

## SELECTED ABSTRACTS FROM PUBMED

1. *Kirov H, Caldonazo T, Mukharyamov M, Toshmatov S, Fischer J, Schneider U, et al. Cardiac Surgery 2023 Reviewed. Thorac Cardiovasc Surg. 2024 Aug;72(5):346-357. doi: 10.1055/s-0044-1786758. Epub 2024 May 13.*

### ABSTRACT

We reviewed the cardiac surgical literature for 2023. PubMed displayed almost 34,000 hits for the search term "cardiac surgery AND 2023." We used a PRISMA approach for a results-oriented summary. Key manuscripts addressed the mid- and long-term effects of invasive treatment options in patient populations with coronary artery disease (CAD), comparing interventional therapy (percutaneous coronary intervention [PCI]) with surgery (coronary artery bypass graft [CABG]). The literature in 2023 again confirmed the excellent long-term outcomes of CABG compared with PCI in patients with left main stenosis, specifically in anatomically complex chronic CAD, but even in elderly patients, generating further support for an infarct-preventative effect as a prognostic mechanism of CABG. For aortic stenosis, a previous trend of an early advantage for transcatheter (transcatheter aortic valve implantation [TAVI]) and a later advantage for surgical (surgical aortic valve replacement) treatment was also re-confirmed by many studies. Only the Evolut Low Risk trial maintained an early advantage of TAVI over 4 years. In the mitral and tricuspid field, the number of interventional publications increased tremendously. A pattern emerges that clinical benefits are associated with repair quality, making residual regurgitation not irrelevant. While surgery is more invasive, it currently generates the highest repair rates and longest durability. For terminal heart failure treatment, donor pool expansion for transplantation and reducing adverse events in assist device therapy were issues in 2023. Finally, the aortic diameter related to adverse events and technical aspects of surgery dominated in aortic surgery. This article summarizes publications perceived as important by us. It cannot be complete nor free of individual interpretation, but provides up-to-date information for patient-specific decision-making.

2. *Zeng Z, Shen Y, Wan L, Yang X, Hu Q, Luo H, et al. Kinesiophobia in patients after cardiac surgery: a scoping review. BMC Cardiovasc Disord. 2024 Sep 3;24(1):469. doi: 10.1186/s12872-024-04140-2.*

### ABSTRACT

**Background:** This paper reviews the scope of research on kinesiophobia in patients after cardiac surgery. Further, it reviews the current situation, evaluation tools, risk factors, adverse effects, and intervention methods of kinesiophobia to provide a reference for promoting early rehabilitation of patients after cardiac surgery.

**Methods:** Guided by the scoping methodology, the Web of Science, PubMed, CINAHL, Cochrane Library, China Biomedical Literature Database, VIP Database, Wanfang Database, CNKI, and other databases were searched from database inception until July 31, 2024. The studies obtained

were screened, summarised and systematically analysed by two researchers.

**Results:** Eighteen studies (16 cross-sectional studies, one qualitative study, and one randomised controlled trial) were included. The incidence of kinesiophobia in patients after cardiac surgery was 39.20-82.57%, and the Tampa Scale for Kinesiophobia Heart (TSK-SV Heart) was used to evaluate this incidence. The influencing factors of kinesiophobia in patients after cardiac surgery included demographic characteristics, pain severity, frailty, exercise self-efficacy, disease-related factors, and psychosocial factors. Kinesiophobia led to adverse health outcomes such as reduced recovery, prolonged hospital stays, and decreased quality of life in patients after cardiac surgery, and there were few studies on intervention methods for postoperative kinesiophobia.

**Conclusion:** The kinesiophobia assessment tools suitable for patients after cardiac surgery should be improved, and intervention methods to promote the early recovery of patients after major clinical surgery and those with difficult and critical diseases should be actively researched.

