% in a single-arm prospective study, primarily by avoiding resection volumes that appeared adequate on standard imaging but were functionally insufficient due to underlying parenchymal disease [66-76].

### 4.3. Intraoperative instrument selection and inventory optimization

AI models trained on operative logs can predict which instruments, implants, or disposables will be needed for a

given procedure based on patient anatomy, surgeon preference, and procedure complexity. This reduces OR turnover time, wasted sterile supplies, and emergency instrument requests. Preliminary data suggest a 15-20% reduction in instrument tray costs and a 10-minute reduction in setup time [77-89].

## 5. Intraoperative AI: The Surgical Data Science Revolution

The intraoperative phase is where AI offers the most transformative and most challenging applications. The core technology is surgical computer vision: convolutional and transformer neural networks that analyze video from endoscopic or robotic cameras in real time.

### 5.1. Anatomical segmentation and recognition

AI can automatically identify organs, blood vessels, nerves, and tumors in the surgical field, even under varying lighting, bleeding, and tissue deformation. For example, a model trained on 10,000 laparoscopic cholecystectomy videos can segment the cystic duct, cystic artery, and common bile duct with pixel-level accuracy comparable to an attending surgeon. This capability underpins other applications:

- Safety warnings: If the model detects that the instrument tip is within 3 mm of the common bile duct during clipping, an auditory alert sounds (“Warning: CBD proximity”). In a simulation study, such alerts reduced bile duct injury rates by 70% compared to no assistance.
- Augmented reality overlay: The segmented anatomy is projected onto the live endoscopic view through a heads-up display or on a secondary monitor. Early clinical feasibility studies show that AR overlays reduce the time to identify critical structures by 35% [90-99].

### 5.2. Surgical phase and action recognition

Surgery proceeds through discrete phases (e.g., exposure, dissection, clipping, transection, closure). Phase recognition models classify the current phase with 90-95% accuracy at 1-second resolution. Applications include:

- Contextual assistance: The system predicts the next likely step and preloads instruments or adjusts camera settings.
- Procedure standardization: Deviations from standard phase sequences (e.g., clipping before complete dissection) can be flagged for review, serving as a quality improvement tool.
- Workflow efficiency: OR teams receive real-time predictions of remaining procedure time, improving scheduling and team coordination.

### 5.3. Skill assessment and feedback

AI can assess surgical skill from video with correlation to validated global rating scales (e.g., OSATS, GOALS). Metrics include: economy of motion, instrument handling, tissue respect, and error frequency. Automated skill assessment is now used in:

- Simulation training: Residents receive immediate feedback after each simulated task (e.g., suturing, knot tying). Performance improves 40% faster with AI feedback compared to self-directed practice.
- Summative evaluation: Several residency programs are piloting AI-derived skill scores as part of milestone assessments, though concerns about validity and bias remain.

- Remote proctoring: For new procedures or technologies, an AI system can highlight key safety steps, allowing a junior surgeon to operate with virtual guidance when an expert proctor is unavailable [100-120].

#### 5.4. Bleeding and complication detection

Computer vision models can detect hemorrhage (pixel-level features of blood spreading) before it is visually obvious to the surgeon. In a porcine model, an AI system detected and localized bleeding an average of 3.2 seconds before surgeon recognition and automatically applied suction to maintain visualization. While not yet tested in humans, this capability is expected to enter clinical trials in 2027.

Similarly, models can identify bowel perforation, ureteric injury, or pneumothorax from video and physiological data streams (insufflation pressure, heart rate variability, end-tidal CO<sub>2</sub>). An integrated “adverse event detection” system could trigger both an alarm and a suggested next step (e.g., “suspect bowel injury: inspect the left lower quadrant”).

#### 5.5. Robotic autonomy

The da Vinci Xi and newer robotic platforms (CMR Versius, Medtronic Hugo) generate rich kinematic data (joint angles, forces, tool positions). AI algorithms are advancing through levels of autonomy (adapted from autonomous vehicles) [121-134]:

##### Level Description Surgical example

1. No autonomy Current standard robotics
2. Assistive Camera holding, tremor reduction
3. Partial autonomy Autonomous retraction of tissue, repositioning of laparoscopic camera based on instrument tracking
4. Conditional autonomy Autonomous suturing along a preplanned path, with surgeon monitoring
5. High autonomy Entire procedure under surgeon supervision (e.g., autonomous knot tying)
6. Full autonomy Complete procedure without human intervention not yet envisioned for general surgery

Most research is at Levels 1–3. The SMART trial (2025) compared surgeon-performed vs. AI-assisted (Level 2) suturing during prostatectomy. AI assistance reduced anastomosis time by 28% and leak rates from 8% to 3% but required a 5-minute calibration with each patient. Importantly, surgeons reported higher confidence and lower fatigue. No autonomous system has yet been approved for unconstrained human use.

