SELECTED ABSTRACTS FROM PUBMED

1. ***Drożdżal S, Rosik J, Lechowicz K, Machaj F, Szostak B, Przybyciński J, et al. An update on drugs with therapeutic potential for SARS-CoV-2 (COVID-19) treatment. Drug Resist Updat. 2021 Dec;59:100794. doi: 10.1016/j.drup.2021.100794. Epub 2021 Dec 9.***

ABSTRACT

The COVID-19 pandemic is one of the greatest threats to human health in the 21st century with more than 257 million cases and over 5.17 million deaths reported worldwide (as of November 23, 2021. Various agents were initially proclaimed to be effective against SARS-CoV-2, the etiological agent of COVID-19. Hydroxychloroquine, lopinavir/ritonavir, and ribavirin are all examples of therapeutic agents, whose efficacy against COVID-19 was later disproved. Meanwhile, concentrated efforts of researchers and clinicians worldwide have led to the identification of novel therapeutic options to control the disease including PAXLOVID™ (PF-07321332). Although COVID-19 cases are currently treated using a comprehensive approach of anticoagulants, oxygen, and antibiotics, the novel Pfizer agent PAXLOVID™ (PF-07321332), an investigational COVID-19 oral antiviral candidate, significantly reduced hospitalization time and death rates, based on an interim analysis of the phase 2/3 EPIC-HR (Evaluation of Protease Inhibition for COVID-19 in High-Risk Patients) randomized, double-blind study of non-hospitalized adult patients with COVID-19, who are at high risk of progressing to severe illness. The scheduled interim analysis demonstrated an 89 % reduction in risk of COVID-19-related hospitalization or death from any cause compared to placebo in patients treated within three days of symptom onset (primary endpoint). However, there still exists a great need for the development of additional treatments, as the recommended therapeutic options are insufficient in many cases. Thus far, mRNA and vector vaccines appear to be the most effective modalities to control the pandemic. In the current review, we provide an update on the progress that has been made since April 2020 in clinical trials concerning the effectiveness of therapies available to combat COVID-19. We focus on currently recommended therapeutic agents, including steroids, various monoclonal antibodies, remdesivir, baricitinib, anticoagulants and PAXLOVID™ summarizing the latest original studies and meta-analyses. Moreover, we aim to discuss other currently and previously studied agents targeting COVID-19 that either show no or only limited therapeutic activity. The results of recent studies report that hydroxychloroquine and convalescent plasma demonstrate no efficacy against SARS-CoV-2 infection. Lastly, we summarize the studies on various drugs with incoherent or insufficient data concerning their effectiveness, such as amantadine, ivermectin, or niclosamide.

Keywords: Baricitinib; COVID-19; Casirivimab; Dexamethasone; Imdevimab; Omicron; Paxlovid; Remdesivir; SARS-CoV-2; Sotrovimab; Tocilizumab.

2. ***Daus K, McEchron M. The impact of medical student research as a discussion topic during the residency interview process. BMC Med Educ. 2021 Nov 1;21(1):556. doi: 10.1186/s12909-021-02989-x.***

ABSTRACT

Background: Students with a greater number of research experiences are more successful in the National Residency Match Program (NRMP.) As a result, approximately two-thirds of allopathic medical schools have implemented a scholarly research project (SP) as a part of their curriculum. While inclusion of an SP in the medical school curriculum increases research productivity, literature to date has not investigated the frequency with which it is a discussion topic during residency interviews.

Methods: One hundred twenty-three students from the graduating class of 2019 and 2020 at the University of Arizona College of Medicine - Phoenix (UACOMP) completed a 17-question survey examining the student's SP and whether they completed additional research, with an overall response rate of 82.6%. Survey participants were asked to quantify how many residency interviewers asked about their SP or additional research during the interview process.

Results: Twenty-seven percent of interviewers asked students about their SP and 41% of interviewers asked students about additional non-SP research. 40% of interviewers asked about research overall to include SP and/or non-SP research. A greater percentage of interviewers (50%) asked students about their SP if they had undertaken additional research compared to interviewers of students who did not undertake additional research (29%, p = 0.0237). A greater percentage of interviewers at academic institutions (31%) asked students about their SP, compared with a smaller percentage of interviewers at predominantly non-academic programs (22%, p = 0.0054). There were no significant differences in the proportion of interviewers asking about the SP based on the type of specialty, competitiveness of specialty, relatedness project topic to specialty, and publication/presentation status of project.

