A.I. eUpdate - Winter 2024/25

Figure 1 NHS Lanarkshire Logo

Contents

AI and Cancer

1. Eisemann, Nora, Stefan Bunk, Trasias Mukama, et al. **Nationwide real-world implementation of AI for cancer detection in population-based mammography screening**. Nat.Med. 2025.

Artificial intelligence (AI) in mammography screening has shown promise in retrospective evaluations, but few prospective studies exist. PRAIM is an observational, multicenter, real-world, noninferiority, implementation study comparing the performance of AI-supported double reading to standard double reading (without AI) among women (50-69 years old) undergoing organized mammography screening at 12 sites in Germany. Radiologists in this study voluntarily chose whether to use the AI system. From July 2021 to February 2023, a total of 463,094 women were screened (260,739 with AI support) by 119 radiologists.

Radiologists in the AI-supported screening group achieved a breast cancer detection rate of 6.7 per 1,000, which was 17.6% (95% confidence interval: +5.7%, +30.8%) higher than and statistically superior to the rate (5.7 per 1,000) achieved in the control group. The recall rate in the AI group was 37.4 per 1,000, which was lower than and noninferior to that (38.3 per 1,000) in the control group (percentage difference: -2.5% (-6.5%, +1.7%)). The positive predictive value (PPV) of recall was 17.9% in the AI group compared to 14.9% in the control group. The PPV of biopsy was 64.5% in the AI group versus 59.2% in the control group. Compared to standard double reading, AI-supported double reading was associated with a higher breast cancer detection rate without negatively affecting the recall rate, strongly indicating that AI can improve mammography screening metrics. 10.1038/s41591-024-03408-6

2. Jeziorski, Krzysztof and Robert Olszewski. **Artificial Intelligence in Oncology.** Applied sciences. 2025.Vol.15(1), pp269.

The aim of the article is to highlight the key role of artificial intelligence in modern oncology. The search for scientific publications was carried out through the following web search engines: PubMed, PMC, Web of Science, Scopus, Embase and Ebsco. Artificial intelligence plays a special role in oncology and is considered to be the future of oncology. The largest application of artificial intelligence in oncology is in diagnostics (more than 80%), particularly in radiology and pathology. This can help oncologists not only detect cancer at an early stage but also forecast the possible development of the disease by using predictive models. Artificial intelligence plays a special role in clinical trials. AI makes it possible to accelerate the discovery and development of new drugs, even if not necessarily successfully. This is done by detecting new molecules. Artificial intelligence enables patient recruitment by combining diverse demographic and medical patient data to match the requirements of a given research protocol. This can be done by reducing population heterogeneity, or by prognostic and predictive enrichment. The effectiveness of artificial intelligence in oncology depends on the continuous learning of the system based on large amounts of new data but the development of artificial intelligence also requires the resolution of some ethical and legal issues.

3. Kucera, Neal, Brandon Salinel, Matthew Grudza, et al. **Patient body fat and AI ensemble technique and the influence on false-positive rate in AI second observer for colorectal cancer detection**. Journal of clinical oncology. 2025.Vol.43(4), pp216. 216

Background: Colorectal cancer (CRC) is the second leading cause of cancer-related deaths. We previously found that delayed diagnosis due to lack of radiological identification results in significantly worse outcome for patients. We had developed a rudimentary, AI second observer which demonstrated potential for detecting CRC on routine CT abdomen/pelvis (CTAP). However, the AI algorithm detected many false positives. In this study, we analyzed the data using TCIA as test cases and evaluated whether patient peritoneal fat content influenced the false positive rate. This could serve as a guide for future training of AI second observer to minimize false positive detection. Methods: 2D U-Net convolutional neural network (CNN) containing 31 million trainable parameters was trained with 58 CRC CT images from Banner MD Anderson (AZ) and MD Anderson Cancer Center (TX) (51 used for training and 7 for validation) and 59 normal CT scans from Banner MD Anderson Cancer Center. 18 of the 25 CRC cases from public domain data (The Cancer Genome Atlas) were

used to evaluate the performance of the models (5 had no identifiable cancer and 2 were rejected for having no contrast). The CRC was segmented using ITK-SNAP open-source software (v. 3.8). To apply the deep ensemble approach, five CNN models were trained independently with random initialization using the same U-Net architect and the same training data. Given a testing CT scan, each of the five trained CNN models was applied to produce tumor segmentation for the testing CT scan. The tumor segmentation results produced by the trained CNN models were then fused using a simple majority voting rule (up to 2 voters) to produce consensus tumor segmentation results. The segmentation was analyzed for the number and location of false positives per case. The peritoneal fat content was classified at the level of aortic bifurcation by the distance of fat between adjacent small bowel loops (≤ or > 1 cm). Chi-square test was performed testing fat volume and number of voters as the intervention. Results: Our results showed that the higher volume of peritoneal fat (> 1 cm, N=6) decreases the rate of false positive compared with low volume (≤ 1 cm, N=12, p=0.013). When comparing between having one voter and two voter ensemble using low fat volume data, two voter ensemble also decreased the number of false positives but not statistically significant (p=0.286). Conclusions: Our results show that AI-based second observer generates more false positives when patients have lower peritoneal fat volume; this implies that future training may require higher percentage of cases with low peritoneal fat to improve second observer precision. Our analysis also showed that increasing the number of voter in the ensemble also decrease the number of false positives per case. 10.1200/JCO.2025.43.4_suppl.216

4. Rai, Hari Mohan, Joon Yoo and Serhii Dashkevych. **Transformative Advances in AI for Precise Cancer Detection: A Comprehensive Review of Non-Invasive Techniques**. Archives of computational methods in engineering. 2025.10.1007/s11831-024-10219-y

AI and Dermatology

5. Atak, Mehmet Fatih, June Y. Moon, Bijan Safai and Banu Farabi. **Utilizing AI to Improve Healthcare Access and Address Disparities in Dermatology**. Int.J.Dermatol. 2025.

AI and Ethics

1. Akrami A, Aftab F. **A Practical Consideration of the Ethical Challenges of AI in Healthcare–A Systematic Review**. The Royal College of Radiologists Open. 2025 Jan 1;3:100225

2. Bavli, Itai, Anita Ho, Ravneet Mahal and Martin J. McKeown. **Ethical concerns around privacy and data security in AI health monitoring for Parkinson's disease: insights from patients, family members, and healthcare professionals**. AI & Soc. 2025.Vol.40(1), pp155–165.