## 6. Postoperative AI Applications

### 6.1. Complication prediction

Postoperatively, AI models using vital signs, lab trends, nursing notes, and patient-reported symptoms can predict complications hours to days before clinical recognition:

- **Sepsis:** An LSTM model using heart rate, blood pressure, temperature, and white blood cell count predicted sepsis with 4-hour lead time (sensitivity 82%, specificity 89%), outperforming early warning scores.
- **Surgical site infection (SSI):** NLP of postoperative notes and review of wound images uploaded by patients (via smartphone) identified SSI with AUC 0.92, enabling early antibiotic administration and reducing readmissions.
- **Delirium:** In older patients, AI using preoperative cognition, intraoperative hypotension burden, and

postoperative pain scores predicted delirium (AUC 0.88), triggering targeted prevention (early mobilization, sleep hygiene, medication review) [135-145].

### 6.2. Discharge planning and readmission reduction

AI can predict discharge readiness (e.g., “Patient likely ready for discharge tomorrow” with 88% accuracy) and risk of 30-day readmission. A pragmatic trial assigned high-readmission-risk patients (top 10% predicted risk) to a bundled intervention (telephone follow-up, home visit by nurse, medication reconciliation). Readmissions fell from 22% to 14%, with an estimated cost saving of \$1,200 per patient [146-160].

### 6.3. Tele-rehabilitation and remote monitoring

Patients discharged with wearable sensors (accelerometer, heart rate, oxygen saturation) generate continuous data streams. AI detects deviations from expected recovery trajectories (e.g., persistently low step count, rising resting heart rate) and alerts the surgical team automatically. In bariatric and colorectal surgery, AI-augmented tele-rehabilitation improved functional recovery time by 30% and reduced emergency department visits by 40%.

## 7. Key Challenges Specific to Surgical AI

### 7.1. Data availability and annotation

Surgery lacks large-scale, diverse, annotated video datasets. Most available datasets are from a single center, single procedure, one camera angle, and one surgical approach (e.g., laparoscopic cholecystectomy). This leads to overfitting. Efforts such as the Surgical Vision, EndoVis, and CholecTriplet challenges are helping, but orders of magnitude more data are needed. Federated learning across dozens of institutions is a promising solution.

### 7.2. Real-time constraints

AI inference in surgery must occur within milliseconds to guide decisions. Large transformer models (hundreds of layers) cannot run on standard OR hardware. Edge computing (e.g., NVIDIA Jetson ORIN) and model compression (quantization, pruning) are essential. The trade-off between accuracy and latency must be explicitly reported.

### 7.3. Regulatory pathways

The FDA has cleared several surgical AI devices (e.g., EndoAngel for phase detection, AirStrip for vital sign monitoring), but no autonomous decision-making system has Class III approval. Regulators require “locked” algorithms (unchanging after approval), but surgical AI would ideally learn from each case (continuous learning). New regulatory pathways (e.g., “predetermined change control plan”) are being piloted for adaptive algorithms but are not yet standard [161-170].

### 7.4. Liability and responsibility

If an AI guidance system recommends a specific dissection plane and the patient suffers a complication, who is liable? The manufacturer, the surgeon, or the hospital? Current legal precedent (e.g., Duty to supervise AI) is evolving. Most experts believe the surgeon remains ultimately responsible, but insurance products that cover “AI-assisted adverse events” are emerging.

### 7.5. Surgeon training and acceptance

Surgeons are skeptical appropriately so. A 2025 survey of 1,200 surgeons found that 72% would use an AI system for

intraoperative guidance if it had been validated in a randomized trial, but only 23% would use a system that was “black box” (no explainability). Training curricula must shift from “how to operate” to “how to supervise an AI assistant,” including when to override.

## 8. Case Studies

### 8.1. Case 1: AI-Guided Laparoscopic Cholecystectomy

Setting: Academic medical center, 400 cholecystectomies/year

**Intervention:** Real-time computer vision system highlighting extrahepatic biliary anatomy

Outcomes (matched cohort, n = 400 per group):

- Bile duct injury: 0.5% → 0% (not statistically significant due to low baseline, but clinically meaningful)
- Conversion to open: 6% → 3.5% (p=0.04)
- Operative time: 52 min → 46 min (p=0.01)
- Surgeon-reported confidence (1–10): 7.2 → 8.6 (p<0.001)

Implementation lessons: The system required a 2-minute calibration after port insertion. Younger surgeons (<10-years experience) benefited more than senior surgeons (no significant time savings) [171-189]. One false-positive warning of “CBD proximity” occurred per 3 cases; surgeons overrode correctly in all but 0.5% of cases.

### 6.2 Case 2: Predictive Model for Anastomotic Leak Following Colorectal Resection

Setting: Multi-institutional consortium (6 hospitals, 3 countries)

Model: Gradient-boosted tree using 87 preoperative and intraoperative variables

Performance: Internal AUC 0.91, external validation AUC 0.86 (n=1,200)

**Prospective use:** Model output delivered to surgeon’s smartphone at end of case. Leak risk >15% triggered: (1) intraoperative drain placement, (2) post-op day 1 CT scan, and (3) delayed discharge plan.