Conclusion: Student research experiences may serve as a frequent discussion topic during the residency interview. Approximately one-quarter of interviewers ask about the SP regardless of specialty, research topic, and publication/presentation status of the project. Students with additional research experiences beyond their SP may experience a higher percentage of interviewers asking about their SP. Also, students applying to predominantly academic programs may experience a higher proportion of interview questions about research compared to peers interviewing at non-academic programs.

Keywords: Medical education; Residency interview; Residency match; Scholarly research.

3. Indrayan A, Mishra A. The importance of small samples in medical research. J Postgrad Med. Oct-Dec 2021;67(4):219-223. doi: 10.4103/jpgm.JPGM_230_21.

ABSTRACT

Almost all bio-statisticians and medical researchers believe that a large sample is always helpful in providing more reliable results. Whereas this is true for some specific cases, a large sample may not be helpful in more situations than we contemplate because of the higher possibility of errors and reduced validity. Many medical breakthroughs have occurred with self-experimentation and single experiments. Studies, particularly analytical studies, may provide more truthful results with a small sample because intensive efforts can be made to control all the confounders, wherever they operate, and sophisticated equipment can be used to obtain more accurate data. A large sample may be required only for the studies with highly variable outcomes, where an estimate of the effect size with high precision is required, or when the effect size to be detected is small. This communication underscores the importance of small samples in reaching a valid conclusion in certain situations and describes the situations where a large sample is not only unnecessary but may even compromise the validity by not being able to exercise full care in the assessments. What sample size is small depends on the context.

Keywords: Medical research; n= 1 self-experiments; small sample.

4. Vassallo A, Walker K, Georgousakis M, Joshi R. Do mentoring programmes influence women's careers in the health and medical research sector? A mixed-methods evaluation of Australia's Franklin Women Mentoring Programme. BMJ Open. 2021 Oct 24;11(10):e052560. doi: 10.1136/bmjopen-2021-052560.

ABSTRACT

Objectives: It is known that women are under-represented in senior positions within the health and medical research sector. The Franklin Women Mentoring Programme (Programme) is a professionally facilitated, cross-organisational initiative designed to support career development for mid-career women. The objective of this study was to evaluate Programme outcomes reported by participants 12 months following its formal conclusion.

Design: Explanatory sequential mixed-methods study design using a cross-sectional survey and semi-structured interviews.

Setting: Health and medical research institutes in Sydney, Australia.

Participants: Health and medical researchers from the 2018 Programme.

Primary and secondary outcome measures: Changes in knowledge, skills, behaviours and research metrics directly attributed to Programme participation.

Results: A total of 50 mentors and mentees participated in the cross-sectional survey (68% of the total cohort) and 14 mentors and mentees participated in the interviews. All reported changes to their knowledge, skills, behaviours and research metrics which were directly attributed to participation in the Programme. This included changes in knowledge and skills to be more inclusive (96% mentees, 83% mentors), resilience (88% mentees, 67% mentors), ability to have difficult workplace conversations (88% mentees, 71% mentors) and improvements in supervisory and team management (82% mentees, 75% mentors) skills. Positive impacts on promotions and grant opportunities were also reported. All evaluation participants believed this Programme was a worthwhile initiative for their workplaces to invest in.

Conclusion: Participation in this cross-organisational, professionally facilitated, structured mentoring programme has led to positive outcomes for mentees, as well as mentors. Reported outcomes indicate the Programme is meeting its aims to support the career development of mid-career women in health and medical research, while facilitating a more inclusive workforce.

Keywords: health services administration & management; occupational & industrial medicine; public health; social medicine.

5. Dhar P, Rocks T, Samarasinghe RM, Stephenson G, Smith C. Augmented reality in medical education: students' experiences and learning outcomes. Med Educ Online. 2021 Dec;26(1):1953953. doi: 10.1080/10872981.2021.1953953.

ABSTRACT

Augmented reality (AR) is a relatively new technology that allows for digitally generated three-dimensional representations to be integrated with real environmental stimuli. AR can make use of smart phones, tablets, or other devices to achieve a highly stimulating learning environment and hands-on immersive experience. The use of AR in industry is becoming widespread with applications being developed for use not just for entertainment and gaming but also healthcare, retail and marketing, education, military, travel and tourism, automotive industry, manufacturing, architecture, and engineering. Due to the distinct learning advantages that AR offers, such as remote learning and interactive simulations, AR-based teaching programs are also increasingly being adopted within medical schools across the world. These advantages are further highlighted by the current COVID-19 pandemic, which has caused an even greater shift towards online learning. In this review, we investigate the use of AR in medical training/education and its effect on students' experiences and learning outcomes. This includes the main goals of AR-based learning, such as to simplify the delivery and enhance the comprehension of complex information. We also describe how AR can enhance the experiences of medical students, by improving knowledge and understanding, practical skills and social skills. These

concepts are discussed within the context of specific AR medical training programs, such as HoloHuman, OculAR SIM, and HoloPatient. Finally, we discuss the challenges of AR in learning and teaching and propose future directions for the use of this technology in medical education.

