

Collaborative Research in Critical Care Medicine: A Way Forward to High-impact Publications from India

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In clinical medicine, multicenter collaborative research usually leads to a large pool of data that are considered nearer to real-world representativeness by the expert in their respective fields. Collaborative research in critical care medicine holds immense promise in advancing our comprehension of critical illnesses, leading to improved patient care and, ultimately, saving lives.

In recent years, countable numbers of high-impact research publications have started to appear in the field of critical care medicine from India. Some of them are landmark studies like a study on treatment strategy for severe scrub typhus and another on the burden of typhoid and paratyphoid fever in India, both original studies were published in 2023 in the *New England Journal of Medicine*.^{1,2} A randomized control trial (RCT) on tocilizumab for moderate-severe COVID-19 was published in the *Lancet Respiratory Medicine* (2021), while an important observational study on healthcare-associated bloodstream and urinary tract infections from multiple Indian ICUs was published in the *Lancet Global Health* (2022).^{3,4} There were some other high-impact publications in the *Journal of American Medical Association* in which Indian centers participated as international collaborators, like the use of red blood cell transfusion in the ICU (2023), evaluating different doses of dexamethasone for COVID-19 (2021), intubation practices and peri-intubation adverse events (2021).⁵⁻⁷ Epidemiology, management and outcome of sepsis in ICUs across Asia was published in the *American Journal of Respiratory and Critical Care Medicine* (2022), and epidemiology of ICU acquired bloodstream infection was published in *Intensive Care Medicine* (2023).^{8,9}

These high-impact publications are possible not only because of relevant clinical topics with sound scientific methodology but also as an overall outcome of the collective efforts of many researchers participating from multicenters representing truly real-world data. In developed countries, professional societies have well-organized research networks that prioritize research areas and provide logistic support for conducting collaborative studies. Some examples are the Critical Care Societies Collaborative (CCSC) in the United States, the European Society of Intensive Care Medicine (ESICM) Trials Group, the Canadian Critical Care Trials Group (CCCTG), the Australian and New Zealand Intensive Care Society (ANZICS) Clinical Trials Group, Asian Critical Care Clinical Trials (ACCCT) from Asia.¹⁰ Recently, the Indian Society of Critical Care Medicine (ISCCM) also started to work on a similar path to promote collaborative research in areas relevant to all but specific to the Indian subcontinent.

There are increasing trends of collaborative research from India, mainly for simple studies like surveys. If we look at the recent years'

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publications in the *Indian Journal of Critical Care Medicine* (*Indian J Crit Care Med*), there are up to 15% of the original studies had authors from different centres. However, the true participation of patients' data from multiple centres might be far less (<1%) in these collaborative publications, including the highlighted one in the INDICAPS-II study.¹¹

In the current issue of the *Indian J Crit Care Med*, Vijayaraghavan BKT et al. published a study on the feasibility of conducting an RCT on the use of vitamin C in septic patients conducted at two Indian ICUs.¹² The presented study, was part of an international collaboration (LOVIT Study), focused on the feasibility of conducting RCTs in the Indian context. The authors demonstrated that conducting a quality study and good adherence to the protocol was feasible and met feasibility endpoints. The authors stated, "Our results demonstrate that with the right combination of mentorship, capacity building, and equitable collaboration, methodologically robust trials can be set up to answer key questions of local and global relevance". The authors' statement seems true, seeing the studies published in the recent past from India.

India is unique in many aspects; the challenges and opportunities for collaborative research are equally enormous. Doing multicenter collaborative research is not a cakewalk; as investigators need to match in many aspects for effective research work. It is not only essential to get together all like-minded researchers but to get with appropriate resources and a supportive hospital system also. India has both public and private sector-run hospitals, teaching and non-teaching, standalone institutions, etc. with varied structural and functional resources.

Moreover, the timeline of Institutional Ethics Committees' approval varies across institutions, leading to undue delay in starting the study. Also, certain other challenges are unique to the Indian settings, like varied cultural beliefs and languages across different states needing appropriate translation of research documents, especially patient information sheets, and consent forms, compared to a single language in Western countries. The policies, like the format of research agreements or other administrative approvals, are often different in different hospitals/institutions, making it difficult to frame a common format that suits all participating institutions, increasing the complexity and delay in both starting as well as completing the collaborative research.

Other challenges include lack of training in research, limited resources, lack of support from institutions to provide support staff (e.g., research coordinators) for research, lack of dedicated research posts, dropouts during the study, undue delays in publication after completing data collection, etc. pose real challenges in conducting quality research in Indian settings.

Despite all these odds, recent good quality high-impact collaborative research publications from India confirm that the country has a lot more opportunities for quality research with self-motivated, younger critical care physicians showing interest in research, good patient mix-ups, increasing tertiary care hospitals and medical colleges/teaching institutions, and broader reach through technology are expanding opportunities for collaborative research. The Indian Society of Critical Care Medicine (ISCCM) also promotes research actively by providing research grants and guidance, creating collaboration opportunities, and conducting ISCCM-led research, further expanding research opportunities.

Though it is attractive to do collaborative research, the final output depends on the quality of data collected, timely execution, motivated team, and adequate resource personnel. It is a challenge to maintain the same quality across institutions that have varied resources and functioning. Also, increasing costs and time consciousness of work hours put pressure on the finances and budget allocations across institutions, which may affect the quality of work.

Even though we have many challenges, the recent study by Vijayaraghavan BKT et al. has given hope for better research conduct and opportunities in India. These studies will be a source of motivation for future research. In summary, collaborative endeavors must be firmly grounded in ethical principles, ensuring patient consent, data sharing agreements, and strict adherence to research ethics, all of which are vital for safeguarding the rights and well-being of the patients as well as researchers involved and, finally, get a large number of high-impact research publications in the near future.

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