

# Perceptions, Attitudes, Practices and Barriers Towards Research Amongst Postgraduate Medical Students in Goa

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## ABSTRACT

**Introduction:** Medical research is a vital entity of every medical professional owing to the continuous advancements in medical science especially during period of postgraduate training. It was observed that majority of the newly joined postgraduate medical students in Goa have limited understanding of research. Hence, the present study was conducted to assess the perception, attitudes, practices and barriers towards research amongst post graduate medical students at Goa Medical College.

**Material and methods:** A descriptive, cross sectional study was conducted at Goa Medical College and Hospital, Bambolim over a period of 2 months (August–September 2019) involving 92 first year postgraduate medical students newly registered for various clinical, pre-clinical and para-clinical degree/diploma courses during the academic year 2019. Data was collected using a 3-part pre-designed semi-structured questionnaire which included sociodemographic data, perceptions, attitudes, practices and barriers towards research. Data was entered into MS Excel and analyzed using SPSS version 22.

**Results:** Among 92 study participants, the mean age of the students was  $25.02 \pm 1.617$  years comprising of majority of females i.e., 60.9% and 39.1% males. Although vast majority of the study participants (96.7%) believed that medical research adds to scientific knowledge and helps in effective health care management, only 25% of them had previously presented oral research papers or posters at conferences and only 16.3% had attempted to publish a research paper. Lack of time (92.39%), lack of knowledge in medical research (55.43%), lack of skill and training (53.26%) and lack of adequate facilities (53.26%) were identified as the major barriers for conducting medical research.

**Conclusion:** The present study revealed a fairly positive attitude towards medical research amongst postgraduate students. Training in research methodology as part of undergraduate, internship and postgraduate curriculum and research-related workshops during medical conferences, including online learning will help to tackle perceived barriers to and promote medical research among students.

**Keywords:** Medical Research, Attitude, Practices, Barriers, Knowledge, Postgraduate Student

Globally, medical research bears tremendous significance contributing to the increased longevity of the human race, due to improvements in diagnosis and treatment which, in turn, contributes to increased productivity and economic stability of the population.<sup>1</sup>

Experience in conducting research is invaluable to the physician's evidence-based clinical practice as it imparts the skills to collect and compile information, assess them objectively, analyse it critically and finally come with a conclusion, all of which is important in clinical decision-making and patient care.<sup>2</sup>

As far as research in medical science is concerned, India has emerged as the world's third largest publisher of science and engineering articles, with 1,35,788 published articles in 2018 accounting for 5.31% of the global research output.<sup>3</sup> However, most of the Indian research studies were conducted by faculty members or scientists from reputed medical institutes, and very little has been contributed by medical students as suggested by a review of research publications from 579 Indian medical colleges and hospitals which reported that 57.3% of the medical colleges did not have a single publication over 10 years (2005–2014) and only 25 (4.3%) institutions produced more than 100 papers a year.<sup>4</sup> Inculcation of research into medical curriculum paves the way for improvement and upgradation of existing knowledge of the concerned field. Exposure to scientific research promotes scientific output as it allows students to enhance their scientific knowledge master basic laboratory skills, develop higher order research competencies such as critical-thinking, problem solving, thought-processing, wise-judging, life-long learning, hypothesis formulation,

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**How to cite this article:** Vernekar P, Kunkolienkar R, Fernandes R, Chiranth AB, Khandeparkar V, Cacodcar JA. Perceptions, attitudes, practices and barriers towards research amongst postgraduate medical students in Goa. International Journal of Contemporary Medical Research 2020;7(9):11-16.

**DOI:** <http://dx.doi.org/10.21276/ijcmr.2020.7.9.9>



## INTRODUCTION

The field of research in medical science holds a great deal of importance to the clinicians to keep up with disease trends and their risk factors, to study outcomes of treatment or public health interventions and to provide better-quality health care.

methodology delineation, results interpretation and data communication both orally and textually.<sup>5</sup>

As per the Medical Council of India (MCI) requirements, postgraduate students have to carry out a dissertation project as a part of their Doctor of Medicine/Master of Surgery (MD/MS) curriculum. Also, MCI has made it mandatory to not only attend one International or National conference, but also present an oral research paper or poster and submit the article for publication in order to encourage research orientation among postgraduate students.<sup>6</sup> Most medical colleges in India are plagued with the barriers of time, expertise and funds to conduct research, and thus adopt a short-sighted approach which may result in publication of poor-quality research papers in predatory journals.<sup>7</sup>

A review of previously published literature noted that medical students in various medical colleges of India have a limited understanding of the importance of research in clinical science. Since no such study of this nature has been conducted in Goa, our present study was undertaken to understand and interpret the perceptions, attitudes, practices and barriers towards medical research amongst post graduate students of Goa Medical College and Hospital, Bambolim.

