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Original Research Article

Knowledge, attitude and practice towards scientific research among undergraduate students of a medical college in Delhi

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ABSTRACT

Background: Scientific research forms an important foundation for producing doctors with an understanding of evidence-based medicine. Medical education in India over a period has largely remained unchanged with a very low emphasis on research and publication. Objective of the study was to assess the knowledge, attitude and practice towards scientific research among undergraduate students of a medical college in Delhi, India.
Methods: A cross sectional study was planned among 240 undergraduate students from five semesters of medical college in New Delhi. The questionnaire consisted of questions about identification data, knowledge, attitude and practices of scientific research. Data was analyzed by SPSS software version 21.0 and for qualitative data analysis Chi-square test was used.
Results: Mean age of study subjects was 20.68±1.87 years and more than half (59.6%) of them were males and (40.4%) were females. Out of 240 participants, only (13.5%) had excellent knowledge about scientific research. Majority (89.6%) of them felt that research work should be a part of the medical curriculum. About one fourth (22.9%) of study participants had done a scientific research. Age of study participants and better knowledge were found significant predictors of conducting research among study participants.
Conclusions: This study concludes that only few study participants had excellent knowledge and practice scientific research but majority of them had positive attitude towards research. So, there is a need to increase awareness about scientific research from an early level in the curriculum among study population.

Keywords: Attitude, Cross-sectional, Knowledge, Medical students, Practice, Research

INTRODUCTION

Medical education in India over a period has largely remained unchanged with a very low emphasis on research and publication. Research, as we know, forms an important foundation for producing doctors with an understanding of evidence-based medicine.[1] This anomaly in education is quite prominently visible at UG level than PG with very little research opportunities available. For PG; there are still some relevant opportunities to conduct research.

Scientific research is defined as systematic collection, interpretation and evaluation of data in a planned manner.[2] Indian council of medical research is the apex body for promoting medical research in India, who started their STS program to increase aptitude for medical research. The number of students availing STS has progressively increased from 495 in 2005 and 613 in 2007 to 889 in 2008.[3] Various studies have shown that performing research allows medical students to gain critical thinking skills, ability to evaluate literature,

teamwork, experience in writing and practice in community data with the scientific field.

After 60 years of independence, the number of medical colleges has increased 13-fold, but their quality remains an issue. Numerous medical colleges do not even publish a single paper in a year. Lack of resources, lack of encouragement and lack of research-based curriculum are the main reasons behind it. Therefore, in view of paucity of literature related to knowledge, attitude and practice towards research among undergraduate medical students, the current study was planned to assess it among medical undergraduates.

METHODS

Study design and population

The study was a cross-sectional study carried out in the Department of Community Medicine, Vardhman Mahavir Medical College, and Safdarjung Hospital, New Delhi among undergraduate medical students. Inclusion criteria were medical students of 1st, 3rd, 5th, 7th and 9th semester plus interns. Students who were absent on the day of study and those who did not give consent were excluded from the study. The data collection was done in September 2018.

Sample size and sampling

The required sample size was calculated using the formula of calculation of sample size in a study where the outcome measured in the form of proportions. Sample size was calculated based on the prevalence of practice of scientific research (16%) taken from a study conducted by Kumar H et al at Kasturba Gandhi Medical College, Mangalore in 2008 and absolute error of 5%, the sample size according to formula 4PQ/L2 plus loss to follow-up as 10% came out to be 240.[4]
So, we covered a sample of 240 undergraduate medical students from five semesters and interns. According to list from academic section, total number of currently enrolled undergraduate medical students were 900 in the college.
There were 150 in each year (5 semesters plus interns). By applying stratified random sampling method, an equal number of students were selected i.e. 40 from each group. Random number tables were used for selecting participants in each group.

Data collection

A pre-designed, semi-structured, self-administered questionnaire was used for data collection. The questionnaire was designed in English and was pretested in 10% of the calculated sample size of another Medical college in New Delhi and necessary changes were incorporated and the questionnaire was finalized. The questionnaire consisted of 45 questions about identification data, knowledge about, attitude towards, and practices of scientific research among the undergraduates.

