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RESEARCH ARTICLE

A CROSS-SECTIONAL STUDY TO ASSESS THE ATTITUDE, KNOWLEDGE AND PRACTICE TOWARDS RESEARCH AMONG UNDERGRADUATES AT A MEDICAL COLLEGE

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ABSTRACT

Background: The introduction of research oriented programmes into medical colleges fosters favourable attitude towards academically focused careers among undergraduate medical students. Early acquaintance with knowledge, perception and practice is associated with better critical thinking and lifelong learning. The present study was carried out to assess knowledge, attitude and practice of medical research among undergraduate students at a medical college in Haryana, India. **Materials and Methods:** This cross sectional study was conducted among undergraduate students of second, pre-final, final MBBS professional year and interns. A pre-designed, semi-structured, self-designed questionnaire in google form was used for data collection. **Results:** A total of 300 undergraduate students participated in the study. There was overall positive attitude (95.66%) of the undergraduate medical students towards scientific research. 37% of study subjects had satisfactory knowledge, 44.66% had fair knowledge and 18.33% had poor knowledge about the research. A small proportion (23%) of students had participated in workshops. Lack of time, inadequate research training, limited access to laboratory equipments and insufficient mentorship were the major obstacles faced by students in conducting medical research. **Conclusion:** Undergraduate students have positive attitude towards medical research and have adequate knowledge. Workshops and research facilities at the institution need to undergo major transfiguration in order to encourage meaningful research by medical students at undergraduate level.

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INTRODUCTION

Research is a systematic process to achieve knowledge, science or invention by the use of scientific methods. Advances in disease surveillance, diagnosis, treatment and prevention are based on quality research[1]. The early introduction of research focused programmes into medical colleges, as well as the encouragement of students participation in research fosters favourable attitudes towards academically focused careers among medical students. Although Indian council of Medical Research (ICMR) and Kishore Vaigyanik Protsahan Yojna have motivated the medical students in research but studies have shown that research experience during medical school is strongly associated with mostly post graduate activities[2,3,4]. To fill the by various strategies such as mandatory and elective research assignment, student sections in indexed journals, organization of students scientific conferences, molding of Medical curriculum to integrate capacity guiding for research and holding of workshop on different aspects of conducting research[4,5,6]. Although lot of medical students have a keen interest in research but there are lot of limitations, concerns and weakness which disconnect them from developing scientific temper. There is lack of research training, professional supervisors, and less time due to vast curriculum[2,4,7]. The study was planned to address the gap by assessing knowledge, attitude and practice of medical research and to explore the potential barriers in carrying out medical research among undergraduate students at a medical college in Haryana, India. The study evaluated how, students' awareness to conduct research and selection of research opportunities ,can

be better informed. The study will have important implications not only for our knowledge of current undergraduate awareness of research but also for best and future development of a competent Indian medical graduate in the era of evidence based medicine.

MATERIALS AND METHODS

The present cross sectional study was conducted at BPS, Government Medical College for Women, Khanpur Kalan, Sonepat. Undergraduate students of second, prefinal and final MBBS professional year & interns who were willing to participate, after consent, were invited to participate in the study. The students of first year were excluded because they are novice in the concept of research and yet not familiar with it. The confidentiality of the students was maintained during the survey. Ethics approval was obtained from Institutional Ethics Board. A pre-designed, semi-structured ,self-designed questionnaire in google form was used for data collection. The questionnaire consists of the list of statements based on the surveys identified from the previous literature and research studies[1,8,9] and the efforts were made to make the contents of the questionnaire appropriate to our local university. The questionnaire was subdivided into four sections that includes demographic details, knowledge, attitude, and practice towards scientific research among the undergraduate students. The validity of the questionnaire was assessed by a pilot study first. Twenty students were given the questionnaire to assess the reliability and validity of the questionnaire. These responses were excluded from the main study. The reliability coefficient was accessed by Cronbach alpha which was 0.84 for knowledge, 0.74 for attitude, and 0.77 for practice.

