

Research Experience of Medical Students Collaborating in an International Peer Research Mentorship Program

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Abstract

In the past decade, research and research mentorship have undergone significant changes with advancements. Since students are actively seeking research opportunities and participating in research workshops, a new era of mentor-mentee programs have emerged by necessity. The peer research mentorship program (PRMP) organized by the International Society for Chronic Illnesses (ISCI) facilitates a global collaboration that does not only improve the quality of research, but also encourages interpersonal relationships and incorporates expertise from different fields. In this article, medical students and early graduates share their experience of participating in a cross-country peer-to-peer mentorship and comment on their learnings and observations. This is an experience report of mentors and mentees in the ISCI-sponsored PRMP. Mentees learnt about metabolic syndrome, alternative medicine, and narrative reviews, and the mentor became more confident in scientific writing and leadership while gaining an in-depth knowledge about the integrative management of metabolic syndromes.

Key Words: International educational exchange; Medical students; Collaboration; Networking; Research (Source: MeSH-NLM).

Introduction

Physicians practicing in tertiary-level hospitals in low- and middle-income countries (LMICs), such as Pakistan and India, spend more time treating and managing patients, and less time engaging in medical research. Few professors or academic physicians at these hospitals concurrently conduct good quality, authentic research and mentor medical students. Insufficient government funds and inadequate state-of-the-art research infrastructure further aggravate this challenge in the medical field.^{1,2}

International research collaborations exist among researchers from different areas of expertise with geographical and cultural differences. Such collaborations provide opportunities for learning, skill development, scientific knowledge exchange, and communicative skill improvement to facilitate growth and development, both professionally and personally. They are cost-effective and sustainable solutions for stimulating the development of soft and scientific skills and promoting health-related research in LMICs.³ Furthermore, papers produced by international research collaborations are more likely to be cited than others by domestic collaborations.⁴ At a national level, such

projects increase scientific and technological capacity and boost economic performance.⁵ However, several challenges, such as credit and responsibility sharing, meeting time scheduling according to different time zones, disagreement among researchers, and research team member attrition, may hinder a smooth and progressive collaboration. Social and geopolitical tensions, such as the recent China-USA rift, have reduced research alliances between China and the USA.⁶

In this article, we describe the experiences of medical students and early graduates who participated in a cross-country peer-to-peer mentorship.

Experience Report

Organization and Research Program

Interventions are needed globally to provide guidance and strategies on peer-research mentorship. One such research program is the Peer Research Mentorship Program (PRMP) launched by the International Society for Chronic Illnesses (ISCI), a non-profit venture with the vision of improving the quality of life of people living with chronic conditions, in August 2021 to guide new researchers in an organized manner.⁷ PRMP leadership consists of the project head, national and regional project heads

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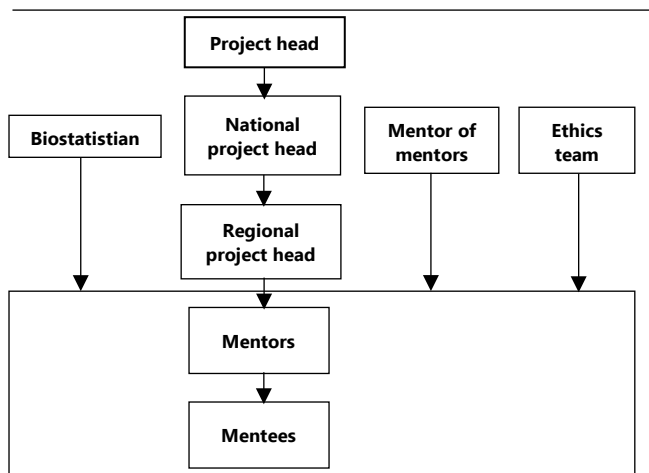
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(NPH/RPH), mentor of mentors, mentors, and mentees (*Figure 1*). Teams are created by the leaders of PRMP based on the topic of interest and study design selected by each researcher in the PRMP Application Form available on ISCI's website, simultaneously making an effort to promote diversity, in terms of geography and designation (*Figure 2*). Mentor-to-mentee ratio is maintained at 1:5 in most teams. Hence, depending on the availability of mentors, the program enrolled medical students as mentees at the beginning of each rotation. As of July 2022, 70 research groups were active in PRMP, with 70 mentors and >450 mentees, consisting of medical students, interns, resident doctors, recent medical graduates, biomedical engineering students and fresh graduates, and PhD students from >15 countries in Asia, North America, Europe, and Africa.