**Keywords:** Cardiac surgery; Kinesiophobia; Nursing; Scoping review.

3. *Juliana N, Abd Aziz NAS, Maluin SM, Abu Yazit NA, Azmani S, Kadiman S, et al. Nutritional status and post-cardiac surgery outcomes: an updated review with emphasis on cognitive function. J Clin Med. 2024 Jul 9;13(14):4015. doi: 10.3390/jcm13144015.*

### ABSTRACT

**Background/Objectives:** Nutritional status significantly influences cardiac surgery outcomes, with malnutrition contributing to poorer results and increased complications. This study addresses the critical gap in understanding by exploring the relationship between pre-operative nutritional status and post-operative cognitive dysfunction (POCD) in adult cardiac patients. **Methods:** A comprehensive search across key databases investigates the prevalence of malnutrition in pre-operative cardiac surgery patients, its effects, and its association with POCD. Factors exacerbating malnutrition, such as chronic illnesses and reduced functionality, are considered. The study also examines the incidence of POCD, its primary association with CABG procedures, and the impact of malnutrition on complications like inflammation, pulmonary and cardiac failure, and renal injury. **Discussions:** Findings reveal that 46.4% of pre-operative cardiac surgery patients experience malnutrition, linked to chronic illnesses and reduced functionality. Malnutrition significantly contributes to inflammation and complications, including POCD, with an incidence ranging from 15 to 50%. CABG procedures are particularly associated with POCD, and malnutrition prolongs intensive care stays while increasing vulnerability to surgical stress.

**Conclusions:** The review underscores the crucial role of nutrition in recovery and advocates for a universally

recognized nutrition assessment tool tailored to diverse cardiac surgery patients. Emphasizing pre-operative enhanced nutrition as a potential strategy to mitigate inflammation and improve cognitive function, the review highlights the need for integrating nutrition screening into clinical practice to optimize outcomes for high-risk cardiac surgery patients. However, to date, most data came from observational studies; hence, there is a need for future interventional studies to test the hypothesis that pre-operative enhanced nutrition can mitigate inflammation and improve cognitive function in this patient population.

**Keywords:** cardiac surgery; inflammation; malnutrition; post-operative cognitive dysfunction (POCD); pre-operative nutrition.

4. **Omar M, Ullanat V, Loda M, Marchionni L, Umeton R. ChatGPT for digital pathology research. *Lancet Digit Health*. 2024 Aug;6(8):e595-e600. doi: 10.1016/S2589-7500(24)00114-6. Epub 2024 Jul 9.**

#### ABSTRACT

The rapid evolution of generative artificial intelligence (AI) models including OpenAI's ChatGPT signals a promising era for medical research. In this Viewpoint, we explore the integration and challenges of large language models (LLMs) in digital pathology, a rapidly evolving domain demanding intricate contextual understanding. The restricted domain-specific efficiency of LLMs necessitates the advent of tailored AI tools, as illustrated by advancements seen in the last few years including FrugalGPT and BioBERT. Our initiative in digital pathology emphasises the potential of domain-specific AI tools, where a curated literature database coupled with a user-interactive web application facilitates precise, referenced information retrieval. Motivated by the success of this initiative, we discuss how domain-specific approaches substantially minimise the risk of inaccurate responses, enhancing the reliability and accuracy of information extraction. We also highlight the broader implications of such tools, particularly in streamlining access to scientific research and democratising access to computational pathology techniques for scientists with little coding experience. This Viewpoint calls for an enhanced integration of domain-specific text-generation AI tools in academic settings to facilitate continuous learning and adaptation to the dynamically evolving landscape of medical research.

5. **Yang C, Liu H, Feng X, Shi H, Jiang Y, Li J, et al. Research hotspots and frontiers of neoadjuvant therapy in triple-negative breast cancer: a bibliometric analysis of publications between 2002 and 2023. *Int J Surg*. 2024 Aug 1;110(8):4976-4992. doi: 10.1097/JS9.0000000000001586.**

