

SELECTED ABSTRACTS FROM PUBMED

1. *Cheruku SR, Raphael J, Neyra JA, Fox AA. Acute Kidney Injury after Cardiac Surgery: Prediction, Prevention, and Management. Anesthesiology. 2023 Dec 1;139(6):880-898. doi:10.1097/ALN.0000000000004734.*

ABSTRACT

Acute kidney injury (AKI) is a common complication in cardiac surgery patients, with a reported incidence of 20 to 30%. The development of AKI is associated with worse short- and long-term mortality, and longer hospital length of stay. The pathogenesis of cardiac surgery-associated AKI is poorly understood but likely involves an interplay between preoperative comorbidities and perioperative stressors. AKI is commonly diagnosed by using increases in serum creatinine or decreased urine output and staged using a standardized definition such as the Kidney Disease Improving Global Outcomes classification. Novel biomarkers under investigation may provide earlier detection and better prediction of AKI, enabling mitigating therapies early in the perioperative period. Recent clinical trials of cardiac surgery patients have demonstrated the benefit of goal-directed oxygen delivery, avoidance of hyperthermic perfusion and specific fluid and medication strategies. This review article highlights both advances and limitations regarding the prevention, prediction, and treatment of cardiac surgery-associated AKI.

2. *Heuts S, Ceulemans A, Kuiper GJAJM, Schreiber JU, van Varik BJ, Olie RH, et al. Optimal management of cardiac surgery patients using direct oral anticoagulants: recommendations for clinical practice. Eur J Cardiothorac Surg. 2023 Oct 4;64(4):ezad340. doi:10.1093/ejcts/ezad340.*

ABSTRACT

Objectives: Literature is scarce on the management of patients using direct oral anticoagulants (DOACs) undergoing elective, urgent and emergency surgery. Therefore, we summarize the current evidence and provide literature-based recommendations for the management of patients on DOACs in the perioperative phase.

Methods: A general literature review was conducted on the pharmacology of DOACs and for recommendations on the management of cardiac surgical patients on DOACs. Additionally, we performed a systematic review for studies on the use of direct DOAC reversal agents in the emergency cardiac surgical setting.

Results: When surgery is elective, the DOAC cessation strategy is relatively straightforward and should be adapted to the renal function. The same approach applies to urgent cases, but additional DOAC activity drug level monitoring tests may be useful. In emergency cases, idarucizumab can be safely administered to patients on dabigatran in any of the perioperative phases. However, andexanet alfa, which is not registered for perioperative use, should not be administered in the perioperative phase to reverse the effect of factor Xa

inhibitors, as it may induce temporary heparin resistance. Finally, the administration of (activated) prothrombin complex concentrate may be considered in all patients on DOACs, and such concentrates are generally readily available.

Conclusions: DOACs offer several advantages over vitamin K antagonists, but care must be taken in patients undergoing cardiac surgery. Although elective and urgent cases can be managed relatively straightforwardly, the management of emergency cases requires particular attention.

Keywords: Antidotes; Bleeding; Cardiac surgery; Direct oral anticoagulants; Emergency.

3. *Boutas I, Kontogeorgi A, Kalantaridou SN, Dimitrakakis C, Patsios P, Kalantzi M, et al. Reverse Onco-Cardiology: what is the evidence for breast cancer? a systematic review of the literature. Int J Mol Sci. 2023 Nov 19;24(22):16500. doi:10.3390/ijms242216500.*

ABSTRACT

Breast cancer and cardiovascular diseases (CVD) represent significant global health challenges, with CVD being the leading cause of mortality and breast cancer, showing a complex pattern of incidence and mortality. We explore the intricate interplay between these two seemingly distinct medical conditions, shedding light on their shared risk factors and potential pathophysiological connections. A specific connection between hypertension (HTN), atrial fibrillation (AF), myocardial infarction (MI), and breast cancer was evaluated. HTN is explored in detail, emphasizing the role of aging, menopause, insulin resistance, and obesity as common factors linking HTN and breast cancer. Moreover, an attempt is made to identify the potential impact of antihypertensive medications and highlight the increased risk of breast cancer among those women, with a focus on potential mechanisms. A summary of key findings underscores the need for a multisystem approach to understanding the relationship between CVD and breast cancer is also explored with a highlight for all the gaps in current research, such as the lack of clinical observational data on MI and breast cancer in humans and the need for studies specifically designed for breast cancer. This paper concludes that there should be a focus on potential clinical applications of further investigation in this field, including personalized prevention and screening strategies for women at risk. Overall, the authors attempt to provide a comprehensive overview of the intricate connections between breast cancer and cardiovascular diseases, emphasizing the importance of further research in this evolving field of cardio-oncology.

