

SELECTED ABSTRACTS FROM PUBMED

1. *Liu L, Luan J. Survey analysis and discussion on cultivating scientific research quality among undergraduates in medical colleges. Pharmacol Res Perspect. 2023 Jun;11(3):e01095. doi: 10.1002/prp2.1095.*

ABSTRACT

To explore rational measures to improve medical undergraduates' scientific research quality by investigating and analyzing their scientific research situation. A questionnaire survey was conducted in March 2022 among medical college/university undergraduates across four grades and five majors. Five hundred and ninety-four questionnaires were distributed, and 553 valid copies were returned, with a 93.1% return rate. The results showed that 61.5% of the students had an intense interest in research experiments, and 46.8% thought it was important for undergraduates to participate in research experiments, but only 17.5% often participated in them. Among the students, 85.0% thought that the main factors preventing them from participating in research experiments were academic stress and insufficient time, and 82.6% hoped that mentors would focus on practical skills training; only 13.0% read literature at least once per week, and 93.5% were not proficient at organizing and using literature. Among the participating undergraduates, more than half were strongly interested in scientific research, but academic stress, unclear participation modes, and insufficient literature retrieval skills limited undergraduate scientific research practice and improvement of scientific quality. Therefore, it is essential to cultivate undergraduates' interest in scientific research, ensure that they have spare time to engage in scientific research, improve the undergraduate scientific research mentorship system, and enhance relevant scientific research abilities to cultivate more innovative talent in scientific research.

Keywords: medical students; questionnaire survey; scientific research quality; undergraduates.

2. *Banerjee G, Mitchell JD, Brzezinski M, DePorre A, Ballard HA. Burnout in Academic Physicians. Perm J. 2023 Jun 15;27(2):142-149. doi: 10.7812/TPP/23.032. Epub 2023 Jun 13.*

ABSTRACT

The prevalence of burnout is much higher in physicians than in other occupations. Academic physicians serve important functions, training future physicians and advancing medical research in addition to doing clinical work. However, they are particularly vulnerable to burnout for reasons including low compensation for teaching, pressure to publish despite a lack of time and declining research funds, and a redistribution of clinical workload due to restrictions on trainee work hours. Junior faculty, women, and marginalized groups are the most affected. Beyond poor physician health and worse patient outcomes, burnout is strongly associated with reduced work effort and an intent to leave the profession. Moreover, physicians are leaving the workforce in record numbers, further increasing the stress on remaining physicians. Combined with a worsening of quality of patient care, this increased rate of physician burnout threatens the

viability of health care organizations. This review discusses the causes and consequences of faculty burnout, as well as interventions undertaken for its mitigation.

Keywords: Academic physicians; Burnout; Faculty.

3. *Haycock PC, Borges MC, Burrows K, Lemaitre RN, Burgess S, Khankari NK, et al. The association between genetically elevated polyunsaturated fatty acids and risk of cancer. EBioMedicine. 2023 May;91:104510. doi: 10.1016/j.ebiom.2023.104510. Epub 2023 Apr 20.*

ABSTRACT

Background: The causal relevance of polyunsaturated fatty acids (PUFAs) for risk of site-specific cancers remains uncertain.

Methods: Using a Mendelian randomization (MR) framework, we assessed the causal relevance of PUFAs for risk of cancer in European and East Asian ancestry individuals. We defined the primary exposure as PUFA desaturase activity, proxied by rs174546 at the FADS locus. Secondary exposures were defined as omega 3 and omega 6 PUFAs that could be proxied by genetic polymorphisms outside the FADS region. Our study used summary genetic data on 10 PUFAs and 67 cancers, corresponding to 562,871 cases and 1,619,465 controls, collected by the Fatty Acids in Cancer Mendelian Randomization Collaboration. We estimated odds ratios (ORs) for cancer per standard deviation increase in genetically proxied PUFA exposures.