Figure 1. Hierarchical Representation of the Members of Peer Research Mentorship Program.

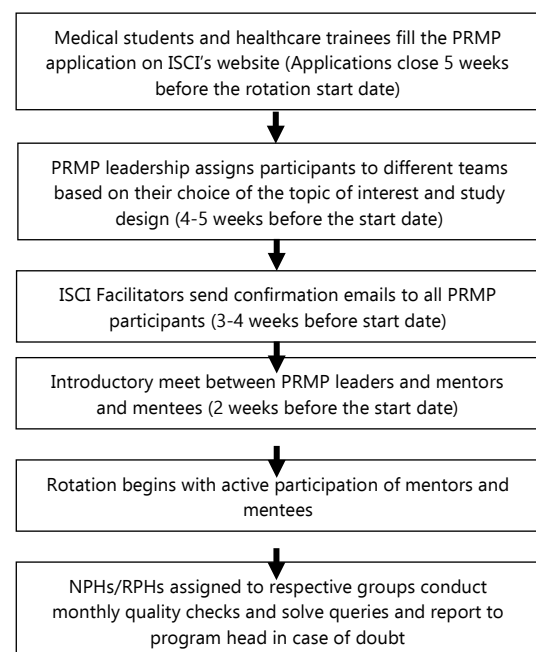


Pre-requisites for mentees, if they wished to conduct original studies (OS) and case reports (CR), were access to institutional ethics committee (IEC) oversight at home affiliation and permission to share de-identified patient data with researchers from other institutions. These pre-requisites did not apply if a mentee wished to learn systematic review (SR), meta-analysis (MA), or short communication (SC). To participate in SR/MA, mentees needed to have prior research experience and at least one original study publication. Since several medical postgraduates waiting to join a residency program were not affiliated to any institute, the ISCI did not require university affiliation for participation in PRMP. Pre-requisites for mentors consisted of at least one publication in the study design that the mentor wished to teach and could commit for the duration of that rotation. Mentees needed to dedicate 5–7 hours per week for all study designs, whereas mentees were required to dedicate 5–7 hours per week for SR/MA and 2–3 hours per week for OS, CR, and SC.

Mentees could contact respective mentors via WhatsApp messenger and email. All researchers were required to respond to texts and emails within 1 week. Mentors arranged biweekly group meetings to receive updates on mentee activities and

resolved issues (*Figure 3*). This format of peer-to-peer mentorship made it easier for mentees in PRMP to seek guidance and actively participate in group discussions, thus, reinforcing the Socratic method of teaching. From case reports to meta-analyses, mentees could choose any type of study design of their preference. Participation in this program was without any monetary cost; therefore, research groups submitted their manuscripts to journals with low processing charges. Each rotation of PRMP was 6 months long, and peer researchers were expected to complete their studies in a time-bound fashion. The quality of research work was maintained by regular quality checks conducted by NPHs/RPHs during which respective groups were checked to ensure compliance with their timelines with their timelines and inactive members were identified and reported back to the Project Head. Authors needed to submit only to PubMed indexed, and peer-reviewed journals to uphold the quality of publications. The end goal of PRMP was to create a network of experienced and trustworthy group of early-career researchers. This workforce would increase the possibility of conducting large-scale and long-term studies of high impact. Results from these studies would then be reported to policy makers, clinicians, and patients.