Keywords: breast cancer; cardiovascular diseases; patient care; reverse onco-cardiology.

4. **Götzinger F, Lauder L, Sharp ASP, Lang IM, Rosenkranz S, Konstantinides S, et al. Interventional therapies for pulmonary embolism. *Nat Rev Cardiol.* 2023 Oct;20(10):670-684. doi:10.1038/s41569-023-00876-0. Epub 2023 May 12.**

ABSTRACT

Pulmonary embolism (PE) is the leading cause of in-hospital death and the third most frequent cause of cardiovascular death. The clinical presentation of PE is variable, and choosing the appropriate treatment for individual patients can be challenging. Traditionally, treatment of PE has involved a choice of anticoagulation, thrombolysis or surgery; however, a range of percutaneous interventional technologies have been developed that are under investigation in patients with intermediate-high-risk or high-risk PE. These interventional technologies include catheter-directed thrombolysis (with or without ultrasound assistance), aspiration thrombectomy and combinations of the aforementioned principles. These interventional treatment options might lead to a more rapid improvement in right ventricular function and pulmonary and/or systemic haemodynamics in particular patients. However, evidence from randomized controlled trials on the safety and efficacy of these interventions compared with conservative therapies is lacking. In this Review, we discuss the underlying pathophysiology of PE, provide assistance with decision-making on patient selection and critically appraise the available clinical evidence on interventional, catheter-based approaches for PE treatment. Finally, we discuss future perspectives and unmet needs.

5. **Rehman M, Santhanam D, Sukhera J. Intersectionality in Medical Education: A Meta-Narrative Review. *Perspect Med Educ.* 2023 Nov 7;12(1):517-528. doi:10.5334/pme.1161. eCollection 2023.**

ABSTRACT

Introduction: Despite increasing attention to improving equity, diversity, and inclusion in academic medicine, a theoretically informed perspective to advancing equity is often missing. Intersectionality is a theoretical framework that refers to the study of the dynamic nature of social categories with which an individual identifies and their unique localization within power structures. Intersectionality can be a useful lens to understand and address inequity, however, there is limited literature on intersectionality in the context of medical education. Thus, we explored how intersectionality has been conceptualized and applied in medical education.

Methods: We employed a meta-narrative review, analyzing existing literature on intersectionality theory and frameworks in medical education. Three electronic databases were searched using key terms yielding 32 articles. After, title, abstract and full-text screening 14 articles were included. Analysis of articles sought a meaningful synthesis on application of intersectionality theory to medical education.

Results: Existing literature on intersectionality discusses the role of identity categorization and the relationship between identity, power, and social change. There are contrasting narratives on the practical application of intersectionality to medical education, producing tensions between how intersectionality is understood as theory and how it is translated in practice.

Discussion: A paucity in literature on intersectionality in medical education suggests that there is a risk intersectionality may be understood in a superficial manner and considered a synonym for diversity. Drawing explicit attention to its core tenets of reflexivity, transformational identity, and analysis of power is important to maintain fidelity to how intersectionality is understood in broader critical social science literature.

6. **Rojas D, Taylor J, Fournier K, Cheung JJ, Rangel C. Zoomification of medical education: can the rapid online educational responses to COVID-19 prepare us for another educational disruption? A scoping review. *Can Med Educ J.* 2023 Nov 8;14(5):33-48. doi:10.36834/cmej.74697. eCollection 2023 Nov.**

ABSTRACT

Introduction: In response to the COVID-19 pandemic, educators have increasingly shifted delivery of medical education to online/distance learning. Given the rapid and heterogeneous nature of adaptations; it is unclear what interventions have been developed, which strategies and technologies have been leveraged, or, more importantly, the rationales given for designs. Capturing the content and skills that were shifted to online, the type of platforms used for the adaptations, as well as the pedagogies, theories, or conceptual frameworks used to inform the adapted educational deliveries can bolster continued improvement and sustainability of distance/online education while preparing medical education for future large-scale disruptions.

Methods: We conducted a scoping review to map the rapid medical educational interventions that have been adapted or transitioned to online between December 2019 and August 2020. We searched MEDLINE, EMBASE, Education Source, CINAHL, and Web of Science for articles pertaining to COVID-19, online (distance) learning, and education for medical students, residents, and staff. We included primary research articles and reports describing adaptations of previous educational content to online learning.