Findings: Genetically elevated PUFA desaturase activity was associated ($P < 0.0007$) with higher risk (OR [95% confidence interval]) of colorectal cancer (1.09 [1.07-1.11]), esophageal squamous cell carcinoma (1.16 [1.06-1.26]), lung cancer (1.06 [1.03-1.08]) and basal cell carcinoma (1.05 [1.02-1.07]). There was little evidence for associations with reproductive cancers (OR = 1.00 [95% CI: 0.99-1.01]; P heterogeneity = 0.25), urinary system cancers (1.03 [0.99-1.06], P heterogeneity = 0.51), nervous system cancers (0.99 [0.95-1.03], P heterogeneity = 0.92) or blood cancers (1.01 [0.98-1.04], P heterogeneity = 0.09). Findings for colorectal cancer and esophageal squamous cell carcinoma remained compatible with causality in sensitivity analyses for violations of assumptions. Secondary MR analyses highlighted higher omega 6 PUFAs (arachidonic acid, gamma-linolenic acid and dihomo-gamma-linolenic acid) as potential mediators. PUFA biosynthesis is known to interact with aspirin, which increases risk of bleeding and inflammatory bowel disease. In a phenome-wide MR study of non-neoplastic diseases, we found that genetic lowering of PUFA desaturase activity, mimicking a hypothetical intervention to reduce cancer risk, was associated ($P < 0.0006$) with increased risk of inflammatory bowel disease but not bleeding.

Interpretation: The PUFA biosynthesis pathway may be an intervention target for prevention of colorectal cancer and esophageal squamous cell carcinoma but with potential for increased risk of inflammatory bowel disease.

Keywords: Cancer risk; Delta-5 desaturase; Delta-6 desaturase; Mendelian randomization; Omega 3; Omega 6; Polyunsaturated fatty acids.

4. **Kamenshchikov NO, Duong N, Berra L. Nitric Oxide in Cardiac Surgery: A Review Article. *Biomedicines*. 2023 Apr 3;11(4):1085. doi: 10.3390/biomedicines11041085.**

ABSTRACT

Perioperative organ injury remains a medical, social and economic problem in cardiac surgery. Patients with postoperative organ dysfunction have increases in morbidity, length of stay, long-term mortality, treatment costs and rehabilitation time. Currently, there are no pharmaceutical technologies or non-pharmacological interventions that can mitigate the continuum of multiple organ dysfunction and improve the outcomes of cardiac surgery. It is essential to identify agents that trigger or mediate an organ-protective phenotype during cardiac surgery. The authors highlight nitric oxide (NO) ability to act as an agent for perioperative protection of organs and tissues, especially in the heart-kidney axis. NO has been delivered in clinical practice at an acceptable cost, and the side effects of its use are known, predictable, reversible and relatively rare. This review presents basic data, physiological research and literature on the clinical application of NO in cardiac surgery. Results support the use of NO as a safe and promising approach in perioperative patient management. Further clinical research is required to define the role of NO as an adjunct therapy that can improve outcomes in cardiac surgery. Clinicians also have to identify cohorts of responders for perioperative NO therapy and the optimal modes for this technology.

Keywords: cardiac surgery; myocardial and acute kidney injury; nitric oxide.

5. **Knežević D, Ćurko-Cofek B, Batinac T, Laškarin G, Rakić M, Šoštarić M, et al. Endothelial Dysfunction in Patients Undergoing Cardiac Surgery: A Narrative Review and Clinical Implications. *J Cardiovasc Dev Dis*. 2023 May 13;10(5):213. doi: 10.3390/jcdd10050213.**

ABSTRACT

Cardiac surgery is one of the highest-risk procedures, usually involving cardiopulmonary bypass and commonly inducing endothelial injury that contributes to the development of perioperative and postoperative organ dysfunction. Substantial scientific efforts are being made to unravel the complex interaction of biomolecules involved in endothelial dysfunction to find new therapeutic targets and biomarkers and to develop therapeutic strategies to protect and restore the endothelium. This review highlights the current state-of-the-art knowledge on the structure and function of the endothelial glycocalyx and mechanisms of endothelial glycocalyx shedding in cardiac surgery. Particular emphasis is placed on potential strategies to protect and restore the endothelial glycocalyx in cardiac surgery. In addition, we have summarized and elaborated the latest evidence on conventional and potential biomarkers of endothelial dysfunction to provide a comprehensive synthesis of crucial mechanisms of endothelial dysfunction

in patients undergoing cardiac surgery, and to highlight their clinical implications.