Figure 2. Process of Team Allotment by PRMP Leadership.



Legend: RMP: Peer Research Mentorship Program. ISCI: International Society For Chronic Illnesses. NPH: National Project Head. RPH: Regional Project Head

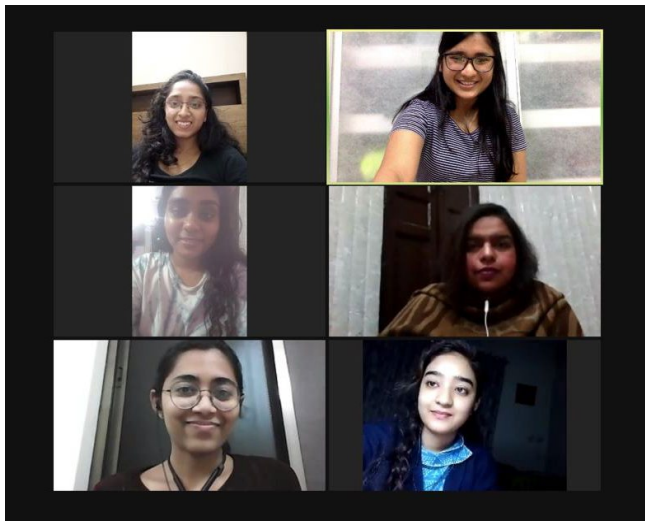
Mentees

We signed up for the PRMP in the August–December 2021 rotation, and our group included five dedicated mentees who were medical students and intern doctors from Karachi Medical and Dental College and Xinxiang Medical University in Pakistan, and JSS Medical College, Baroda Medical College, and Government Medical College of Miraj in India. Our mentor was a research scholar at Harvard Medical School of Postgraduate Medical Education with >10 publications (h-index =

2). Team members had had no previous interactions prior to signing up for the program. After conducting a thorough literature search, we chose to perform a narrative review on metabolic syndromes. As mentees, we received mentorship on literature search, research methodologies, scientific writing, editing, journal selection, and reviewing according to the Scale for Quality Assessment of Narrative Review Articles (SANRA) guidelines. Throughout the project, we were encouraged to share our ideas and express our opinions, which enabled critical questioning of the literature and drawing appropriate conclusions from the data. In some instances, we were asked to teach and guide our fellow mentees, thereby instilling a leadership attitude and fostering an alliances. We were guided through every step in the process, from framing research questions to corresponding with the journal editor.

Unlike most professors who only guide students in research projects, our mentor made the extra effort to guide us in resolving issues. Mostly, we had a huge footfall of patients to cater to in our set-up; hence, professors were preoccupied with clinical duty, sparing minimal time for research. Furthermore, our medical school curriculum does not include research, and more importance is given to enhancing medical knowledge than conducting research studies.

Figure 3. Snapshot from a Zoom Meeting During a PRMP Informative Session.



Legend: PRMP - Peer Research Mentorship Program
Top right corner – mentor

Working with team members from other countries taught us more about our cultural differences while also honing our communicative skills. Since we were at different stages of our medical careers and sometimes preoccupied with other commitments, our mentor was lenient with deadlines and task allocation. For example, if a mentee was not able to meet the deadline for a literature search, others would help in completing that task. Working on this project has boosted our confidence in scientific writing and presentation abilities. We had no ethical issues to deal with and had a pleasant work environment. For example, in November and December, due to imminent medical school examinations, we struggled to balance studies with research. Hence, our mentor guided us on time management and extended the deadline for our research tasks in order to help us to prioritize medical education at that time. In a short period, PRMP enabled us to gain

exposure to various aspects of scientific writing and provided us with a valuable research opportunity. We improved our understanding of metabolic syndrome, alternative medicine, and narrative reviews. For medical students in tertiary care institutions in LMICs with limited research aptitude, it was a wonderful opportunity and a valuable learning experience.