#### ABSTRACT

Triple-negative breast cancer (TNBC) is a highly aggressive type of breast cancer with poor prognosis, and neoadjuvant therapy (NAT) has emerged as an important component in managing advanced-stage patients by providing surgical opportunities and improving survival outcomes. A search of publications on NAT for TNBC from 2002 to 2023 was

conducted through the Web of Science core collection. A comprehensive bibliometric analysis was conducted on the data using CiteSpace, VOSviewer, and Bibliometrix. The analysis revealed a continuous and steady growth in the number of articles published in this field over the past 20 years. The United States has made significant contributions to this field, with The University of Texas MD Anderson Cancer Center publishing the most articles. Loibl, S. from Germany was found to be the most published author with 54 articles. Analysis of the journals showed that the *Journal of Clinical Oncology* is the most cited journal. Combined with the keyword co-occurrence analysis and clustering analysis, current research topic focuses on treatment regimens and disease prognosis. Dual-map overlay of the journals indicates that the research trend is gradually shifting from molecular biology and genetics to immunology and clinical research. Combination therapy, including immunotherapy, may be the future direction for NAT treatment of TNBC. Overall, this study provides valuable insights into the current research status, latest advancements, and emerging development trend of NAT for TNBC.

6. **Jeon SJ, Yo HH. Changes in medical students' research-related perceptions through student-engaged medical research curriculum experience. *BMC Med Educ*. 2024 Sep 13;24(1):1002. doi: 10.1186/s12909-024-06003-y.**

#### ABSTRACT

**Background:** This study investigated changes in students' perceptions related to research following a student-engaged medical research curriculum.

**Methods:** Three surveys were administered to 112 medical students to examine the changes in their perceptions of the need for research competence, research interest, and research self-efficacy after each Medical Research Practice course.

**Results:** The results revealed a decline in the perception of the need for research competence and research interest after Medical Research Practice 2, with a subsequent increase after Medical Research Practice 3. Conversely, research self-efficacy showed steady improvement throughout the curriculum. Additionally, students with prior research experience exhibited higher levels of perception of the need for research competence, research interest, and research self-efficacy than those without such experience.

**Conclusion:** This study provides insights into how medical students' perceptions change in relation to student-engaged medical research course experiences, supporting expanding research-related curricula and assisting in the development and systematic implementation of similar programs in other medical schools.

**Keywords:** Medical education; Medical research curriculum; Medical students; Need for research competence; Research interest; Research self-efficacy; Student-engaged research.

7. **Elendu C, Amaechi DC, Okatta AU Amaechi EC, Elendu TC, Ezech CP, et al. The impact of simulation-based training in medical education: A review. *Medicine***

(Baltimore). 2024 Jul 5;103(27):e38813. doi: 10.1097/MD.000000000038813.

#### ABSTRACT

Simulation-based training (SBT) has emerged as a transformative approach in medical education, significantly enhancing healthcare professionals' learning experience and clinical competency. This article explores the impact of SBT, tracing its historical development and examining the various types of simulations utilized today, including high-fidelity mannequins, virtual reality environments, standardized patients, and hybrid simulations. These methods offer a safe and controlled environment for students to practice and hone technical and non-technical skills, ultimately improving patient safety and clinical outcomes. The benefits of SBT are manifold, including enhanced skill acquisition, error reduction, and the opportunity for repeated practice without risk to actual patients. Immediate feedback and structured debriefing further solidify learning, making Simulation an invaluable tool in medical education. However, the implementation of SBT is challenging. It requires substantial financial investment, specialized equipment, and trained faculty. Additionally, there are concerns about the realism of simulations and the transferability of skills to real-world clinical settings. Despite these challenges, numerous case studies and empirical research underscore the effectiveness of SBT compared to traditional methods. Looking ahead, advancements in technology, such as artificial intelligence and improved virtual reality applications, promise to enhance the efficacy and accessibility of simulation training. The integration of Simulation with other training modalities and its adoption in diverse global contexts highlight its potential to revolutionize medical education worldwide. This article affirms the crucial role of SBT in preparing the next generation of healthcare professionals and its ongoing evolution driven by technological innovations.

8. Jackson P, Sukumaran GP, Babu C, Tony MC, Jack DS, Reshma VR, et al. Artificial intelligence in medical education - perception among medical students. *BMC Med Educ.* 2024 Jul 27;24(1):804. doi: 10.1186/s12909-024-05760-0.