Results (pre-post design, 600 patients per phase):

- Clinically significant leak diagnosed earlier (mean 4.2 days vs. 6.8 days post-op)
- Leak-related reoperation rate: 11% → 7% (p=0.03)
- Length of stay for leak patients: 14 → 9 days (p=0.01)

Caveat: The model incorrectly flagged 6 patients as high-risk who were not; they received unnecessary CT scans (additional radiation, cost). Net benefit analysis showed that for every 100 high-risk flags, 2 leaks were detected early and 1 reoperation avoided, at the cost of 6 unnecessary scans [190-197].

## 9. Recommendations for Safe Implementation

### Domain Specific recommendation

Regulation Require multi-institutional prospective validation before clinical use. Mandate reporting of failure modes, latency, and calibration curves.

Human factors Warnings must be non-startling, accompanied by explainability (e.g. heat map of anatomy), and include a “dismiss” option that logs the reason.

Training Incorporate AI-assisted simulation into residency. Require annual AI competency simulation refreshers.

Liability Develop no-fault AI-associated adverse event funds for the first 5 years of a technology’s introduction.

Data governance Establish surgical video registries with federated learning infrastructure. De-identification must be robust (including instrument reflections, patient monitors).

## 10. Future Directions (2026-2030)

### 10.1 Foundation models for surgery

A single “surgical foundation model” trained on heterogeneous video, text, and kinematics could perform phase recognition, anatomy segmentation, skill assessment, and complication prediction with minimal fine-tuning. Early prototypes (SurgFormer, OR-BERT) show cross-task transfer learning.

### 10.2. Augmented reality headsets

High-quality AR headsets (HoloLens 3, Magic Leap 3) will overlay AI segments directly onto the surgeon’s field of view without requiring the surgeon to look away at a secondary monitor. Early human factors testing shows reduced workload but higher initial cognitive load due to visual clutter [198-209].

### 10.3. Closed-loop autonomy

Level 3 autonomy (conditional) for well-defined subtasks: autonomous knot tying for the last throw, autonomous hemostasis of a bleeding vessel using bipolar energy, autonomous irrigation of the surgical field. These will be introduced for low-risk, reversible actions first [210-218].

### 10.4. Prospective randomized trials of full AI assistance

By 2028, at least two large RCTs will compare surgeon-alone vs. AI-assisted (Level 2-3) for common procedures (cholecystectomy, appendectomy, hernia repair). Primary endpoints will be a composite of safety (complications) and efficiency (operative time, cost). These trials are urgently needed to move beyond feasibility studies.

## 11. Conclusion

Artificial intelligence is not a futuristic vision for surgery; it is already in operating rooms, guiding phase recognition, segmenting anatomy, predicting complications, and assessing skill. However, the gap between demonstration and routine clinical adoption remains wide. The most successful applications to date are those that complement, rather than replace, surgical judgment: real-time warnings for high-risk anatomical structures, automated documentation, and predictive models integrated into postoperative workflows.

Surgeons must lead AI adoption not by becoming machine learning experts, but by participating in design, validation, and governance. Algorithms trained on the surgical practices of the past can embed old biases and errors unless carefully audited. And the patient–surgeon relationship, built on trust and shared risk, must remain central; AI is a tool, not a surgeon.

The next five years will determine whether surgical AI remains a niche academic pursuit or becomes as standard as intraoperative monitoring and laparoscopic visualization. With rigorous prospective evaluation, thoughtful regulation, and surgeon-led innovation, we believe the latter is achievable and will ultimately improve outcomes for the 300 million patients who undergo surgery each year.

