

EDITORIAL

Need to integrate student research with the medical course curriculum in India

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The integration of research component into undergraduate (UG) medical curriculum in India is still an issue that has not received much attention. Medical educators in the west have generally favoured this with most of the medical schools maintaining it as curriculum requirement. In India, the efforts in this direction are still in a stage of infancy.

The arguments in support of making research as an essential component are based on the strong conviction that undertaking basic research helps the medical students to sharpen their analytical, creative, and critical thinking skills, which the practice of medicine demands. ⁽¹⁾ The concepts and tools clinicians use in their routine practice are believed to be the direct product of basic and applied scientific inquiry. This renewed emphasis on the medical students' research is also aimed to fulfil the future research, especially translational medical research that needs more and more involvement of medical scientists. Moreover, exposure to research at UG level is expected to have good impact on the medical students to create interest in research and may serve as incentive for them to take up research as a career in future. ⁽¹⁻³⁾

On the other hand, there are experts who question the wisdom in making research training as mandatory in UG course considering the fact that the content to be learnt is already too vast in the curriculum. ^(1,4) There is still no overruling evidence available to show that research experience does help in shaping a better physician leading to improved patient care. There is also apprehension that it might be misleading to encourage medical students to consider research careers in the context of limited funding available for research and the competition for investigator posts being so

intense, which is perhaps more applicable for developing countries like India, where funds allocated for research are far from satisfactory.

A popular trend in the developed countries with positive impact:

The current trend in most of the medical schools in western countries is very much in favour of making research as an essential scholarly component in modern undergraduate curriculum. General Medical Council of UK and Scottish Deans Curriculum group in 'Tomorrow's Doctors: the outcomes and standards of UG medical education' and National Alliance for Physician's competence in its guide to 'Good Medical Practice in USA' have strongly advocated fostering of research-specific skills among UG medical students along with the development of transferable skills, such as communication, teamwork, time management and critical thinking. The major initiatives taken by USA in this regard which had high impact in motivating the medical students for research, have been the National Institutes of Health (NIH) supported Medical Student Research Fellowship (MSRF) programme and the Doris Duke Clinical Research fellowship (CRF) programme. ⁽³⁾ Yale's school of Medicine has the longest history of integrating research into the medical school curriculum with students exposed to research throughout the course, which is reported to have played critical role in the career choice of students. ⁽¹⁾ Case Western Reserve University (CWRU) School of Medicine has mandatory four months research block in the UG curriculum, making the students do research full time during that phase with a faculty mentor, which is reported to be effective in strengthening medical student professionalism. ⁽⁴⁾ The Drew University College

of Medicine offers a curriculum requiring UG medical students to develop, design, and implement a primary care research project, which is well received by students as beneficial and positive. ⁽⁵⁾ Harvard medical school and Mount Sinai School of Medicine have been late to start but are now running active medical student research programmes. A thorough inquiry into different mandatory and elective models of medical students' research programmes in USA gave the impression that they have the potential to significantly impact the medical education through scholarly in-depth enquiry and longitudinal faculty mentorship. ⁽⁶⁾

Queens University and the University of Western Ontario in Canada also have rural summer studentship programmes. ⁽⁴⁾ Norway has students research programme in all of its four medical faculties, which is reported to have led to significant increase in the recruitment of graduated physicians to medical research. ⁽⁷⁾ In the Netherlands, medical students are required to do full-time individual research projects and a survey based on the number of publications has shown their productive involvement in research during the course. ⁽⁴⁾ In the UK, all medical students are exposed to research principles within the student selected components (SSC) programme, which is reported to have facilitated medical undergraduates to experience better quality research. ⁽⁴⁾

Scenario in India:

UG medical students in India have limited opportunities to participate in research and are not exposed to a formal training in research. ⁽¹⁻⁴⁾ As per the national level survey on the scientific papers published during 1990-1994 from medical colleges across India, almost 20 per cent of the colleges did not publish even a single paper during this period. ⁽⁸⁾ Medical education in India as such is more clinical practice oriented. The regulatory bodies and the health universities have been slow in implementing reforms in medical education as per the changing trends. Research training has still not been made a formal component of UG medical students' curriculum. Though Medical Council of India has recently proposed to include research methodology as one of the electives of UG

medical course in its vision 2015 document, it does not leave any scope for UG students to have mandatory exposure to research.

The only significant positive move in the past few years in this direction is the initiative of Indian Council of Medical research (ICMR). Over the years, the scheme has become quite popular with significant increase in the number of students applying for studentships. However, ICMR-STS scheme alone is not able to cater to the needs of increasing number of students interested to carry research. The students have no cue of which types of projects are being selected by ICMR and are left with the impression that getting studentship is a matter of chance. Though some of the Health Universities like Maharashtra University of Health Sciences have also taken initiative in offering fellowships for medical undergraduates, the available financial resources are still far less to make an impact and attract the students towards research. The lack of interest, willingness and often inadequate expertise among the mentors and the procedural hurdles dissuade the motivated students to take up research in medical institutes.