Artificial intelligence (AI) technologies in medicine are gradually changing biomedical research and patient care. High expectations and promises from novel AI applications aiming to positively impact society raise new ethical considerations for patients and caregivers who use these technologies. Based on a qualitative content analysis of semi-

structured interviews and focus groups with healthcare professionals (HCPs), patients, and family members of patients with Parkinson's Disease (PD), the present study investigates participant views on the comparative benefits and problems of using human versus AI predictive computer vision health monitoring, as well as participants' ethical concerns regarding these technologies. Participants presumed that AI monitoring would enhance information sharing and treatment, but voiced concerns about data ownership, data protection, commercialization of patient data, and privacy at home. They highlighted that privacy issues at home and data security issues are often linked and should be investigated together. Findings may help technologists, HCPs, and policymakers determine how to incorporate stakeholders' intersecting but divergent concerns into developing and implementing AI PD monitoring tools. 10.1007/s00146-023-01843-6

3. Comeau, Donnella S., Danielle S. Bitterman and Leo Anthony Celi. **Preventing unrestricted and unmonitored AI experimentation in healthcare through transparency and accountability**. npj Digit.Med. 2025.Vol.8(1), pp42–7.

The integration of large language models (LLMs) into electronic health records offers potential benefits but raises significant ethical, legal, and operational concerns, including unconsented data use, lack of governance, and AI-related malpractice accountability. Sycophancy, feedback loop bias, and data reuse risk amplifying errors without proper oversight. To safeguard patients, especially the vulnerable, clinicians must advocate for patient-centered education, ethical practices, and robust oversight to prevent harm.

4. Corfmat, Maelenn, Joé T. Martineau and Catherine Régis. **High-reward, high-risk technologies? An ethical and legal account of AI development in healthcare**. BMC medical ethics. 2025.Vol.26(1), pp4–19.

Considering the disruptive potential of AI technology, its current and future impact in healthcare, as well as healthcare professionals' lack of training in how to use it, the paper summarizes how to approach the challenges of AI from an ethical and legal perspective. It concludes with suggestions for improvements to help healthcare professionals better navigate the AI wave. We analyzed the literature that specifically discusses ethics and law related to the development and implementation of AI in healthcare as well as relevant normative documents that pertain to both ethical and legal issues. After such analysis, we created categories regrouping the most frequently cited and discussed ethical and legal issues. We then proposed a breakdown within such categories that emphasizes the different - yet often interconnecting - ways in which ethics and law are approached for each category of issues. Finally, we identified several key ideas for healthcare professionals and organizations to better integrate ethics and law into their practices. We identified six categories of issues related to AI development and implementation in healthcare: (1) privacy; (2) individual autonomy; (3) bias; (4) responsibility and liability; (5) evaluation and oversight; and (6) work, professions and the job market. While each one raises different questions depending on perspective, we propose three main legal and ethical priorities: education and training of healthcare professionals, offering support and guidance throughout the use of AI systems, and integrating the necessary ethical and legal reflection at the heart of the AI tools themselves. By highlighting the main ethical and legal issues involved in the development and implementation of AI technologies in healthcare, we illustrate their profound effects on professionals as well as their relationship with patients and other organizations in the healthcare sector. We must be able to identify AI

technologies in medical practices and distinguish them by their nature so we can better react and respond to them. Healthcare professionals need to work closely with ethicists and lawyers involved in the healthcare system, or the development of reliable and trusted AI will be jeopardized. 10.1186/s12910-024-01158-1

5. Kostick-Quenet, Kristin. **A caution against customized AI in healthcare**. npj Digit.Med. 2025.Vol.8(1), pp13–4.

This article critiques the shift towards personalized AI in healthcare and other high-stakes domains, cautioning that without careful deliberation, customized AI systems can compromise the diversity and reach of human knowledge by restricting exposure to critical information that may conflict with users' preferences and biases. Customized AI should be applied with caution and intention where access to a wide and diverse range of perspectives is essential for impartial, informed decision making.

6. Mohsin Khan, Muhammad, Noman Shah, Nissar Shaikh, Abdulnasser Thabet, Talal alrabayah and Sirajeddin Belkhair. **Towards secure and trusted AI in healthcare: A systematic review of emerging innovations and ethical challenges**. International journal of medical informatics (Shannon, Ireland). 2025.Vol.195 pp105780.

Provides a systematic review of cutting-edge AI innovations addressing trust, ethics, and security in healthcare.•Explores the potential of Explainable AI (XAI) and federated learning to enhance transparency and protect patient privacy.•Analyzes key challenges like algorithmic bias, adversarial attacks, and the lack of standardized regulations.•Proposes actionable recommendations for practitioners, policymakers, and researchers to foster safe and reliable AI adoption.•Emphasizes the critical role of ethical design and interdisciplinary collaboration in shaping the future of healthcare AI. Artificial Intelligence is in the phase of health care, with transformative innovations in diagnostics, personalized treatment, and operational efficiency. While having potential, critical challenges are apparent in areas of safety, trust, security, and ethical governance. The development of these challenges is important for promoting the responsible adoption of AI technologies into healthcare systems. This systematic review of studies published between 2010 and 2023 addressed the applications of AI in healthcare and their implications for safety, transparency, and ethics. A comprehensive search was performed in PubMed, IEEE Xplore, Scopus, and Google Scholar. Those studies that met the inclusion criteria provided empirical evidence, theoretical insights, or systematic evaluations addressing trust, security, and ethical considerations. The analysis brought out both the innovative technologies and the continued challenges. Explainable AI (XAI) emerged as one of the significant developments. It made it possible for healthcare professionals to understand AI-driven recommendations, by this means increasing transparency and trust. Still, challenges in adversarial attacks, algorithmic bias, and variable regulatory frameworks remain strong. According to several studies, more than 60 % of healthcare professionals have expressed their hesitation in adopting AI systems due to a lack of transparency and fear of data insecurity. Moreover, the 2024 WotNot data breach uncovered weaknesses in AI technologies and highlighted the dire requirement for robust cybersecurity. Full understanding of the potential of AI will be possible only with putting into practice of ethical and technical maintains in healthcare systems. Effective strategies would include integrating bias mitigation methods, strengthening cybersecurity protocols to prevent breaches. Also by adopting interdisciplinary collaboration with the goal of forming transparent regulatory guidelines. These are very important steps toward

earning trust and ensuring that AI systems are safe, reliable, and fair. AI can bring transformative opportunities to improve healthcare outcomes, but successful implementation will depend on overcoming the challenges of trust, security, and ethics. Future research should focus on testing these technologies in multiple real-world settings, enhance their scalability, and fine-tune regulations to facilitate accountability. Only by combining technological innovations with ethical principles and strong governance can AI reshape healthcare, ensuring at the same time safety and trustworthiness.