Results: From an initial 980 articles, we identified 208 studies for full-text screening and 100 articles for data extraction. The majority of the reported scholarship came from Western Countries and was published in clinical science journals. Cognitive content was the main type of content adapted (over psychomotor, or affective). More than half of the articles used a video-conferencing software as the platform to pivot their educational intervention into virtual. Unfortunately, most of the reported work did not disclose their rationale for choosing a platform. Of those that did, the

majority chose technological solutions based on availability within their institutions. Similarly, most of the articles did not report the use of any pedagogy, theory, or framework to inform the educational adaptations.

7. **Sattar K, Yusoff MSB, Arifin WN, Yasin MAM, Nor MZM.** *A scoping review on the relationship between mental wellbeing and medical professionalism. Med Educ Online. 2023 Dec;28(1):2165892. doi:10.1080/10872981.2023.2165892.*

ABSTRACT

Background: Mental wellbeing issues among medical students are common, and their relationship to medical professionalism is debated. Few studies have attempted to link such issues with undergraduate medical education. This review aimed to advance the knowledge on this matter by exploring the relationship between mental wellbeing and medical professionalism in undergraduate medical education.

Methods: We collected the literature about mental wellbeing and medical professionalism (published from 1 January 1986 to 31 March 2021) from the Web of Science, PubMed, Scopus and ScienceDirect databases using the search terms 'mental wellbeing' and 'medical professionalism'. We included all peer-reviewed articles in which mental wellbeing and medical professionalism in the undergraduate medical education context were the central topics regardless of the age range, nationality, race and gender of the participants.

Results: From the 13,076 initially found articles, 16 were included. These 16 articles were from nine countries in four different continents, which all together helped us find answer to our research question using extracted points relating to the main study themes (mental wellbeing and medical professionalism). Under theme 1 (mental wellbeing), six subthemes emerged: burnout, stress, depression, disappointment, depersonalisation and conscientiousness. Theme 2 (medical professionalism), on the other hand, had five subthemes: empathy, academic performance, compassion, unprofessional behaviour and professionalism. A significant inverse association was found between empathy and burnout. Academic performance was also related to burnout. At the same time, empathy was found to have a varied association with stress. Moreover, compassion was found to alleviate burnout and nurture professional gratification.

Conclusion: The medical professionalism attributes were found to deteriorate as the mental wellbeing issues grow. This can harm medical students' overall health, current learning abilities and future attitudes towards their patients. Explicit primary research is thus required to examine and intervene in the cause-effect relationship between medical professionalism and mental wellbeing.

Keywords: Medical professionalism attributes; burnout; empathy; mental wellbeing; relationship; scoping review; stress.

8. **Tönnies T, Schlesinger S, Alexander Lang A, Kuss O.** *Mediation analysis in medical research. Dtsch Arztebl Int. 2023 Oct 13;120(41):681-687. doi:10.3238/arztebl.m2023.0175.*

ABSTRACT

Background: Mediation analysis addresses the question of the mechanisms by which an exposure causes an outcome. This article is intended to convey basic knowledge of statistical mediation analysis.

Methods: Selected articles and examples are used to explain the principle of mediation analysis.

Results: The goal of mediation analysis is to express an overall exposure effect as a combination of an indirect and a direct effect. For example, it might be of interest whether the increased risk of diabetes (outcome) due to obesity (exposure) is mediated by insulin resistance (indirect effect), and, if so, how much of a direct effect remains. In this example, insulin resistance is a potential mediator of the effect of obesity on the risk of diabetes. In general, for a mediation analysis to be valid, more confounders must be taken into account than in the estimation of the overall effect size. A regression-based approach can be used to ensure the consideration of all relevant confounders in a mediation analysis.

Conclusion: By decomposing the overall exposure effect into indirect and direct components, a mediation analysis can reveal not just whether an exposure causes an outcome, but also how. For a mediation analysis to be valid, however, multiple assumptions must be satisfied that cannot easily be checked, potentially compromising such analyses as compared to the estimation of an overall effect.

9. **Asghar AUR, Aksoy M, Graham AI, Baseler HA.** *Developing research skills in medical students online using an active research study. BMC Med Educ. 2023 Oct 26;23(1):805. doi:10.1186/s12909-023-04781-5.*

ABSTRACT

Background: Developing research skills and scholarship are key components of medical education. The COVID-19 pandemic necessitated that all teaching be delivered online. We introduced an approach to small group teaching in the academic year 2020-2021 online which involved students in an active (ongoing) research study to develop their research skills.

