



Original Research Article

Perception, Practices and Barriers towards Health Research among Young Medical Professionals of Northern India

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Received: 19/11/2014

Revised: 14/01/2015

Accepted: 16/01/2015

ABSTRACT

Background: Research experiences early in the medical student's education are an important factor for attracting a greater number of doctors to careers with a research component.

Objective: This study was planned to find out perception, attitude, practices and level of involvement in health research amongst interns and post graduate medical trainees of medical and dental colleges situated in state of Haryana. It was also intended to identify the barriers faced by the above population in pursuing research.

Design: An institution-based, cross-sectional study was conducted. A total of 276 postgraduates and 184 interns were included in the study. Study participants were selected by simple random sampling. A pretested, structured and self-administered questionnaire was used; the data were analyzed using statistical methods.

Results: Out of 460 participants, 91.7% of post graduates and 14.7% interns of the medical and dental colleges responded that research in medical field is important. Nearly half (42%) of the students participated in the scientific conferences and 32% presented their research work. Most of the students opted for questionnaire based cross-sectional study. More (67%) number of Post graduates students of basic subjects participated in research than clinical specialties (28%). Participants believed that the reasons behind non involvement in the research work were curriculum overload (60%) and lack of time due to the demands of a busy residency curriculum (52%). Lack of proper staff guidance and cooperation to motivate them to do the research work and lack of interest in the field (12%) were also cited as reasons for not participating in research work.

Conclusion: This study has confirmed some practical barriers to research such as lack of time, lack of knowledge specific to research, mentorship and resources. These barriers can be resolved with adequate and appropriate mentorship alongside time release measures and some modification in curriculum with adequate emphasis on research.

Keywords: research, lack of interest, medical students, participation and barriers.

INTRODUCTION

Health research is essential to improve health care and plays a central role in the field of medicine. ^[1] For a long time most of the developing world relied on research findings, interpretation and application from the western world. This did not always provide the solution to the problems of developing countries. ^[2] Slow advances however, had been made in medical research in developing countries and more funding, material and logistic support had been provided for conducting research. ^[3] Nevertheless, the quality of research is affected by lack of expertise in research skills. ^[4] Problems were also seen in sharing and dissemination of results locally and in incorporation of research findings in policy making; either because a lack of understanding of research findings or its clinical implications by the health policy makers. ^[4] In all disciplines of science and technology, India had 136 researchers per million citizens; as compared to 3658 researchers per million citizens in the developed countries. ^[5] Developing countries must therefore enhance their research capacity to efficiently address the growing burden of both communicable and non-communicable diseases. ^[4]

The objective of medical education is to prepare medical professionals to meet the challenges of practice by fulfilling their roles as clinicians, educators and clinical researchers. ⁶ The rapidly evolving medical science of today necessitates that physicians keep abreast with the latest developments. This requires the understanding and use of scientific principles and methods. Research activity of medical professionals is important as it promises better clinical care, critical reasoning, lifelong, self directed learning and future research activity. ^[4] With rising health costs, local literature is important for facilitating evidence based and cost-effective decisions and thereby

improving clinical practice. To promote health research and provide an enabling environment it is important to identify the domains where intervention is desired. In order to evaluate whether efforts and interventions to promote research were paying off, we need to assess the level of research knowledge, attitudes and practices of residents. It would also help identifying difficulties and challenges faced by them whilst pursuing research during residency, and thus allow us to build a research-facilitating curricula and environment in residency programs. This would help to increase research activity in the country, both in terms of quality and quantity. Thus this study was planned to find out perception, attitude, practices and level of involvement in health research amongst interns and post graduate medical trainees of a Medical and dental college situated in state of Haryana. It was also intended to identify the barriers faced by the above population in pursuing research.

MATERIALS AND METHODS

The present cross-sectional study was conducted among interns and postgraduate students of 2 medical and 1 dental colleges of the state of Haryana situated in Northern part of India.. As per the data available from the two institutions there were 250 interns and 376 postgraduates in these colleges. A sample size of 460 students had been calculated to fulfill the objectives of our study at a 95% confidence level. Sample size was calculated assuming a 30% prevalence of good knowledge and attitude, 10 % sampling error and 10% non-response. As the total study population consists of 60% postgraduates and 40% interns so a total of 276 postgraduates and 184 interns were included in the study. Study participants were selected by simple random sampling. It was done by random number table method.

A list of all the interns and postgraduates were procured from the two medical institutions in the state of Haryana. All the eligible candidates were separately allotted a serial number. A list of random numbers was generated by random number generator on computer with help of programme Stat trek available on the following link "<http://stattrek.com/Tables/Random.aspx>". This table of random numbers was produced by randomly selecting numbers from within the range of 1 to 250 for interns, 1 to 376 for postgraduates. Duplicate numbers were not allowed.

