

# A Cross-sectional Descriptive Study to Assess the Knowledge, Attitude and Practices towards Voluntary Participation in Health Research among the Medical Undergraduate Students

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## ABSTRACT

**Background and Aim:** Research training at the level of undergraduate is found to be a critical component of medical school curriculum. Undergraduate medical students routinely participate as volunteers in both observational as well as survey studies conducted at medical institutions. Their knowledge, attitude and the practices they follow in voluntary participation in a research project as a subject is unknown. Here in this study we tried, 1. To assess the level of knowledge, attitude and practices towards voluntary participation in medical research among the undergraduate medical students. 2. To analyse the gender differences existing in the opinions given by the above respondents. **Methods:** A cross sectional descriptive survey using a pretested questionnaire was done among the students with stratified random sampling and the students were selected from the different batches. The study was carried out in the campus for a period of 45 days among 200 students of both gender. Statistical significance was calculated using Graph pad prism v5.0. **Results:** Ninety percentage of the students agreed for the need for voluntary participation in medical research. 55% of them volunteered as subjects due to their peer pressure only. 78% never ever participated in any research. 95% of the female participants expressed the importance of voluntary participation in research ( $p < 0.05$ ). **Conclusion:** There is an expectation among the students to participate and acquire knowledge and skill through research activities. Majority of them expect a research integrated curriculum that could cater their enrollment and participation in research activities. Differences in opinions among the gender was not seen.

**Key words:** Voluntary participation, Student research, Medical undergraduates, Medical education, Undergraduate research.

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## INTRODUCTION

Research training at the level of undergraduate medical school education is found to be a critical component of medical school curriculum.<sup>[1]</sup> It is important that tomorrow's clinicians receive better training in order to inculcate better competencies like critical thinking and critical appraisal.<sup>[2]</sup> Though a large sector of student population agrees that research training should be made mandatory and also were interested to conduct an independent research, it did not translate into actual research due to issues like, lack of time, lack of research component in curriculum or inadequate facilities.<sup>[3]</sup>

With the medical education system in India not incorporating research methodology as part of the curriculum, research in medical colleges among the medical undergraduate students takes the lowest priority.<sup>[4]</sup> It was reported that an alarmingly low (0.9%) percentage of medical students only had shown interest in research through various research programs.<sup>[5]</sup> The Medical Council of India has emphasized the importance of undergraduate medical research and advocated introduction of electives in

various topics including research methodology in its Vision-2015.<sup>[6]</sup>

Participation in research as voluntary participants would definitely make a student learn enough nuances in the conduct of any research. This also enhances their understanding about the ethics involved, autonomy to be practiced which gets translated to their patients in their clinical practice. The rise in number of unethical practices in clinical research in India in the recent past would also be brought if awareness and exposure of the medical students to ethical conduct of research is made at an early stage. Research oriented medical education (ROME) will orient a student to think independently, search literature quickly and understand research methodology. Also it could be a very good stress buster and would help the student develop self-directed learning and communication skills.<sup>[7]</sup> Undergraduate medical students routinely participate as volunteers in both observational as well as survey studies conducted at our institute. However coercion is one identified factor that prevents students from participating in any

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medical research<sup>[8]</sup> and is also less identified area in any research campus in promoting the student participation. Their knowledge, attitude and the practices they follow in voluntary participation in a research project as a subject is unknown. Published literature on this issue across the country is also very scanty and hence we decided to investigate the same in our campus among our medical undergraduates. The objectives were, 1) To assess the level of knowledge, attitude and practices towards voluntary participation in medical research among the undergraduate medical students of a medical college. 2) To analyse the gender differences existing in the opinions given by the above respondents.

## MATERIALS AND METHODS

Institutional ethics committee approval was obtained well before the initiation of the study and a written informed consent was collected from every participant. This was a cross sectional descriptive study with the stratified random sampling method. The study population was the medical undergraduate student volunteers of Shri Sathya Sai Medical College and Research Institute. Students belonging to II(n=64), III(n=58), IV(n=23) year and Interns (n=55) of both gender were included in the study. The estimated sample size was 220 subjects with an expected drop out of 10%. Printed pretested questionnaire was used to collect data from the students. Questionnaire had 25 items, 10 items pertaining to the knowledge section, 10 items on attitude and 5 items related to their practice of voluntary participation towards research.