## MATERIAL AND METHODS

The present study was a descriptive, cross-sectional study conducted at Goa Medical College and Hospital, Bambolim over a period of 2 months (August–September 2019) involving 100 first year postgraduate medical students newly registered for various clinical, pre-clinical and para-clinical degree/diploma courses during the academic year 2019. A pre-designed semi-structured questionnaire was used to collect the data from the students. The questionnaire was developed based on the objectives of the study under the guidance of previously published literature. The purpose of the study was explained before administering the questionnaire and written informed consent was obtained from all study participants.

The first part of the questionnaire comprised of socio-demographic data of the study participants including age, sex, marital status and field of specialty. The second part had questions related to perceptions and attitudes towards medical research and contained a total of 7 multiple choice questions. The third part contained practices and barriers faced by medical students in conducting medical research and comprised of a total of 9 multiple choice questions including 3 questions with choice of multiple options.

Ethical approval was obtained from the Institutional Ethics Committee of Goa Medical College before commencement of the study. Data was entered into MS Excel and analyzed using SPSS version 22.

## RESULTS

In the present study, out of 100 eligible study participants, 92 consented to participate in the study. Mean age of the students was  $25.02 \pm 1.617$  years; majority being females i.e., 60.9% and 39.1% males. Among these, majority i.e.

74 (80.4%) were from clinical departments while only 18 (19.5%) belonged to pre- and para-clinical departments (table-1).

Table-2 displays perceptions and attitudes towards medical research among the students. In the current study, 85.9% of the students felt that there should be mandatory training in medical research for postgraduate students and 84.8% agreed that there should be compulsory lectures on research methodology in undergraduate/postgraduate curriculum. However, 56.5% revealed that undertaking medical research increases burden on already overworked resident doctors. Also, a significant proportion (42.4%) weren't sure of pursuing medical research as a long-term career goal. Although majority of the students (96.7%) believed that medical research adds to scientific knowledge, only 25% of them had previously presented oral research papers or posters at medical conferences and 16.3% had attempted to publish a research paper (table-3). The sources of information accessed by students for published literature were internet (39.13%), scientific journals (27.17%), text books (7.6%), library (5.43%) while 20.65% were unaware of such sources. Figure-1 demonstrates that the principal motivation for medical post graduates to consider medical research was to fulfil PG criteria (46%), to improve academics (23%) and personal interest (19%).

Figure-2 shows that lack of time (92.39%), lack of knowledge in medical research (55.23%), lack of skill and training (53.26%), lack of adequate facilities for research (53.26%) were the main barriers perceived by the students for not taking part in research.

Permitting dedicated time for understanding and planning research (83.69%), periodic research related workshops (67.39%) and provision of incentives (40.26%) were some of the recommendations suggested to improve student participation in research (figure-3).

## DISCUSSION

In our study, it was found that postgraduate students had a

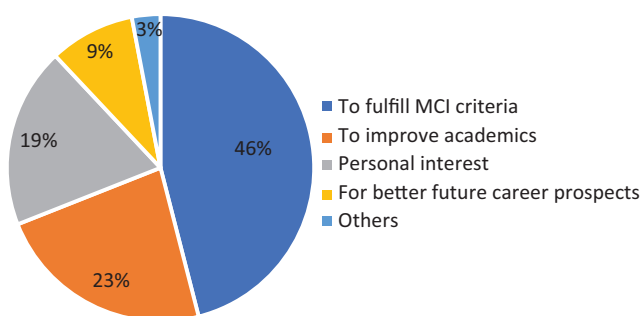
Variables	No. (%) (n = 92)
Age (years)	
≤ 25	74 (80.4)
26-28	15 (16.3)
≥ 29	3 (3.3)
Sex	
Male	36 (39.1)
Female	56 (60.9)
Marital Status	
Married	6 (6.5)
Unmarried	86 (93.5)
Specialty	
Medicine & Allied	45 (48.9)
Surgery & Allied	29 (31.5)
Pre-clinical	6 (6.5)
Para-clinical	12 (13)
<b>Table-1: Sociodemographic characteristics of study participants</b>	