Statistical analysis

The data was initially checked for completeness and was cleaned for errors and missing values. The corrected data was entered in a master sheet on MS Excel and later transferred from MS Excel to SPSS Software version 21.0 for analysis. Simple tables and cross tables were formulated. For qualitative data analysis, Chi-square test was used. A p-value of less than 0.05 was considered statistically significant. Approval from Institutional Ethical Committee of Vardhman Mahavir Medical College, and Safdarjung Hospital, New Delhi was taken before the start of study. All participants were assured of complete confidentiality of information. Written and informed consent was obtained from the study participants.

RESULTS

Socio-demographic data

The study was conducted among 240 undergraduate medical students with 100% response rate. Mean age of study participants was 20.68 years (SD ± 1.87). The study participants age ranged between 17 to 25 years. More than half (51.2%) of them were in the age group of 20 -22 years. Males were more (59.6%) as compared to (40.4%) females. Majority (77.9%) were hostellers. Among the parents of the study participants, majority of them (77.4 %) were professionals while only (2.0%) were skilled workers (Table 1).

Table 1: Distribution of study participants according to the socio demographic profile (N=240).

Socio Demographic profile of study participants		
Age group (years)	**Number**	**Percentage (%)**
17-19	71	29.6
20-22	123	51.2
23-25	46	19.2
Gender		
Male	143	59.6
Female	97	40.4
Parent's occupation		
Skilled	5	2.0
Semi-Professional	49	20.4
Professional	186	77.4
Place of residence		
Day scholar	53	22.1
Hosteller	187	77.9

Knowledge about scientific research

Out of 240 participants, majority (69%) of them had heard about scientific research, out of which only (19.3%)

were correctly able to define it. About one fourth (23.75%) of the participants had good and very good knowledge respectively while only (13.5%) had excellent knowledge. About one third (35.0%) of the study participants learnt about scientific research from the peer groups.

Majority (62.5%) of the study participants thought that it was important to conduct a scientific research since it improves development of scientific thinking along with adding to the knowledge of medicine. About one third (36.7%) of study participants knew about search engines where they could find research articles and (29.6%) knew about software's for statistical analysis Figure 1.

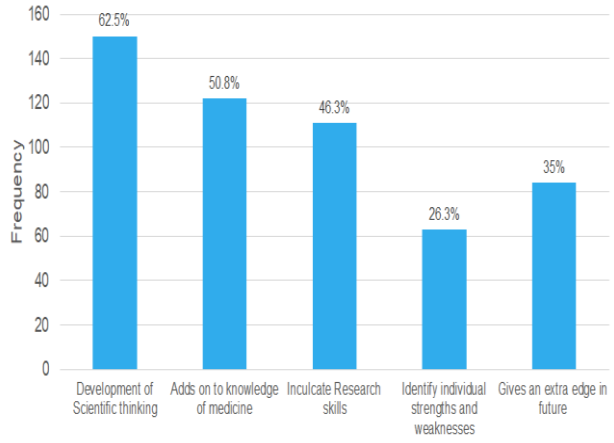

Figure 1: Distribution of study participants according to importance of scientific research (N240).

Attitude towards scientific research

Of the 240 participants in the study, about three-fourth (73%) of them agreed to the fact that it is important at undergraduate level to conduct a scientific research/ publish a paper. Only (21.3%) had family members who have done and published a research. More than half (64.2%) of the participants had friends/family members/seniors who encouraged them to do research work. Majority (83.8%) of study participants thought that they would opt to do a research project and out of which most of them (85.1%) wanted to be a part of a funded research project. Main obstacles in getting involved with research work were found to lack of resources, lack of time due to other commitments and lack of awareness in the study population.

Among the study participants, majority (89.6%) felt that research work should be a part of the medical curriculum in all medical colleges and it should be introduced in the fourth semester. About three-fourth (78.8%) of study participants thought that research experience should influence selection for training jobs and placements abroad.

