Knowledge, Attitude and Practice of Research among Second Year Undergraduate Medical Students in a Medical College of Telangana, India

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ABSTRACT

Introduction: Research experience is important for practice of evidence based medicine among the physicians. It is important to assess the opinion of medical students on research, as it helps us to take necessary measures to motivate them towards research.

Aim: To assess the knowledge, attitude and practice of research among second year undergraduate medical students in Kamineni Institute of Medical Sciences, Hyderabad, Telangana, India.

Materials and Methods: This cross-sectional study was conducted on 120 undergraduate medical students in Kamineni Institute of Medical Sciences, Narketpally from December 2018-January 2019. The basic awareness about research was assessed using a validated questionnaire. The basics of research methodology were then taught to these students and

improvement in knowledge was assessed after lecture. The attitude of students towards research was also assessed by a questionnaire. The practice of research among the students was then evaluated on a 5 point likert scale.

Results: There was a significant improvement (p<0.05) in the knowledge domain among both boys and girls after the lecture. A total of 76 students had opinion that interest in particular field was driving force for doing research (63.02%). Lack of guidance (31.2%) and funding (46.2%) were the perceived barriers for conducting research in the undergraduate days. A total of 49.5% students felt that teaching research methodology should be an integral part of MBBS curriculum.

Conclusion: Learning research methodology from undergraduate days helps the students inculcate research in practice and choose research as their long term career goal.

INTRODUCTION

Research activity of medical students is important to ensure better skills in critical reasoning, life-long learning and also in better treatment outcomes. Research experience is therefore, important for practice of evidence based medicine among the physicians [1].

The one doing efficient research have to acquire ample skills and knowledge regarding research methodology. Formulating effective research training sessions at undergraduate and postgraduate levels will create interest and increase the orientation of students towards research [2]. Lack of research quantity as well as quality is seen in undergraduate students due to some of the issues like vast MBBS curriculum and lack of knowledge on research methodology.

The second year MBBS students do funded projects like ICMR-STS projects. So, the knowledge of research methodology helps them in preparing protocol for the project and taking it forward. Also, early exposure to health training research has been emphasised in modern undergraduate curriculum.

Health research in developing countries is a low priority area with inadequate research budgets and is not a financially rewarding venture, which needs to be paid more attention. Training on research from theory to the part of practical application should be a part of continued medical education curriculum in India.

The present study was done to evaluate the knowledge and opinions of the undergraduate students towards research, as this determines the outcomes of research itself and demonstrates the association between research and medical education.

MATERIALS AND METHODS

This study was a cross-sectional study conducted on 120 medical under-graduates pursuing second year MBBS in Kamineni Institute

of Medical Sciences, Hyderabad, Telangana, India from December 2018 to January 2019. After taking permission from Institutional Ethics Committee, a validated and peer reviewed questionnaire was prepared to assess the awareness on research among these students. Verbal consent was taken, after explaining the purpose of the study.

Pre-lecture questionnaire comprising of 10 questions was used to assess the basic awareness of the students regarding research methodology (Annexure-1). A brief lecture of one hour duration using power point presentation was given by the investigator herself to teach all the 120 students the various methods of conducting research, the various bodies conducting research and ways to tackle the various problems encountered in conducting research. The same questionnaire was again answered by the students after the lecture. Attitude of the students regarding research and barriers they felt in conducting research by the students were assessed by using a questionnaire given after the lecture. Their ideas regarding practice of research domain of the study was then assessed on a 5 point Likert scale (strongly agree, agree, neutral, disagree and strongly disagree). The answers given by the 2nd year MBBS undergraduate students in the questionnaire, both pre-lecture and post-lecture were evaluated and scores were given (knowledge and attitude domains).

STATISTICAL ANALYSIS

Demographic details and scores of knowledge domain of the questionnaire were analysed by applying descriptive statistics including mean and standard deviation. Paired t-test (z-test) was performed in Graph pad prism 7.0 software to assess the improvement in the knowledge domain of the questionnaire. The level of significance was kept at 0.05. Frequency and percentage of student responses were used to assess the attitude and practice of research.

RESULTS

Demographic Details

A total of 120 MBBS students participated in the study, out of which 27 were males and 93 were females. Mean age of the students was 19±0.82 years. Mean age of male students was 20±1 years and of female students was 18±0.92 years.

After collecting the demographic details, a lecture on basics of research methodology was given. The pre-lecture scores varied from 4-8 in males and 5-10 in female students. The post-lecture scores varied from 5-9 in males and 6-10 in female students.

Z test was performed to compare pre-lecture and post-lecture scores. The p-value obtained was 0.07. This indicates that there is significant difference in the scores of pre-lecture and post-lecture questionnaires [Table/Fig-1]. This indicates that there was significant improvement in performance of the students after the lecture.

	Pre-lecture score (Mean±SD)	Post-lecture score (Mean±SD)
Males	6.07±1.28	7.78±1.32
Females	6.1±1.28	7.81±1.29

[Table/Fig-1]: Scores in the knowledge domain of the questionnaire.

While assessing the factors of hurdles in conducting research, most of the students i.e., 46.20% agreed on lack of funding as the main reason [Table/Fig-2]. On the other hand factor which motivated students to conduct research was interest in particular field [Table/Fig-3].

