Title: Lessons Learnt from Operationalizing an International Collaborative Multi-Centre Study

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Discussion Points.

1. Can medical students lead the operational side of international collaborative study? Rhea et al. think they can
2. Graphics are important in modern-day research. Medical students interested in research need to gain experience
3. Student-to-student ethical approval mentoring – is this the future?
4. Is it okay for medical students to make mistakes when running studies? Better now, than when they are practicing physicians/researchers.

Abstract

Many medical students are both skilled and experienced in healthcare research, statistical analysis, and evidence synthesis. These are assets that can be deployed to great effect in order to conduct research and contribute to the body of evidence. In this article, we document the process by which a group of medical students across the world, with senior support, played leading roles in an international, multi-center study run by the Global Health Research Group on Children's Non-Communicable Diseases (Global Children's NCDs). Many lessons have been learnt from the successful operationalization of this study, which we hope to impart in this article. Our operations team consisted of a Social Media Team that managed our various account, a Graphic Design Team that produced visuals to illustrate milestones achieved or highlight countries from which we did not yet have representatives, a Network Team that constructed a database to manage our extensive collaborator network, a Communications Team that managed emails and maintained regular contact with collaborators as well as producing a guide of common issues, a Researcher Support Team that worked to ensure that any issues faced were dealt with promptly by hosting drop-in sessions, and a Research Capacity Building Team. We found that medical students bring new perspectives and an open-minded approach which is useful in reframing challenges and generating innovative solutions. Based on the findings of this study, it is useful to give medical students the opportunity to collaborate with and learn from senior academics and policy-makers.

THE EXPERIENCE

Clinician scientists are a varied group of healthcare professionals with roles in research and/or teaching alongside their clinic work.[1] They play a key role in implementing research findings into clinical practice. Given their importance, there is growing concern regarding the decline in the number of healthcare professionals seeking to pursue a career as a clinical scientist.[2] To tackle this issue, several initiatives to promote research activities among medical students have been launched to inspire the next generation of clinician scientists. They have ranged from incorporating publications and presentations into requirements when hiring for new positions[3] to the creation of research mentoring schemes.[4] Since active learning has long been known to be the optimum mechanism through which individuals learn,[5] students have been enthusiastically encouraged to conduct their own research. Indeed, students have shown they can run national collaborative research studies effectively, with extensive protocols detailing how the studies were conducted.[6] However, there is a lack of literature on how students can get involved in international research studies. To our knowledge, there is no published literature on students operationalizing an international collaborative multi-center cohort study. This article details the experience of a group of students who participated in leading roles in an international multi-center study run by the Global Health Research Group on Children's Non-Communicable Diseases (Global Children's NCDs) during the COVID-19 pandemic. Many lessons have been learnt from the successful operationalization of this study, which we hope to impart in this article.

Due to a lack of ability to travel or network in-person during the pandemic, to conduct this study effectively we had to mobilize attention and participation through effective use of online methods. We created a WhatsApp group for each operational team and its respective members. This allowed us to communicate the team goals and offer guidance and motivation. As operational team leaders, this method proved effective, as it allowed us to systematically organize and delegate tasks to group members. While an application tool such as Slack may have allowed for more streamlined communication, the use of WhatsApp reduced any barriers to inclusion for a global team. All members were familiar with WhatsApp; the same was not true for Slack. Creating an inclusive environment was felt to be imperative for the success of a global collaboration, and WhatsApp was pivotal to this. Additionally, having an instant messaging platform as our communication tool enabled us to solve problems and provide constructive feedback to team members in a timely fashion throughout the duration of the study. Social media was also found to be the optimal method for recruiting global collaborators in the circumstances of the pandemic. This involved creating a public-facing image and communicating ideas from our protocol using graphics. We designed graphics to promote the objectives of the study and raise awareness about the importance of pediatric cancer research. Our graphics proved incredibly successful in generating interest, with Twitter analytics revealing they had yielded 43,500 impressions and prompted 4,679 visits. Developing our graphic design skills was not only beneficial for the current project, but will likely become increasingly important in our globalized world as we become progressively reliant on using online platforms to communicate ideas and generate interest. Studies have already highlighted how important Twitter is in generating interest for academic articles,[7] and the effect of social media in generating interest can be enhanced with the use of graphics, such as visual abstracts.

Once the collaborative network had been created, it was essential for us to maintain it and provide direction to over 1,000 interested researchers spread across 100 different countries. As a first step, we decided to designate

one individual in each research center as the local study coordinator. Our next step involved connecting other collaborators with their respective local study coordinator. To ensure an effective workflow, a collaborator network database was created and organized by continent, country, and hospital. This structure also allowed for identification of regions where we had yet to generate interest, and therefore facilitated a targeted recruitment drive that aimed to maximize the number of countries captured within our collaborative network. Given the high volume of recruitment, multiple medical students needed to be involved in this part of the operational team to maintain the workflow. This posed an internal communication challenge to ensure that all members of the team were aware of the latest developments, and how to address and answer any questions or concerns. We employed two tools that were indispensable in meeting this challenge. First, a regularly updated online guide which contained algorithms for addressing common scenarios. Second, a series of template emails which could be edited to quickly address common scenarios in a standardized format. Whenever a new issue arose, it was escalated to a senior member of the team. Once we had a solution, the guide and template emails were updated to reflect this, and the solution was integrated into these to ensure the process was streamlined. Developing a team of medical students proficient in multiple languages also aided in the translation of documents and communication with collaborators who did not speak English.

We also recognized that several of our collaborators had never navigated the process of gaining ethical approval locally. As such we set up a research support team. Our aim here was to ensure that collaborators felt supported in their efforts to gain the necessary approvals to participate at their institution as per their local ethical regulations. The novelty of our research support team was that it was composed of medical students, albeit supported by academics and clinicians. Previous research has highlighted that near-peer teaching benefits students by increases understanding as well as by fostering more comfortable learning and interpersonal connection.[8,9] In conducting this approach, we hoped collaborators would develop transferable skills and the confidence to use what they gained from this study in their own future work. The skillset and awareness developed from this experience will allow us to feel more comfortable in leading our own studies in the future and supporting future generations of medical students.

In summary, being involved in running an international, multi-center cohort study provided an invaluable learning opportunity. Developing our ability to communicate scientific knowledge and the importance of a study through online channels will be useful in our future academic careers. Similarly, logistical management is important in any large-scale study, and developing an awareness of how to do this effectively at an early stage is valuable. The decline in interest in clinical academics is an international problem and there is a need for international mentorship to address this problem. Students can define the future of global research. Thus, it is imperative that they have the opportunity to develop skills at an early stage and learn from their mistakes We actively encourage senior academics and policymakers to recognize the value of having medical students involved in leading international studies in order to facilitate the development of future clinician scientists.

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