Statements	Agree	Can't say	Disagree
	No. (%)		
Medical research adds to scientific knowledge and helps in effective health care management.	89 (96.7)	3 (3.3)	--
Conduct of research reinforces teamwork spirit.	68 (73.9)	23 (25)	1 (1.1)
Lectures on research methodology should be made a compulsory part of the UG/PG curriculum.	78 (84.8)	10 (24.9)	4 (4.3)
Training in medical research should be made mandatory for PG students.	79 (85.9)	11 (12)	2 (2.2)
Conducting medical research should be a mandatory criterion for appearing for final examination of PG curriculum.	47 (51.1)	31 (33.7)	14 (15.2)
Conducting medical research increases burden on already over worked resident doctors.	52 (56.5)	30 (32.6)	10 (10.9)
I see medical research as a long-term career goal.	38 (41.3)	39 (42.4)	15 (16.3)

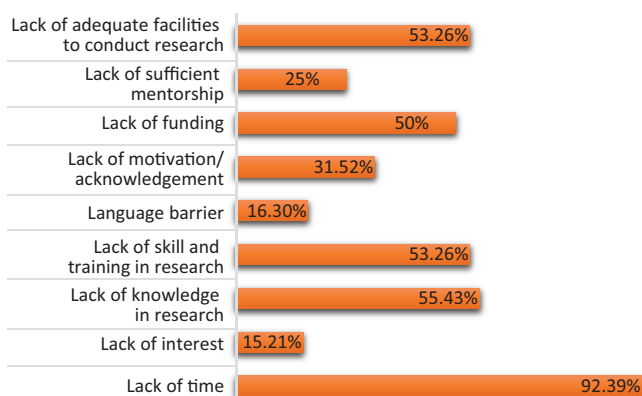
**Table-2:** Perceptions and attitudes towards medical research among study participants

Questions	Yes (%)	No (%)
Familiar with writing of research protocol	16 (17.39)	76 (82.60)
Presented research poster/paper at a medical conference	23 (25)	69 (75)
Attempted to publish a research paper	15 (16.3)	77 (83.69)
Willing to participate in a workshop on research methodology	88 (95.65)	4 (4.34)
Encouraged by seniors to get involved in any research	56 (60.86)	36 (39.13)

**Table-3:** Practices towards medical research among study participants

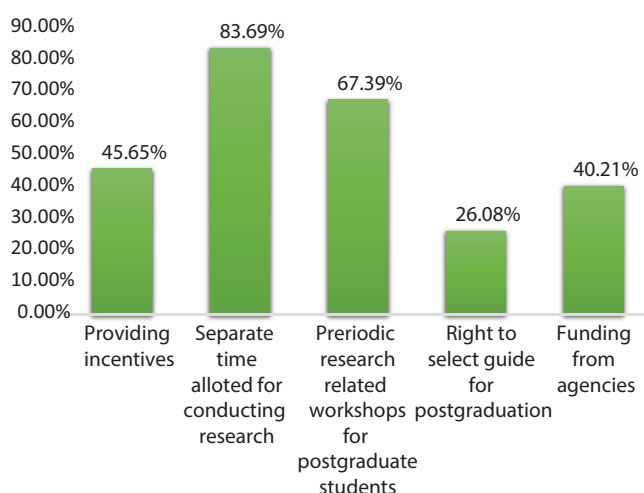


**Figure-1:** Principal motivation for medical post graduates to consider medical research



**Figure-2:** Barriers faced by post graduate students/resident doctors towards medical research

fairly positive attitude towards medical research. Majority of the students believed that medical research adds to scientific knowledge and helps ineffective health care management (96.7%), lectures on research methodology should be made a compulsory part of the undergraduate/postgraduate curriculum (84.8%) and that training in medical research should be made mandatory for postgraduate students (85.9%). These findings were comparable with similar studies performed by Gupta et al<sup>8</sup>, Vairamani CB et al<sup>9</sup> and



**Figure-3:** Recommendations from medical post graduates to increase involvement of resident doctors in medical research