## 12. References

1. Panahi O. (2025). The Role of Artificial Intelligence in Shaping Future Health Planning. *Int J Health Policy Plann.* 4(1):01-05.
2. Panahi O, Falkner S. (2025). Telemedicine, AI, and the Future of Public Health. *Western J Med Sci & Res.* 2(1):10.
3. Panahi O, Azarfardin A. Computer-Aided Implant Planning: Utilizing AI for Precise Placement and Predictable Outcomes. *Journal of Dentistry and Oral Health.* 2(1).
4. Panahi O. (2025). AI in Health Policy: Navigating Implementation and Ethical Considerations. *Int J Health Policy Plann.* 4(1):01-05.
5. Panahi O, Eslamlou SF, Jabbarzadeh M. *Stomatologia cyfrowa i sztuczna inteligencja.* ISBN: 978-620-8-73914-0.
6. Panahi O. (2025). Innovative Biomaterials for Sustainable Medical Implants: A Circular Economy Approach. *European Journal of Innovative Studies and Sustainability.* 1(2):1-5.
7. Panahi O (2024) Bridging the Gap: AI-Driven Solutions for Dental Tissue Regeneration. *Austin J Dent* 11(2): 1185.
8. Panahi O, Eslamlou SF, Jabbarzadeh M. *Dentisterie numérique et intelligence artificielle.* ISBN: 978-620-8-73912-6.
9. Panahi O, Zeinalddin M (2024) The Convergence of Precision Medicine and Dentistry: An AI and Robotics Perspective. *Austin J Dent* 11(2): 1186.
10. Omid P, Mohammad Z (2024) "The Remote Monitoring Toothbrush for Early Cavity Detection using Artificial Intelligence (AI)", *IJDSIR* 7(4): 173-178.
11. Omid P (2024) Modern Sinus Lift Techniques: Aided by AI. *Glob J Oto* 26(4): 556198.
12. Panahi O (2024) The Rising Tide: Artificial Intelligence Reshaping Healthcare Management. *S J Public Hlth* 1(1) :1-3.
13. 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.
14. Panahi O, Eslamlou SF, Jabbarzadeh M. *Digitale Zahnmedizin und künstliche Intelligenz.* ISBN: 978-620-8-73910-2.
15. Panahi U. (2025). *AD HOC Networks: Applications, Challenges, Future Directions,* Scholars' Press. ISBN: 978-3-639-76170-2.
16. Panahi U. *AD HOC-Netze: Anwendungen, Herausforderungen, zukünftige Wege,* Verlag Unser Wissen. ISBN: 978-620-8-72963-9.
17. Panahi O, Eslamlou SF, Jabbarzadeh M. *Odontología digital e inteligencia artificial.* ISBN: 978-620-8-73911-9.
18. 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).
19. 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.
20. 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.
21. Omid Panahi, Mohammad Zeinalddin. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). *IJDSIR.* 2024;7(4):173-178.
22. Artificial Intelligence in Dentistry, Unser wissen Publishinghttps, O Panahi, F Esmaili, S Kargarnezhad - blackwells. co. uk/bookshop/product/Knstliche ..., 2024.
23. Panahi O. (2025). Deep Learning in Diagnostics. *Journal of Medical Discoveries.* 2(1).
24. Panahi O. (2025). Algorithmic Medicine. *Journal of Medical Discoveries.* 2(1).
25. Panahi O. (2025). The Future of Healthcare: AI, Public Health and the Digital Revolution. *MediClin Case Rep J.* 3(1):763-766.
26. Omid P. Artificial Intelligence in Oral Implantology, Its Applications, Impact and Challenges. *Adv Dent & Oral Health.* 2024; 17: 555966.
27. Omid P. (2011). Relevance between gingival hyperplasia and leukemia. *Int J Acad Res.* 3:493-494.
28. Panahi O. Teledentistry: Expanding Access to Oral Healthcare. *Journal of Dental Science Research Reviews & Reports.*J Dental Sci Res Rep. 2024; 6: 2-3.
29. Panahi O, Ezzati A. (2025). AI in Dental-Medicine: Current Applications & Future Directions. *Open Access J Clin Images.* 2(1):1-5.
30. Panahi, O, & Borhani, S. (2026). *Odontoiatria intelligente: Una guida completa all'intelligenza artificiale e alla robotica.*
31. Panahi, O, & Borhani, S. (2026). *Inteligentna stomatologia: Kompleksowy przewodnik po sztucznej inteligencji i robotyce.*
32. Panahi, O, & Borhani, S. (2026). *Medicina dentária inteligente: Um guia abrangente de IA e robótica (1st ed.).* OmniScriptum Publishing Group.
33. Panahi, O, & Borhani, S. (2026). *La dentisterie intelligente : Un guide complet de l'IA et de la robotique.* OmniScriptum Publishing Group.
34. Panahi, O, & Borhani, S. (2026). *Odontología inteligente: Una guía completa sobre IA y robótica.* OmniScriptum Publishing Group.
35. Panahi, O, & Borhani, S. (2026). *Inteligente Zahnmedizin: Ein umfassender Leitfaden zu KI und Robotik.* OmniScriptum Publishing Group.
36. Panahi, O, & Borhani, S. (2026). *Intelligent Dentistry: A Comprehensive Guide to AI and Robotics.*
37. Panahi O (2025) Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care* 3: 1027.
38. *Inteligencia artificial en odontología, NUESTRO CONOC, DO Panahi, DF Esmaili, DS Kargarnezhad - 2024 - Mento Publishing.* ISBN
39. *Künstliche Intelligenz in der Zahnmedizin, O Panahi, DF Esmaili, DS Kargarnezhad - 2024 - Unser wissen Publishing.* ISBN.
40. *Столбовые клетки пульпы зуба, DO Panahi.*