AI and Heart Disease

7. Ashfaq, Muhammad Talha, Nadeem Javaid, Nabil Alrajeh and Syed Saqib Ali. **An explainable AI based new deep learning solution for efficient heart disease prediction at early stages**. Evolving Systems. 2025.Vol.16(1), pp33.

Accurate predictive models are crucial for early detection and intervention of Heart Disease (HD), which continues to be a major cause of death worldwide. However, the challenges of high dimensionality and data imbalance affect the precision and generalizability of predictions. We propose a novel deep model, the Fully Connected Wave Network (FCW-Net), for early HD prediction. To mitigate class imbalance, Proximity Weighted Synthetic (ProWSyn) oversampling technique is employed, while Principal Component Analysis (PCA) is used to reduce dimensionality, enhancing model efficiency and prediction accuracy. With an AUC-ROC of 0.9622, an accuracy of 0.9237, a precision of 0.8856, an F1-score of 0.9268, and a recall of 0.9721, our results demonstrate that the FCW-Net deep model achieves superior performance than baseline models when using PCA and ProWSyn. Model transparency is further improved by eXplainable Artificial Intelligence technique, SHapley Additive exPlanations analysis, which provides insights into feature contributions to HD risk.

8. Parsa, Shyon, Priyansh Shah, Ritu Doijad and Fatima Rodriguez. **Artificial Intelligence in Ischemic Heart Disease Prevention**. Curr.Cardiol.Rep. 2025.Vol.27(1), pp44.

Purpose of Review This review discusses the transformative potential of artificial intelligence (AI) in ischemic heart disease (IHD) prevention. It explores advancements of AI in predictive modeling, biomarker discovery, and cardiovascular imaging. Finally, considerations for clinical integration of AI into preventive cardiology workflows are reviewed. Recent Findings AI-driven tools, including machine learning (ML) models, have greatly enhanced IHD risk prediction by integrating multimodal data from clinical sources, patient-generated inputs, biomarkers, and imaging. Applications in these various data sources have demonstrated superior diagnostic accuracy compared to traditional methods. However, ensuring algorithm fairness, mitigating biases, enhancing explainability, and addressing ethical concerns remain critical for successful deployment. Emerging technologies like federated learning and explainable AI are fostering more robust, scalable, and equitable adoption. Summary AI holds promise in reshaping preventive cardiology workflows, offering more precise risk assessment and personalized care. Addressing barriers related to equity, transparency, and stakeholder engagement is key for seamless clinical integration and sustainable, lasting improvements in cardiovascular care. 10.1007/s11886-025-02203-0

9. Sakamoto, Akira, Yutaka Nakamura, Eiichiro Sato and Nobuyuki Kagiyama. **Artificial Intelligence in Clinics: Enhancing Cardiology Practice**. JMA journal. 2025.Vol.8(1), pp131–140.

In recent years, every aspect of the society has rapidly transformed because of the emergence of artificial intelligence (AI) technologies. AI excels not only in image and voice recognition and analysis but also in achieving near-natural conversations through the development of large language models. These technological innovations are steadily being integrated into healthcare settings and can significantly change the way physicians work in clinics in the near future. Patient interviews will predominantly be performed by AI. Physicians will discuss the findings of traditional tests like electrocardiograms and chest X-rays with AI, providing beyond-human interpretation. Additionally, AI is changing areas that have seen little development for a long time, such as auscultation and phonocardiography, and the recognition and quantification of previously challenging observations like the gait analysis. Although barriers to real-world implementation exist, in the near future, a majority of physicians will collaborate with AIs supporting various aspects of clinical practice, consequently enabling more accurate and appropriate diagnosis and treatment of cardiovascular diseases, including ischemic and valvular heart diseases, arrhythmias, and heart failure. This review focuses on AI application in the field of cardiology, specifically on how it can improve the workflow in clinical settings. We examine various examples of AI integration in cardiology to demonstrate how these technologies can lead to more accurate and efficient patient care. Understanding the advancements in AI can lead to more appropriate and streamlined medical practices, which will ultimately benefit both healthcare providers and patients.

AI and Healthcare Systems

10. Algarni, Abdullah M. and Vijey Thayananthan. **Digital Health: The Cybersecurity for AI-Based Healthcare Communication**. Access. 2025.Vol.13 pp5858–5870.

The implementation of AI-based healthcare communication systems presents a significant challenge for the development of cost-effective medical environments. Despite numerous approaches introduced internationally, the field continues to grapple with real-world issues, demands, and a rising number of unforeseen diseases stemming from vulnerabilities, such as zero-day attacks. Purpose: The healthcare system, including communication between medical devices, must evolve alongside new technologies, such as AI-based proactive devices. Future healthcare hubs (future proactive devices), which will be deployed in various remote locations, utilize their own cybersecurity solutions to ensure secure AI-based healthcare communication services. Addressing these challenges requires managing potential issues arising in current medical scenarios. For instance, sudden security issues like ransomware attacks disrupting medical activities in London hospitals in May 2024 highlight the urgency of developing effective solutions that can be applied globally. Method: The AI-based approach offers a potential solution to these problems, although its implementation in medical security management presents challenges for the healthcare profession. While cybersecurity solutions are necessary, they can be developed through various management strategies. Anticipated Results: Implementing management solutions will require updating medical systems with AI-based policies. Efficient AI algorithms, derived from advanced mathematical or scientific techniques, are essential. The effectiveness of these solutions will

ultimately determine the outcomes. Conclusion: Healthcare applications should be designed to be affordable while accommodating the essential facilities for human life.

11. Ali, Sara, Atrubah Aslam, Zarmeen Tahir, Bashair Ashraf and Afifa Tanweer. **Advancements of AI in healthcare: a comprehensive review of ChatGPT's applications and challenges**. Journal of the Pakistan Medical Association. 2025.Vol.75(1), pp78–83.

The rapid integration of artificial intelligence into healthcare has introduced transformative possibilities and challenges. The current narrative review was planned to explore diverse applications of Chat Generative Pre-Trained Transformer (ChatGPT) across medical domains, ranging from dietary planning and disease management to medical education and clinical decision support. A comprehensive analysis of ChatGPT's healthcare applications was conducted between July and September 2023, reviewing literature from prominent medical journals and databases, including PubMed, Embase, Cochrane library and the Cumulated Index in Nursing and Allied Health Literature. The studies revealed notable limitations, including inaccuracies, bias and potential safety concerns. Quantitative data highlighted ChatGPT's high accuracy rates in disease detection, nutrient sufficiency in ChatGPTgenerated diet plans and various medical scenarios. The predominantly quantitative evaluations might overlook nuanced qualitative aspects, such as users' perceptions, experiences and ethical concerns. Studies often focus on specific domains, potentially limiting generalisability. Evolving artificial intelligence technology warrants longterm impact assessment, including ChatGPT's contextual appropriateness and accommodation of individual preferences. ChatGPT shows promise in healthcare, but needs specialised training for medical use. Ethical concerns, data quality and interpretability require thorough investigation for responsible implementation.

