

## SELECTED ABSTRACTS FROM PUBMED

1. **Hodgson SH, Mansatta K, Mallett G, Harris V, Emary KRW, Pollard AJ.** *What defines an efficacious COVID-19 vaccine? A review of the challenges assessing the clinical efficacy of vaccines against SARS-CoV-2.* *Lancet Infect Dis.* 2021 Feb;21(2):e26-e35. doi: 10.1016/S1473-3099(20)30773-8. Epub 2020 Oct 27.

### ABSTRACT

The novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has caused more than 1 million deaths in the first 6 months of the pandemic and huge economic and social upheaval internationally. An efficacious vaccine is essential to prevent further morbidity and mortality. Although some countries might deploy COVID-19 vaccines on the strength of safety and immunogenicity data alone, the goal of vaccine development is to gain direct evidence of vaccine efficacy in protecting humans against SARS-CoV-2 infection and COVID-19 so that manufacture of efficacious vaccines can be selectively upscaled. A candidate vaccine against SARS-CoV-2 might act against infection, disease, or transmission, and a vaccine capable of reducing any of these elements could contribute to disease control. However, the most important efficacy endpoint, protection against severe disease and death, is difficult to assess in phase 3 clinical trials. In this Review, we explore the challenges in assessing the efficacy of candidate SARS-CoV-2 vaccines, discuss the caveats needed to interpret reported efficacy endpoints, and provide insight into answering the seemingly simple question, "Does this COVID-19 vaccine work?"

2. **Raynaud M, Zhang H, Louis K, Goutaudier V, Wang J, Dubourg Q, et al.** *COVID-19-related medical research: a meta-research and critical appraisal.* *BMC Med Res Methodol.* 2021 Jan 4;21(1):1. doi: 10.1186/s12874-020-01190-w.

### ABSTRACT

**Background:** Since the start of the COVID-19 outbreak, a large number of COVID-19-related papers have been published. However, concerns about the risk of expedited science have been raised. We aimed at reviewing and categorizing COVID-19-related medical research and to critically appraise peer-reviewed original articles.

**Methods:** The data sources were Pubmed, Cochrane COVID-19 register study, arXiv, medRxiv and bioRxiv, from 01/11/2019 to 01/05/2020. Peer-reviewed and preprints publications related to COVID-19 were included, written in English or Chinese. No limitations were placed on study design. Reviewers screened and categorized studies according to i) publication type, ii) country of publication, and iii) topics covered. Original articles were critically appraised using validated quality assessment tools.

**Results:** Among the 11,452 publications identified, 10,516 met the inclusion criteria, among which 7468 (71.0%) were peer-reviewed articles. Among these, 4190 publications

(56.1%) did not include any data or analytics (comprising expert opinion pieces). Overall, the most represented topics were infectious disease (n = 2326, 22.1%), epidemiology (n = 1802, 17.1%), and global health (n = 1602, 15.2%). The top five publishing countries were China (25.8%), United States (22.3%), United Kingdom (8.8%), Italy (8.1%) and India (3.4%). The dynamic of publication showed that the exponential growth of COVID-19 peer-reviewed articles was mainly driven by publications without original data (mean 261.5 articles  $\pm$  51.1 per week) as compared with original articles (mean of 69.3  $\pm$  22.3 articles per week). Original articles including patient data accounted for 713 (9.5%) of peer-reviewed studies. A total of 576 original articles (80.8%) showed intermediate to high risk of bias. Last, except for simulation studies that mainly used large-scale open data, the median number of patients enrolled was of 102 (IQR = 37-337).

**Conclusions:** Since the beginning of the COVID-19 pandemic, the majority of research is composed by publications without original data. Peer-reviewed original articles with data showed a high risk of bias and included a limited number of patients. Together, these findings underscore the urgent need to strike a balance between the velocity and quality of research, and to cautiously consider medical information and clinical applicability in a pressing, pandemic context. **SYSTEMATIC REVIEW REGISTRATION:** <https://osf.io/5zjyx/>.

**Keywords:** COVID-19; Critical appraisal; Quality of research; Systematic review.

3. **Iserson KV.** *SARS-CoV-2 (COVID-19) Vaccine Development and Production: An Ethical Way Forward.* *Camb Q Healthc Ethics.* 2021 Jan;30(1):59-68. doi: 10.1017/S096318012000047X. Epub 2020 Jun 5.