Sl. No.	Perceived hurdles	Percentage
1	Lack of guidance	31.20%
2	Lack of funding	46.20%
3	Lack of patient co-operation	19.30%
4	Others	3.30%

[Table/Fig-2]: Factors of hurdles in conducting research.

Sl. No.	Factors which motivate	Percentage
1	Interest in particular field	63.02%
2	Target knowledge gaps in the subject	12.60%
3	Recent advances in the field	12.60%
4	Comparative analysis of other studies	11.07%

[Table/Fig-3]: Factors the students felt which motivate to conduct research.

Many of the students recommend the prospective study (65.50%) followed by Randomised Controlled Trial (RCTs) (15.96%) [Table/Fig-4]. Based on assessment of attitude domain of the questionnaire, 53.78% students agreed that participation in research is important in undergraduate days, while 49.5% students strongly agreed on teaching research methodology should be a part of MBBS curriculum [Table/Fig-5].

Sl. No.	Study design	Percentage
1	Prospective study	65.50%
2	Retrospective study	9.20%
3	Randomised controlled trial	15.96%
4	Not specific	9.20%

[Table/Fig-4]: Design of study the students prefer.

Among second year students, percentage of students who participated in conference were 5%, out of which only 1% of students gave oral presentation.

DISCUSSION

Knowledge on research methodology is important to do efficient research [1]. Comprehension of biostatistics and principles of research design is important for literature evaluation and evidence

Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Teaching research methodology should be a part of MBBS curriculum	49.5%	43.69%	4.29%	1.68%	0.84%
Research in medical field is important	40%	40.2%	0.4%	16.1%	3.3%
Participation in research during undergraduate days is important	39.49%	53.78%	6.72%	1.67%	0.01%
Research is part of long term career goal	26.89%	36.13%	33.61%	1.69%	1.68%

[Table/Fig-5]: Practice of research among 2ⁿᵈ year undergraduate students.

based practice of medicine [2]. Medical students have limited understanding of research and its importance. Therefore, the present study was taken up to assess knowledge, attitude and practice of research among 2ⁿᵈ year undergraduate students. There are meager studies regarding opinion of undergraduates about research in India, although there are a number of studies understanding the same in the medical and dental postgraduates.

In the present study, the overall knowledge scores were higher among female compared to male students. This finding is similar to a study done by Pallamparthy S and Basavareddy A which was a study also done in medical undergraduate students [3]. Similar to the findings of the present study, their study also perceived that the barriers in conducting research are lack of awareness, lack of funds and difficulty in follow-up patients due to lack of co-operation on their part.

The lecture on basics of research methodology helped the students to gain familiarity with research, as was seen by significant increase of score after the lecture. The hurdles in conducting research were lack of funding and guidance, and this can be improved by effective mentorship program [4]. These findings were comparable to those in the study done by Vairamani CR and Akoijam BS, on medical interns and post-graduate medical students [2].

Majority of students were of the opinion that, it is interest in particular field that motivates the students to do research. Target knowledge gaps in the subject are another such important factor [5]. The students were more interested in prospective studies and in clinical research than invitro or animal studies. Majority of students felt that teaching the fundamentals of research methodology in early semesters of MBBS curriculum is important. These findings were similar to the findings of study done on undergraduate medical students by Althubaiti A et al., in Saudi Arabia [6].

Limitation(s)

The study should have included MBBS students of other batches as well, so that difference in attitude and practice could have been computed.

CONCLUSION(S)

Institution of effective mentorship program helps the undergraduate medical students bring theory into their practice of research. The medical colleges in countries like India should provide proper infrastructural facilities to boost their participation in research.

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Annexure 1: Questionnaire to assess the knowledge domain and its improvement after lecture.

1. What is purpose of research?
   a) Provide scientific basis to prevent disease and promote health
   b) Identify sections of population at greatest risk to target interventions
   c) Evaluate effectiveness of programs in improving health of the population
   d) All of the above

2. Which of the following studies are gold standards of research?
   a) Cohort studies
   b) Case-control studies
   c) Randomised control trials
   d) Case series

3. Which of the following are observational studies?
   a) Cohort studies
   b) Case-control studies
   c) Cross-sectional studies
   d) All of the above

4. Which of the following are best research methods for detecting a rare disease?
   a) Case-control studies
   b) Cohort studies
   c) Randomised control study
   d) Case series

5. In a clinical trial on hypertension, the research participant is unaware of his medication which was given by the researcher-whether it was placebo or test drug. Such a study is called:
   a) Open label study
   b) Single blinded study
   c) Double blinded study
   d) None of these

6. Which of the following is a randomisation method?
   a) Table of random numbers
   b) Computer generated random numbers
   c) Interactive voice response system
   d) All of the above

7. Which of the following can be done to eliminate bias?
   a) Randomisation
   b) Bias
   c) Both of these
   d) None of the above

8. Cohort studies are usually
   a) Prospective
   b) Retrospective
   c) Cross-sectional
   d) none of the above

9. Which of the following research methods cannot be used to test hypotheses?
   a) Randomised control studies
   b) Case-control studies
   c) Cohort studies
   d) Case reports and case series

10. Which of the following organisations set standards for research in India?
    a) ICMR
    b) US-FDA
    c) ICH-GCP
    d) EMA