Sangam.<sup>10</sup> However, a considerable proportion of students showed lack of certainty towards medical research being a mandatory criterion for appearing for final examination of postgraduate curriculum (33.7%) and that it contributes to additional burden on already overworked resident doctors (32.7%). This shows that although the students are interested to learn medical research, they are hesitant to pursue it which may probably be due to the deficient knowledge and misconceptions amongst the students with respect to research owing to the lack of priority given to research in the medical curriculum. Most of the students were uncertain taking up medical research as a long-term career goal (42.4%). These findings are in contrast to observations in a study performed in Saudi Arabia<sup>11</sup> that involved senior students who attended and completed a medical research course. This study also showed a clear disparity with regards to attitude and actual participation of the students in conduct of research. Only 17.39% of the students were familiar

with writing of research protocol, only 25% had presented oral research papers or posters at medical conferences and just 16.3% had attempted to publish a research paper. These findings are consistent with previously published studies.<sup>12,13,14</sup> Also, 95.65% of the students were willing to participate in a workshop on research methodology which is consistent with a study done in Central India.<sup>15</sup> This suggests that postgraduate students are out of touch with the theoretical essentials of research methodology and biostatistics quite early in their undergraduate curriculum. It is to be noted that although community health projects and field visits are conducted during third year (Part I) of MBBS, participation in and publication of research is not a mandatory criterion for clearing the course. Hence, a fewer proportion of students take interest in research and engage themselves in getting accustomed to the requirements of the postgraduate course.

Among the students that had published or been part of a research paper, the major difficulty faced was data analysis which is in contrast to a study performed in Telangana state<sup>16</sup> where interpretation of results was found to be most difficult. Shashiraj HK et al<sup>17</sup> also found that students struggled with selecting a topic for research.

A significant margin (i.e., 60.86%) of the students reported that their seniors encourage them to get involved in research activity. This probably stems from the fact that the senior postgraduates are experienced enough to recognize the advantages and usefulness of research in medical field.

Less than half of the students stated that the main motivation to consider research for publishing an article was to fulfil mandatory MCI requirements. This finding was similar to a study done by Hegde et al<sup>18</sup> in which a number of factors such as career progression, improvement of academics, personal interest favoured conduct of research among students.

In the current study, insufficient amount of time was reported as the main perceived barrier towards medical research, followed by lack of knowledge, skills and training in research and inadequate facilities available to conduct research. In addition, inadequate financial support, lack of researcher motivation or acknowledgement, inappreciable mentorship, linguistic barrier and lack of interest were also cited as barriers by students.

Limited time available for research as noted in other studies done in India and abroad<sup>8,10,16,19-22</sup> could be due to the fact that resident doctors are embroiled into clinical practice that demands physical and mental commitment to the extent of not being able to spare time for engaging in research. This was in contrast to studies done by Hegde et al<sup>18</sup> and Memarpour et al<sup>23</sup> where the major barrier towards research was lack of funding support. These studies suggested that research grants sought by students and their mentors through non-governmental sources or offered to them from institutional funds may be helpful in reducing this barrier. Some studies particularly also suggested that learning of postgraduate subjects consumes a lot of time.

In view of the various obstacles faced by resident doctors towards research, we asked the students to suggest

recommendations to promote inculcation of research activity in postgraduate curriculum. Most students suggested separate time slot to focus on research activity which allows them to access various journals and books from the library and form an idea of topics that can be undertaken for research in similar settings. During this time slot, they can also seek mentorship of their respective guides for discussing ideas and solving difficulties with respect to research activity. Hence, adequate amount of time permitted for research endeavours in the postgraduate curriculum can help to reduce the barrier of time constraints in research.<sup>24</sup> Also, more than half of students suggested periodic research related workshops to keep up with the principles of research methodology, biostatistics and publication of research as implied by previous similar studies.<sup>18,25</sup> A study done by Madhavrao C et al<sup>26</sup> also reported that 92.31% of students require seminars, workshops or CMEs periodically to update their knowledge on research principles. A significant proportion of students also suggested funding from agencies which is similar to findings suggested by Shakeel A et al<sup>17</sup> which shows that funding support will promote interest in research among students. Setting aside a certain portion of the annual budget from institutional funds would help to promote student research.<sup>27</sup> Providing incentives for students could be in the form of wholesome cash prizes for paper/poster presentation at National/State/Regional conferences. Student's opinion could be taken with respect to choice of guide after taking up concerned postgraduate course.