12. Eke, Christopher Ifeanyi and Liyana Shuib. **The role of explainability and transparency in fostering trust in AI healthcare systems: a systematic literature review, open issues and potential solutions**. Neural Comput & Applic. 2025.Vol.37(4), pp1999–2034.

The healthcare sector has advanced significantly as a result of the ability of artificial intelligence (AI) to solve cognitive problems that once required human intelligence. As artificial intelligence finds more applications in healthcare, trustworthiness must be guaranteed. Even while AI has the potential to improve healthcare, there are still challenging issues because it is yet to be widely adopted, especially when it comes to transparency. Concerns about comprehending the internal workings of AI models, possible biases, model robustness, and generalizability are raised by their opacity which makes them function like black boxes. A solution for worries over the transparency of AI algorithms is explainable AI. Explainable AI seeks to enhance AI explainability and analytical capabilities, particularly in vital industries like healthcare. Even though earlier research has examined several explainable AI-related topics, such as a lexicon, industry-specific overviews, and applications in the healthcare industry, a thorough analysis concentrating on the function of explainable AI in building trust in AI healthcare systems is required. In an effort to close this gap, a systematic literature review that adheres to PRISMA principles that analyze relevant papers that were published between 2015 and 2023 was done in this paper. To determine the critical role that explainable AI plays in fostering trust, this study examines widely utilized methodologies, machine learning and deep learning techniques, datasets,

performance measures and validation procedures used in AI healthcare research. In addition, research issues and potential research directions are also discussed in this research. Thus, this systematic review provides a thorough summary of the present status of research on explainability and transparency in AI healthcare systems, thus illuminating crucial factors that affect user trust. The results are intended to assist researchers, policymakers and healthcare professionals in developing a more transparent, responsible and reliable AI system in the healthcare sector.

13. Ferede, Dereje. **Artificial Intelligence (AI) and Healthcare Capabilities: A Systematic Literature Review**. F1000 research. 2025.Vol.14 pp20.

Artificial Intelligence (AI) has the potential to transform the healthcare ecosystem, but further research is needed to understand how it can enhance healthcare capabilities. This study analyzes the literature on AI and healthcare capability using the PRISMA approach, applying specific search keywords and inclusion/exclusion criteria. The findings indicate that AI benefits the healthcare ecosystem, significantly influences health outcomes, and transforms medical practices. However, there is limited literature and a lack of understanding regarding how AI enhances healthcare capabilities. Most studies date from 2019, suggesting that COVID-19 has accelerated the adoption of AI systems in healthcare. This research contributes theoretically by developing a framework that clarifies AI's role in enhancing healthcare capabilities, serving as a foundational model for future studies. It identifies critical gaps in the literature, especially in the Global South, and encourages exploration in under-researched areas where healthcare professionals can benefit from AI. Additionally, it bridges the gap between AI and healthcare, enriching interdisciplinary dialogue relevant to emerging economies facing financial constraints. Practically, the study provides actionable insights for healthcare practitioners and policymakers in the Global South on leveraging AI to improve service delivery. It sets the stage for empirical research, promoting the testing and refinement of the proposed framework in resource-limited contexts, while raising awareness among healthcare staff, managers, and technology developers about AI's role in healthcare.

14. Li, Anson Kwok Choi, Ijaz A. Rauf and Karim Keshavjee. **Knowledge is not all you need for comfort in use of AI in healthcare.** Public health (London). 2025.Vol.238 pp254–259.

The adoption of artificial intelligence (AI) in healthcare is rapidly expanding, transforming areas such as diagnostics, drug discovery, and patient monitoring. Despite these advances, public perceptions of AI in healthcare, particularly in Canada, remain underexplored. This study investigates the relationship between Canadians' knowledge, comfort, and trust in AI, focusing on key sociodemographic factors like age, gender, education, and income. Cross-sectional study. Using data from the 2021 Canadian Digital Health Survey of 12,052 respondents, we employed ordinal logistic and multivariate polynomial regression analyses to uncover trends and disparities. Findings reveal that women and older adults consistently report lower levels of knowledge and comfort with AI, with middle-aged women expressing the most significant discomfort. Comfort levels are closely tied to concerns over data privacy, especially regarding the use of identifiable personal health data. Healthcare professionals exhibited heightened discomfort with AI, indicating potential issues with trust in AI's reliability and ethical governance. Our results underscore that increasing knowledge alone does not necessarily lead to greater comfort with AI in healthcare. Addressing public

concerns through robust data governance, transparency, and inclusive AI design is essential to fostering trust and successful integration of AI in healthcare systems. 10.1016/j.puhe.2024.11.019

15. Mohamed Jasim, K., A. Malathi, Seema Bhardwaj and Eugene Cheng-Xi Aw. **A systematic review of AI-based chatbot usages in healthcare services**. Journal of health organization and management. 2025.

This systematic literature review aims to provide a comprehensive and structured synthesis of the existing knowledge about chatbots in healthcare from both a theoretical and methodological perspective. To this end, a systematic literature review was conducted with 89 articles selected through a SPAR-4-SLR systematic procedure. The document for this systematic review was collected from Scopus database. The VoSviewer software facilitates the analysis of keyword co-occurrence to form the fundamental structure of the subject field. In addition, this study proposes a future research agenda revolving around three main themes such as (1) telemedicine, (2) mental health and (3) medical information. This study underscores the significance, implications and predictors of chatbot usage in healthcare services. It is concluded that adopting the proposed future direction and further research on chatbots in healthcare will help to refine chatbot systems to better meet the needs of patients. 10.1108/JHOM-12-2023-0376

16. Sanchita Pal, **Embedding professionalism and governance in AI integration: a strategic framework for healthcare leadership** The Royal College of Radiologists Open, Volume 3, Supplement 1, 2025,

AI and Medical Education

1. Galli C, Moretti C, Calciolari E. **Intelligent summaries: Will Artificial Intelligence mark the finale for biomedical literature reviews?.** Learned Publishing. 2024 Dec 9.

2. Lenihan, David. **Three Effective, Efficient, and Easily Implementable Ways to Integrate A.I. Into Medical Education**. Curēus (Palo Alto, CA). 2023.Vol.15(10), ppe47204.