Mentor

The mentor screened several articles and videos available on the internet and used past experiences to provide the most factually correct information for mentees. The mentor thoroughly researched the steps of conducting a narrative review and created a timeline for fellow researchers. The mentor consulted the PRMP MoM and gathered information from online journals, videos, and blogs, as and when required. Considering the availability of mentees, the mentor understood the importance of making efficient timelines. In teaching the narrative review steps, including the creation of a research question using the Population, Intervention, Control, and Outcomes (PICO) model, robust literature search on various databases, manuscript drafting using the SANRA guidelines, and article submission to a medical journal, the mentor understood the significance of maintaining deadlines and ensuring flexibility. Delegation and automation of the research process are important in a mentor-mentee relationship.¹⁰ Good mentor-mentee relationship can be nurtured by humility and teachability. The mentor emerged from this research mentorship experience more confident in scientific writing skills and leadership qualities, and gained in-depth knowledge about the integrative management of metabolic syndrome. With this experience, the mentor will manage three more research groups in the July–December 2023 rotation; two mentees of this group are currently mentors in this rotation.

Discussion

Over the last decade, several mentor-mentee research programs have emerged worldwide, especially in low- and middle-income countries. Although such programs are advantageous and fill a significant gap in medical student education, the quality and impact of these programs on medical students and healthcare trainees, and mentor satisfaction should be assessed. Evaluating the efficacy of mentor-mentee research programs is challenging due to the presence of several confounding factors, such as participation of mentees in multiple research programs, difference in interests of mentees and mentors, and variability of skill and knowledge of mentors.

A mentored student project (MSP) program started by Manipal University in India reported that their mentees experienced improvement in their research skills while research knowledge was not much affected.⁸ Ssemata et al. found that lack of a formal mentorship structure, low skill and knowledge level of mentors, and unclear roles and expectations were some barriers in these programs. Additionally, the authors asserted the need for measurable outcomes of research projects, creation of shared mentor-mentee expectations, and adaptation of mentoring models to local contexts.⁹ According to a review by Atlas et al.,¹⁰ these research programs had extensive benefits to mentees, including research development, psychosocial support, confidence building, and improved residency program admission chances. Mentors, on the other hand, enjoyed their relationships

with students, enhanced teaching skills, and refined their curriculum vitae. Due to time constraints of senior mentors, peer mentors were seen as highly approachable.¹² Altonji et al. suggested that mentor training sessions should be incorporated in these programs to enhance their research and communicative skills.¹¹

Due to the increasing number of mentor-mentee research programs, the need for creating a structured and formal mentorship increases. Inculcating these extra-curricular research programs into the medical curriculum through collaboration between independent organizations and medical universities may create a path for uniform distribution of research knowledge and skills. This will ensure that only skilled and dedicated researchers are given the responsibility of mentorship. A multi-organizational study may suggest and explore the impacts of the different mentorship styles and program structures on mentee satisfaction and quality of scientific literature produced.

Conclusion

Peer research mentoring is necessary and justified. Universities should organize such programs to expose their students to

research early on in their medical careers. Such initiatives will reduce the disparity of opportunities in LMICs.

Summary – Accelerating Translation

In the past decade, research and research mentorship have undergone significant changes with advancements. Since students are actively seeking research opportunities and participating in research workshops, a new era of mentor-mentee programs have emerged by necessity. The peer research mentorship program (PRMP) organized by the International Society for Chronic Illnesses (ISCI) facilitates a global collaboration that does not only improve the quality of research but also encourages interpersonal relationships and incorporates expertise from different fields. In this article, medical students and early graduates share their experience of participating in a cross-country peer-to-peer mentorship and comment on their learnings and observations. This is an experience report of mentors and mentees in the ISCI-sponsored PRMP. Mentees learnt about metabolic syndrome, alternative medicine, and narrative reviews, and the mentor became more confident in scientific writing and leadership while gaining in-depth knowledge about the integrative management of metabolic syndrome.

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