This study was conducted during June 2012 to December 2012. A structured questionnaire was designed incorporating important barriers and attitudes in research that was identified through an extensive literature search of the Pub Med database. Some questions, which were particularly important to our local scenario, were also included. Face and content validity of the questionnaire was obtained through a review process with experts in the field. After incorporating the identified inconsistencies and inaccuracies, the questionnaire was pre-tested on a group of residents to identify any problems relating to question design, flow and interpretation. This was also done to ensure that the questionnaire was in concordance with the study objectives. Suggestions given were incorporated accordingly. It had three components of information from the students: 1. Information to know their awareness, and perceptions about importance of research in medical field. 2. Questions to assess their practices i.e. attempts to write, conduct projects and publish in journals. 3. Questions to bring out barriers in perusing research. Questionnaire had a mix of open ended, closed ended single response questions. The format of all the responses was in categorical design (yes/no and by choosing appropriate responses among

already given options). A paragraph explaining the purpose of the study, seeking their consent and requesting their participation in the study had also been added at the beginning of the questionnaire.

Permission from the Dean/ principal of the colleges was sought before conducting the study. The principal investigator and the medical student involved in the study went to all departments to distribute the self-administered and anonymous questionnaire among the participants at their place of posting. It was made clear that the participation in the study is voluntary. As the participants didn't have to mention their names or registration numbers, the confidentiality of their responses was assured. The participants were requested to fill the questionnaire as per their convenience. Approval of ethical committee was sought before conducting the study. Proforma was kept anonymous and informed verbal consent was taken from the participants

Statistical analysis: Data was entered and analyzed in Statistical package for social sciences 20.0 (SPSS, inc., Chicago, IL, USA) and Microsoft Excel (Microsoft Corp, Redmond, WA). A descriptive analysis was performed with the use of percentages. Differences in proportions were analyzed with use of the Pearson's chi-square test. Univariate logistic regression analyses have been used to calculate crude odds ratio while multivariate logistic regression analysis used to calculate adjusted odds ratio.

RESULTS

In all, 276 postgraduates and 184 interns were recruited into the study; out of these 52% were male and 48% were female. Over half (69%) of the total group were aged between 20 and 30 years. (Table 1)

Table 1: Socio-demographic characteristic of Students

Student Characteristics	No. of Respondents	Percentage
Gender		
Male	239	52
Female	221	48
Age Groups(Yrs)		
20-25	157	34
25_30	153	33
30_35	111	24
35-40	29	6.1
>40	10	1.9
Student Year		
Interns	184	40
First Year PG	84	18.2
Second Year PG	92	20.2
Third Year PG	100	21.6

Perception about Health Research

Though 91.7% of post graduates and 14.7% interns of the medical and dental colleges responded that research in medical field is important but when enquired about the possible role of health research in career of a medical professional, many of them not clear about the specific role it plays in medical discipline.(Table 2) Some of them also felt that it wastes time(26%) and deviates doctors from the patient care (21%). The proportions were significantly different ($p < 0.001$). when they were asked about importance of knowing research methodology, 83% post graduate students find it important as compared to 50.5% interns and the difference is statistically significant($p < 0.001$).

Table 2: The role of health research in career of a medical professional

Perceived Role Of Health Research	Percentage
1.It helps in critical thinking and decision making	32
2.It develops a scientific orientation and vision towards health	22
3.Helps to change health policy	10
4.Helps professional enhancement	24
5.It helps in providing better health care to patients	14
6.It is must for advancement in medical care	18
7.It wastes time.	26
8.It deviates doctor from the main objective of patient care	21

*multiple answers were allowed.

Participation in Research: 90.8% post graduate students were involved in research which is part of their curriculum in the form

of thesis while 33.3% interns had been a part of research apart from curriculum. This difference is statistically significant with $p < 0.001$. Out of total, 42% of the students participated in the scientific conferences and 32% presented their research work. Most of the students were opting for questionnaire based cross-sectional study. More (67%) number of post graduates students of basic subjects (Anatomy, physiology, Biochemistry, Pathology, Microbiology, Pharmacology, Forensic Medicine,) participated in research than clinical specialties (28%). More males than females were engaged in research. Male students felt significantly more competent than with their research-specific skills, study design ($p = 0.042$) biological statistics ($p = 0.042$) and paper presenting ($p = 0.032$). There were significant differences in relation to gender.

