

Proposal to Publication: Experience of a Research Capacity Building Initiative from a Low Middle-Income Country

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Abstract: Research is primary to academic acceleration and no intellectual growth can happen without its presence. To pursue the recommended path of academic progress, research training and capacity building are essential. In low-middle-income countries, institutes lack skilled human resources and financial stability to plan & implement an outcome-based research training program. This article describes an experience of executing a research capacity-building program with minimum financial and human resource. The article is written from the lens of an organizer and a participant, to share challenges and areas of improvement.

Keywords: Capacity building, Research training, Low middle-income country, Resource constraints, Research workshop, Training experience.

INTRODUCTION

Research serves as the fuel for academia to generate new knowledge. The General Medical Council and Royal College of Physician and Surgeons Canada have recommended research as the essential skill of a physician [1, 2]. In this region also research has been recommended by the College of Physicians and Surgeons Pakistan and by Pakistan Medical & Dental Council [3]. The current state of research, especially in developing countries is way behind the standards, though the Higher Education Commission (Pakistan) has regarded research as one of the criteria for the promotion [4]. The available data reports lack of training as one of the main barriers to research activities, and this is prevalent across all cadres [5]. Another important factor is lack of cooperation from the supervisors and dearth of trained physicians [6, 7]. Thus, the efforts required to establish and enhance the research culture at institutional level, requires all stakeholders to work in synergy, from leadership to the research department. The training programs are an essential step in developing the research-base of the institute.

The objective of this article is to share the experience of a 10-week research capacity-building program, from a low-middle-income country, with minimum finances and human resources. The program was conducted at a Transplant centre between January to March 2023. The article is written from two perspectives, one from the organizer and the second from the participant's view. Both the authors wrote the draft independently, however before submission, a brief editing was done. The primary aim was to share with the medical fraternity, different perspectives in organizing, identifying the outcomes, limitations and suggesting better ways to establish a research training program.

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STRUCTURE AND ORGANIZATION

Organizer's Perspective

The program was organized for the clinical employees, with the aim to train young and middle cadre staff (Table 1). The classes were scheduled for every Wednesday afternoon (0300-0430 hours) for 10-weeks in continuation. An initial approval from the Medical Director (academic head of the institution) was taken. A search was made in the acquaintance for the best available tutors for the program. The invitation request was made to 13 faculty with experience in research training across the country. A total of nine researchers/trainers agreed to serve as faculty members, the remaining four never replied. The institutional marketing department was requested to formulate and advertise the poster. A Google form was made for the admission purpose. The admissions were closed before the deadline due to the overwhelming response. All participants who applied were sent the undertaking to be signed by themselves and by the Head of the departments, along with the fee submission details. The fee was kept minimal (Pak Rupees 5000/- equals to USD 17.70) with the thought that it may serve as the string to remain regular (Table 2). The total number of participants was twenty-two. The refusal to course admission was made mainly due to two reasons, either the content of the program was basic as compared to the qualification of the participant or the participant was unable to show the undertaking.

The course was planned in 10 different sessions, to address all essential content needed to initiate, execute, complete and submit the study in any medical journal (Table 3). A Whatsapp group was formed for sharing information and lecture notes.

A special emphasis was given to meals. Each session was served with at least two munching items like, dates, cake slice, boiled eggs, samosa, biscuits, oranges/bananas and tea/coffee. The fee

from the participants was partially used to cover the expense of food, rest was voluntarily spent by the organizer (around USD 03/session). In one of the session, participants were asked to bring at least one food item to encourage comradeship. The participants particularly highlighted food as the stimulating element in the course.

Table 1. Demographics of the Participants.

Designation	Number	Mean Number of Publications	Gender (M:F)
Consultant	06	4.6	2:1
Senior Registrar	05	1.5	4:1
Registrar	02	1.5	1:1
Clinical Pharmacist	05	1.4	1:3
Medical Officer	04	2.3	1:3

After completion, a certificate distribution ceremony was arranged, and the Director of Medical Education distributed the certificates. The organizer and participants put forward their recommendations to the Medical Director to consider, in order to establish robust research training.

All courses were recorded in Zoom, and one session was recorded with live coverage on the official YouTube channel.