#### ABSTRACT

**Background:** As Artificial Intelligence (AI) becomes pervasive in healthcare, including applications like robotic surgery and image analysis, the World Medical Association emphasises integrating AI education into medical curricula. This study evaluates medical students' perceptions of 'AI in medicine', their preferences for AI training in education, and their grasp of AI's ethical implications in healthcare.

**Materials & Methods:** A cross-sectional study was conducted among 325 medical students in Kerala using a pre-validated, semi structured questionnaire. The survey collected demographic data, any past educational experience about AI, participants' self-evaluation of their knowledge and evaluated self-perceived understanding of applications of AI in medicine. Participants responded to twelve Likert-scale questions targeting perceptions and ethical aspects and

their opinions on suggested topics on AI to be included in their curriculum.

**Results & Discussion:** AI was viewed as an assistive technology for reducing medical errors by 57.2% students and 54.2% believed AI could enhance medical decision accuracy. About 49% agreed that AI could potentially improve accessibility to healthcare. Concerns about AI replacing physicians were reported by 37.6% and 69.2% feared a reduction in the humanistic aspect of medicine. Students were worried about challenges to trust (52.9%), patient-physician relationships (54.5%) and breach of professional confidentiality (53.5%). Only 3.7% felt totally competent in informing patients about features and risks associated with AI applications. Strong demand for structured AI training was expressed, particularly on reducing medical errors (76.9%) and ethical issues (79.4%).

**Conclusion:** This study highlights medical students' demand for structured AI training in undergraduate curricula, emphasising its importance in addressing evolving healthcare needs and ethical considerations. Despite widespread ethical concerns, the majority perceive AI as an assistive technology in healthcare. These findings provide valuable insights for curriculum development and defining learning outcomes in AI education for medical students.

**Keywords:** Artificial intelligence; Healthcare; Medical curriculum; Medical education; Medical ethics.

9. Sendra-Portero F, Lorenzo-Álvarez R, Rudolphi-Solero T, Ruiz-Gómez MJ. The Second Life Metaverse and its usefulness in medical education after a quarter of a century. *J Med Internet Res.* 2024 Aug 6;26:e59005. doi: 10.2196/59005.

#### ABSTRACT

The immersive virtual world platform Second Life (SL) was conceived 25 years ago, when Philip Rosedale founded Linden Lab in 1999 with the intention of developing computing hardware that would allow people to immerse themselves in a virtual world. This initial effort was transformed 4 years later into SL, a universally accessible virtual world centered on the user, with commercial transactions and even its own virtual currency, which fully connects with the concept of the metaverse, recently repopularized after the statements of the chief executive officer of Meta (formerly Facebook) in October 2021. SL is considered the best known virtual environment among higher education professionals. This paper aimed to review medical education in the SL metaverse; its evolution; and its possibilities, limitations, and future perspectives, focusing especially on medical education experiences during undergraduate, residency, and continuing medical education. The concept of the metaverse and virtual worlds was described, making special reference to SL and its conceptual philosophy, historical evolution, and technical aspects and capabilities for higher education. A narrative review of the existing literature was performed, including at the same time a point of view from our teaching team after an uninterrupted practical experience of undergraduate and

postgraduate medical education in the last 13 years with >4000 users and >10 publications on the subject. From an educational point of view, SL has the advantages of being available 24/7 and creating in the student the important feeling of "being there" and of copresence. This, together with the reproduction of the 3D world, real-time interaction, and the quality of voice communication, makes the immersive experiences unique, generating engagement and a fluid interrelation of students with each other and with their teachers. Various groups of researchers in medical education have developed experiences during these years, which have shown that courses, seminars, workshops and conferences, problem-based learning experiences, evaluations, teamwork, gamification, medical simulation, and virtual objective structured clinical examinations can be successfully carried out. Acceptance from students and faculty is generally positive, recognizing its usefulness for undergraduate medical education and continuing medical education. In the 25 years since its conception, SL has proven to be a virtual platform that connects with the concept of the metaverse, an interconnected, open, and globally accessible system that all humans can access to socialize or share products for free or using a virtual currency. SL remains active and technologically improved since its creation. It is necessary to continue carrying out educational experiences, outlining the organization, objectives, and content and measuring the actual educational impact to make SL a tool of more universal use.