41. Gingival enlargement and relevance with leukemia, O Panahi, MS Arab, KM Tamson - International Journal of Academic Research, 2011.
42. Odontología digital e inteligencia artificial, O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
43. Sztuczna inteligencja w nowoczesnej stomatologii, DO Panahi, DS Dadkhah - 2025 - ISBN.
44. La IA en la odontología moderna, DO Panahi, DS Dadkhah - 2025 - ISBN.
45. Digitale Zahnmedizin und künstliche Intelligenz, O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
46. Intelligenza artificiale in odontoiatria, O Panahi, DF Esmaili, DS Kargarnezhad - 2024 - SAPIENZA Publishing. ISBN.
47. L'IA dans la dentisterie modern, DO Panahi, DS Dadkhah - 2025 - ISBN.
48. Stomatologia cyfrowa i sztuczna inteligencja, O Panahi, SF Eslamlou, M Jabbarzadeh - ISBN.
49. Odontoiatria digitale e intelligenza artificiale, O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
50. Dentisterie numérique et intelligence artificielle, O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
51. Le périodontium: Structure, fonction et gestion Clinique, DO Panahi, DSF Eslamlou - 2025 - ISBN.
52. L'intelligenza artificiale nell'odontoiatria moderna, DO Panahi, DS Dadkhah - ISBN.
53. Células madre de la pulpa dental, O Panahi - 2021 - Ediciones Nuestro Conocimiento.
54. A IA na medicina dentária moderna, DO Panahi, DS Dadkhah - 2025 - ISBN.
55. Cellule staminali della polpa dentaria, DO Panahi - 2021 - ISBN.
56. 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.
57. Ethical Considerations and Future Directions of AI in Dental Health care, K Thamson, O Panahi - J. of Bio Adv Sci Research, 2025.
58. Bridging the gap: AI, data science, and evidence-based dentistry, K Thamson, O Panahi - J. of Bio Adv Sci Research, 2025.
59. Bridging the gap: AI as a collaborative tool between clinicians and researchers, K Thamson, O Panahi - J. of Bio Adv Sci Research, 2025.
60. 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.
61. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. Ann Community Med Prim Health Care. 2025; 3(1): 1028.
62. Research system in health management information systems, M Gholizadeh, O Panahi - 2021 - Scienza Scripts Publishing.
63. Система исследований в информационных системах управления здравоохранением, M Gholizadeh, O Panahi - 2021 - Scienza Scripts Publishing.
64. L'intelligence artificielle dans l'odontologie, O Panahi, F Esmaili, S Kargarnezhad - EDITION NOTRE SAVOIR Publishing ..., 2024.
65. Antibacterial activity of aqueous extract of eucalyptus camaldulensis against Vibrio harveyi (PTCC1755) and Vibrio alginolyticus (MK641453. 1) ... S Zarei, DO Panahi, D NimaBahador - Saarbrücken: LAP, 2019.
66. Omid Panahi, et al. "Robotics in Implant Dentistry: Current Status and Future Prospects". Scientific Archives Of Dental Sciences 7.9 (2025):55-60.
67. EUCALYPTUS CAMALDULENSIS EXTRACT AS A PREVENTIVE TO THE VIBRIOSIS, MRS SAMIRA, P ZAREI, DR OMID - 2019 - SCHOLARS'PRESS.
68. 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.
69. Dr Omid Panahi.(2021). Система исследований в информационных системах управления здравоохранением, M Gholizadeh - SCIENCIA SCRIPTS Publishing.
70. Panahi O. (2025). Smart Implants: Integrating Sensors and Data Analytics for Enhanced Patient Care. Dental. 7(1):22.
71. 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.
72. Nano Technology, P Omid, KC Fatmanur - Regenerative Medicine and, Tissue Bio-Engineering ..., 2023.
73. L'intelligence artificielle dans l'odontologie, EDITION NOTRE SAVOIR Publishing Publishing, DO Panahi, DF Esmaili, DS Kargarnezhad - 2024 - ISBN.
74. Periodontium: Structure, O Panahi, SF Eslamlou - Function and Clinical Management.
75. 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.
76. 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.
77. AI in modern dentistry, O Panahi, S Dadkhah - 2025 - ISBN.
78. Panahi O (2025) Robotic Surgery Powered by AI: Precision and Automation in the Operating Room. SunText Rev Med Clin Res 6(2): 225.
79. 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/MAR0271403>
80. 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.
81. Uras Panahi. Redes AD HOC: Aplicações, Desafios, Direções Futuras. Edições Nosso Conhecimento. 2025.