Practice of scientific research

About one fourth (22.9%) of study participants had done a scientific research and more than half of them (67.2%) chose ICMR-STS for their research. Only (9.2%) were involved in research project in school out of which only (13.6%) got it published. About half (43.8%) of them had attended undergraduate conferences, while only 42 (17.5%) had attended workshops on research methodologies. One fourth (25.7%) of participants had read scientific research/Journal articles. Only (14.2%) did oral/poster presentations in a conference. Community medicine followed by microbiology were the preferred choice subjects for research in the study population.

Table 2: Distribution of study participants according to role played in the scientific research (n = 55).

Role played in scientific research	Number	Percentage (%)
Writing papers for publication	6	10.9
Delivering oral presentation	6	10.9
Designing posters for presentation	9	16.4
Writing of abstracts	27	49.1
Analysing data	31	56.4
Lab work	19	34.5
Handing out questionnaires	21	38.5
Going through patient notes and collecting data	29	52.7
Design of the research project	15	27.3
Conception of the idea	17	30.9

*Results are not mutually exclusive

Out of total participants, only (6.3%) had submitted an article for publication, out of which about one third (40%) of them were published. Only (12.5%) of participants had submitted abstracts, out of which majority (86.6%) of them were accepted. Out of total participants who did research, about one fourth (23.6%) of them had received ICMR-STS Grants.

On analyzing Knowledge about scientific research with its determinants, it was observed that knowledge is increasing significantly ($p<0.001$) with increase in age of study participants. Factors like gender, parent's occupation and place of residence had no statistically significant association with Knowledge about scientific research among study participants. On analyzing practice of scientific research with its determinants, it was observed that factors like age, knowledge about scientific research and whether participants approached someone were significantly associated ($p<0.001$). Factors like gender, parent's occupation and place of residence had no statistically significant association with practice of scientific research among study participants.

Table 3: Determinants of knowledge and practice of scientific research among study participants (N=240).

Knowledge about scientific research				P
Age (Year)	**Good n (%)**	**Poor n (%)**	**Total n (%)**	
17-19	1 (1.4)	70 (98.6)	71 (100)	0.001
20-22	61 (49.6)	62 (50.4)	123 (100)	
23-25	29 (63)	17 (37.0)	46 (100)	
Gender				
Male	49 (34.3)	94 (65.7)	143 (100)	0.176
Female	42 (43.3)	55 (56.7)	97 (100)	
Parent's occupation				
Doctors	24 (36.9)	41 (63.1)	65 (100)	0.882
Non-doctors	67 (38.3)	108 (38.3)	175 (100)	
Residence				
Hosteller	73 (39.0)	114 (61.0)	187 (100)	0.526
Day scholar	18 (34.0)	35 (66.0)	53 (100)	
Done scientific research				
Age (Year)	**Yes n (%)**	**No n (%)**	**Total n (%)**	
17-19	1 (1.4)	70 (98.6)	71 (100)	0.001
20-22	39 (31.7)	84 (68.3)	123 (100)	
23-25	15 (32.6)	31 (67.4)	46 (100)	
Gender				
Male	25 (17.5)	118 (82.5)	143 (100)	0.019
Female	30 (30.9)	67 (69.1)	97 (100)	
Parent's occupation				
Doctors	20 (30.8)	45 (69.2)	65 (100)	0.086
Non-doctors	35 (20.0)	140 (80)	175 (100)	
Residence				
Hosteller	46 (24.6)	141 (75.4)	187 (100)	0.272
Day scholar	9 (17.0)	44 (83.0)	53 (100)	
Knowledge about scientific research				
Good	42 (46.7)	49 (53.3)	91 (100)	0.01
Poor	13 (8.7)	136 (91.3)	149 (100)	
Approach someone for research				
Yes	36 (47.4)	40 (52.6)	76 (100)	0.01
No	19 (11.6)	145 (88.4)	164 (100)	