As a medical school CEO who is following the development of A.I. very closely, I believe that med students are eager to adopt the possibilities that A.I. tools can deliver in their training. Not only do these students already use variations of A.I. in other areas of their lives, but they also embrace advanced technology and understand how to use it.With the tech readiness of today's students in mind, I have devised three recommendations for how to best infuse A.I. into medical education. This strategic guidance can deliver significant benefits to today's tech-fluent medical school students and enhance their training in their journeys to become doctors.

AI and Mental Health

3. Auf, Hassan, Petra Svedberg, Jens Nygren, Monika Nair and Lina E. Lundgren. **The Use of AI in Mental Health Services to Support Decision-Making: Scoping Review**. Journal of medical Internet research. 2025.Vol.27(1), ppe63548.

Recent advancements in artificial intelligence (AI) have changed the care processes in mental health, particularly in decision-making support for health care professionals and individuals with mental health problems. AI systems provide support in several domains of mental health, including early detection, diagnostics, treatment, and self-care. The use of AI systems in care flows faces several challenges in relation to decision-making support, stemming from technology, end-user, and organizational perspectives with the AI disruption of care processes. This study aims to explore the use of AI systems in mental health to support decision-making, focusing on 3 key areas: the characteristics of research on AI systems in mental health; the current applications, decisions, end users, and user flow of AI systems to support decision-making; and the evaluation of AI systems for the implementation of decision-making support, including elements influencing the long-term use. A scoping review of empirical evidence was conducted across 5 databases: PubMed, Scopus, PsycINFO, Web of Science, and CINAHL. The searches were restricted to peer-reviewed articles published in English after 2011. The initial screening at the title and abstract level was conducted by 2 reviewers, followed by full-text screening based on the inclusion criteria. Data were then charted and prepared for data analysis. Of a total of 1217 articles, 12 (0.99%) met the inclusion criteria. These studies predominantly originated from high-income countries. The AI systems were used in health care, self-care, and hybrid care contexts, addressing a variety of mental health problems. Three types of AI systems were identified in terms of decision-making support: diagnostic and predictive AI, treatment selection AI, and self-help AI. The dynamics of the type of end-user interaction and system design were diverse in complexity for the integration and use of the AI systems to support decision-making in care processes. The evaluation of the use of AI systems highlighted several challenges impacting the implementation and functionality of the AI systems in care processes, including factors affecting accuracy, increase of demand, trustworthiness, patient-physician communication, and engagement with the AI systems. The design, development, and implementation of AI systems to support decision-making present substantial challenges for the sustainable use of this technology in care processes. The empirical evidence shows that the evaluation of the use of AI systems in mental health is still in its early stages, with need for more empirically focused research on real-world use. The key aspects requiring further investigation include the evaluation of the use of AI-supported decision-making from human-AI interaction and human-computer interaction perspectives, longitudinal implementation studies of AI systems in mental health to assess the use, and the integration of shared decision-making in AI systems.

4. Asman, Oren, John Torous and Amir Tal. **Responsible Design, Integration, and Use of Generative AI in Mental Health**. JMIR mental health. 2025.Vol.12 ppe70439.

Generative artificial intelligence (GenAI) shows potential for personalized care, psychoeducation, and even crisis prediction in mental health, yet responsible use requires ethical consideration and deliberation and perhaps even governance. This is the first published theme issue focused on responsible GenAI in mental health. It brings together evidence and insights on GenAI's capabilities, such as emotion recognition, therapy-session summarization, and risk assessment, while highlighting the sensitive nature of mental health data and the need for rigorous validation. Contributors discuss how bias, alignment with human values, transparency, and empathy must be carefully addressed to ensure ethically grounded, artificial intelligence-assisted care. By proposing conceptual frameworks; best practices; and regulatory approaches, including ethics of care and the preservation of

socially important humanistic elements, this theme issue underscores that GenAI can complement, rather than replace, the vital role of human empathy in clinical settings. To achieve this, an ongoing collaboration between researchers, clinicians, policy makers, and technologists is essential.

5. Scherbakov, Dmitry A., Nina C. Hubig, Leslie A. Lenert, Alexander V. Alekseyenko and Jihad S. Obeid. **Natural Language Processing and Social Determinants of Health in Mental Health Research: AI-Assisted Scoping Review**. JMIR mental health. 2025.Vol.12 ppe67192.

The use of natural language processing (NLP) in mental health research is increasing, with a wide range of applications and datasets being investigated. This review aims to summarize the use of NLP in mental health research, with a special focus on the types of text datasets and the use of social determinants of health (SDOH) in NLP projects related to mental health. The search was conducted in September 2024 using a broad search strategy in PubMed, Scopus, and CINAHL Complete. All citations were uploaded to Covidence (Veritas Health Innovation) software. The screening and extraction process took place in Covidence with the help of a custom large language model (LLM) module developed by our team. This LLM module was calibrated and tuned to automate many aspects of the review process. The screening process, assisted by the custom LLM, led to the inclusion of 1768 studies in the final review. Most of the reviewed studies (n=665, 42.8%) used clinical data as their primary text dataset, followed by social media datasets (n=523, 33.7%). The United States contributed the highest number of studies (n=568, 36.6%), with depression (n=438, 28.2%) and suicide (n=240, 15.5%) being the most frequently investigated mental health issues. Traditional demographic variables, such as age (n=877, 56.5%) and gender (n=760, 49%), were commonly extracted, while SDOH factors were less frequently reported, with urban or rural status being the most used (n=19, 1.2%). Over half of the citations (n=826, 53.2%) did not provide clear information on dataset accessibility, although a sizable number of studies (n=304, 19.6%) made their datasets publicly available. This scoping review underscores the significant role of clinical notes and social media in NLP-based mental health research. Despite the clear relevance of SDOH to mental health, their underutilization presents a gap in current research. This review can be a starting point for researchers looking for an overview of mental health projects using text data. Shared datasets could be used to place more emphasis on SDOH in future studies.

6. Yonatan-Leus, Refael and Hadas Brukner. **Comparing perceived empathy and intervention strategies of an AI chatbot and human psychotherapists in online mental health support.** Counselling and psychotherapy research. 2025.Vol.25(1),10.1002/capr.12832

AI and Nursing

7. Cary, Michael P., Sophia Bessias, Jonathan McCall, et al. **Empowering nurses to champion Health equity & BE FAIR: Bias elimination for fair and responsible AI in healthcare**. Journal of nursing scholarship. 2025.Vol.57(1), pp130–139.