### ABSTRACT

The world awaits a SARS-CoV-2 virus (i.e., COVID-19 disease) vaccine to keep the populace healthy, fully reopen their economies, and return their social and healthcare systems to "normal." Vaccine safety and efficacy requires meticulous testing and oversight; this paper describes how despite grandiose public statements, the current vaccine development, testing, and production methods may prove to be ethically dubious, medically dangerous, and socially volatile. The basic moral concern is the potential danger to the health of human test subjects and, eventually, many vaccine recipients. This is further complicated by economic and political pressures to reduce government oversight on rushed vaccine testing and production, nationalistic distribution goals, and failure to plan for the widespread immunization needed to produce global herd immunity. As this paper asserts, the public must be better informed to assess promises about the novel vaccines being produced and to tolerate delays and uncertainty.

**Keywords:** COVID-19; SARS-CoV-2 virus; immunization; vaccine testing; vaccines.

4. *Dexter PR, Grout RW, Embi PJ. Transforming primary medical research knowledge into clinical decision. AMIA Annu Symp Proc. 2021 Jan 25;2020:358-362. eCollection 2020.*

#### ABSTRACT

While the utility of computerized clinical decision support (CCDS) for multiple select clinical domains has been clearly demonstrated, much less is known about the full breadth of domains to which CCDS approaches could be productively applied. To explore the applicability of CCDS to general medical knowledge, we sampled a total of 500 primary research articles from 4 high-impact medical journals. Employing rule-based templates, we created high-level CCDS rules for 72% (361/500) of primary medical research articles. We subsequently identified data sources needed to implement those rules. Our findings suggest that CCDS approaches, perhaps in the form of non-interruptive info buttons, could be much more broadly applied. In addition, our analytic methods appear to provide a means of prioritizing and quantitating the relative utility of available data sources for purposes of CCDS.

5. *Arshad S, Ul Huda N, Nadeem N, Ali S, Ahmad N, Anwar S, et al. Perceptions of medical students about research at undergraduate level. J Ayub Med Coll Abbottabad. Jan-Mar 2021;33(1):129-133.*

#### ABSTRACT

**Background:** Undergraduate (UG) research is new but important concept in modern science. It is considered as an effective educational tool for enhancing the undergraduate medical experience. The objectives of the study were to know the perceptions of UG medical students towards research, main motivating factors and barriers faced by the students.

**Methods:** It was Crosssectional study with both quantitative and qualitative portions conducted in Ayub Medical College (AMC) from November 2018 to April 2019. The quantitative portion of the study was based on a simple questionnaire with 9 closed ended questions completed by 215 participants selected using stratified random sampling technique. Data was analysed using SPSS 20.0. The Qualitative portion of the study was based on 8 Focused Group Discussions (FGDs), two from each year, with 6-10 participants. The interviews were recorded and reported by obtaining informed consent from each participant. The audio recording of the FGDs was transcribed verbatim and content analysis was done by conventional content analysis.

**Results:** Out of 215, 128 (59.5%) had a previous research experience mostly as a compulsory requirement of undergraduate curriculum; 134 (62.3%) were aware that research is a part of their curriculum. Lack of resources and lack of interest of students was main barrier, i.e., 152

(70.7%). For 133 (61.8%) participants, the main motivating factor was learning research methodology.

**Conclusions:** Students were aware about research and their awareness about research increased with increasing year in medical school. Hardly any student had a research experience beforehand they took part in mandatory research in 4th year.

**Keywords:** Medical undergraduates; Undergraduate research.

6. *Jaarsma T, Hill L, Bayes-Genis A, La Rocca H-PB Castiello T, Čelutkienė J, et al. Self-care of heart failure patients: practical management recommendations from the Heart Failure Association of the European Society of Cardiology. Eur J Heart Fail. 2021 Jan;23(1):157-174. doi: 10.1002/ehf.2008. Epub 2020 Oct 20.*

#### ABSTRACT

Self-care is essential in the long-term management of chronic heart failure. Heart failure guidelines stress the importance of patient education on treatment adherence, lifestyle changes, symptom monitoring and adequate response to possible deterioration. Self-care is related to medical and person-centered outcomes in patients with heart failure such as better quality of life as well as lower mortality and readmission rates. Although guidelines give general direction for self-care advice, health care professionals working with patients with heart failure need more specific recommendations. The aim of the management recommendations in this paper is to provide practical advice for health professionals delivering care to patients with heart failure. Recommendations for nutrition, physical activity, medication adherence, psychological status, sleep, leisure and travel, smoking, immunization and preventing infections, symptom monitoring, and symptom management are consistent with information from guidelines, expert consensus documents, recent evidence and expert opinion.