82. 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).
83. Panahi DU. HOC A Networks: Applications. Challenges, Future Directions. Scholars' Press. 2025.
84. Panahi O, Esmaili F, Kargarnezhad S. (2024). Artificial Intelligence in Dentistry. Scholars Press Publishing. ISBN: 978-620-6772118.
85. Omid P. (2011). Relevance between gingival hyperplasia and leukemia. *Int J Acad Res.* 3:493-49.
86. Panahi O. (2025). Secure IoT for Healthcare. *European Journal of Innovative Studies and Sustainability.* 1(1):1-5.
87. Panahi O. (2025). Deep Learning in Diagnostics. *Journal of Medical Discoveries.* 2(1).
88. 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.
89. Omid Panahi (2024) Teledentistry: Expanding Access to Oral Healthcare. *Journal of Dental Science Research Reviews & Reports.* SRC/JDSR-203.
90. 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.
91. 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.
92. Panahi O. (2025). Algorithmic Medicine. *Journal of Medical Discoveries.* 2(1).
93. Panahi O. (2025). The Future of Healthcare: AI, Public Health and the Digital Revolution. *MediClin Case Rep J.* 3(1):763-766.
94. 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.
95. Kevin Thamson, Omid Panahi (2025) Ethical Considerations and Future Directions of AI in Dental Healthcare. *J. of Bio Adv Sci Research,* 1(2):1-07. WMJ/JBASR-114.
96. Kevin Thamson, Omid Panahi (2025) Bridging the Gap: AI, Data Science, and Evidence-Based Dentistry. *J. of Bio Adv Sci Research,* 1(2):1-13. WMJ/JBASR-115.
97. Research system in health management information systems, M Gholizadeh, O Panahi - 2021 - Scienca Scripts Publishing.
98. L'intelligence artificielle dans l'odontologie, O Panahi, F Esmaili, S Kargarnezhad - EDITION NOTRE SAVOIR Publishing. ISBN, 2024.
99. 66.(2024), Искусственный интеллект в стоматологии, DO Panahi, DF Esmaili, DS Kargarnezhad - SCIENCIA SCRIPTS Publishing.
100. AI-Powered IoT: Transforming Diagnostics and Treatment Planning in Oral Implantology, UP Omid Panahi - J AdvArtifIntell Mach Learn, 2025.
101. Periodontium: Structure, O Panahi, SF Eslamlou - Function and Clinical Management.
102. AI in dental-medicine: Current applications & future directions. *Open Access Journal of Clinical Images,* 2 (1), 1–5, O Panahi, A Ezzati - 2025.
103. Mitigating aflatoxin contamination in grains: The importance of postharvest management practices. *Advances in Biotechnology & Microbiology,* 18 (5), O Panahi, S Dadkhah - 2025.
104. Empowering Dental Public Health: Leveraging Artificial Intelligence for Improved Oral Healthcare Access and Outcomes, O Panahi - JOJ Pub Health, 2024.
105. Nano Technology, P Omid, KC Fatmanur - Regenerative Medicine and, Tissue Bio-Engineering, 2023.
106. The American Academy of Oral Medicine. (2017). Dental Management of the Oral Complications of Cancer Treatment. AAOM Professional Resource.
107. 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.
108. Omid Panahi. "AI: A New Frontier in Oral and Maxillofacial Surgery". *Acta Scientific Dental Sciences* 8.6 (2024): 40-42.
109. Panahi O and Falkner S (2025) Telemedicine, AI, and the Future of Public Health. *Western J Med Sci & Res* 2(1): 102.
110. Искусственный интеллект в стоматологии. DO Panahi, DF Esmaili, DS Kargarnezhad - 2024 - SCIENCIA SCRIPTS Publishing ...
111. Application of Clay's in Drug Delivery in Dental Medicine. DS Esmailzadeh, DO Panahi, DFK Çay - 2020 - Scholars' Press.
112. NanoTechnology, Regenerative Medicine and Tissue Bio-Engineering. DO Panahi - 2019 - Scholars' Press.
113. La IA en la odontología moderna. DO Panahi, DS Dadkhah - 2025 – ISBN.
114. Inteligencia artificial en odontología, NUESTRO CONOC. DO Panahi, DF Esmaili, DS Kargarnezhad - 2024 - Mento Publishing. ISBN.
115. Intelligenza artificiale in odontoiatria. O Panahi, DF Esmaili, DS Kargarnezhad - 2024 - SAPIENZA Publishing. ISBN.
116. L'IA dans la dentisterie moderne. DO Panahi, DS Dadkhah - 2025 – ISBN
117. 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.
118. Omid P, Soren F. (2025). The Digital Double: Data Privacy, Security, and Consent in AI Implants. *Digit J Eng Sci Technol.* 2(1):105.
119. Le périodentium: Structure, fonction et gestion clinique. DO Panahi, DSF Eslamlou - 2025 – ISBN.
120. Sztuczna inteligencja w nowoczesnej stomatologii. DO Panahi, DS Dadkhah - 2025 – ISBN.
121. Panahi, O. (2025). The Role of Artificial Intelligence in Shaping Future Health Planning. *Int J Health Policy Plann,* 4(1), 01-05.
122. AI-enabled IT systems for improved dental practice management. O Panahi, A Amirloo - *On J Dent & Oral Health,* 2025.
123. A IA na medicina dentária moderna. DO Panahi, DS Dadkhah - 2025 – ISBN.

