

# The Role and Scope of Research in Undergraduate Medical Curriculum

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## ABSTRACT

A continual enhancement of research capacity remains the cornerstone of modern medicine. Medical students need to understand, learn and apply the principles of research to practice of medicine. The best time to instill these principles in students is during the undergraduate medical course. This initiative can help to generate interest in medical students to develop cutting edge innovations for the benefit of all. Strategic planning and step-wise implementation of research module is possible without much alteration in conventional medical curriculum. The goal of the module is to give research insight to undergraduate medical students through meaningful ethical research. The research module may also help in inculcating other attributes like self-discipline, problem solving, critical thinking and life-long learning in medical students.

**Keywords:** Medical curriculum, Medical students, Research

## INTRODUCTION

Medicine is an ever evolving branch of science. Path breaking discoveries and innovations in medical sciences are a product of continuous scientific advancement and better understanding of social aspects of human life. Research and development in these aspects have played a pivotal role in reshaping our lives and belief systems. This dynamic research base is the foundation of modern medicine and has helped us to achieve great accomplishments. It is expected that universities should provide a platform for understanding and conducting research in a controlled setting at all levels of medical education. Over time, medical universities have adopted various means to enhance their undergraduate curriculum but the focus on undergraduate research is still very low [1]. However, there has been an increasing international acceptance of developing research skills as is documented by several studies [2,3].

### The Need

Since the primary focus of undergraduate medical curriculum is to produce a medical practitioner, the emphasis is laid on teaching rather than research in the field of medicine. Over the last few years, the focus of medical education has changed from a research-based medical practice to a service-based industry. An inquisitive attitude towards learning medicine is an essential attribute of each and every medical student. Infact, questioning and reasoning are two powerful tools required to expand frontiers of medical science. Developing research skills is vital to encourage medical students to use the best available medical evidence obtained through systematic search and appraisal of the relevant sources of information, to inform their clinical decisions. This goes a long way in developing new knowledge through application of basic research methods and skills. Young minds need systematic channelisation of these energies to develop the principles of problem solving and critical thinking. Structured training in conducting research and analysing data will equip medical students with greater confidence to practice medicine rationally in the future. The challenge is to make viable changes in the undergraduate medical curriculum regarding research for the benefit of the future doctors. A paradigm shift in attitude of all stake holders will be required to involve mandatory research in undergraduate medical curriculum.

### The Solution

Promoting a culture fostering research is a solution to the problem. This will require the incorporation of a vertical strand of mandatory research module in undergraduate medical curriculum. This module should span throughout the entire duration of the medical course. A dedicated time for conducting research of not more than 5-10 percent of total workload should be given for the same. The expected outcome should be a meaningful research report and not an impact factor driven indexed publication. Results from studies done earlier show that incorporation of research in undergraduate medical curriculum fosters the enhancement of knowledge and better understanding of the medical subjects [4,5].

Participation in research will enhance attributes of scientific thinking, team working, leadership, communication and management skills. This in turn will fuel the growth of life-long learning aptitudes. Research module will also make medical students accountable for their daily schedules and empower them with the armaments of discipline, self-confidence and curb the habit of procrastination. The objective is to lay emphasis on the process of the research rather than the outcome at the undergraduate level. Medical students will be required to work in practical settings which will give them an opportunity to observe and learn skills beyond books. This will help the students identify their academic role models and life-long mentors during the process.

Research module with a step-wise approach comprising 'taught' and 'search' domains should be developed. During first and second year of the medical course, students should be taught to critically appraise selected published research articles. Enhancing acquisition of data analysis skills through training in biostatistics using software and improving english language skills should also be a part of the module. Pedagogical techniques like series of lectures, small group discussions and workshops need to be integrated within the existing curriculum. A summative assessment of these reporting and learning sections will pave way to further interest and work in the field of research [6].

In the clinical years, the approach should focus on student centric, self-directed learning. Medical students should be assigned a research mentor from within the faculty. Multidisciplinary research

with emphasis on teamwork should be promoted. Research mentors can help students choose a topic for research. The topics selected should be of the level appropriate for undergraduate students.

Schools can reserve a part of student's tuition fee for funding of the research project. Funding agencies can be approached by the institution to source additional funds, if required. All the research proposals can be submitted for ethical clearance to institutional board and approvals should be a part of interim summative assessment. This will help strengthen the foundation of ethics in conduct of research. A log book to keep a track record of activities can avoid bias in the long run. A research report needs to be submitted by the student for summative assessment. The process of conducting research should carry more weightage as compared to the final outcome.

The goal of this module is to make students aware of the guiding principles of research in medical field. Several studies have explored several types of research experience offered to medical students and have emphasised the need for a structured approach to research [6,7].

Research module will help students to gear up for research at postgraduate level. Few students may also want to expand their research portfolios and do intercalated courses out of interest over time. This research may also upgrade their knowledge in selected field of clinical medicine which will help to achieve early success in their careers. A medical student with a strong foundation of research can understand the importance of evidence-based medicine and practice the same in the future. The idea and science behind

research will drive the way to major discoveries and innovations in the future.

## CONCLUSION

Understanding and integrating new knowledge into clinical practice is an essential attribute of a good medical practitioner. Medical education requires a nexus between teaching and research activities with an outward looking approach to foster the research culture. Experiential student learning through a research module is a viable solution to promote lifelong learning skills amongst future doctors.

## REFERENCES

- [1] Deo MG. Undergraduate medical students' research in India. *J Postgraduate Med.* 2008;54(3):176-79.
- [2] Dowell J, Merrylees N. Electives: isn't it time for a change? *Med Educ.* 2009;43(2):121-26.
- [3] Medical Education in Europe. MEDINE2. Integrating the research component in medical education in Europe. <http://medine2.com/> (2018). Accessed 25 June 2018.
- [4] Laidlaw A, Aiton J, Struthers J, Guild S. Developing research skills in medical students: AMEE Guide No. 69. *Med Teach.* 2012;34(9):e754-71.
- [5] Amgad M, Man Kin Tsui M, Liptrott SJ, Shash E. Medical student research: an integrated mixed-methods systematic review and meta-analysis. *PLoS One.* 2015;10(6):e0127470.
- [6] Riley SC, Morton J, Ray DC, Swann DG, Davidson DJ. An integrated model for developing research skills in an undergraduate medical curriculum: appraisal of an approach using student selected components. *Perspectives on Medical Education.* 2013;2(4):230-47.
- [7] Dangayach NS, Kulkarni UP, Panchabhai TS. Mentoring medical student research through studentships and fellowships: Reflections from India. *J Postgraduate Med.* 2009;55(2):152-53.

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