**Keywords:** Heart failure; Lifestyle; Patient education; Self-care.

7. *Groth NA, Stone NJ, Benziger CP. Cardiology clinic visit increases likelihood of evidence-based cholesterol prescribing in severe hypercholesterolemia. Clin Cardiol. 2021 Feb;44(2):186-192. doi: 10.1002/clc.23521. Epub 2020 Dec 23.*

#### ABSTRACT

**Background:** Patients with phenotypic severe hypercholesterolemia (SH), low-density lipoprotein-cholesterol (LDL-c)  $\geq 190$  mg/dl, atherosclerotic cardiovascular disease (ASCVD) or adults 40-75 years with diabetes with risk factors or 10-year ASCVD risk  $\geq 20\%$  benefit from maximally tolerated statin therapy. Rural patients have decreased access to specialty care, potentially limiting appropriate treatment.

**Hypothesis:** Prior visit with cardiology will improve treatment of severe hypercholesterolemia.

**Methods:** We used an electronic medical record-based SH registry defined as ever having an LDL-c  $\geq$  190 mg/dl since January 1, 2000 (n = 18 072). We excluded 3205 (17.7%) patients not alive or age 20-75 years. Patients defined as not seen by cardiology if they had no visit within the past 3 years (2017-2019).

**Results:** We included 14 867 patients (82.3%; mean age  $59.7 \pm 10.3$  years; 58.7% female). Most patients were not seen by cardiology (n = 13 072; 72.3%). After adjusting for age, sex, CVD, hypertension, diabetes and obesity, patients seen by cardiology were more likely to have any lipid-lowering medication (OR = 1.46, 95% CI: 1.29-1.65), high-intensity statin (OR = 1.81, 95% CI: 1.61-2.03), or proprotein convertase subtilisin-kexin type 9 (PCSK9) inhibitor (OR = 5.96, 95% CI: 3.34-10.65) compared to those not seen by cardiology. Mean recent LDL-c was lower in patients seen by cardiology ( $126.8 \pm 51.6$  mg/dl vs.  $152.4 \pm 50.2$  mg/dl, respectively;  $p < .001$ ).

**Conclusion:** In our predominantly rural population, a visit with cardiology improved the likelihood to be prescribed any statin, a high-intensity statin, or PCSK9 inhibitor. This more appropriately addressed their high life-time risk of ASCVD. Access to specialty care could improve SH patient's outcomes.

**Keywords:** atherosclerotic cardiovascular disease; guideline adherence; low-density lipoprotein cholesterol; rural healthcare; severe hypercholesterolemia.

8. *Li Y-H, Wang M-T, Huang W-C, Hwang J-J. Management of acute coronary syndrome in patients with suspected or confirmed coronavirus disease 2019: Consensus from Taiwan Society of Cardiology. J Formos Med Assoc. 2021 Jan;120(1 Pt 1):78-82. doi: 10.1016/j.jfma.2020.07.017. Epub 2020 Jul 13.*

#### ABSTRACT

Coronavirus disease 2019 (COVID-19) is a highly contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Infection with SARS-CoV may cause coronary plaque instability and lead to acute coronary syndrome (ACS). Management of ACS in patients with COVID-19 needs more consideration of the balance between clinical benefit and transmission risk of virus. This review provides recommendations of management strategies for ACS in patients with suspected or confirmed COVID-19 in Taiwan.

**Keywords:** Acute coronary syndrome; Acute myocardial infarction; Coronavirus disease 2019; Non ST-Segment elevation acute coronary syndrome; ST-Segment elevation myocardial infarction.

9. *He K, Edward Whang E, Gentian Kristo G. Graduate medical education funding mechanisms, challenges, and solutions: A narrative review. Am J Surg. 2021*

*Jan;221(1):65-71. doi: 10.1016/j.amjsurg.2020.06.007. Epub 2020 Jun 23.*

#### ABSTRACT

**Background:** With increased attention on the federal budget deficit, graduate medical education (GME) funding has in particular been targeted as a potential source of cost reduction. Reduced GME funding can further deteriorate the compensation of physicians during their residency training.

**Methods:** In order to understand the GME funding mechanisms and current challenges, as well as the value of the work accomplished by residents, we searched peer-reviewed, English language studies published between 2000 and 2019.