Keywords: anesthesia; cardiac surgery; endothelial dysfunction; endothelial glycocalyx; endothelium; intensive care.

6. **Brown JK, Shaw AD, Mythen MG, Guzzi L, Reddy VS, Crisafi C, et al. Adult Cardiac Surgery-Associated Acute Kidney Injury: Joint Consensus Report. *J Cardiothorac Vasc Anesth*. 2023 May 23;S1053-0770(23)00340-3. doi: 10.1053/j.jvca.2023.05.032. Online ahead of print.**

ABSTRACT

Objectives: Acute kidney injury (AKI) is increasingly recognized as a source of poor patient outcomes after cardiac surgery. The purpose of the present report is to provide perioperative teams with expert recommendations specific to cardiac surgery-associated AKI (CSA-AKI).

Methods: This report and consensus recommendations were developed during a joint, in-person, multidisciplinary conference with the Perioperative Quality Initiative and the Enhanced Recovery After Surgery Cardiac Society. Multinational practitioners with diverse expertise in all aspects of cardiac surgical perioperative care, including clinical backgrounds in anesthesiology, surgery and nursing, met from October 20 to 22, 2021, in Sacramento, California, and used a modified Delphi process and a comprehensive review of evidence to formulate recommendations. The quality of evidence and strength of each recommendation were established using the Grading of Recommendations Assessment, Development, and Evaluation methodology. A majority vote endorsed recommendations.

Results: Based on available evidence and group consensus, a total of 13 recommendations were formulated (4 for the preoperative phase, 4 for the intraoperative phase, and 5 for the postoperative phase), and are reported here.

Conclusions: Because there are no reliable or effective treatment options for CSA-AKI, evidence-based practices that highlight prevention and early detection are paramount. Cardiac surgery-associated AKI incidence may be mitigated and postsurgical outcomes improved by focusing additional attention on presurgical kidney health status; implementing a specific cardiopulmonary bypass bundle; using strategies to maintain intravascular euvoledemia; leveraging advanced tools such as the electronic medical record, point-of-care ultrasound, and biomarker testing; and using patient-specific, goal-directed therapy to prioritize oxygen delivery and end-organ perfusion over static physiologic metrics.

Keywords: acute kidney injury; cardiac surgery; expert consensus; goal-directed therapy; perioperative care.

7. **Kim S, Jeong H, Cho H, Yu J. Extracurricular activities in medical education: an integrative literature review. *BMC Med Educ*. 2023 Apr 22;23(1):278. doi: 10.1186/s12909-023-04245-w.**

ABSTRACT

Background: The importance of extracurricular activities (EAs) has been emphasized in medical education. These activities could enhance medical students' emotional and

physical health and afford them developmental opportunities. Despite the growing amount of research related to this theme, few studies review and synthesize the existing literature. This study aims to provide an understanding of the educational implications of EAs in medical colleges and constructs an integrated conceptual framework concerning their types and learning outcomes by literature review.

Methods: An integrative literature review was conducted following Torraco's method, with the aim to generate a new framework for the given topic. The authors utilized Scopus and PubMed as databases, using search terms "extracurricular," "medical," and "students." Initially, titles and abstracts were screened to include relevant studies, and the researchers verified the eligibility of the articles by following the inclusion and exclusion criteria. Of the 263 articles identified, 64 empirical studies were selected for further review.