Participant's Perspective

The program tutors were experts in their respective fields, from bioethics, statistics, literature review, manuscript drafting to the area of grant acquisition. Thus, there was an immense room to learn, and the facilitators began from the basics and attempted to build-on. Participants were able to discover new dimensions that they were totally unaware initially, for example, the online resources to enhance the research knowledge, portals that offer short courses in one's area of interest, online platforms to interact with research mentors and mentees to help enrich the existing knowledge and for troubleshooting. From the hunt for a research idea to the final draft, every component of a research article was covered and given due importance. The facilitators were friendly and open to all sorts of questions. Importantly, they adhered to the topics assigned to them without any lateral diversion. Few of the sessions included small interactive short quizzes and tasks which kept the interest of the participants alive. Since most of these tasks were to be performed in groups, thus they encouraged teamwork amongst the members.

The in-house course organizer had a very encouraging attitude and would intermittently motivate the members to ask as many questions to the tutors as possible. He was also very prompt in sharing the video recordings, PowerPoint presentations from the course as well as other relevant material that could aid the participants in consolidating upon what they had already learnt and at other times, give an insight into what was about to be taught in the next session. Overall, the schedule and the format of the

sessions were well-planned.

The prerequisites to pass out of the course were also intelligently designed. The participants were supposed to submit their proposals to the institutional review board (IRB) at the beginning of the course and had to submit their manuscripts in at least a locally recognized journal by the end of the last session. This acted as a stimulus to actively work on one's research idea while learning in-depth about the different components of a research article, followed by submission in about 2.5 months' time. The queries related to an individual's proposal and the confusions were clarified in the relevant session of the course. Thus, this acted as an on-ground practice and as an individual assignment.

The audio-video and internet connectivity were seamless with few moments of lagging or inaudible speaker, and this is an inherent defect in virtual sessions. Every session included a small snack followed by tea/coffee. The eatables were different each time and the participants' preferences for the menu were duly considered too through Whatsapp polls. Since the sessions took place towards the end of the working day, after a long day of exhausting work, this refreshment was used to replenish all the drained-away energy and did come in handy.

The participants were professionally diverse; from consultants to residents, medical officers and research officers, from experienced professionals to young colleagues some of which were beginners both in research and their respective fields. This blend created an opportunity to learn from each other and know each other better too since many of the participants were interacting with each other for the first time. The environment was friendly and light-hearted, the seniors had left their hats of rank and achievements outside the room leading to some very healthy interactions. Thus, network building was a good outcome.

Table 2. Budgeting.

EXPENSE	
Printing (Certificates and Shields)	21000/- (USD 74)
Stationery and Consumables	10000/- (USD 35)
Food and Snacks	50000/- (USD 176)
Total	81000/- (USD 285)
REVENUE	
Fees (5000 each)	110000/- (USD 387)
SURPLUS	
Total	21000/- (USD 74)

OUTCOMES

Organizer's Perspective

The outcome initially penned down by the organizer was individual submission in a medical journal, soon after the course finishes. The initial thought was to move the course linearly at a pace that participants simultaneously worked on their proposals.

However, only one participant (the author of this draft) worked with this pace and submitted the article, before the certification ceremony. All the rest participants struggled with the juxta-puzzle of the research and very few ended up with the IRB submission only.

The other outcome was to ignite the participant’s research skills. This was fairly achieved as one surgical department, which hasn’t submitted a single proposal in the last 5 years, was able to submit around 6 proposals to IRB within six weeks of the course completion.

The organizer also thought to build a network from the institute’s perspective for future collaborative work. In this region, where inflation has peaked at around 37% and every other person is struggling to make two ends meet, another course request without an honorarium or a decent incentive would be difficult to initiate. The institute shall create a specific finance budget for academic and research activities.

Another outcome was to build a culture of research in the institute. This outcome was minimally achieved, as forming a culture takes time before an evident change is noticed [8, 9]. Looking into the outcomes from an organizer’s perspective it seems that we achieved very little however the fact is that the ball has started to roll!