Background The concept of health equity by design encompasses a multifaceted approach that integrates actions aimed at eliminating biased, unjust, and correctable differences

among groups of people as a fundamental element in the design of algorithms. As algorithmic tools are increasingly integrated into clinical practice at multiple levels, nurses are uniquely positioned to address challenges posed by the historical marginalization of minority groups and its intersections with the use of “big data” in healthcare settings; however, a coherent framework is needed to ensure that nurses receive appropriate training in these domains and are equipped to act effectively. Purpose We introduce the Bias Elimination for Fair AI in Healthcare (BE FAIR) framework, a comprehensive strategic approach that incorporates principles of health equity by design, for nurses to employ when seeking to mitigate bias and prevent discriminatory practices arising from the use of clinical algorithms in healthcare. By using examples from a “real-world” AI governance framework, we aim to initiate a wider discourse on equipping nurses with the skills needed to champion the BE FAIR initiative. Methods Drawing on principles recently articulated by the Office of the National Coordinator for Health Information Technology, we conducted a critical examination of the concept of health equity by design. We also reviewed recent literature describing the risks of artificial intelligence (AI) technologies in healthcare as well as their potential for advancing health equity. Building on this context, we describe the BE FAIR framework, which has the potential to enable nurses to take a leadership role within health systems by implementing a governance structure to oversee the fairness and quality of clinical algorithms. We then examine leading frameworks for promoting health equity to inform the operationalization of BE FAIR within a local AI governance framework. Results The application of the BE FAIR framework within the context of a working governance system for clinical AI technologies demonstrates how nurses can leverage their expertise to support the development and deployment of clinical algorithms, mitigating risks such as bias and promoting ethical, high-quality care powered by big data and AI technologies. Conclusion and Relevance As health systems learn how well-intentioned clinical algorithms can potentially perpetuate health disparities, we have an opportunity and an obligation to do better. New efforts empowering nurses to advocate for BE FAIR, involving them in AI governance, data collection methods, and the evaluation of tools intended to reduce bias, mark important steps in achieving equitable healthcare for all.

8. Milasan, Lucian H. and Daniel Scott-Purdy**. The Future of Artificial Intelligence in Mental Health Nursing Practice: An Integrative Review**. International journal of mental health nursing. 2025.Vol.34(1), ppe70003.

Artificial intelligence (AI) has been increasingly used in delivering mental healthcare worldwide. Within this context, the traditional role of mental health nurses has been changed and challenged by AI-powered cutting-edge technologies emerging in clinical practice. The aim of this integrative review is to identify and synthesise the evidence of AI-based applications with relevance for, and potential to enhance, mental health nursing practice. Five electronic databases (CINAHL, PubMed, PsycINFO, Web of Science and Scopus) were systematically searched. Seventy-eight studies were identified, critically appraised and synthesised following a comprehensive integrative approach. We found that AI applications with potential use in mental health nursing vary widely from machine learning algorithms to natural language processing, digital phenotyping, computer vision and conversational agents for assessing, diagnosing and treating mental health challenges. Five overarching themes were identified: assessment, identification, prediction, optimisation and perception reflecting the multiple levels of embedding AI-driven technologies in mental health nursing practice, and how patients and staff perceive the use

of AI in clinical settings. We concluded that AI-driven technologies hold great potential for enhancing mental health nursing practice. However, humanistic approaches to mental healthcare may pose some challenges to effectively incorporating AI into mental health nursing. Meaningful conversations between mental health nurses, service users and AI developers should take place to shaping the co-creation of AI technologies to enhance care in a way that promotes person-centredness, empowerment and active participation.

AI and Ophthalmology

9. Obi E, Owens D, Bulpin G, Beatty S. **Artificial Intelligence (AI) in early triaging of referred patients with retinal disease–AI Solutions in Ophthalmic healthcare**. The Royal College of Radiologists Open. 2025 Jan 1;3:100182.

AI and Patient Care

1. Bachina, Lakshmipriya, Anusha Kanagala, Sattibabu Korapu and P. Ratnaraju. **Sustainable materials for artificial intelligence (AI) technology adoption for energy-efficient patient-centric healthcare solutions**. Journal of education and health promotion. 2025.Vol.14(1),

Sustainable materials are also known as eco-friendly materials. A thorough examination of the relationship between sustainable materials, AI technology adoption, and patient-centered healthcare sustainable materials is crucial for reducing the carbon footprint of AI hardware and data storage in healthcare applications. Emphasizing eco-friendly practices aligns AI-driven healthcare with broader sustainability goals. The aim is to make it possible for energy-efficient AI technologies to revolutionize patient-centric healthcare while minimizing environmental impact and enhancing clinical outcomes. The development of sustainable and renewable resources to aid the adoption of artificial intelligence (AI)-driven healthcare solutions is the goal of sustainable materials for AI technology. The study takes a multidisciplinary approach, incorporating life cycle evaluation, a systematic review of literature, and Vos viewer keyword analysis. The study assesses the environmental impact of using sustainable materials in AI-driven healthcare solutions via life cycle assessment, addressing issues ranging from resource extraction to disposal. Artificial intelligence (AI) has quickly developed into a patient-centric approach. However, as the increasing adoption of AI-powered healthcare solutions has become more popular, there are growing worries about energy consumption, and the environmental impact of the materials used in AI devices. The use of sustainable materials in AI technology has the potential to improve patient-centric healthcare solutions by reducing energy consumption and limiting environmental impact. Adopting eco-friendly artificial intelligence hardware methods would concrete the way for a more sustainable and efficient healthcare ecosystem. 10.4103/jehp.jehp_527_24

2. Hilbers, Daniel, Navid Nekain, Alan T. Bates and John-Jose Nunez. **Patients' attitudes toward artificial intelligence (AI) in cancer care: A scoping review protocol**. PloS one. 2025.Vol.20(1), ppe0317276.

Artificial intelligence broadly refers to computer systems that simulate intelligent behaviour with minimal human intervention. Emphasizing patient-centered care, research has

explored patients' perspectives on artificial intelligence in medical care, indicating general acceptance of the technology but also concerns about supervision. However, these views have not been systematically examined from the perspective of patients with cancer, whose opinions may differ given the distinct psychosocial toll of the disease. This protocol describes a scoping review aimed at summarizing the existing literature on the attitudes of patients with cancer toward the use of artificial intelligence in their medical care. The primary goal is to identify knowledge gaps and highlight opportunities for future research. This scoping review protocol will adhere to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (PRISMA-ScR). The electronic databases MEDLINE (OVID), EMBASE, PsycINFO, and CINAHL will be searched for peer-reviewed primary research articles published in academic journals. We will have two independent reviewers screen the articles retrieved from the literature search and select relevant studies based on our inclusion criteria, with a third reviewer resolving any disagreements. We will then compile the data from the included articles into a narrative summary and discuss the implications for clinical practice and future research. To our knowledge, this will be the first scoping review to map the existing literature on the attitudes of patients with cancer regarding artificial intelligence

3. Khamaj, Abdulrahman. **AI-enhanced chatbot for improving healthcare usability and accessibility for older adults**. Alexandria engineering journal. 2025.Vol.116 pp202–213.