92.8% post graduate students have been a part of research team before conducting the study while 55.4% of interns had never been a part of any research team yet($p < 0.001$). This difference can be attributed to research work being a part of postgraduate curriculum while interns or undergraduates hardly come across a research work unless and until they are inspired or guided by their superiors. (Table 2) It was good to know that more than half of PGs (62.3%) had made an attempt to publish their research work as compared to 11.9 % interns. It showed that as the seniority in medical fraternity increases research work increases, opportunities to conduct research increase and also the efforts to get it published ($p < 0.001$).

Table 3 depicts that most of the medical trainees (62%) are involved in research work because they think it can help them to improve their career progression. Second most important reason was to improve their academics (16%). Only few of them (11%) are involved in the research

work out of interest. Participants believed that the reasons behind non involvement in the research work were curriculum overload (60%) and lack of time due to the demands of a busy residency curriculum (52%). Lack of proper staff guidance and cooperation to motivate them to do the research work and

lack of interest in the field (12%) were also cited as reasons for not participating in research work..Analysis of responses also suggested that students were reluctant to pursue research because they felt that doing so would isolate from interaction with people and patients (14%)

Table 3: Reasons for participation and non participation in research

Reason for participation in research			Reasons for non participation in research work	
S. No.	Variable	Percentage	Variable	Percentage
1	Career Progression	62	Work overload	60
2	Improvement in Academics	16	Lack of time due to the demands of a busy residency curriculum	52
3.	Out of personal Interest	11	Not had the opportunity to take part in research	18
4	Inspiration or guidance from superiors	22	Deterioration of clinical skills due to more time being spent on research activities	14
5	Peer influence	5	Lack of interest	12
6.	Forced by faculty	10	Unavailability of appropriate mentorship	7
			Previous research not published	5
			Neglect of routine studies and patient care	9

Barriers in Pursuing Research:

Participants identified several barriers to research activity. Most (76%) of them opined that lack of research allotted time is the main obstacle in pursuing research. (Table 4)

Research as a Career: Very few numbers of PGs (15.2%) and interns (10.3%) were interested in making research work as their

future career option. Also the difference is not statistically significant. 25% PGs and 11.5% interns felt that it is a financially bad option

Table 4: Difficulty faced in pursuing research

1.	Lack of research allotted time	76
2.	Lack for research training	38
3.	Lack of statistical support	28
4.	Lack of mentorship	24
5.	Lack of financial incentives	32

Table 5: Univariate and multivariate analysis of factors responsible for participation in research among interns versus post graduate students

Factors		PG students (n=276, %)	Interns (n=184, %)	Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Sex	Male	161	99	1.3 (0.82-1.50)	1.2 (0.87-1.78)
	Female	115	85		
Awareness about research as career	Yes	178	72	2.83 (1.93- 4.15)**	2.51 (0.88-5.70)
	No	98	112		
Participation in research work within Curriculum	Yes	195	66	4.30 (2.50 -7.70)**	1.70 (1.05-7.50)*
	No	81	118		
Research in addition to curriculum	Yes	222	46	12.33 (7.89-9.28)**	6.60 (4.50-9.80)*
	No	54	138		
Various difficulties faced in pursuing research	Yes	75	38	1.12 (0.77-1.63)	1.02 (0.92-3.10)
	No	176	86		
To calculate adjusted odds ratio, rest variables used as covariates					
Result is significant at p<0.05*, p<0.001**					

As shown in table no.5, when univariate and multivariate analysis of factors responsible for participation in research among interns versus post graduate

students was done, it was found that gender was not significantly associated with it. Awareness amongst Post graduate students about research as a career was significantly

higher as compared to graduates with $p < 0.001$ when not adjusted for other variables. Participation in the research within curriculum by post graduate students was significantly more after adjusted for other variables as compared to the graduates ($p < 0.05$). Again participation of post graduate students in research apart from their curriculum was significantly higher as compared to graduates with $p < 0.05$. Significant difference was found in rate of participation when we compared students who faced difficulties in pursuing research from those who did not.

Facilities for Health Research in the Institutions: Overall 45% of the students were satisfied with the facilities available in the institution for research. 33% reported that there is sufficient availability of books and journals in the library. 68% told that the timing of library is convenient for students. The institutions also provided facilities for free internet access to major international and national journals in the library. 38% were of the opinion that there is sufficient availability of funds for health research. Information regarding availability of funds and sponsoring agencies are displayed on the board regularly. Both the institutions had research committee and ethical research committee at the institutional level. 32% students felt that their teachers were promotive and had helping attitude towards research while 45% felt that they were negative and indifferent.