Methods: We acquired student feedback to evaluate their perspectives quantitatively on development of research and scholarship skills, teaching content and format, and tutor performance using this teaching approach. In addition, we captured free text responses from both students and tutors on the positives and negatives of our course, and their suggested improvements. We also compared summative assessment marks for the online/active research course (2020-2021) with those obtained from previous (2017-2019) and subsequent (2021-2023) teaching sessions.

Results: Students were largely positive about most aspects of the online course utilising an active research study (n = 13). Students agreed that they were able to acquire research skills, particularly related to data analysis, transferable skills, and giving scientific presentations. A one-way ANOVA revealed no significant difference for assessment marks across all five teaching years (two years prior and two years following the online/active research course), indicating that the course achieved the learning outcomes. Students enjoyed the convenience of online teaching and the availability of course resources, but least liked the lack of in-person interaction and laboratory training. Tutors enjoyed the collaborative aspects of online teaching, but least liked the lack of face-to-face interactions with students.

Conclusions: Our study demonstrates that delivering online teaching which involves students in active research engages and motivates them to develop their research and scholarship skills. We recommend that educators consider incorporating a current research study in their undergraduate courses as this can enhance the student learning experience as well as the research project itself.

Keywords: Medical school; Online teaching; Research skills; Research study; Student engagement; Teaching format.

10. *Alsulami AF, Khaimi ZO, Hadi MA, Aljabri YH, Mayet TS, Althubaiti A. "Publish or Perish": barriers to research publication in an undergraduate medical research program. BMC Res Notes. 2023 Oct 13;16(1):269. doi:10.1186/s13104-023-06542-5.*

ABSTRACT

Objectives: Publication is one of the crucial parameters in research, and the inability to publish has been noted in many medical students' projects due to different reasons. This cross-sectional study aimed to determine the obstacles that prevented medical students in a health science university from publishing their research from 2018 to 2021. First, an online survey was distributed to assess the obstacles to publication perceived by the medical students. Second, a total of 81 research projects were evaluated by scientific reviewers and their final decision about the publication was recorded.

Results: In total, 162 students filled out the survey. The barriers faced by the students were various. They included an unsupportive research supervisor, a lack of time, an insufficient sample size, and many others. In the reviewer's evaluation, out of 81 projects, 70 projects (86.4%) were recommended to be published after minor or major

modifications, while 11 projects (13.6%) were rejected due to poor writing style, poor results interpretation, and incorrect methodology.

Conclusion: Articulating the barriers to undergraduate medical research publication is important in boosting publication rates and research experience of graduating medical students. Medical research educators and research supervisors should strongly consider creating a framework that tackles existing obstacles and any future matters.

Keywords: Barriers; Medical research; Publication; Students; Undergraduate.

11. *Zhaksylyk A, Zimba O, Yessirkepov M, Kocyigit BF. Research Integrity: where we are and where we are heading. J Korean Med Sci. 2023 Dec 4;38(47):e405. doi:10.3346/jkms.2023.38.e405.*

ABSTRACT

The concept of research integrity (RI) refers to a set of moral and ethical standards that serve as the foundation for the execution of research activities. Integrity in research is the incorporation of principles of honesty, transparency, and respect for ethical standards and norms throughout all stages of the research endeavor, encompassing study design, data collecting, analysis, reporting, and publishing. The preservation of RI is of utmost importance to uphold the credibility and amplify the influence of scientific research while also preventing and dealing with instances of scientific misconduct. Researchers, institutions, journals, and readers share responsibilities for preserving RI. Researchers must adhere to the highest ethical standards. Institutions have a role in establishing an atmosphere that supports integrity ideals while also providing useful guidance, instruction, and assistance to researchers. Editors and reviewers act as protectors, upholding quality and ethical standards in the dissemination of research results through publishing. Readers play a key role in the detection and reporting of fraudulent activity by critically evaluating content. The struggle against scientific misconduct has multiple dimensions and is continuous. It requires a collaborative effort and adherence to the principles of honesty, transparency, and rigorous science. By supporting a culture of RI, the scientific community may preserve its core principles and continue to contribute appropriately to society's well-being. It not only aids present research but also lays the foundation for future scientific advancements.

Keywords: Ethics in Publishing; Plagiarism; Research Misconduct; Scientific Dishonesty; Scientific Fraud; Scientific Misconduct.