People above 60 years of age have difficulties using laptops and digital healthcare systems because of eyesight problems, hand tremors, and less exposure to laptops. The needs are not met using traditional means of communication, including intricate website interfaces and conventional chatbots, which leads to poor healthcare participation. Standard digital interfaces are not customizable; they lack adjustable font density and are not voice-controlled, which are important aspects for the elderly. Further, the existing icon-based or text-based chatbots are less efficient in handling and responding to complicated healthcare-related queries. To this end, the following work seeks to design an AI-based interface for a chatbot to support elderly patients for timely appointments and efficient follow-up. It employs machine learning and natural language processing algorithms to make it more sensitive to patients' needs. The features installed in the improved chatbot are options for text size, voice control, booking an appointment, asking for any medical data, and prescription prompts. It also updates the current user's interactions, allowing the dynamic adjustment of the interface and more effective answering of multipart questions. Similarly, the presence of older users in usability testing showed that Older adults' usability effects can be observed in terms of increased number of successful task completion, perceived satisfaction, and overall quality of interaction. Thus, the iterative approach based on direct user feedback in the context of the current work allowed for the overcoming of such drawbacks and the provision of the target population of older adults with the needed healthcare services.

4. van Leersum CM, Maathuis C. **Human centred explainable AI decision-making in healthcare. Journal of Responsible Technology**. 2025 Mar 1;21:100108.

5. Sobaih, Abu Elnasr E., Asma Chaibi, Riadh Brini and Tamer Mohamed Abdelghani Ibrahim. **Unlocking Patient Resistance to AI in Healthcare: A Psychological**

Exploration. European journal of investigation in health, psychology and education. 2025.Vol.15(1), pp6.

Artificial intelligence (AI) has transformed healthcare, yet patients' acceptance of AI-driven medical services remains constrained. Despite its significant potential, patients exhibit reluctance towards this technology. A notable lack of comprehensive research exists that examines the variables driving patients' resistance to AI. This study explores the variables influencing patients' resistance to adopt AI technology in healthcare by applying an extended Ram and Sheth Model. More specifically, this research examines the roles of the need for personal contact (NPC), perceived technological dependence (PTD), and general skepticism toward AI (GSAI) in shaping patient resistance to AI integration. For this reason, a sequential mixed-method approach was employed, beginning with semi-structured interviews to identify adaptable factors in healthcare. It then followed with a survey to validate the qualitative findings through Structural Equation Modeling (SEM) via AMOS (version 24). The findings confirm that NPC, PTD, and GSAI significantly contribute to patient resistance to AI in healthcare. Precisely, patients who prefer personal interaction, feel dependent on AI, or are skeptical of AI's promises are more likely to resist its adoption. The findings highlight the psychological factors driving patient reluctance toward AI in healthcare, offering valuable insights for healthcare administrators. Strategies to balance AI's efficiency with human interaction, mitigate technological dependence, and foster trust are recommended for successful implementation of AI. This research adds to the theoretical understanding of Innovation Resistance Theory, providing both conceptual insights and practical implications for the effective incorporation of AI in healthcare.

6. Traylor, Daryl O., Keith V. Kern, Eboni E. Anderson and Robert Henderson. **Beyond the Screen: The Impact of Generative Artificial Intelligence (AI) on Patient Learning and the Patient-Physician Relationship**. Curēus (Palo Alto, CA). 2025.Vol.17(1), ppe76825.

The rapid advancement of generative artificial intelligence (AI), exemplified by tools like ChatGPT, has transformed the healthcare landscape, particularly in patient education and the patient-physician relationship. While AI in healthcare has traditionally focused on data analysis and predictive analytics, the rise of generative AI has introduced new opportunities and challenges in patient interactions, information dissemination, and the overall dynamics of patient care. This narrative review explores the dual impact of generative AI on healthcare, examining its role in enhancing patients' understanding of medical conditions, promoting self-care, and supporting healthcare decision-making. Additionally, the review considers the potential risks, such as the erosion of trust in the patient-physician relationship and the spread of misinformation, while addressing ethical implications and the future integration into clinical practice. A comprehensive literature search, conducted using databases like PubMed, MEDLINE, Scopus, and Google Scholar, included studies published between 2010 and 2024 that discussed the role of generative AI in patient education, engagement, and the patient-physician relationship. Findings show that generative AI tools significantly enhance patient health literacy by making complex medical information more accessible, personalized, and interactive, thus empowering patients to take a more active role in managing their healthcare. However, risks such as misinformation and the undermining of the patient-physician relationship were also identified, with case studies highlighting both positive and negative outcomes. To fully harness the potential of AI in

healthcare, it is essential to integrate these tools thoughtfully, ensuring they complement rather than replace the personalized care provided by physicians. Future research should focus on addressing ethical challenges and optimizing AI's role in clinical practice to maintain trust, communication, and the quality of patient care.

7. Zezza, Mark. **The promise of AI in healthcare: transforming communication and decision-making for patients.** Journal of communication in healthcare. 2025. pp1–4.

AI and Shared-Decision Making

1. Gould, Daniel J., Michelle M. Dowsey, Marion Glanville-Hearst, et al. **Patients' Views on AI for Risk Prediction in Shared Decision-Making for Knee Replacement Surgery: Qualitative Interview Study**. Journal of medical Internet research. 2023.Vol.25(9823), ppe43632.

The use of artificial intelligence (AI) in decision-making around knee replacement surgery is increasing, and this technology holds promise to improve the prediction of patient outcomes. Ambiguity surrounds the definition of AI, and there are mixed views on its application in clinical settings. In this study, we aimed to explore the understanding and attitudes of patients who underwent knee replacement surgery regarding AI in the context of risk prediction for shared clinical decision-making. This qualitative study involved patients who underwent knee replacement surgery at a tertiary referral center for joint replacement surgery. The participants were selected based on their age and sex. Semistructured interviews explored the participants' understanding of AI and their opinions on its use in shared clinical decision-making. Data collection and reflexive thematic analyses were conducted concurrently. Recruitment continued until thematic saturation was achieved. Thematic saturation was achieved with 19 interviews and confirmed with 1 additional interview, resulting in 20 participants being interviewed (female participants: n=11, 55%; male participants: n=9, 45%; median age: 66 years). A total of 11 (55%) participants had a substantial postoperative complication. Three themes captured the participants' understanding of AI and their perceptions of its use in shared clinical decision-making. The theme Expectations captured the participants' views of themselves as individuals with the right to self-determination as they sought therapeutic solutions tailored to their circumstances, needs, and desires, including whether to use AI at all. The theme Empowerment highlighted the potential of AI to enable patients to develop realistic expectations and equip them with personalized risk information to discuss in shared decision-making conversations with the surgeon. The theme Partnership captured the importance of symbiosis between AI and clinicians because AI has varied levels of interpretability and understanding of human emotions and empathy.

