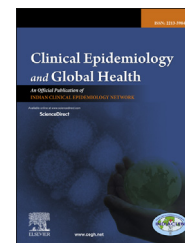


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The significance of research in post-graduate education and ways to facilitate



Rajamohanam K. Pillai^{a,b,*}, Sanjay Mehendale^{c,d}, Shally Awasthi^{e,f},
G. Ravi Varman^{g,h}

^a Director, CERTC, Medical College, Thiruvananthapuram, India

^b President, IndiaCLEN, India

^c Director, NIE, Chennai, India

^d Scientist, G ICMR, India

^e Prof. & HOD, Paediatrics, King George Univesrity, Lucknow, India

^f Past President, IndiaCLEN, India

^g Director & Professor of Community Medicine, Institute of Community Medicine, Chennai, India

^h (Retd.) & Secretary, IndiaCLEN, India

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ABSTRACT

The concept of research for the postgraduates, its scope and the debating points in the Indian context are described and discussed in this article. The scope of research as part of postgraduate activity is discussed along with the importance of methodology, followed by the barriers faced in doing good research. After this introductory part, the points for debate are identified and listed as initiation points for discussion. The alternate viewpoints are also described for each discussion point. The suggestions put forth are listed as points for initiating further discussion and debate.

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1. Scope for research in the life of a physician

A doctor or a physician plays roles of a clinician, teacher, counselor and family health manager in the community. In the immediate post-independence era, their role as researchers was not adequately emphasized. The Srivastava Committee (1975) popularly known as medical education committee and ICMR- ICSR committee on health status have

made passing references to the importance of research in medical education.¹ The 12th five year plan document on social sector, stresses on the importance of encouraging young researchers and mention about introducing research scholarships at the post graduate level.² The national health policy of the Government of India stresses the importance of research.³ The national health research policy says that the medical education system needs to develop a research culture.⁴ Over the last three decades the importance of research

* Corresponding author.

E-mail addresses: drjamohanank@gmail.com, certctvm@gmail.com (R.K. Pillai).

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in all fields of medicine has been increasingly recognized. The nature of research ranges from basic and clinical to field based and applied research and can be preclinical, clinical and Para-clinical or diagnostic, preventive and therapeutic in application. The dichotomies like experimental and observational research and qualitative and quantitative research are mostly methodology related. Operational research, implementation research, inter-disciplinary research and translational research primarily describe the area of its potential impact.

2. Scope and significance of postgraduate research

All universities granting postgraduate medical degree as well as the Medical council of India⁵ consider research or thesis work as an obligatory requirement, but do not insist on this requirement for postgraduate diploma courses. The fundamental principles of postgraduate medical education have been described in the World Federation of Medical Education document and they clearly mention research competency as a requirement among post-graduates.⁶ There is an implicit expectation of their ability for appraisal and utilization of new scientific knowledge to improve clinical practice and scholarly contribution to development and research in the chosen field of medicine. This is expressed as the need for research oriented medical education in India.⁷ Everybody agrees that voluminous clinical material is available in the campus of medical colleges and university archives. Our doctors are well known for their clinical expertise. However, the research output from our medical campuses is not remarkable. Most of the postgraduate research remains unpublished (30%) and there is considerable criticism about its quality.⁸ The gaps in knowledge of methodology and poor quality of research training at post-graduate level was mentioned in one of the editorials of clinical epidemiology and Global health.⁹ The ‘publish or perish’ attitude was critically looked by Paul grant et al.¹⁰ In spite of various initiatives at the institutional and national levels, primary preference to clinical commitment overrides research commitment. Also, for a medical teacher, most of the time is spent on teaching and related activities and research gets no priority in the daily routine. Hence only few medical teachers are able to pursue research diligently.

Every patient coming to the physician is a source of new information. Moreover, intuitive thinking and decision making based on judgment and experience by the physicians generate data which can be equally valuable as that arising from carefully planned observational and experimental studies. Hence careful documentation of clinical information is important and such data should be analyzed to make meaningful conclusions which can improve the management practices and clinical outcomes. The present situation of less supportive environment for research is changing and a rapid momentum has been felt recently in some institutions.¹¹

There are various reasons why it is necessary to give attention and emphasis to postgraduate research. Postgraduate training lays a scientific, rational and ethical foundation for practice of medicine in the future. Most of the medical colleges have strengthened infrastructure and taken initiatives to foster postgraduate research. They include

training in research methodology, establishment of institutional research and ethics committees, promoting students and teachers to write research projects and even providing funding for implementing research and presenting the same in conferences and meetings. However, some postgraduates prefer to walk on the trodden path, their mentors and teachers don't find enough time to guide them and strong funding options to support postgraduate research are practically non-existent in the majority of the medical institutions in the country. There is a need for a radical reform in all these areas. Incentivized approach both for students as well as teachers and sizeable funding for postgraduate research might significantly improve the quality and output of postgraduate research. How incentives can be provided is a matter for debate.