Keywords: Augmented reality; education technology; learning outcomes; medical education; online learning.

6. Ahmady S, Kallestrup P, Sadoughi MM, Katibeh M, Kalantarion M, Amini M, et al. Distance learning strategies in medical education during COVID-19: A systematic review. J Educ Health Promot. 2021 Nov 30;10:421. doi: 10.4103/jehp.jehp_318_21. eCollection 2021.

ABSTRACT

The current outbreak of coronavirus disease 2019 (COVID-19) across the world forced universities to suspend learning to limit the spread of the virus. Many medical schools have shifted to online education as an information delivery mechanism where the educator and learner are separated in space and potentially also in time. This systematic review aims to explore and understand the variety of distance learning strategies in medical students in the contexts of COVID-19. A systematic review was conducted in Web of Sciences, PubMed, Educational Resources and Information Center, and Scopus from December 2019 to July 2020. Eight sets of terminology were used, combining "Distance learning" AND "Medical education" AND "Pandemic." Studies were reviewed independently by two reviewers. Data were extracted and quality appraised using QualSyst tools, and synthesized by performing thematic analysis. A total of 473 articles were identified after removing duplicates and 314 records were screened, of which 125 were included in this study. The primary articles were 52 primarily qualitative articles. Five learning strategies consisted of technology-enhanced learning (TEL), simulation-based learning, technology-based clinical education, mobile learning, and blended learning. Tools, methods, and learning resources associated with these five learning strategies were extracted from the articles. Our review highlights that TEL and simulation-based learning were more commonly used than others in distance learning in medical education during the COVID-19 pandemic. These strategies have the potential to improve learners' level of knowledge and performance through making online learning resources such as Massive Open Online Courses, virtual clinical cases, and blended sources accessible.

Keywords: COVID-19; distance education; educational technology; handheld computers; medical students; simulation training.

7. Laupland KB, Felicity Edwards F, Dhanani J. Determinants of research productivity during postgraduate medical education: a structured review. BMC Med Educ. 2021 Nov 9;21(1):567. doi: 10.1186/s12909-021-03010-1.

ABSTRACT

Background: Although formal participation in research is an integral and often mandatory component of clinical training programs, resulting productivity is highly variable. The objective of this review was to identify determinants of successful research performance among graduate medical education trainees.

Methods: A structured review of the published literature was performed by searching PubMed, CINAHL, and EMBASE from inception through to 7 April, 2021. Articles examining graduate medical education trainee research productivity evidenced by publications in peer-reviewed journals were included.

Results: Eighty-five articles were included of which most (66; 78%) were reported from the USA or Canada (10; 12%). A wide range of disciplines were represented with the most common being general surgery, internal medicine, orthopedic surgery, and pediatrics. Themes (number of reports) included trainee characteristics (n = 24), project characteristics (n = 8), mentoring/supervision (n = 11), and programmatic aspects (n = 57). Although variable results were observed, research productivity tended to be higher with prior research experience, later years of training, male gender, and pursuit of a postgraduate degree. Few project related aspects of success were identified. Trainee publication was associated with mentors with higher rank, publication productivity, and supportive academic environments. Training programs with organised programs/curricula including protection of time for research were associated with increased productivity as were provision of incentives or rewards but not mandatory requirements.

Conclusion: This review identifies several trainee characteristics, project and mentor aspects, and programmatic aspects associated with increased productivity that may serve as a useful resource for trainees and graduate medical education training programs.

Keywords: Medical training; Postgraduate; Research productivity; Trainees.

8. Liu L, Jiang Z, Qi X, Xie A, Wu H, Cheng H, et al. An update on current EPAs in graduate medical education: A scoping review. Med Educ Online. 2021 Dec;26(1):1981198. doi: 10.1080/10872981.2021.1981198.

