

Correspondence

Research temperament among undergraduate medical students: A nationwide study

Modern medicine and healthcare rely on an evidence-based approach, emphasizing the need for good scientific research. The worldwide decrease in the number of physician–researchers is a matter of concern. There are no universally accepted ways to motivate doctors; however, the literature clearly upholds the role of early induction as a promising option.^{1,2} Undergraduate research can thus be a possibility to enhance the physician–scientist workforce.³

Research and related activities during the undergraduate period can be mandatory, elective or extracurricular depending on the institutional norms, department culture and faculty motivation. Since early exposure is highly valued, we aimed to assess research-related activities of undergraduate medical students in India. Quantitative evaluation based on publications/projects is not appropriate. Any activity outside their curriculum showing scientific pursuit or inclination needs to be considered. Ethical waiver was obtained from our Institutional Ethics Committee.

We collected the research background of participants of a national-level research methodology programme organized from 7 to 17 September 2020 by our medical college. A total of 174 undergraduates from 57 medical colleges across India, representing 11 states/Union Territories, attended the programme and responded to the google form-based survey by furnishing the following details:

1. Reading scientific articles/research reports
2. Attending scientific conferences/workshops
3. Involvement in community medicine projects (data collection, data entry, etc.)
4. Presenting scientific papers in seminars/conferences
5. Short-term studentship (STS)
6. Publishing scientific articles

Data were entered into Microsoft Excel and analysed using IBM SPSS version 25. Research activities were scored in the order given above with the minimum score of 1 for reading scientific articles and the maximum of 6 for publishing activity. Kruskal–Wallis test was performed to assess the association between research activity and year of study.

The maximum respondents were from the state of Kerala (54.6%), followed by Tamil Nadu (17.2%), Karnataka (6.9%), Telangana (4.6%), Maharashtra (4.0%), Gujarat (3.5%), Puducherry (3.5%), West Bengal (2.9%), Chhattisgarh (1.2%), Punjab (1.2%) and Bihar (0.6%). The study group comprised 72.4% women and 27.6% men, with 34.5% in third year, 30.5% in second year, 20.7% in the final year and 14.4% in first year.

Our study showed that 66.1% of undergraduates were involved in research-related activities. Attending seminars/workshops were reported by 29.3%, the activity increasing with the year of study. The habit of reading scientific articles was reported by 25.9%, with maximum response from those in second year. Hands-on research experience through STS was reported by 16.7%. Scientific presentations and paper publishing by 2.9% and 1.7%, respectively, were limited to third- and fourth-year students (Table I). A single research activity was reported by 13.2%, two different activities by 9.8%, three by 8.6%, four by 4.6% and five different activities by 0.6%. Year-wise activity score showed a steady rise from first to third year, but a slight drop was noticed during the final year (Table II). The Kruskal–Wallis test found a statistically significant association between the year of study and research activity ($p=0.024$).

The higher representation of women in the study may be a reflection of the gender disparity among the undergraduate students of medical colleges, especially in the southern states. Colleges from Tamil Nadu, Karnataka and Kerala show high women–men ratios (Christian Medical College, Vellore 1.39, Kasturba Medical College, Manipal 1.16 and Amrita Institute of Medical Sciences, Kochi 1.69).⁴

Improved research activities with advancing year of study may be attributed to greater opportunities, exposure and enhanced interest. Previous studies have emphasized the role of Mentored Students Projects.⁵ The promotion of undergraduate research by the Indian Council of Medical Research through STS is noticeable in our study. Updation on current research through literature survey was reported by 34% in the second year, but showed a decline during clinical rotation and the patient exposure phase. This might retard the process of identification of research gaps and framing of well-structured clinical questions. The importance of scientific publications has been stressed by authors,⁶ but our study reported only 1.7% publication output. With India having a mere 1.6% share in the world medical research

TABLE I. Research activity among undergraduate medical students

Activity	Year of study (%)				Total (n=174)
	First (n=25)	Second (n=53)	Third (n=60)	Fourth (n=36)	
Reading articles/reports	16	34	23.3	25	25.86
Attending seminars/workshops	12	20.8	33.3	47.2	29.3
Involvement in community projects	–	1.9	5	5.6	3.44
Presenting research work	–	–	3.3	8.3	2.87
Short-term studentship (STS)	–	20.8	16.7	22.2	16.67
Publishing research	–	–	1.7	5.6	1.72

TABLE II. Year-wise research activity score of medical students

Year of study	Research activity and scores						Total score
	Reading research articles	Attending seminars workshops	Community project	Presenting research work	Short term studentship	Publishing research	
First	4	6	0	0	0	0	10
Second	18	22	3	0	55	0	98
Third	14	40	9	8	50	6	127
Fourth	9	34	6	12	40	12	113

Association between the year of study and research activity score was significant ($p<0.05$).

output,⁷ and the major share of it being from faculty members/scientists from elite medical institutes, little contribution occurs from the student community.⁸

Over the years, a paradigm shift has occurred from experience-based medicine to evidence-based practice, making medical research and training an integral component of the medical curriculum.⁹ Education should ensure systematic enquiry skills along with reflective practice and action. The undergraduate curriculum (2018) of the Medical Council of India provides competency in basic biostatistics, epidemiological research designs and data collection, but does not familiarize students with critical appraisal of research findings, interpretation of statistical measures and conduct of systematic reviews. The institutional goals can focus on building research capability of students. The revised Graduate Medical Education Regulation, Part II (2019) prescribes two mandatory elective blocks; the first one is in basic sciences or research. Students opting for research can take up projects or participate in pre-existing projects under a preceptor for one month.¹⁰ Association with an active researcher/research department can be motivating and rewarding for the student.

Research temperament of the study group is promising, showing direct relation with the year of study. Involvement in research and updation on global research activities is appreciable. The research output among the group appeared inadequate.

Conflicts of interest. None declared

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