2.1. Barriers faced in doing research

These are discussed in various references and we do not want to list them again. We only want to share our view point on this.^{12–15} Results of research become apparent only after some time and one has to be patient. For the success of research projects, conducive and supportive environment is crucial. Even for formally trained researchers the lack of an enabling environment is identified as the most important problem.¹⁶ Institutions of excellence have better facilities and arrangements for helping researchers. Positive and supportive research environment should become a part of institutional culture and commitment and gets passed on from generation to generation. There is need to have dedicated funding for research and the prevailing rules should also be supportive. It is often noticed that industry supported research and clinical trials get done because they are accompanied by funding support and opportunity for revenue generation for the institution and researchers.

Doctors who do not have a good understanding of mathematics and statistics usually do not have a mathematics background and hence find it difficult to analyze quantitative data. Even in bio-medical sciences, appropriate conclusions and inferences are possible with an optimum experience and expertise in statistical methods. It is sometimes noticed that questionnaires developed for postgraduate studies are very elaborate, but the data presented in the dissertations is often in the form of simple frequency distributions only. The students do not understand how to analyze confounders and report interactions while analyzing causal pathways and associations. One of the contributing factors for this plight is the inability of postgraduate teachers themselves to guide their students in this area due to ignorance in methodology. This significant deficiency needs to be specifically addressed. Medical institutions should offer compulsory foundation courses in research methodology and biostatistics to all postgraduate students and develop dedicated establishments for promoting research.¹⁷

Although research means many things to many, the basic purpose of bio-medical research is to prevent diseases, promote health, ensure freedom from illness, minimize disabilities and improve physical, psychological and social wellbeing. Whether it is obligatory or voluntary, the purpose of medical research should be suited to the requirements of

the country and should be realistic.¹⁸ Although irregularities in clinical trials have been an area of concern in recent times in the country, medical science is unlikely to progress by not doing them. Therefore, it has to be ensured that, clinical trials are conducted in a sound clinical, ethical and regulatory framework. The Ethics Committees are expected to judge and provide opinion about ability of the study methods to manage human subject's issues, but the true responsibility of conducting ethical research lies with the researchers. Research based on poor methodology is expected by all means to compromise basic ethical principles.

2.2. The questions to be addressed

2.2.1. Investigator competence

Are there any ethical or structural challenges in permitting postgraduates to do research projects independently which are linked to their incompetence and experience in doing them independently? Those who criticize postgraduate research on the basis of lack of competence should know that ICMR encourages even undergraduates to do research.¹⁹ What is the study design allowed at post graduate research level is another question. For postgraduate research at basic level of initiation and training, close guidance of mentors, teachers or guides and keeping primary focus on observational studies/case series etc. could be the right approach. It is advisable that clinical trials or interventional studies are not undertaken at this level. This is again a point for debate.

2.2.2. Training in methodology as requirement for doing research

Faculty involvement in postgraduate research is less than desired and consequently most postgraduates do not take thesis work seriously. This is partly due to lack of knowledge for both mentors as well as the mentees on methodology or how to do research. Lack of motivation is a universal problem. Possible solutions to change this scenario could be to provide incentives, prizes, seed money for postgraduate research, compulsory foundation level courses for students, special engagement programs for teachers, allotment of sizeable marks in the overall assessment and external evaluation of all postgraduate theses. To improve the quality of postgraduate research, all the post graduate (PG) courses should have "Epidemiology and Research methods" as an essential theory paper in the first semester of the PG course. Only after completing this course, the registered postgraduates should be allowed to submit their research question with pre-proposal. Beginners should be handled with a supportive attitude and research should never become another source of stress.²⁰

2.2.3. Should research be an integral part of postgraduate curriculum?

Making the thesis submission mandatory for PGs need not be viewed as a statutory requirement for acquisition of postgraduate medical degree, but an opportunity to get exposure to conduct research on their areas of interest. Such an opportunity will enable postgraduates to understand their potential and interest to take up a career in research in future. It has already been previously argued that exposure to research

is likely to make the physician more rational, logical and responsible. Some of the postgraduate teachers have also started arguing in favor of thesis as an obligatory requirement.²¹

2.2.4. Mentorship, faculty's research competence and willingness to engage

There can be three types of career tracks for physicians; research plus teaching, Clinical practice plus teaching and combination of both tracks. While discussing on lack of motivation and interest among medical graduates and postgraduates, we have to realize that it is not prudent to hold the students alone responsible for this. In many instances the faculty is unable to inspire them and cannot even project themselves as role models. There is already reference to the positive impact of mentoring in development of productive research career in medical colleges.²² It is important to concentrate more on the capacity building and training of faculty and also provide them substantial incentives to get engaged in research. It may be important to set up a mechanism for periodic review of student's theses in a formal manner, preferably coordinated at the level of the university granting the degree. This may be also based on formal reports periodically submitted by the mentors or postgraduate teachers.