Results: EAs in undergraduate medical education can be classified into direct extracurricular activities and indirect extracurricular activities, the latter of which is sorted into nine sub-categories. We identified seven main categories regarding the learning outcomes of EAs. In addition to general activities (e.g., pro-social activities, team sports), some distinctive activities such as research have been largely addressed in previous studies. The results of EAs were discussed in relation to academic growth, career development, and psychological experiences.

Conclusions: This review identified the types and learning outcomes of EAs in the context of medical education, thereby suggesting ways to improve the quality of EAs and maximize their educational effects.

Keywords: Extracurricular activities; Medical students; Outcome of extracurricular activities; Type of extracurricular activities; Undergraduate medical education.

8. *Ewnte B, Yigzaw T. Early clinical exposure in medical education: the experience from Debre Tabor University. BMC Med Educ. 2023 Apr 17;23(1):252. doi: 10.1186/s12909-023-04221-4.*

ABSTRACT

Background: The idea of early clinical exposure in Ethiopian medical schools is a young concept. Old and newly established universities across the nation are shifting towards incorporation of early clinical exposure (ECE) in their curricula. Debre Tabor University introduced ECE in undergraduate medical education from inception. This study generated evidence on students' experience and academic leaders' reflection on early clinical exposure implementation.

Objective: This study was carried out to investigate medical students' perception towards early clinical exposure and its implementation process by instructors in undergraduate medical education at Debre Tabor University.

Method: A cross-sectional survey design that combines quantitative and qualitative methods was conducted in 2021. We asked fifth year medical students (42) to complete a self-administered questionnaire on 5-point Likert scale. The data

were supplemented by semi-structured interview with 6 purposively selected academic leaders on the factors that facilitate or impede early clinical exposure implementation. The quantitative data were entered and analyzed using SPSS 20 to compute frequency, median and interquartile range. The qualitative data were analyzed thematically.

Results: The study findings suggest that early clinical exposure (ECE) has a positive impact on the development of students' professional knowledge, problem-solving skills, motivation, active learning, and community orientation. Specifically, 64.3% of the surveyed students believed that ECE was effective in constructing their professional knowledge, while 52.4% felt that it improved their problem-solving skills and facilitated constructive/active learning. Additionally, 57.1% of students reported that ECE improved their motivation and 50% noted that it facilitated community orientation. The study also identified several barriers to the implementation of ECE, with the heavy workload being the most commonly mentioned (78.6%). Other challenges included a loose linkage between academic and healthcare institutions (59.5%) and a lack of orientation on the implementation process (35.7%). Academic leaders reflected that ECE was beneficial in familiarizing students with the clinical environment, but staff commitment was crucial for its successful implementation. The study also found that heavy workload, lack of assessment dedicated to ECE on the curriculum, and poorly oriented staff about the program impeded its implementation.

Conclusion and recommendations: The findings of this study suggest that early clinical exposure was beneficial learning method. Teachers' commitment to their roles with adequate preparation, and the contribution of curriculum in providing the learning objective and cases for each session were factors that facilitate effective implementation of ECE. Heavy workload and poor orientation about the program could impede ECE implementation.

Keywords: Early clinical exposure; Undergraduate Medical Education; Vertical integration.

9. *Merola D, Young J, Schrag D, Lin KJ, Alwardt S, Schneeweiss S. Effectiveness research in oncology with electronic health record data: A retrospective cohort study emulating the PALOMA-2 trial. Pharmacoepidemiol Drug Saf. 2023 Apr;32(4):426-434. doi: 10.1002/pds.5565. Epub 2022 Nov 14.*

ABSTRACT

Purpose: Oncology electronic health record (EHR) databases have increased in quality and availability over the past decade, yet it remains unclear whether these clinical practice data can be used to conduct reliable comparative effectiveness studies. We sought to emulate a clinical trial with EHR data in the advanced breast cancer population and compare our results against the trial.