Collected responses were entered into Microsoft excel 2007 sheet and were coded. Coded responses were later imported into the statistical software Graphpad prism v 5.0 for statistical analysis. Descriptive frequency analysis were performed for all variables in the questionnaire. Chi-square test was done to investigate the association between gender and perception towards voluntary participation in research. The statistical level of significance was set at value  $p < 0.05$ .

## RESULTS

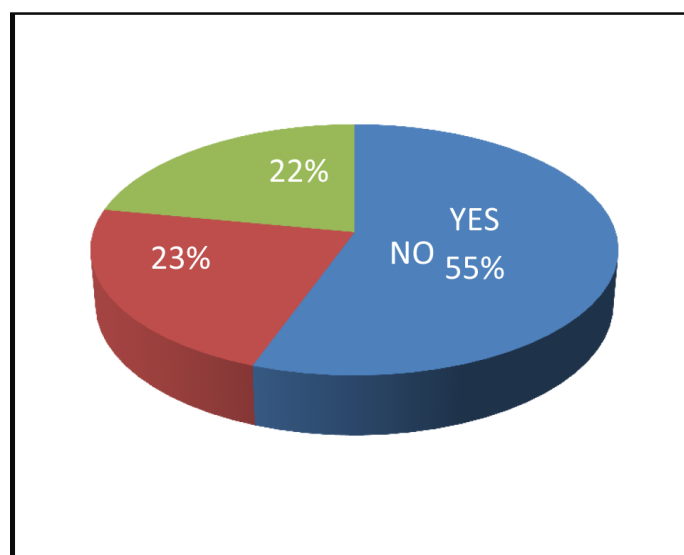
The results of our study are tabulated here below that explains the knowledge, attitude and perception towards voluntary participation in research. Our findings unveiled the necessity for awareness and training for the undergraduate students at every other college.

Knowledge on voluntary participation in health research among medical college students showed a higher percentage of students accepting the fact that the evolution of medical science is based on the discoveries over a long period of time (Table 1). Most of them also accepted the introduction or implementation of the research oriented medical education. More than 3/4<sup>th</sup> of the participants felt that voluntary participation in anyone research will improve the participant's knowledge on the project that is being done. However the lower percentage of the undergraduates knowing the premier regulatory body for the medical research showed the need for creating awareness.

Attitude towards voluntary participation in health research among students have been better with the expectations of most them seeking ethical conduct of medical research within their undergraduate curriculum itself (Table 2). Broadening of the ideas in research at the undergraduate level itself shows that the future policies on medical curriculum can include research as a part of it.

Unfortunate less participation in medical research by undergraduates shows lesser opportunities being given to the students by the teacher researchers or in general by the medical college campus (Table 3).

Female's students were better informed about the benefits of voluntary participation in medical research and hence they support the idea of gaining more knowledge by participating in any kind of research (Table 4).



**Figure 1:** Percentage distribution of students who are aware of their right to abstain from further participation in a research project in-case of any discomfort.

Awareness about the “Right to withdraw” ethical principle during any voluntary participation in research exists among more than 55% of the participants which showed that the students were aware of their rights on any participation of themselves as research participants (Figure 1).

## DISCUSSION

Problems faced by undergraduate medical students were explained in the results of our study. Information on their knowledge, attitude and practices of medical research as participants were sought and discussed against their perceptions towards voluntary participation in any research that happens in the campus.