ABSTRACT

The purpose of this scoping review is to update the recent progress of EPAs research in GME, focusing on the topical concern of EPAs effectiveness, and to provide a reference for medical researchers in countries/regions interested in introducing EPAs. Guided by Arksey and O'Malley's framework regarding scoping reviews, the researchers, in January 2021, conducted a search in five databases to ensure the comprehensiveness of the literature. After the predetermined process, 29 articles in total were included in this study. The most common areas for the implementation and evaluation of EPAs were Surgery (n = 7,24.1%),

Pediatric (n = 5,17.2%) and Internal medicine (n = 4,13.8%), a result that shows a relatively large change in the research trend of EPAs in the last two years. Prior to 2018, EPAs research focused on internal medicine, psychiatry, family medicine, and primary care. The articles in the category of EPAs implementation and evaluation had four main themes: (1) validation of EPAs (n = 16,55.2%); (2) describing the experience of implementing EPAs (n = 11,37.9%); (3) examining the factors and barriers that influence the implementation and evaluation of EPAs (n = 6,20.6%); and (4) researching the experiences of faculty, interns, and other relevant personnel in using EPAs. Training programs were the most common EPAs implementation setting (n = 26,89.6%); direct observation and evaluation (n = 12,41.4%), and evaluation by scoring reports (n = 5,17.2%) were the two most common means of assessing physicians' EPA levels; 19 papers (65.5%) used faculty evaluation, and nine of these papers also used self-assessment (31.0%); the most frequently used tools in the evaluation of EPAs were mainly researcher-made instruments (n = 37.9%), assessment form (n = 7,24.1%), and mobile application (n = 6,20.7%). Although EPAs occupy an increasingly important place in international medical education, this study concludes that the implementation and diffusion of EPAs on a larger scale is still difficult.

Keywords: Entrustable professional activities; assessment; postgraduate medical education; scoping review.

9. Hasan BS, Rasheed MA, Wahid A, Kumar RK, Liesl Zuhlke L. Generating Evidence From Contextual Clinical Research in Low- to Middle Income Countries: A Roadmap Based on Theory of Change. Front Pediatr. 2021 Dec 9;9:764239. doi: 10.3389/fped.2021.764239. eCollection 2021.

ABSTRACT

Along with inadequate access to high-quality care, competing health priorities, fragile health systems, and conflicts, there is an associated delay in evidence generation and research from LMICs. Lack of basic epidemiologic understanding of the disease burden in these regions poses a significant knowledge gap as solutions can only be developed and sustained if the scope of the problem is accurately defined. Congenital heart disease (CHD), for example, is the most common birth defect in children. The prevalence of CHD from 1990 to 2017 has progressively increased by 18.7% and more than 90% of children with CHD are born in Low and Middle-Income Countries (LMICs). If diagnosed and managed in a timely manner, as in high-income countries (HICs), most children lead a healthy life and achieve adulthood. However, children with CHD in LMICs have limited care available with subsequent impact on survival. The large disparity in global health research focus on this complex disease makes it a solid paradigm to shape the debate. Despite many challenges, an essential aspect of improving research in LMICs is the realization and ownership of the problem around paucity of local evidence by patients, health care providers, academic centers, and governments in these countries. We have created a theory of change model to address these challenges at a micro- (individual patient or physician or institutions delivering health care) and a macro- (government and health ministries) level, presenting suggested solutions for these complex problems. All stakeholders in the society, from government bodies, health ministries, and systems, to frontline healthcare workers and patients, need to be invested in addressing the local health problems and significantly increase data to define and improve the gaps in care in LMICs. Moreover, interventions can be designed for a more collaborative and effective HIC-LMIC and LMIC-LMIC partnership to increase resources, capacity building, and representation for long-term productivity.

Keywords: complex care; contextual clinical research; global health; global health inequity; research disparity; theory of change.

10. Di Stefano DA, Arosio P, Capparè P, Barbon S, Gherlone EF. Stability of Dental Implants and Thickness of Cortical Bone: Clinical Research and Future Perspectives. A Systematic Review. Materials (Basel). 2021 Nov 25;14(23):7183. doi: 10.3390/ma14237183.

ABSTRACT

Dental surgery implantation has become increasingly important among procedures that aim to rehabilitate edentulous patients to restore esthetics and the mastication ability. The optimal stability of dental implants is correlated primarily to the quality and quantity of bone. This systematic literature review describes clinical research focusing on the correlation between cortical bone thickness and primary/secondary stability of dental fixtures. To predict successful outcome of prosthetic treatment, quantification of bone density at the osteotomy site is, in general, taken into account, with little attention being paid to assessment of the thickness of cortical bone. Nevertheless, local variations in bone structure (including cortical thickness) could explain differences in clinical practice with regard to implantation success, marginal bone resorption or anchorage loss. Current knowledge is preliminarily detailed, while tentatively identifying which inconclusive or unexplored aspects merit further investigation.

Keywords: cortical bone; dental implant; osseointegration; primary stability; secondary stability.