The obstacles like funding and institutional ethics committee's clearances, which are reported to exist to some extent even in developed countries ⁽¹⁾ are expected to be more intense in Indian scenario. One of the suggested solutions to overcome these problems is to make the students join a mentor's established research project. With the exception of few leading institutes, the faculty members in most of the Indian medical colleges in both public and private sectors do not have funded projects to accommodate student's research. ⁽²⁾ In the absence of any performance based appraisals or incentives and poor infrastructure most of the teachers lack interest and confidence in writing research project(s) for financial support from funding agencies. ⁽²⁾

UG medical students perceptive:

Having been selected from high competition, the students who join medical courses are very bright and represent cream of the aspirants. Recently, we have conducted a study to assess UG medical students' perceptions of research, which showed that they were highly motivated

and have a positive attitude towards research. Significantly large number (77%) of students favored inclusion of research training in the MBBS curriculum. ⁽⁹⁾

Another important development in recent years that reflects positive aptitude and strong motivation among the students towards research is their active participation in the National Medical Students Research Conferences, which were initially started by Padma Shri Dr. Deo under the banner of Moving Academy of Medicine and Biomedicine. The impact of past five annual meetings (MEDICONS) organized by students themselves has been so good that, it has steered them to form a 'Forum for Medical Students' Research, India', to help in the promotion UG medical students' research.

Initiatives needed to make research as a part of UG medical curriculum:

In the context of broadly agreed view on the importance of educating future medicos to be inquisitive and to help them to develop judicious insight and evidence based approach in their academic and clinical practice, there is need for immediate measures to integrate research into UG medical curriculum in India. The vast experience of the developed countries shows that there is no single model for successfully integrating research into curriculum. ⁽¹⁾ We have to work out the model that suits to our pattern and needs. Apart from making research methodology as a part of the curriculum, there are several additional initiatives that can motivate the students for research and help

them to build strong scientific foundation for future medical practice. Providing incentives to students in the form of credits in internal assessments, considering their research involvement while selecting for post-graduation courses, giving early training in research methodology, helping them to overcome the procedural hurdles and making them join the ongoing faculty research projects, encouraging them to take off some dedicated time for research are some of the student focused measures. ^(10,11) Implementing and encouraging sound mentoring programme, training the faculty in this direction and recognizing their efforts in providing effective guidance and favourable environment to students are the faculty focused measures. The medical institutes need to improve funding for research, support organization of workshops and conferences for faculty and students, help in running students journals for sharing their research, and promote collaborations with other institutes. ^(10,11)

The words of Dr. S Fauci, the Director of the National Institute of Allergy and Infectious Diseases, "I chose science and medicine because of my attraction to public service and my desire to use science for humanitarian purposes. I feel strongly that there is no higher calling than science for the sake of human health..." reflect the sentiment and express the need for giving due importance for student research to strengthen the current medical curriculum in India.

Particulars of Author:

Dr. MVR Reddy is working as Prof. and Head, Dept. of Biochemistry at MGIMS, Sewagram. Prof. Reddy has received various awards including *Best Teacher award* from Maharashtra University of Health Sciences (2011), *Awadhesh Saran Memorial Oration Award* (2010) from Association of Clinical Biochemists of India etc. He was Chairman, Board of studies of Pre-clinical Medical Board and currently on the Boards of Sciences of both UG and PG Boards and member of Faculty of Medicine at MUHS, Nashik. Presently he is also the Associate Editor for *Journal of MGIMS*, Sewagram and Managing Editor for *Indian Journal of Clinical Biochemistry*. Prof. Reddy was also Editor-in-Chief for *ACBI News Bulletin* in recent past and is one of the eminent members of the Advisory Panel for *The Health Agenda* journal.

REFERENCES

1. Josiah Macy Jr. Foundation, Mount Sinai School of Medicine and the New York Academy of Sciences (2012, December 24) Symposium: Integrating Student Research into the Medical School Curriculum. Technical report, The New York Academy of Sciences.
2. Deo MG. Need for research oriented medical education in India. *Indian J Med Res* 2009; 130(2): 105-107.
3. Burgoyne L, O' Flynn S, Boylan G. Undergraduate medical research: the student perspective. *Med Educ Online*. 2010, 15.
4. Sreedharan J. Introduction of a Research component in the undergraduate medical curriculum - Review of a trend. *Nepal Journal of Epidemiology* 2012; 2(3):200-204.
5. Ogunyemi D, Bazargan M, Norris K, Jones-Quaidoo S, Wolf K, Edelstein R. The development of a mandatory medical thesis in an urban medical school. *Teach Learn Med*. 2005; 17(4):363-369.
6. Green EP, Borkan JM, Pross SH, Adler SR, Nothnagle M, Parsonnet J, Gruppuso PA. Encouraging scholarship: medical school programs to promote student inquiry beyond the traditional medical curriculum. *Acad Med*. 2010; 85(3): 401- 418.
7. Steiner H, Breivik J, Siebke M, Tommeras K, Figenschau K, Hansen JB. Evaluation of the medical student research programme in Norwegian medical schools. A survey of students and supervisors. *BMC Med Ed*. 2009; 9:43.
8. Satyanarayana K. National mapping of India in biomedical sciences based on Index Medicus, Excerpta Medica and Tropical Diseases Bulletin for 1990 and 1994; Indian Council of Medical Research, New Delhi; 1998.
9. Reddy MVR, Khan MS, Goswami K, Deshmukh P, Anshu. Presented at SEARAME NCHPE 2012 - South East Asian International and Indian National Conference on Health Professions Education, 5 - 8 Sept. 2012.
10. Dangayach NS, Kulkarni UP, Panchabhai TS. Mentoring medical student research through studentships and fellowships: reflections from India. *J Postgrad Med*. 2009; 55(2):152-153.
11. Singh S, Pruthi S. Undergraduate medical research: tapping the untapped potential. *Indian J Med Res*. 2010; 131:459-460.