**Keywords:** computer simulation; medical education; medical students; metaverse; postgraduate; virtual worlds.

10. *Subbiah V, Gouda MA, Ryll B, Burris 3rd HA, Kurzrock R. The evolving landscape of tissue-agnostic therapies in precision oncology. CA Cancer J Clin. 2024 Sep-Oct;74(5):433-452. doi: 10.3322/caac.21844. Epub 2024 May 30.*

#### ABSTRACT

Tumor-agnostic therapies represent a paradigm shift in oncology by altering the traditional means of characterizing tumors based on their origin or location. Instead, they zero in on specific genetic anomalies responsible for fueling malignant growth. The watershed moment for tumor-agnostic therapies arrived in 2017, with the US Food and Drug Administration's historic approval of pembrolizumab, an immune checkpoint inhibitor. This milestone marked the marriage of genomics and immunology fields, as an immunotherapeutic agent gained approval based on genomic biomarkers, specifically, microsatellite instability-high or mismatch repair deficiency (dMMR). Subsequently, the approval of NTRK inhibitors, designed to combat NTRK gene fusions prevalent in various tumor types, including pediatric cancers and adult solid tumors, further underscored

the potential of tumor-agnostic therapies. The US Food and Drug Administration approvals of targeted therapies (BRAF V600E, RET fusion), immunotherapies (tumor mutational burden  $\geq 10$  mutations per megabase, dMMR) and an antibody-drug conjugate (Her2-positive-immunohistochemistry 3+ expression) with pan-cancer efficacy have continued, offering newfound hope to patients grappling with advanced solid tumors that harbor particular biomarkers. In this comprehensive review, the authors delve into the expansive landscape of tissue-agnostic targets and drugs, shedding light on the rationale underpinning this approach, the hurdles it faces, presently approved therapies, voices from the patient advocacy perspective, and the tantalizing prospects on the horizon. This is a welcome advance in oncology that transcends the boundaries of histology and location to provide personalized options.

**Keywords:** immunotherapy; precision oncology; targeted therapy; tissue-agnostic therapy; tumor-agnostic drug development.

11. *Ee C, Kay S, Reynolds A, Lovato N, Lacey J, Koczwara B. Lifestyle and integrative oncology interventions for cancer-related fatigue and sleep disturbances. Maturitas. 2024 Sep;187:108056. doi: 10.1016/j.maturitas.2024.108056. Epub 2024 Jun 21.*

#### ABSTRACT

Fatigue, insomnia and sleep disturbances are common after cancer diagnosis, and have a negative impact on quality of life and function. This narrative review synthesised evidence on lifestyle and integrative oncology interventions for cancer-related fatigue, insomnia and sleep disturbances in cancer survivors. There is strong evidence in support of aerobic and strength exercise for the relief of cancer-related fatigue. Yoga, massage therapy, acupuncture, Tai Chi and qigong can also be recommended for cancer-related fatigue. The evidence on yoga, acupuncture and massage therapy for sleep disturbances in cancer is mixed, while exercise appears to have a modest favourable effect. There is insufficient evidence on nutrient supplements or dietary interventions for cancer-related fatigue or insomnia and other sleep disturbances after cancer. Beyond alleviating cancer-related fatigue and insomnia-related symptoms, integrative oncology and lifestyle interventions have potential to effect multiple other benefits, such as improvement in symptoms such as pain and menopausal symptoms. There is a need for well-designed randomised controlled trials of interventions, particularly in the areas of diet and nutrient supplements, and for implementation studies of interventions already supported by evidence.

**Keywords:** Cancer survivors; Diet; Exercise; Fatigue; Integrative oncology; Sleep.