The questionnaire addressed

- Part 1 included students' demographic information such as age, gender, level of parent's education and professional year.
- Part 2 addressed attitude towards scientific research in eight questions. The answers were evaluated by 5-point likert scale ranging from strongly agree(score 5) to strongly disagree(score 1).A total score >24 was considered as positive attitude towards research, a score of 17-24 as neutral attitude and a score of <16 as negative attitude towards research.
- Part 3 investigated knowledge of the students about research methodology based on five questions. The correct response was awarded score 1 and incorrect answer was given a score of 0.Thus, a total score of 0-1were classified as low levels of knowledge, 2-3 as fair level and 4-5 as satisfactory level of knowledge.
- Part 4 assessed the practice of scientific research among students in the form of attending any workshops, reading medical journals, any paper/poster presentation in conference, or any project submission. The answers were analysed in the form of yes or no and expressed in percentages.

RESULTS

A total of 300 undergraduate students participated in the study. Out of these participants, 41.3 %, 34.7% and 16.3% were from second year, pre-final year and final year respectively and 7.7% were interns (Figure 1). Maximum number of participants belonged to 21-22 years of age group. Encouragingly, there was overall positive attitude (95.66%) of the undergraduate medical students towards scientific research (Table 1). Almost all the participants (95%) agreed to the fact that research promotes critical thinking and contributes to innovations in medical field. 91.4% students felt that research enriches medical education and helps in better understanding of the subject. Majority (92.3%) of participants opined that research helps in the improving one's curriculum vitae and helps professional enhancement. A large proportion (85%) of students agreed to the fact that scientific research should be a part of MBBS curriculum. 86.3% study subjects felt that research improves patients' care and later on, it will help one's clinical practice. About three-fourth (70.7%) of them agreed to the fact that financial prospects are good for research career. More than half (53.4%) of them thought that the scientific research at undergraduate level should influence selection for postgraduate courses or foreign competitive examinations. Among 300 participants, 37% of study subjects had satisfactory knowledge, 44.66% had fair knowledge and 18.33% had poor knowledge about the research(Table 2). Only 59.3% of students knew that ICMR-STS is a government sponsored fellowship offered to medical students.

Table 3 shows that a small proportion (23%) of students had participated in workshops on research methodology, laboratory research or any other similar workshops. Only 11.3% of study participants conducted a medical research project .Only 7.3% and 5.3% of study subjects presented a scientific paper/ poster in a conference of participants and had published their research studies in a journal respectively.

DISCUSSION

Early introduction to scientific research at the undergraduate level plays a noteworthy role in constructing an advanced medical education for students. The exploration of potential of medical students in research will boost their research productivity, thinking & reasoning skills and also upsurge the rate of publications in medical science. These publications will pave a path towards more precise, accurate and effective health policy developments for a particular region[10-12]. But in India, research is not yet a compulsory component of medical education for undergraduate students[2,3,13].However,to foster research culture and emphasize the practice of evidence based medicine, the attitude and knowledge of the undergraduate students towards research needs to be assessed. The present cross sectional study is an attempt to evaluate the understanding of research and the barriers faced by students in conducting research. The results of our study shows that 95.66% of the undergraduate medical students had positive attitude towards scientific research. The finding is consistent with previous research conducted in Tanta University, Egypt, which revealed more than two-thirds of its students had a positive attitude towards research[14]. Earlier studies from Arab countries also have demonstrated high level of perceived research usefulness and relevance and a high level of positive attitudes towards research[15-18]. Similarly, Burman *et al*[19]found that 77% of preclinical and 71% of clinical students agreed that research is an important part of the medical school educations. Sarita *et al*[8]also showed that 62% and 52% of their undergraduate students strongly agreed that research contributes to innovations in medical field and enriches medical education respectively.