DISCUSSION

Participation in research during residency training is recognized as an important component of physician education. In the present study too although many residents considered research in medical field as important but were not clear about specific role it plays in career of a medical professional. Good numbers of students were interested in pursuing research

during residency but rates of participation tend to be low, and the quality of the research experience can vary greatly. The evaluation of data confirmed some common barriers to research which are reported in other projects, such as lack of time, difficulty in finding a suitable topic, and unavailability of appropriate mentorship. Strong faculty and institutional support, counsel and guidance of a faculty member, supportiveness of the work environment are critical prerequisites for any research project done by medical interns or residents to reach to the stage of publication. [6,7]

Articles by health researchers in South Asia comprised only 1.2% of all annual research of health topics in the institute of scientific information database in 1992-2001. [2] This low proportion indicates how little is shared rather than the quantity of research carried out. Similar findings were reported from the field of tropical disease research. [8] The combination of not having the time or skills to carry out research has resulted in a lack of motivation for some participants and they questioned the reward system for research activity.

Again a minority of participants were very self motivated and wanted to be involved in research activity for personal reward and satisfaction

One long-term strategy for promoting health research is to target medical students early in their careers. Most of the research to date on the effectiveness of such a strategy has been done in Western settings. This research has shown that research experience as a medical student is strongly associated with postgraduate research involvement. [9,10]

There are many benefits of doing a research project as a student, not surprisingly, in a study, 97% of students considered research as a useful alternative to electives. [11] In our study 91.7% PGs and

14.7% find research as an important aspect of medical education.

Student research is not without its problems. Good mentorship, for example, is a vital component of effective student research, and inadequate mentoring can lead to discontentment with research. Other problems include lack of time, neglect of routine studies and deterioration of clinical skills due to more time being spent on research activities, and inadequate project management. [12] In our study 60% students mentioned the reason behind not doing research to be work overload, 16% due to lack of interest, 12% due time constraint and others due to lack of good mentorship.

In one Indian study, for example, 91% of interns reported no research experience in medical school. [13] While in our study 92.8% PGs and 44.6% interns had been a part of medical research some or the other time.

More than two-thirds of the postgraduate trainees at one Pakistani institution, reported reading scientific journals only once in six months or more. [14] In our study about 91% PGs are familiar with writing a protocol and almost all PGs are referring to different sources of information for doing research which is really commendable.

In Germany, medical students authored 28% of the publications of one institution, including first authorship in 7.8% of papers. [15] In the Indian institutions studied by us 62.3% PGs and 11.9% interns have made an attempt to publish research. But very a few were interested in research as a career option. As far as factors to opt research as a career are analyzed it was found that it did not make any difference whether the medico is a male or female. But awareness about research as a career, participation in research work within and in addition to the curriculum is statistically more significant in PGs as compared to

interns. In another study role of mentors has been found to be very important in promotion of research. [16]

In research conducted at Aga Khan University (Karachi, Pakistan), it was found that knowledge of research is lower, and attitudes more indifferent, during the initial years of medical school. [17] Another study also showed that students face a number of problems in conducting research: curriculum overload, time limitation, lack of proper training, uncooperative staff, and lack of motivation and incentives. [18] Another study at the same university established that students undergoing lecture-based learning showed less interest in health research than those undergoing problem-based learning. [19] It has been found that lack of interest in research among medical students results from insufficient attention given by the faculty and administration to medical students, which can be improved by a well-considered approach. [20]

CONCLUSION

Health research is essential to improving health care. One long-term strategy for promoting health research is to target medical students early in their careers. There is a need for medical educators to focus on the integration of specific research skills training within all aspects of the medical curriculum so that these skills are perceived by medical professionals to be relevant to the routine practice of all doctors and not just those engaged in full-time research. We must focus our efforts on introducing and illustrating the concepts of translational research to target the student population who see research as an activity that is totally divorced from patient contact or patient relevance. At our own medical and dental school, we believe that medical students are becoming more enthusiastic about getting involved in research, which is encouraging. Given the right amount of

support, medical students' interest in research can be successfully nurtured. The positive impact of research as a compulsory part of curriculum may help in improving research output from developing countries in future.

Limitations

There are some limitations to this study. First, it has been undertaken only in one private university in Haryana, and using a cross-sectional methodology. It is difficult to make generalized conclusions and causal relation-based recommendations. Our findings are based on self-reports and ratings by interns and postgraduates. Though self-reported measures are commonly used in cross-sectional studies but are subject to participant overestimation and recall bias. Second, this study has only collected binary answers. To analyze the complexity of social and academic issues that might influence the level of interest in research medicine, a stronger, more detailed study design involving both government and private universities would be valuable. Finally, the study was conducted only among interns and postgraduates. The picture might be entirely different in junior classes as different levels of education are likely to motivate students in different ways.

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How to cite this article: Pathak R, Chaudhary C, Mishra P et. al. Perception, practices and barriers towards health research among young medical professionals of northern India. *Int J Health Sci Res*. 2015; 5(2):11-19.