Methods: This cohort study used EHR data from US oncology practices. All elements of the study were defined to mimic the PALOMA-2 trial as closely as possible. Patients with hormone-positive, HER-2 negative metastatic breast cancer with no prior treatment for metastatic disease were included. Patients initiating palbociclib and letrozole

on the same day following the earliest record of metastasis were compared to those initiating letrozole only. The primary associational measure was the conditional hazard ratio for time-to-next treatment (TTNT). TTNT is well-measured in our data source and amenable for calibration against the randomized study results of the PALOMA-2 trial. We used multiple imputation for several patient characteristics with missing values.

Results: There were 3836 study-eligible women with advanced breast cancer. The hazard ratio for TTNT in the observational study (HR: 0.62; 95% CI: 0.56-0.68) was closely aligned with that of the randomized trial (HR: 0.64; 95% CI: 0.52-0.78).

Conclusions: Under our assumptions on missing data and comparability of the two study populations, results from our non-randomized study closely matched that of the randomized trial. Further studies are needed to determine whether EHR data can yield reliable conclusions on treatment effects in oncology.

Keywords: comparative effectiveness; electronic health records; healthcare databases; metastatic breast cancer; oncology; real-world evidence.

10. *Caroline D, Marie-France M. Get this thing out of my body! Factors determining consent for translational oncology research: a qualitative research. J Transl Med. 2023 May 21;21(1):336. doi: 10.1186/s12967-023-04039-0.*

ABSTRACT

Background: Depending on the needs of scientific research at a given time, biobanks make biological samples and data available to researchers. In this article, we aim to describe the reasons and underlying logic that determine the decision to grant or deny consent to the conservation of tumour samples in a biological resource platform for research purposes. We make use of the CARPEM biological resource platform model, where broad consent is required.

Methods: The results are based on semi-structured interviews, conducted between 2019 and 2021, with 25 individuals having various profiles.

Results: All the people interviewed readily accepted the principle of conserving a tumour sample for research purposes. They explained their decision by citing the desire to participate in research dedicated to improving therapeutic medicine. Their trust in research institutions or in doctors was an important factor in their consent. The tumorous

nature of the samples also played an important role, as did the absence of constraints. Finally, the high level of consent was also based on the difficulty they had in conceiving what the future risks might be once the sample had been taken, whereas the fact that they did not know the nature or purpose of the research to be carried out when they signed the consent form posed some problems. These results stem from a lack of a culture of ethics among the people interviewed.

Conclusion: The information provided in the context of consent at the CARPEM tumour bank seems inadequate for consent to be considered 'informed', given the low level of knowledge that people have of the risks and issues. Information is missing even though we feel it would not change consent or only marginally. This raises questions, since part of the act of granting consent is based on the implicit trust French people have in the hospital that collects the data and in research practices in general. In the minds of those who participate, transparency is the ground on which trust rests. Lack of transparency could be deleterious for future research practices. However, it is not by striving to improve information leaflets that the consent-related information will improve but, rather, by more effectively helping future patients to assimilate that information.

Keywords: Biobank; Broad consent; Consent models; Informed consent; Translational research; Trust.

11. *Wadhwa V, Patel N, Grover D, Ali FS, Thosani N. Interventional gastroenterology in oncology. CA Cancer J Clin. 2023 May-Jun;73(3):286-319. doi: 10.3322/caac.21766. Epub 2022 Dec 10.*

ABSTRACT

Cancer is one of the foremost health problems worldwide and is among the leading causes of death in the United States. Gastrointestinal tract cancers account for almost one third of the cancer-related mortality globally, making it one of the deadliest groups of cancers. Early diagnosis and prompt management are key to preventing cancer-related morbidity and mortality. With advancements in technology and endoscopic techniques, endoscopy has become the core in diagnosis and management of gastrointestinal tract cancers. In this extensive review, the authors discuss the role endoscopy plays in early detection, diagnosis, and management of esophageal, gastric, colorectal, pancreatic, ampullary, biliary tract, and small intestinal cancers.

Keywords: cancer; cholangiocarcinoma; colon cancer; endoscopic ultrasound; endoscopy; esophageal cancer; gastric cancer; oncology; pancreatic cancer.