Table 1. Respondents attitude towards research

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Research enriches medical education and helps in better understanding of subject	9 (3%)	3 (1%)	14 (4%)	173 (57.7%)	101 (33.7%)
Research should be a part of MBBS Curriculum	5 (1.7%)	8 (2.7%)	32 (10.7%)	162 (54%)	93(31%)
Research helps in the improving one's CV and helps professional enhancement	6(2%)	3(1%)	14(4.7%)	190 (63.3%)	87 (29%)
Research promotes critical thinking and contributes to innovations in medical field	5(1.7%)	0	10(3.3%)	171(57%)	114 (38%)
Research improves patients' care and will help one's clinical practice later	6 (2%)	5(1.7%)	30(10%)	184 (61.3%)	75 (25%)
Financial prospects are good for research career	6(2%)	14(4.7%)	68(22.7%)	171(57%)	41(13.7%)
Research is time consuming and extra burden to conduct scientific research during undergraduate period	14(4.7%)	92(30.7%)	78(26%)	86(28.7%)	30(10%)
The scientific research at UG level should influence selection for PG courses or foreign competitive exminations	18(6%)	60(20%)	62(20.7%)	131 (43.7%)	29(9.7%)

Table 2. Students' level of knowledge of research

Statement	YES	NO	Don't Know
A research hypothesis is a specific, testable prediction and is verifiable by statistical and analytical means.	230 (76.7%)	12 (4%)	58(19.3%)
ICMR-STS is a government-sponsored fellowship offered to medical students	178 (59.3%)	14 (4.7%)	108(36%)
Descriptive studies do not test a hypothesis?	91(30.3%)	81(27%)	128 (42.7%)
Acknowledgment to persons who assisted you during the research is the part of a scientific paper?	222 (74%)	21(7%)	57(19%)
Does One page concept paper for research projects helps you receive rapid and positive response?	142 (47.3%)	79(26.3%)	79(26.3%)

Table 3. Various methods to practice research by students

STATEMENT	YES	NO
Did you participate in any workshops on research methodology, laboratory research or any other similar workshops?	69 (23%)	231(77%)
Have you ever searched for medical journals or any databases for research articles (eg. Pub Med, Research Gate,etc) at library/online?	108(36%)	192(64%)
Have you ever conducted a medical research project?	34(11.3%)	266(88.7%)
Have you done a scientific paper /poster presentation in a conference?	22(7.3%)	278(92.7%)
Have you published any of your research studies in a journal?	16 (5.3%)	284(94.7%)
Do you read medical journals regularly?	29(9.7%)	271(90.3%)