It has been noted that the major reasons for poor attitude towards research in developing countries seem to be lack of career opportunities in academics, lack of resources in relation to funding as well as electronic resources such as Internet and lack of time in relation to clinical services which contributed to lack of interest in pursuing an academic career.<sup>28</sup> Overall, we can ascertain that our students generally had positive mindset towards engaging in research and their perceived barriers could be tackled with the help of a full-fledged robust research training program right from undergraduate level to realize the importance and increase awareness and skill in research methodology.<sup>29</sup>

Some medical postgraduate students in southern Brazil<sup>30</sup> consider scientific research crucial for their future medical activity and are of the opinion that even if they do not wish to pursue an academic career can benefit from the experience of scientific research in their professional practice to search and critically evaluate scientific information. As a postgraduate student, exposure to research will be valuable to help identify future careers, establish important contacts and secure better residency positions.<sup>31</sup> The Indian Council of Medical Research has introduced short-term studentship which encourages the undergraduate students to undertake research for 2 months in their own field of interest. The students receive incentives and certificate as token of appreciation. Kishore Vaigyanik Protsahan Yojana program is introduced by the Department of Science and Technology, Government of India, to identify and encourage talented students with an aptitude for research by providing scholarship.

Recently, in order to improve the research skills of Indian medical postgraduate students, the Board of Governors in supersession with MCI has approved an online course “Basic Course in Biomedical research” offered by ICMR-National Institute of Epidemiology, Chennai that provides learning materials on fundamental concepts in research.<sup>32</sup> It has also been suggested that the Government should mainly invest on those doctors who are working as faculty in medical institutes and plan a Compulsory Practical Training Research Workshop (CPTRW) in every speciality as these doctors will train their students in near future with right vision and expertise of research.<sup>33</sup> Medical colleges should also have periodic workshops and hands on training on new improved software for data entry and statistical analysis. Introduction of journal club activity as a monthly class would help students to maintain familiarity with research principles and can foster student-faculty interaction. Marks or credit points should be given for research publications during postgraduate examination.

### Limitations

This study was conducted in the only medical college of Goa among a limited number of participants; hence the findings cannot be generalized.

### CONCLUSION

The present study revealed a fairly positive attitude towards medical research amongst postgraduate students. However, an array of perceived barriers was noted that withholds them from taking up research studies. Students are interested to conduct research only if dedicated time slot is available, periodic research related workshops are organized and incentives are provided. Increased involvement of PG students in medical research can be achieved if these barriers are addressed by faculty, administrators and policy makers which will contribute to scientific progress of the nation.

### REFERENCES

1. Bhavna Chawla. Medical Research in India: Are We There Yet? *Delhi J Ophthalmol.* 2017;28:4-5.
2. Garg R, Goyal S, Singh K. Lack of Research Amongst Undergraduate Medical Students in India: It's time to Act and Act Now. *Indian Pediatr.* 2017;54:357-60.
3. Academic Research and Development, Science & Engineering Indicators 2018, National Science Board, 2018. Arlington, VA: National Science Foundation. Available at <https://www.nsf.gov/statistics/2018/nsb20181/#/>.
4. Kapoor A. Quality medical research and publications in India: Time to introspect. *Int J App Basic Med Res.* 2019;9:67-8.
5. Abu-Zaid A, Alkattan K. Integration of scientific research training into undergraduate medical education: a reminder call. *Med Educ Online.* 2013;18:22832.
6. Medical Council of India | P. G. Medical Education Regulations, 2000. Available from: <http://www.mciindia.org/CMS/rules-regulations/p-g-medical-education-regulations-2000>
7. Banerjee A. Medical research in India: Spirit is unwilling and the flesh is weak. *Med J DY Patil Univ.* 2017;10:399-400.
8. Gupta R, Malhotra A, Malhotra P. An observational study on awareness about medical research among postgraduate students in a tertiary care teaching hospital in North India. *Int J Med Sci Public Health.* 2018;7:859-63.
9. Vairamani CB, Akoijam BS. Knowledge, attitude and perceived barriers towards conducting research among students in a medical college, India. *Int J Community Med Public Health.* 2018;5:806-10.
10. Sangam MR. Attitudes and Practices of Postgraduate Students towards Medical Research. *Indian J App Basic Med Res.* 2016;5:513-519.
11. Noorelahi MM, Soubhanneyaz AA, Kasim KA. Perceptions, barriers, and practices of medical research among students at Taibah College of Medicine, Madinah, Saudi Arabia. *Adv Med Educ Pract.* 2015;6:479-485.
12. Satav PJ, Wankhede UN. Knowledge, attitude, and practice of resident doctors about medical research in BJ medical college, Pune, Maharashtra. *Int J Reprod Contracept Obstet Gynecol.* 2017;6:2969-72.
13. Patel B, Kubavat A, Sondarva D, Chaudhari J. Knowledge, Attitude, and Practice of Resident Doctors about Medical Research in a Tertiary care Hospital, Rajkot, Gujarat. *Int J Res Med.* 2014;3:94-97
14. Pawar DB, Gawde SR, Marathe PA. Awareness about medical research among resident doctors in a tertiary care hospital: A cross-sectional survey. *Perspect Clin Res.* 2012;3:57-61.
15. Giri PA, Bangal VB, Phalke DB. Knowledge, attitude and practices towards medical research amongst the postgraduate students of pravara institute of medical sciences university of central India. *J Fam Med Primary Care.* 2014;3:22-4.
16. Shakeel Anjum M, Parthasarathi Reddy P, Monica M, Yadav Rao K, Irram A, Sheetal A, et al. A Survey on perceptions, opinions and barriers to conduct research among Dental postgraduates in Telangana state, India. *Webmed Central Public Health* 2016;7:11.
17. Shashiraj HK, Deepali A, Kavitha BS, Mahesh SH. A cross sectional study on attitude, knowledge and barriers towards research among medical post graduate students. *Indian J Clin Anat Physiol.* 2017;4:422-426.
18. Hegde A, Venkataramana G, Kulkarni SB, Bhaskar NN, Jacob J, Gangadharappa SK. Attitudes, experiences, and barriers to research and publishing among dental postgraduate students of Bengaluru City: a cross-sectional study. *J Indian Assoc Public Health Dent.* 2017;15:157-61.
19. Chellaiyan VG, Manoharan A, Jasmine M, Liaquathali F. Medical research: Perception and barriers to its practice among medical school students of Chennai. *J Edu Health Promot.* 2019;8:134.
20. Saeed I, Khan NF, Bari A, Khan RA. Factors contributing to the lack of interest in research activities among postgraduate medical students. *Pak J Med Sci.* 2018;34:913-917.
21. Abushouk AI, Hatata AN, Omran IM, Younis MM et al. Attitudes and perceived barriers among medical students towards clinical research: A cross-sectional study in an Egyptian medical school. *J Biomed Educ.*