2. Hassan, Nehal, Robert Slight, Kweku Bimpong, et al. **Systematic review to understand users perspectives on AI-enabled decision aids to inform shared decision making**. npj Digit.Med. 2024.Vol.7(1), pp332–11.

Artificial intelligence (AI)-enabled decision aids can contribute to the shared decision-making process between patients and clinicians through personalised recommendations. This systematic review aims to understand users' perceptions on using AI-enabled decision aids to inform shared decision-making. Four databases were searched. The population,

intervention, comparison, outcomes and study design tool was used to formulate eligibility criteria. Titles, abstracts and full texts were independently screened and PRISMA guidelines followed. A narrative synthesis was conducted. Twenty-six articles were included, with AI-enabled decision aids used for screening and prevention, prognosis, and treatment. Patients found the AI-enabled decision aids easy to understand and user-friendly, fostering a sense of ownership and promoting better adherence to recommended treatment. Clinicians expressed concerns about how up-to-date the information was and the potential for over- or under-treatment. Despite users' positive perceptions, they also acknowledged certain challenges relating to the usage and risk of bias that would need to be addressed. Registration: PROSPERO database: (CRD42020220320).

3. Hao Y, Liu Z, Riter RN, Kalantari S. **Advancing patient-centered shared decision-making with ai systems for older adult cancer patients**. InProceedings of the 2024 CHI Conference on Human Factors in Computing Systems 2024 May 11 (pp. 1-20).

4. Osmanodja, Bilgin and Klemens Budde. **Prospective, Randomized Controlled Pilot Trial to Investigate the Impact of Artificial Intelligence (AI) on Shared Decision Making in Post-Kidney Transplant Care (PRIMA-AI): Study Protocol for a Randomized Controlled Trial: PUB062**. Journal of the American Society of Nephrology. 2023.Vol.34(11), pp1065. 10.1681/ASN.20233411S11065d

5. Ojo Y, Makinde OA, Babatunde OV, Babatunde G, Okeowo S. **Evaluating AI-Driven Mental Health Solutions: A Hybrid Fuzzy Multi-Criteria Decision-Making Approach**. AI. 2025 Jan 16;6(1):14.

6. Sassi, Zeineb, Sascha Eickmann, Roland Roller, et al. **Prospectively investigating the impact of AI on shared decision-making in post kidney transplant care (PRIMA-AI): protocol for a longitudinal qualitative study among patients, their support persons and treating physicians at a tertiary care centre**. BMJ Open. 2024.Vol.14(10), ppe081318.

As healthcare is shifting from a paternalistic to a patient-centred approach, medical decision making becomes more collaborative involving patients, their support persons (SPs) and physicians. Implementing shared decision-making (SDM) into clinical practice can be challenging and becomes even more complex with the introduction of artificial intelligence (AI) as a potential actant in the communicative network. Although there is more empirical research on patients' and physicians' perceptions of AI, little is known about the impact of AI on SDM. This study will help to fill this gap. To the best of our knowledge, this is the first systematic empirical investigation to prospectively assess the views of patients, their SPs and physicians on how AI affects SDM in physician–patient communication after kidney transplantation. Using a transdisciplinary approach, this study will explore the role and impact of an AI-decision support system (DSS) designed to assist with medical decision making in the clinical encounter. Methods and analysis This is a plan to roll out a 2 year, longitudinal qualitative interview study in a German kidney transplant centre. Semi-structured interviews with patients, SPs and physicians will be conducted at baseline and in 3-, 6-, 12- and 24-month follow-up. A total of 50 patient–SP dyads and their treating physicians will be recruited at baseline. Assuming a dropout rate of 20% per year, it is anticipated that 30 patient–SP dyads will be included in the last follow-up with the aim of achieving data saturation. Interviews will be audio-recorded and transcribed verbatim.

Transcripts will be analysed using framework analysis. Participants will be asked to report on their (a) communication experiences and preferences, (b) views on the influence of the AI-based DSS on the normative foundations of the use of AI in medical decision-making, focusing on agency along with trustworthiness, transparency and responsibility and (c) perceptions of the use of the AI-based DSS, as well as barriers and facilitators to its implementation into routine care.Ethics and disseminationApproval has been granted by the local ethics committee of Charité—Universitätsmedizin Berlin (EA1/177/23 on 08 August 2023). This research will be conducted in accordance with the principles of the Declaration of Helsinki (1996). The study findings will be used to develop communication guidance for physicians on how to introduce and sustainably implement AI-assisted SDM. The study results will also be used to develop lay language patient information on AI-assisted SDM. A broad dissemination strategy will help communicate the results of this research to a variety of target groups, including scientific and non-scientific audiences, to allow for a more informed discourse among different actors from policy, science and society on the role and impact of AI in physician–patient communication.

AI and Workforce

7. Huo, Weiwei, Qiuchi Li, Bingqian Liang, Yixin Wang and Xuanlei Li. **When Healthcare Professionals Use AI: Exploring Work Well-Being Through Psychological Needs Satisfaction and Job Complexity**. Behavioral sciences. 2025.Vol.15(1), pp88.

This study examines how the use of artificial intelligence (AI) by healthcare professionals affects their work well-being through the satisfaction of basic psychological needs, framed within Self-Determination Theory. Data from 280 healthcare professionals across various departments in Chinese hospitals were collected, and the hierarchical regression and regression were analyzed to assess the relationship between the use of AI, psychological needs satisfaction (autonomy, competence, and relatedness), and their work well-being. The results reveal that the use of AI enhances work well-being indirectly by increasing the satisfaction of these psychological needs. Additionally, job complexity serves as a boundary condition that moderates the relationship between the use of AI and work well-being. Specifically, job complexity weakens the relationship between the use of AI and the satisfaction of autonomy and competence, while having no significant effect on the relationship between the use of AI and the satisfaction of relatedness. These findings suggest that the impact of the use of AI on healthcare professionals' well-being is contingent on job complexity. This study highlights that promoting healthcare professionals' well-being at work in the context of AI adoption requires not only technological implementation but also ongoing adaptation to meet their evolving psychological needs. These insights provide a theoretical foundation and practical guidance for integrating AI into healthcare to support the well-being of healthcare professionals.