Participant’s Perspective

A comprehensive expected outcome from a participant’s perspective would have been to be able to write a research article more confidently. This would include an independent statistical analysis without assistance from a biostatistician which is an Achilles heel for most medical faculty and trainees. Although by the end of the course, the participants did feel relatively more comfortable in medical writing, they were left wanting, especially regarding biostatistics. They were able to solve the statistical issues of their ongoing projects but still faced difficulties in upcoming studies. Whether or not the course served as an impetus for the young and experienced researchers to contribute more research in their respective specialities, is yet to be determined; the number of next year’s IRB submissions may give an objective idea.

Overall, the participants felt that it was a much-needed initiative by the organizers of the course and the institution, a good beginning to inculcate research initiatives. It did improve the overall medical writing skills and did introduce to the participants some new online resources to assist in medical writing.

Table 3. Topics and Schedule.

S. No.	Date and Day	Topic
1	Wednesday, 11 th January, 23	Introduction to Research-I (Basics, Design, Online Research Resources)
2	18 th January, 23	Introduction to Research-II (Formulating Research Question, Literature Review, Proposal Writing and IRB Submission)
3	25 th January, 23	Biostatistics-I (Making data set, Sample size, Analysis Proposal)
4	01 st February 23	Research Ethics (Consent Form, Concerns)
5	08 th February, 23	Manuscript Writing - I (Introduction/Methodology)
6	15 th February, 23	Biostatistics-II (Analysis and Result Interpretation)
7	22 nd February, 23	Manuscript writing - II Results and Tables/Figures)
8	01 st March, 23	Manuscript Writing - III (Discussion and References)
9	08 th March, 23	Proof Reading of the Manuscript and Identifying Suitable Medical Journals
10	15 th March, 23	Research Grants During Clinical Life: The Road Less Travelled

LIMITATIONS

Organizer’s Perspective

Limitations are essential to be ascertained, to improve the process. As an organizer, I was faced with following limitations and barriers in this process:

1. The clerical staff, dedicated to work for academic activities need to be designated. This will save the time of the organizer from managing at the micro level.
2. The debate of online vs physical sessions is complex to resolve in this paper, however, we found out that for our audience and subject, physical sessions were more useful. Due to financial and time limitations, we opted for online discussion in most of the sessions.
3. The lack of a research resource person as backup was also found as one of the limitations. The professional credentialed in research would have been useful for the participants in the completion of their project. This would have also been helpful in arranging for the tutorials and resolving the hiccups.
4. The outcome in terms of the submitted article should have

been linked to the annual appraisal of the participant. This might have worked as the pull factor.

5. The time constraint was another limitation for the participants as they all were from clinical areas. An interdepartmental level coverage of the participant would have eased their learning. The time of the session was allocated from 0300-0430pm, this would have been more useful if the session were arranged a little later, i.e. the last hour of the day.

Participant's Perspective

There were quite a few limitations that must be highlighted.

1. **Duration:** On many occasions, participants felt that the time allocated for one session was not enough to cover a particular topic. Consider biostatistics for example, it cannot be covered in one or two sessions in view of the complexity of the subject, and its multiple facets. Therefore, the number of sessions and time allocated to some important and confusing components of research could have been managed better.
2. **Virtual vs Physical:** Another barrier was the online nature of the course. The best session of the course was about biostatistics which the facilitator expertly presented in a nutshell despite the time constraints. This was the only physical interactive session and was thoroughly enjoyed by everyone even though biostatistics is generally considered by many as alien, confusing and at times boring aspect of research methodology learning. Interestingly a complimentary online session by the same facilitator was found to be lacklustre. The participants felt that in an interactive session, they could explain their queries and confusions in a better way and in return would receive a better understanding. Participants asked questions pertaining to their current research topics, and the tutor could also cross-question in a better manner, and thus the group members left the room with clearer concepts as to what type of statistical test to be used for their research data. In contrast to this, during online sessions, it was difficult to explain the questions to the tutors effectively and on quite a few occasions either the question was misunderstood by the tutor, or the participant was left dissatisfied with the response. Moreover, participants comparatively hesitated more in asking questions in an online session than in a physical interaction. Even after putting the confusion across to the tutor, quite frequently they would hesitate in cross-questioning if the answer did not satisfy their research needs. The members also felt that in physical interactive sessions, the tutors could more effectively conduct quizzes, tasks and exercises than in an online session.
3. **Time of the Day:** It is generally believed that the human brain is more active, receptive and fresh in the earlier few hours of a working day. The sessions could have been organized right at the beginning of the day to ensure better learning. Another important aspect in this regard is the workflow in a quaternary care hospital with 8:30 am to 5:30 pm working hours. Generally, in our country, all such