2.2.5. Is there a need to make a provision for resources to support postgraduate research (Financial support for postgraduate research)

There is no uniform or consistent policy regarding provision of seed grant for postgraduate research. High quality research requires good funding and can be expensive. If clinical research requires laboratory work up, the cost may further increase. Majority of the medical institutions or universities do not have a provision for funding postgraduate research. It is therefore important to ask for Governmental and private funding allocation to medical colleges and universities to build a corpus fund for research from which research grants can be sanctioned for postgraduate research. Medical Council of India should play an active role and become an interface in this process.

2.2.6. What kind of institutional and administrative support other than funding is required to strengthen postgraduate medical research?

One of the pillars for maintaining high standards of postgraduate medical research is solid institutional support. All medical colleges and universities should have mechanisms for scientific review of postgraduate research proposals by Institutional Research Committee and ethics review by Institutional Ethics Committee. ICMR insists on scientific evaluation of every research proposal before ethical review.²³ This scientific evaluation can be done by the research committee. Now standard formats identical to Good Clinical practices are available called Good Bio-statistical reviewing standards.²⁴ These committees should meet timely to review and facilitate approvals and strive to maintain high standards of research. It may also become important to set up Conflict Resolution Boards to solve grievances and complaints by students, mentors and institutions. It would be preferable to

have standardized mechanisms for all medical institutions undertaking postgraduate medical research, endorsed by Medical Council of India and University Grants Commission.

It is important to inculcate research culture in the institutions fostering team-work and inter-disciplinary approach to find answers to health problems.

3. Conclusions

There is an urgent need for revamping the policies, infrastructure, environment and funding options to foster and improve the quality of postgraduate research in medical colleges and medical institutions. It is important to motivate and encourage students to take postgraduate research seriously. The faculty should be more actively engaged in the mentorship program with significantly higher qualitative and quantitative inputs. The research culture in medical institutions should be strengthened and medical universities as well as policy making and statutory bodies should take necessary steps to insist on high quality postgraduate thesis work. There is a need of collective effort and various interested groups and stakeholders should be actively engaged in bringing in radical reforms. We should have a firm belief that all doctors will be much better professionals if they have a research mindset, orientation, exposure and hands on experience. The following suggestions are put forth to initiate discussion and consideration for administrators.

1. Start research cell with Clinical epidemiology units as research facilitation centers attached with either community medicine or teacher training unit or any major clinical department in all medical colleges and coordinating center under university. The following paragraph is from the MCI book on Postgraduate medical education.²⁵ This should be insisted for implementation throughout the country. “University to facilitate research by mandatory creation of research cell in every medical college that will provide assistance in financial and administrative management of research projects”. What should be the name of this research facilitation centre is again a matter for debate. Clinical epidemiology is now established as the independent discipline dealing with the methodology of doing clinical research. Now standard text books of public health as well as epidemiology have dedicated chapters on this discipline.^{26,27} Functioning of a research facilitation centre cannot be complete if this important discipline is not given due respect. Example of research cell with explicit guidelines is the one at All India Institute of Medical sciences, Jodhpur.²⁸

Medical colleges would create a corpus of intra-mural funds that provide seed money to encourage young teachers and research workers to initiate and then seek funding from regular funding agencies.

2. The concept of research based curriculum and policy and curriculum based research should be popularized. Innovative teaching learning methods can be incorporated to this. Topics for postgraduate research should be decided based on this.²⁹

3. Key posts like convener of institutional research committee, epidemiologist, or membership in committees having a say on the conduct of research should be occupied by those formally trained in research methodology and epidemiology.
4. Pooling of resources and sharing of resources especially extramural funds should be by an institution level central agency and under explicit guidelines.
5. Formal endorsement by concerned administration of all research activity should be insisted without fail.
6. Complaint redressal or conflict resolution committees to initiate and decide on complaints regarding research misconduct should be started in all institutions or attached to grievance redressal committees already functioning in medical colleges.³⁰
7. National forums should take opinions and feedback from those who do research and incorporate that in to the process of regulating research in the country.
8. Allotment of committed funds for supporting postgraduate research should be done on sharing basis institutional/state/central/sponsored funds.

These suggestions are put forth here as a continuation of our previous activity published and represented to the Govt. of India.³¹

Conflicts of interest

All authors have none to declare.

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