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CHALLENGES AND BARRIERS AMONG UNDERGRADUATE STUDENTS IN CONDUCTING RESEARCH AT A MEDICAL COLLEGE IN HARYANA

Microbiology

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ABSTRACT

Introduction: In the ever-evolving landscape of healthcare, medical research stands as cornerstone for advancement in the field of medicine and clinical practice. The present study was done to explore the challenges and barriers towards medical research among undergraduates in Haryana. **Methodology:** The present cross- sectional study was conducted among medical undergraduate students of BPS Government Medical College for Women, Khanpur Kalan, Sonepat, Haryana. An online survey was carried out using a pre-designed questionnaire and the data was collected. **Results:** A majority of study participants were from second, pre-final and final MBBS professional year. The most prevalent barrier was inadequate training or student conferences (92.3%) to understand different kinds of scientific research designs. 91.7% students acknowledged the pervasive issue of insufficient funding and limited access to laboratory equipments in universities, hindering the execution of research projects. Lack of time, skills, limited mentorship and busy educational curriculum were the prominent obstacles in conducting research. **Conclusion:** Various barriers need to be addressed in order to enhance student's engagement in medical research such as lack of time, interest, funding and insufficient professional supervisors and access to scientific tools. Significant modifications are needed in the medical undergraduate curriculum.

KEYWORDS

Medical research, Undergraduates, Workshops, Conferences

INTRODUCTION

In the ever- evolving landscape of healthcare, medical research stands as the cornerstone for advancement in the field of medicine and clinical practice. Modern medicine and healthcare practices including disease diagnosis, surveillance, treatment and prevention, rely on evidence basis medicine in current era.(1,2) Considering the importance of medical research in all aspects, exposure of medical undergraduates to research activities is currently aptly desired. In addition, involving medical students in research at undergraduate level improves their scientific output and is strongly linked to developing positive attitudes towards research.(2,3) Early participation in the research will promote a tendency to be involved in academic careers in their later life. Despite the importance of medical research at undergraduate level, attempts of medical colleges to encourage students to take part in research remain unsatisfactory.(3,4) Lack of time, limited level of knowledge, funding, limited access to medical journals and related databases etc are considered potential barriers towards development of physician scientists.(4,5)

Moreover, 70% of medical students are not willing to carry out medical research because of existing challenges and barriers.(5,6) Many studies stated that students in developing countries face more difficulties in conducting research than developed countries.(6,7) Considering the mighty role of undergraduates in research and inculcating the spirit of scientific research, it is essential to identify the barriers for conducting research.

The present study aimed to explore the challenges and barriers to medical research as perceived by the students at a tertiary medical college in Haryana.

Methodology

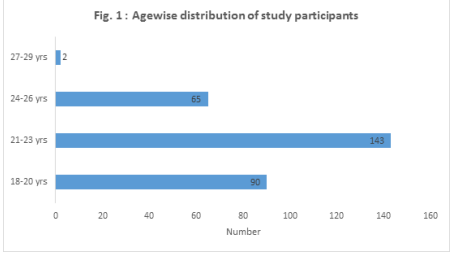
The cross-sectional study was conducted from May 2023 to July2023 among undergraduate students of BPS Government Medical College for Women, Khanpur Kalan, Sonepat, Haryana. Undergraduate students of second, pre-final, final MBBS professional year and interns were invited to participate in the study. 300 students participated and completed the survey.

A pre-designed, self-administered google form questionnaire was structured. The validity of the questionnaire was assessed by a pilot study. Twenty students were given the questionnaire first to assess the reliability and validity. These responses were excluded from the main study.

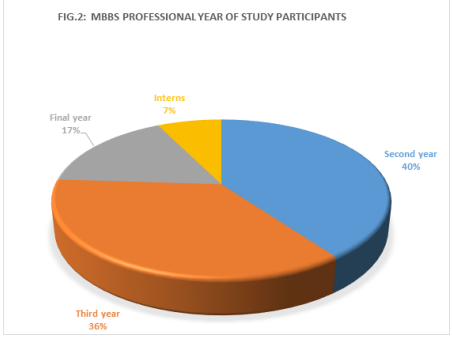
Descriptive analysis was used to describe the collected data in the form of percentages. Data were entered in Microsoft Excel and statistically analysed with the Statistical Package for the Social Sciences (SPSS) software.

RESULTS

A total of 300 students participated in the study reporting the barriers faced in doing research at undergraduate level. The response rate was 100%. The age range of the study participants was 18-29 years and their average age was 21.75+2.75 years. (Fig.1)



Most of the responses were obtained from second and pre-final MBBS students(76%). (Fig.2)



92.3% (277) students admitted that there was a lack of adequate training/workshops or student conferences to understand different kinds of scientific research designs and its interpretation.

The other most important barriers to medical research evaluated from the perspective of undergraduate students were inadequate funding and limited access to laboratory equipments (91.7%).

The common barriers experienced by students in conducting medical

research are shown in Table 1.