- 2016;7.
22. Stockfelt M, Karlsson L, Finizia C. Research interest and activity among medical students in Gothenburg, Sweden, a cross-sectional study. *BMC Med Educ.* 2016; 16:226.
  23. Memarpour M, Fard AP, Ghasemi R. Evaluation of attitude to, knowledge of and barriers toward research among medical science students. *Asia Pac Fam Med.* 2015;14:1.
  24. Siemens DR, Punnen S, Wong J, Kanji N. A survey on the attitudes towards research in medical school. *BMC Med Educ.* 2010;10:4.
  25. Unnikrishnan B, Kanchan T, Holla R, Kumar N, Rekha T, Mithra P, et al. Medical students' research – Facilitators and barriers. *J Clin Diagn Res.* 2014;8:XC01-4.
  26. Madhavrao C, Menon R, Babu S. Knowledge attitude and practices towards principles of research among medical postgraduates in a teaching tertiary care centre. *Int J Cur Res Rev.* 2016;8:1-6.
  27. Shankar PR, Chandrasekhar TS, Mishra P, Subish P. Initiating and strengthening medical student research: Time to take up the gauntlet. *Kathmandu Univ Med J.* 2006;4:135-8.
  28. Siddaiah-Subramanya M, Singh H, Tiang KW. Research during medical school: is it particularly difficult in developing countries compared to countries? *Adv Med Educ Pract.* 2017;8:771–776.
  29. Harsha Kumar H, Jayaram S, Kumar GS, Vinita J, Rohit S, Satish M, et al. Perception, Practices Towards Research and Predictors of Research Career Among UG Medical Students from Coastal South India: A Cross-Sectional Study. *Indian J Community Med.* 2009;34:306–9.
  30. Moraes DW, Jotz M, Menegazzo WR, Menegazzo MS, Veloso S, Machry MC et al. Interest in research among medical students: Challenges for the undergraduate education. *Rev Assoc Med Bras.* 2016; 62:652-658.
  31. Aslam F, Shakir M, Qayyum MA. Why medical students are crucial to the future of research in South Asia. *PLoS Med.* 2005;2:e322.
  32. Kumar N, Singh S, Pal R, Kumar R. Lack of research aptitude in medical education. *Int J Basic Clin Pharmacol.* 2014;3:247-8.
  33. Basic course in Biomedical Research; 2019. Available from [https://swayam.gov.in/nd1\\_noc19\\_ge33/preview](https://swayam.gov.in/nd1_noc19_ge33/preview).

**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 25-07-2020; **Accepted:** 16-08-2020; **Published:** 18-09-2020