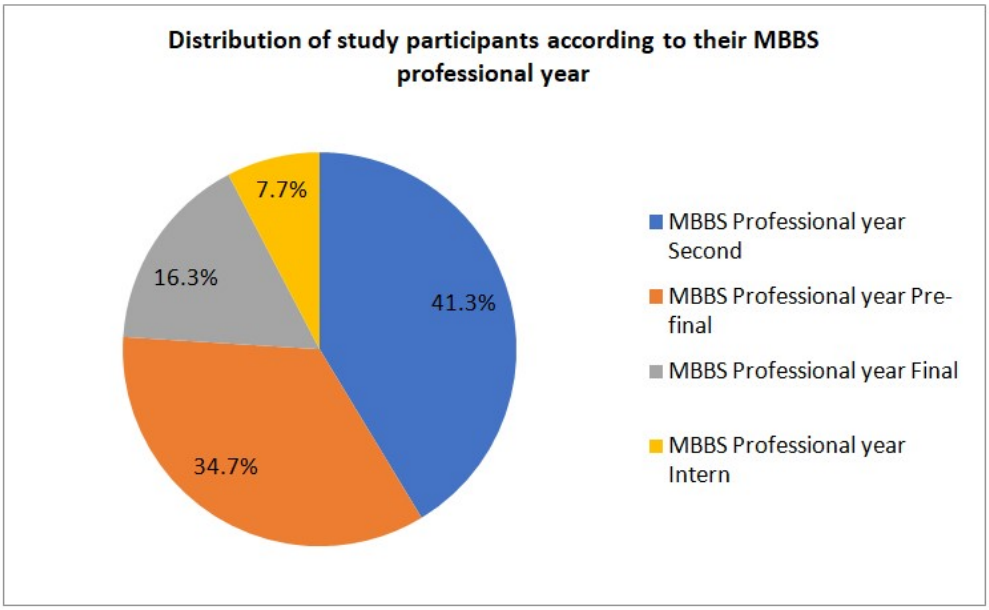

Figure 1. Distribution of study participants according to their MBBS professional year

The results of the present study are supported by study conducted by Sharma *et al*[5],where most of the students agreed that research improves their curriculum vitae, enriches medical education and helps in one's clinical practice later(83%, 82% & 72% respectively).This keen interest and positive attitude in research is imperative to attain a workforce of clinician scientists actively involved in clinical research. 38.6% of our students stated that research is time consuming and an extra burden to conduct scientific research. The reason behind this agreement might be that most of the students are not aware about the organization, methodology and conduction of the research due to lack of guidance and motivation by the mentors. Sharma *et al*[8] also found a significant number of students with same opinion.

The current study showed that majority of our students (37.0 - 44.6%)had adequate knowledge about scientific research similar to the findings shown by Memarpour and colleagues[20] where 34.1-43.8% of students knowledge was moderately favourable. However, Vairamani*et al*[21]found that more than three-fourth of the respondents had inadequate level of knowledge of conducting research. As our medical college is only for female students, this might be a plausible reason for higher knowledge as also suggested by previous studies where females respondents have shown a higher level of knowledge[9,20,22]. Although Indian Council of Medical Research supported Short-Term Studentships (STS) programs are available for conducting research projects at undergraduate level, but very few students are able to avail the opportunity due to unawareness and limited selection.

Despite a higher level of knowledge and positive attitude towards research, the paper and poster presentations were almost negligible (7.3%) by the students. A very low proportion of students had publications (5.3%).Similar findings have been shown by Soe and coauthors[22].Pallamparthy *et al*[9]also reveals a similar experience of students regarding presentations(5.0%) and publications(5.6%).Most of the previous studies have reported comparablefindings[8,23,24].In the current survey, only 23.0% had participated in research workshops whereas Sharma *et al*[8] reported 11% of the undergraduate students participated in research related workshops. The explanation for scanty participation might be that most of the workshops are organized either for post-graduate students or faculty members. Recently, a few medical colleges in Haryana have started organizing conferences for undergraduate students which include CMEs, trainings and workshops as well. This initiative would prime the students at an early stage and enable them to participate later in advanced research workshops. An important aspect of encouraging medical students to undertake research lies in providing them relevant opportunities and enabling them to identify major barriers. Lack of time due to busy curriculum (89.3%),lack of adequate trainings/workshops/ student conferences to understand different kinds of scientific research designs and its interpretation(92.3%) and lack of funding in universities (91.7%) were the main obstacles stated by the undergraduate students in the present study. The findings are in concordance with study done by Sayed *et al*[24] where 81.8% of students reported lack of time as one of the major challenges followed by lack of funding(76.3%) and motivation (74.4%). The same results have also been reported in other studies[4,20]. We expect that finding ways, to overcome the obstacles students face, are needed to motivate students to participate in research.

Integration of research in medical curriculum, is essential and robust method for facilitation of research practices among undergraduate students. The research practice is essential for medical students so that they can make informed medical judgements based on best available evidence. A basic knowledge of research processes and understanding how evidence is derivedwill stimulate their critical thinking and will help in stimulating their positive attitudes and interest into real actions and skill development.

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CONFLICTS OF INTEREST: None declared

KEY-POINTS

- Introduction of research at undergraduate level will nurture medical undergraduates' research skills.
- It will enhance critical appraisal among the undergraduates.
- Research education will help them acquire specific mindsets to confirm future career plans.

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