Table 1: Common barriers experienced by medical students in conducting research

S. NO	STATEMENT	YES [Frequency(%age)]	NO [Frequency(%age)]
1	There is lack of adequate training/workshops/student conferences to help understand different kinds of scientific research designs and its interpretation?	277 (92.3%)	23(7.7%)
2	There is lack of funding in universities to facilitate student research projects?	275 (91.7%)	25(8.3%)
3	Lack of access to laboratory equipment for performing research project?	275 (91.7%)	25 (8.3%)
4	Priority is given to education over research in medical colleges?	272 (90.7%)	28 (9.3%)
5	There is lack of financial incentives/monetary benefits in conducting research?	271 (90.3%)	29(9.7%)
6	There is lack of time due to busy curriculum?	268 (89.3%)	32(10.7%)
7	There is lack of sufficient mentorship/professional supervisors?	264(88%)	36(12%)
8	Difficulty in follow up of the patients?	264 (88%)	36(12%)
9	There is a lack of motivation in students?	254 (84.7%)	46(15.3%)
10	There is lack of interest in research?	188 (62.7%)	112 (37.3%)

DISCUSSION

Knowledge on medical research among undergraduates is crucial for educative process and scientific advancement. The medical college provides an adequate teaching and learning environment with an exposure to academic role models. It also fosters critical thinking, skills and enhances problem-solving abilities, which are essential for future medical professionals.

The present study focussed on the difficulties and obstacles that students felt in conducting research.

According to the present study, 92.3% study participants stated lack of adequate training/workshops/student conferences to help understand different kinds of scientific research designs and its interpretation as the most prevalent barrier to medical research.

Similar to our study, Siemens et al observed that only 85% of the respondents in medical school felt that there was insufficient training in research methodology.(8) Dadipoor and colleagues also found that inadequate skill and knowledge of research methodology were the main personal barriers to student participation in research.(7) In the study conducted by Ibrahim Abushouk et al,the inadequate understanding of the concepts of research,especially the statistical concepts and lack of skill in scientific writing were the barriers to research.(9) Adequate training and organising workshops to teach students about the concept of medical research from early stages is need of the hour in medical science.

The current study showed that 91.7% of undergraduates cited lack of funding in universities to facilitate student research projects as a major hindrance. Similar results were obtained by Memarpour et al, where the inadequate financial support(82.40%) from the administration was reported as main barrier to research.(10) Inadequate financial grants to carry out the research were also opined as a strong barrier by 67% of undergraduates in the study conducted by Sharma et al.(11) Pallambarthy et al also stated 62% of students felt lack of financial grants to carry out research as predominant obstacle.(12) The lack of funding also delays purchase of equipments and other consumables limiting the resource availability to the researchers. Appropriate budget allocation for research activities is vital for academic enhancement of the institution.

Factors like lack of access to library or internet services, laboratory equipment for performing research project or lack of institutional support has been quoted as constraints offering resistance to medical undergraduates towards research in many studies.(11,13,14) Majority of the students(91.7%) in the present study also admitted that lack of access to laboratory equipments hinders their research activity. Administrative support and provision of facilities to students are essential to drive students to develop positive attitudes towards research and boost their confidence levels in conducting research activities.

In the present study, 89.3% of undergraduate students stated lack of time due to busy curriculum deter students from conducting research. In lieu of busy curriculum, 90.7% of students give priority to education over research. Alsulami et al also stated that students find it difficult to have enough time for balancing medical studies and research publication process.(15) Jai Kumar and colleagues identified lack of time as the predominant barrier by 88.79% of the students.(16) To combat this challenge, medical curriculum needs to be more flexible and credit courses in research procedures in health as implicated in western countries can be inducted in our medical education.(17)

According to the present findings, 88% of our students rated lack of sufficient mentorship and professional supervisors among the key barriers to research. This finding is consistent with that of studies by Dadipoor et al, Azhar et al, Dina El achi et al, where students found lack of mentoring and guidance to be the main barriers.(6, 17, 18) In the present study, 84.7% of the students addressed lack of motivation as one of the limiting factors. The lack of proper encouragement or support to engage in research activities was found to be a significant barrier in Taibah University.(19) The supervisors play a key role in acquiring new skills through the learning phase and assessing progress of the research. But, most of the faculty members are already loaded with intensive work, clinical and administrative responsibilities, research programs are added responsibility for them. However, increasing the number of faculty positions and establishment of active student research committees, empowering students and employing students as effective motivators can help curb this hindrance.(6)

In the current study,62.7% of undergraduates declared lack of interest in research. Mahmood Ali Sayed et alfound 73.4% of their students had lack of interest in research.(20) Vairamani and colleagues also observed lack of interest in research by 59.3% of the students.(21) This lack of interest might be due to lack of motivation, lack of skill training, infrastructure and facilities and most importantly lack of financial rewards.

The present study fully supports the viewpoint of Rahman et al that only 2% of the scientific publications in indexed journals come from developing countries citing lack of research capacity as one the primary reasons. Training and education in research methodology are often deficient in both the undergraduate and post graduate curricula active research life should be an essential component of competency based medical education for development of a competent Indian medical graduate.

Ethics

The present study has been approved by the Institutional Human Ethics Committee. Written informed consent was obtained from the willing participants of academic years (II-IV & Interns)

CONCLUSION

This study highlights significant barriers that undergraduate students face in conducting medical research. Various barriers need to be addressed in order to enhance student's engagement in medical research such as lack of time, interest, funding and insufficient professional supervisors and access to scientific tools. The majority of participants reported a lack of adequate training, workshops, and student conferences to understand various research designs and their interpretation. The findings suggest a need for more significant modifications in the medical undergraduate curriculum and improved access to resources to facilitate student involvement in medical research. Addressing these barriers could enhance the research capabilities of undergraduate students and encourage a more research-oriented academic environment in medical education.

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