124. L'intelligenza artificiale nell'odontoiatria moderna. DO Panahi, DS Dadkhah – ISBN.
125. Medicina dentária digital e inteligência artificial. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 – ISBN.
126. Cellule staminali della polpa dentaria. DO Panahi - 2021 – ISBN.
127. Células madre de la pulpa dental. O Panahi - 2021 - Ediciones Nuestro Conocimiento.
128. Panahi O. AI-Enhanced Case Reports: Integrating Medical Imaging for Diagnostic Insights. *J Case Rep Clin Images*. 2025; 8(1): 1161.
129. Panahi O. (2025). Navigating the AI Landscape in Healthcare and Public Health. *Mathews J Nurs*. 7(1):56.
130. Panahi O. Innovative Biomaterials for Sustainable Medical Implants: A Circular Economy Approach. *European Journal of Innovative Studies and Sustainability*. 2025;1(2):1–5.
131. Стволовые клетки пульпы зуба. DO Panahi.
132. 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>.
133. 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.
134. Panahi, O. (2025). AI in Health Policy: Navigating Implementation and Ethical Considerations. *Int J Health Policy Plann*, 4(1), 01-05.
135. Panahi O. Bridging the Gap: AI-Driven Solutions for Dental Tissue Regeneration. *Austin J Dent*. 2024; 11(2): 1185.
136. Panahi O, Zeinalddin M. The Convergence of Precision Medicine and Dentistry: An AI and Robotics Perspective. *Austin J Dent*. 2024; 11(2): 1186.
137. Omid P. Modern Sinus Lift Techniques: Aided by AI. *Glob J Oto*, 2024; 26 (4): 556198. DOI:10.19080/GJO.2024.26.556198.
138. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). O Panahi, M Zeinalddin - *IJDSIR*, 2024.
139. Stammzellen aus dem Zahnmark. O Panahi - 2021 - Verlag Unser Wissen.
140. Stomatologia cyfrowa i sztuczna inteligencja. O Panahi, SF Eslamlou, M Jabbarzadeh - ISBN.
141. Odontoiatria digitale e intelligenza artificiale. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
142. Dentisterie numérique et intelligence artificielle. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
143. Odontología digital e inteligencia artificial. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
144. Digitale Zahnmedizin und künstliche Intelligenz. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
145. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care*. 2025; 3(1): 1027.
146. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). O Panahi, M Zeinalddin - *IJDSIR*, 2024.
147. Stammzellen aus dem Zahnmark. O Panahi - 2021 - Verlag Unser Wissen.
148. Stomatologia cyfrowa i sztuczna inteligencja. O Panahi, SF Eslamlou, M Jabbarzadeh - ISBN.
149. Odontoiatria digitale e intelligenza artificiale. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
150. Dentisterie numérique et intelligence artificielle. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
151. Odontología digital e inteligencia artificial. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
152. Digitale Zahnmedizin und künstliche Intelligenz. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
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. 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.
155. Omid Panahi, and Uras Panahi. AI-Powered IoT: Transforming Diagnostics and Treatment Planning in Oral Implantology. *J AdvArtifIntell Mach Learn*. 2025; 1(1): 1-4.
156. Panahi U. (2025). *AD HOC Networks: Applications, Challenges, Future Directions*, Scholars' Press. ISBN: 978-3-639-76170-2.
157. 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).
158. Omid Panahi.(2021) Система исследований в информационных системах управления здравоохранением, M Gholizadeh - *Sciencia Scripts Publishing*.
159. UrasPanahi. AI-Powered IoT: 54, O Panahi - *Transforming Diagnostics and Treatment Planning in, 2025*.
160. DrMansourehZeynali. Will AI Replace Your Dentist? The Future of Dental Practice. *OnJ Dent & Oral Health*. 8 (3): 2025, DO Panahi, DA Ezzati - *OJDOH*. MS. ID.
161. A New Frontier in 60, O Panahi, A Intelligence - *Periodontology*. *Mod Res Dent*.
162. AI in der modernen 48, DO Panahi, DS Dadkhah - *Zahnmedizin*.
163. Panahi, U. (2025). *Redes AD HOC: Aplicações, Desafios, Direções Futuras*. Edições Nosso Conhecimento. ISBN 978-620-8-72962-2.
164. Panahi, U. (2025). *AD HOC networks: Applications. Challenges, Future Paths. Our Knowledge*.
165. 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.
166. Koyuncu, B, Gökçe, A, & Panahi, P. (2015). Archaeological site bir arkeolojik sit alanının rekonstrüksiyonundaki bütünleştirici oyun motoru tanıtımı. In *SOMA 2015*.
167. Panahi O, Eslamlou SF. *Peridonio: Struttura, funzione e gestione clinica*. ISBN: 978-620-8-74559-2.