**Results:** Direct and indirect GME funding is intended to support resident reimbursement and the higher costs associated with supporting a teaching program. However, policy efforts have aimed to reduce federal funding for GME. Furthermore, evidence suggests that residents are inadequately compensated because their salaries do not reflect the number of hours worked and are not comparable to those of other medical staff.

**Conclusions:** Our review suggests that creative solutions are needed to diversify GME funding and improve resident compensation.

**Keywords:** Funding; Graduate medical education; Resident compensation.

10. *Iwanaga J, Loukas M, Dumont AS, Tubbs RS. A review of anatomy education during and after the COVID-19 pandemic: Revisiting traditional and modern methods to achieve future innovation. Clin Anat. 2021 Jan;34(1):108-114. doi: 10.1002/ca.23655. Epub 2020 Aug 24.*

#### ABSTRACT

The coronavirus disease 2019 (COVID-19) pandemic has had enormous effects on anatomy education. During the pandemic, students have had no access to cadavers, which has been the principal way to learn anatomy since the 17th century. As it is difficult to predict future access to cadavers for students or in-person classes, anatomy educators are encouraged to revisit all possible teaching methods in order to develop innovations. Here, we review anatomy education methods to apply to current and future education.

**Keywords:** COVID-19; SARS-CoV-2; anatomy education, teaching; cadaver; dissection; medical education; novel coronavirus; technology; virtual.

11. *Burrows AM, Laupland KB. Comprehensiveness of distributed medical education systems: a regional population-based perspective. BMC Med Educ. 2021 Jan 9;21(1):42. doi: 10.1186/s12909-020-02466-x.*

#### ABSTRACT

**Background:** The core business of medical schools includes clinical (education and service) and academic (research) activities. Our objective was to assess the degree

to which these activities exist in a distributed medical education system in Canada.

**Methods:** A population-based design was utilized. Programs were contacted and public records were searched for medical trainees and faculty positions within a province in Canada during the 2017/2018 academic year. Data were expressed as positions per 100,000 residents within the Lower Mainland, Island, and Northern and Southern interior geographical regions.

**Results:** Substantial differences in the distribution of medical students by region was observed with the highest observed in the Northern region at 45.5 per 100,000 as compared to Lower Mainland, Island, and Southern regions of 25.4, 16.8, 16.0 per 100,000, respectively. The distribution of family medicine residents was less variable with 14.9, 10.7, 8.9, and 5.8 per 100,000 in the Northern, Island, Southern, and Lower Mainland regions, respectively. In contrast, there was a marked disparity in distribution of specialty residents with 40.8 per 100,000 in the Lower Mainland as compared to 7.5, 3.2, and 1.3 per 100,000 in the Island, Northern, and Southern regions, respectively. Clinical faculty were distributed with the highest observed in the Northern region at 180.4 per 100,000 as compared to Southern, Island, and Lower Mainland regions of 166.9, 138.5, and 128.4, respectively. In contrast, academic faculty were disproportionately represented in the Lower Mainland and Island regions (92.8 and 50.7 per 100,000) as compared to the Northern and Southern (1.4 and 1.2 per 100,000) regions, respectively.

**Conclusions:** While there has been successful redistribution of medical students, family medicine residents, and clinical faculty, this has not been the case for specialty residents and academic faculty.

**Keywords:** Academic faculty; Distributed medical education; Residency training program; Undergraduate medical students.

12. *Thakur A, Soklaridis S, Crawford A, Mulsant B, Sockalingam S. Using Rapid Design Thinking to Overcome COVID-19 Challenges in Medical Education. Acad Med. 2021 Jan 1;96(1):56-61. doi: 10.1097/ACM.0000000000003718.*

#### ABSTRACT

The rapid rise of cases of coronavirus disease 2019 (COVID-19) has led to the implementation of public health measures on an unprecedented scale. These measures have significantly affected the training environment and the mental health of health care providers and learners. Design thinking offers creative and innovative solutions to emergent complex problems, including those related to training and patient care that have arisen as a result of the COVID-19 pandemic. Design thinking can accelerate the development and implementation of solution prototypes through a process of inspiration, ideation, and implementation. Digital technology can be leveraged as part of this process to provide care and education in new or enhanced ways. Online knowledge hubs, videoconference-based interactive sessions, virtual simulations, and technology-enhanced coaching for health care providers are potential solutions to address identified issues. Limitations of this model include inherent bias toward utilitarian instead of egalitarian principles and the subsequent threat to diversity, equity, and inclusion in solutions. Although medical educators have embraced digital transformation during the COVID-19 pandemic, there is a need to ensure that these changes are sustained.