hospitals have the most minimal workload in the first 2 to 3 hours of the day. The patient influx picks up after that and reaches a peak at about 2-3 pm following which it either becomes a plateau or shows only a small decline. For consultants and particularly the residents and registrars, this was a major challenge as they would return to their assigned area of work only to find enormous loads of piled up work finishing which within the working hours would be quite an uphill task. At times, it was possible to arrange replacements so as to avoid such situations, but such days were only few and far between. As a result, many participants particularly from the surgical departments missed out on quite a few sessions. Some even had a short attendance in the end and could only be awarded CME hours rather than the course completion certificate.

WAY FORWARD

Research is an integral component to excel in academia and losing the connection to it will result in intellectual dwarfism. The low-middle income countries face resource constraints along with a perspective that research is a supplementary subject to be covered and invested in, as compared to the service delivery [10]. In our opinion, the following approach will be helpful for other institutes in developing research capacity-building programs.

Organiser's Perspective

1. Leadership engagement is essential to develop and sustain any educational program. The leadership involvement shall be initiated from the planning stage and be continued till the last. This will not only help the organizers politically but also the hurdles will be lessened in the execution.
2. It is essential to build a team with common interests and delegate the work. A solo flight without ground support may never land!
3. Don't focus on just one cycle of the program rather an activity to be repeated. In each cycle improve from the experiences of the last program.
4. Identify finances, either through the institute or some donor agencies. This will help in keeping the fee low, arranging more physical sessions and providing an honorarium to the tutors.
5. Keep the entry and exit rules of the program for the participants, manageable, but firm. Never compromise, as the news will spread, and it will be difficult to keep the rules straight in the next programs.
6. Identify master trainers from each batch to be included in the tutor's list.

Participant's Perspective

1. One program/course is not enough; it must be a continuum. Repetition is important and perhaps a better path would be to arrange more elaborate courses picking up components of an article one by one. For example, 4-6 weeks course only on biostatistics, medical writing language and so on. Thus, the frequency of such courses

needs to be much greater.

2. In continuation to the above point, it must be emphasized that one individual should not be expected to take all the pain every time. The institution needs to step in, and a core team needs to be formulated including individuals from the institutions who have more publications and interest in research. This will also lead to the generation of new ideas and methods of execution.
3. More physical rather than online sessions can be ensured by including institutional faculty members with an avid interest in research. Young blood should be encouraged more in this regard as it is these people who would be expected to assume leadership roles in years to come as they become more seasoned.
4. The rules should be stricter though not intimidating. This would improve the credibility of a course and would strengthen it further. The participants would take the responsibilities more seriously, as happens in the carrot and stick approach.
5. The institution should finance all such activities and consider research capacity building as a vital responsibility rather than a by-product of service provision and patient care. Besides such programs, activities like the annual research day focused primarily on the postgraduate trainees should be organized including prizes for top research papers and poster presentations. The reward is one of the best stimuli to encourage a particular trait among the trainees. Departments with the most IRB submissions should also be acknowledged and rewarded.

Organizers or the core team that sheds blood sweat and tears in arranging and engineering these activities need to be duly rewarded as well or else they will lose interest one day or the other.

CONCLUSION

Research is not a solo flight and engagement with stakeholders & leadership is pertinent for a successful outcome. Our experience also suggests building a network with common interests among the national and international faculty for engagement to form a robust research-base of any organization. This research capacity-building course also identifies physical sessions as more productive than virtual, contrary to what post-COVID global learning is. Our experience closely lands with the notion that when there's a will, there's a way!

AUTHORS' CONTRIBUTION

Both the authors contributed equally.

CONFLICT OF INTEREST

Declared none.

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