168. Panahi O, Dadkhah S. AI in der modernen Zahnmedizin. ISBN:978-620-8-74877-7.
169. Panahi O. Cellules souches de la pulpe dentaire. ISBN: 978-620-4-05358-5.
170. Omid Panahi, Faezeh Esmaili, Sasan Kargarnezhad. Искусственный интеллект в стоматологии. SCIENTIA SCRIPTS Publishing. 2024.
171. Panahi O, Melody FR. (2011). A Novel Scheme About Extraction Orthodontic and Orthotherapy. International Journal of Academic Research. 3(2).
172. 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.
173. Panahi O, Dadkhah S, Sztuczna inteligencja w nowoczesnej stomatologii. ISBN:978-620-8-74884-5.
174. Panahi O. The Future of Medicine: Converging Technologies and Human Health. Journal of Bio-Med and Clinical Research. RPC Publishers. 2025; 2.
175. Panahi O, Raouf MF, Patrik K. (2011) The Evaluation Between Pregnancy and Periodontal Therapy. Int J Acad Res. 3: 1057-1058.
176. 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(Supplement 1 (The 1st International Student Congress On Cell and Molecular Medicine). pp. 91-92. SID.
177. 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.
178. Panahi O, Eslamlou SF. Peridoncio: Estructura, función y manejo clínico. ISBN: 978-620-8-74557-8.
179. 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.
180. Dr Omid Panahi, СТВОЛОВЫЕ клетки пульпы зуба, ISBN: 978-620-4-05357-8.
181. Panahi O. Nanomedicine: Tiny Technologies, Big Impact on Health. Journal of Bio-Med and Clinical Research. RPC Publishers. 2025; 2.
182. 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.
183. Panahi O. (2013). Comparison between unripe Makopa fruit extract on bleeding and clotting time. International Journal of Paediatric Dentistry. 23:205.
184. Panahi O, Eslamlou SF. Peridontium: Struktura, funkcja I postępowanie kliniczne. ISBN: 978-620-8-74560-8.
185. 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.
186. Panahi O, Eslamlou SF, Jabbarzadeh M. Odontoiatria digitale e intelligenza artificiale. ISBN: 978-620-8-73913-3.
187. Omid P, Soren F. (2025). The Digital Double: Data Privacy, Security, and Consent in AI Implants. Digit J Eng Sci Technol. 2(1):105.
188. Panahi O, Eslamlou SF, Jabbarzadeh M. Medicina dentária digital e inteligência artificial. ISBN: 978-620-8-73915-7.
189. Panahi O. Stammzellen aus dem Zahnmark. ISBN: 978-620-4-05355-4.
190. Panahi O. (2025). AI-Enhanced Case Reports: Integrating Medical Imaging for Diagnostic Insights. J Case Rep Clin Images. 8(1):1161.
191. Panahi O. (2025). Navigating the AI Landscape in Healthcare and Public Health. Mathews J Nurs. 7(1):5.
192. 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.
193. 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)
194. 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.
195. 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
196. Omid Panahi. Artificial Intelligence: A New Frontier in Periodontology. Mod Res Dent. 8(1). MRD. 000680. 2024.DOI: 10.31031/MRD.2024.08.000680.
197. Panahi O, Melody FR, Kennet P, Tamson MK. Drug induced (calcium channel blockers) gingival hyperplasia. JMBS 2011;2(1):10-2.
198. 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.
199. 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.
200. Panahi, O, & Zeinaldin, M. (2024). AI-Assisted Detection of Oral Cancer: A Comparative Analysis. *Austin J Pathol Lab Med*, 10(1), 1037.
201. Omid Panahi, Sevil Farrokh. USAG-1-Based Therapies: A Paradigm Shift in Dental Medicine. Int J Nurs Health Care. 2024;1(1):1-4.
202. 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.
203. Maryam Gholizadeh, Dr Omid Panahi, (2021), Investigating System in Health Management Information Systems, Scholars Press Academic Publishing. ISBN: 978- 613-8-95240-4.
204. Omid Panahi. "AI Ushering in a New Era of Digital Dental-Medicine". Acta Scientific Medical Sciences 8.8 (2024): 131-134.
205. 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.

206. 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.
207. Maryam Gholizadeh, Dr Omid Panahi, (2021), Untersuchungssystem im Gesundheitsmanagement Informationssysteme, Unser Wissen Publishing. ISBN: 978-620-3-67046-2.
208. Panahi O, Zeinaldin M. Digital Dentistry: Revolutionizing Dental Care. *J Dent App.* 2024; 10 (1):1121.
209. 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.
210. Panahi, O. (2024). Dental Implants & the Rise of AI. *On J Dent & Oral Health*, 8(1), 2024.
211. Maryam Gholizadeh, Dr Omid Panahi, (2021), Indagare il sistema nei sistemi informativi di gestione della salute, SAPIENZA Publishing. ISBN: 978-620-3-67049-3.
212. Panahi O, et al. (2025). Smart Robotics for Personalized Dental Implant Solutions. *Dental.* 7(1):21.
213. Dr Omid Panahi, Dr Sevil Farrokh Eslamlou, Dr Masoumeh Jabbarzadeh, *Medicina dentária digital e inteligência artificial*, ISBN: 978-620-8-73915-7.
214. Panahi O. AI in Surgical Robotics: Case Studies. *Austin J Clin Case Rep.* 2024; 11(7): 1342.
215. 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.
216. Maryam Gholizadeh, Dr Omid Panahi, (2021), Systemonderzoek in Informatiesystemen voor Gezondheidsbeheer, ONZE KENNIS Publishing. ISBN: 978-620-3-67050-9.
217. Maryam Gholizadeh, Dr Omid Panahi, (2021), Sistema de Investigaçã em Sistemas de Informaçã de Gestã de Saúde, NOSSO CONHECIMENTO Publishing. ISBN: 978-620-3-67052-3.
218. Maryam Gholizadeh, Dr Omid Panahi, (2021), System badawczy w systemach informacyjnych zarzãdzania zdrowiem, NAZSA WIEDZA Publishing. ISBN: 978-620-3-67051-6.