DISCUSSION

In our study, age group of study participants was between 17 and 25 years. Mean age of study participants in was 20.68±1.87. In a similar study conducted by Khalid et al in Saudi Arabia, the age group of study participants was between 21 to 32 years and mean age of them was 23±1.17 years.[5] The reason for this difference may be due to difference in age of entry in medical college in Saudi Arabia as compared to India. More number of males (59.6%) as compared to females (40.4%) was found in the present study. In a study conducted by Kumar et al in coastal South India also had a greater number of males (51.2%) as compared to (48.8%) females.[4] Among the parents of the study participants, majority of them (77.4%) were professionals while only (2.0%) were skilled workers. In a similar study conducted by Ibrahim NK et al found that more than half (51.9%) of study participants parent's occupation was professionals.[6]

In the current study, only (13.5%) of study participants had excellent knowledge of scientific research. Similar results of low level (16.9%) of satisfactory knowledge was found in a study conducted by Ibrahim et al in Saudi Arabia among medical students.[6] In another study conducted by Khan et al in Pakistan, it was found that only (9.1%) had excellent knowledge of scientific research.[7] In our study, about one fourth (28.3%) of participants knew about PubMed while only (6.3%) knew about Google scholar as a search engine for research activities. A similar study conducted by Kumar et al in south India found that (18%) students knew about PubMed while three fourth (74%) of participants knew about Google scholar.[4] The reason behind this difference is that, the students in the college with better knowledge have to complete student research project during their graduation period.

In the present study, about three fourth (73%) of participants felt that it is important for undergraduate medical students to conduct research while majority (89.6%) of them felt that research should be a part of medical curriculum. A similar study conducted by Kumar H et al in South India found that about one third (37.3%) of students felt that research is important, the difference could be due to increased number of first years enrolled in this research.[4]

Results of present study shown that, about one third (35%) of study participants were influenced by their peers for carrying out research work. A similar study conducted by Lopatto et al in UK found that majority (78%) of participants were influenced by peer group to carry out research activities.[8] The reason behind this difference is that seniors and faculty also played a significant role in our study group. Lack of awareness, time and lack of resources were found as the major obstacles for conducting research in the present study. Similar findings were found in a study conducted by Kumar et al that lack of financial and academic benefit and lack of time as the major obstacles.[4]

In our study, about one fourth (22.9%) of them had done a scientific research while only (6.3%) of study participants attempted to publish an article. A similar study conducted by Kumar et al in south coastal India found that three fourth (76%) of students had been a part of a research activity while only (16%) students attempted to publish an article.[4] Comparing the two, the proportion of students who attempted to publish an article was lower in our study group. This must be due to that lack of awareness and guidance in the study group towards research, making the overall participation lower.

In the present study, knowledge and practice of scientific research increases significantly (p<0.001) with increase in age of study participants with each semester in college while factors like gender, parent's occupation and place of residence had no statistically significant association. In a study conducted by Ibrahim et al in Saudi Arabia, it was found that knowledge about scientific research had no significant association with age and gender of study participants.[6] In another similar study conducted by Khan et al in Pakistan, it was also found that participant's knowledge of research increases significantly (p<0.001) with increase in age with each semester while gender has no significant association.[7] Better knowledge was found a significant predictor of conducting a research among study participants of present study. In a study conducted by Ibrahim et al in Manipur, similar result was found.[6]

Our study has some strength which makes it more reliable including informed verbal consent at the time of data collection, pilot tested questionnaire and fair representation from each semester with high response rate. Additionally, we have a questionnaire that can be successfully used in medical colleges to study the publication practices of medical students all over the country. First limitation is that the result of our study, cannot be generalized to entire population of undergraduate medical students across India. Since the study used a self-reported questionnaire, hence under-reporting or over-reporting may be present is another limitation.

CONCLUSION

This study concludes that only few study participants had excellent knowledge and practice scientific research but majority of them had positive attitude towards research. Age of study participants and better knowledge were significantly associated with practice of scientific research. There is a need to increase awareness about scientific research from an early level in the MBBS curriculum. A competency-based curriculum of research along with integration of specific research skills training should be planned to boost the knowledge and participation in scientific research among the study population.

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