### Knowledge about medical research and voluntary participation

Nearly 90% of students agreed that medical research has led to the growth of medical science (Table 1). Forty percentage of students opted for Research integrated curriculum than 31% opting for Research oriented medical education (ROME). This idea of incorporating research into the medical curriculum is emerging as the need of the hour with authors like M G Deo (200) who has insisted for this curriculum in medical education which he says might lead to a shift from importing knowledge to indigenous generation of new knowledge.<sup>[9]</sup>

Another 90% of students accepted that voluntary participation in medical research is essential. Only 40-47% were aware of the regulatory bodies that control the functioning of both Institution ethics committee and Institutional animal ethics committee (Figure 1). Knowledge on this sector needs Updation for the students. 50% of the participants were unaware what an informed consent is. Priority on these details is to be taken for updating the knowledge of the students who are going to be researchers in the near future.

Awareness about the systematic review as the highest level in the research pyramid and Helsinki declaration is also less known by our participants.

Seventy three percentage of students were aware about the Short term studentship (STS) programme offered once in a year by the ICMR.

**Table 1: Knowledge towards voluntary participation in health research among the medical undergraduates. (n=200)**

SI No.	Question details	Response	Response (%)
1.	Evolution of medical science is based on discoveries over a long period of time	a) Yes b) No c) Don't know	89 4 7
2	Method that helps to improve one's knowledge in medical science	a) Research oriented medical education b) Integrated curriculum c) Research Integrated curriculum d) No idea about this	31 22 40 7
3	Voluntary participation in medical research for students – is this essential?	a) Yes b) No c) Don't know	90 9 1
4	Organisation that controls medical research in India?	a) ICAR b) ICMR c) UGC d) MoHFW	8 83 4 5
5	Institutional Human Ethics Committees in India are regulated by ,	a) ICMR b) ISB c) DST d) MoHFW	40 36 4 20
6	Regulatory body that governs the Institutional Animal Ethics Committee,	a) CPCSEA b) MCI c) DST d) DBT	47 28 15 10
7	Highest level of research in the research pyramid,	a) In-vitro research b) Animal Research c) RCT d) Systematic review/ Meta-analysis	34 12 39 15
8	Medical Undergraduates are offered short term studentship by,	a) DST b) DBT c) ICMR d) MoHFW	13 10 73 4

ICMR: Indian council for Medical Research, ICAR: Indian council for agricultural research

DBT: Department of Biotechnology, DST: Department of Science and Technology, MCI: Medical Council of India, MoHFW: Ministry of Health and Family welfare, CPCSEA: Committee for the purpose of control and supervision of experiments on Animals.

RCT: Randomized controlled trial

## Attitude towards medical research and voluntary participation

Eighty six percentage of students agreed to their belief that participation in research activities improves their knowledge in a particular section the health problem. This results of ours were in concurrence with the reports of Khalid *et al.* (93%) (2014).<sup>[10]</sup> Ninety one percent of them believed patient outcome will improve if there is continued medical research. This was in concurrence with same amount of students (93%) (Table 2) accepting the above said reasons as reported in their findings

**Table 2: Attitude towards voluntary participation in health research among the medical undergraduates. (n=200)**

SI No.	Question details	Response	Response (%)
1	Type of research uncomfortable to participate.	a) Survey b) Clinical Trial c) Interventional studies d) Observational studies	22 29 23 26
2	Ethical conduct of medical research need to be included in the curriculum?	a) Yes b) No c) Don't know	73 14 13
3	Research to be included as a part of the medical undergraduate curriculum	a) Yes b) No	84 16
4	Participation in research will help to understand the problems of the patients	a) Yes b) No	87 13
5	Will incentives motivate students to participate as volunteers in medical research?	a) Yes b) No	82 18

**Table 3: Practice towards voluntary participation in health research among the medical undergraduates. (n=200)**

SI No.	Question details	Response	Response (%)
1	Participated in any of the medical research conducted in the campus	a) Yes b) No	22 78
2	What was the reason behind your non-participation?	a) So far I was not approached by any researcher for data b) Am not aware if any research is being done in our campus c) Volunteers were many such that I don't get an opportunity d) Research is not compulsory to pass the examinations	35 20 27 18
3	Ever been a co-investigator of any health research project in the campus	a) Yes b) No	27 73

by Tarig Osman in 2016.<sup>[11]</sup> 42% of students were scared to be a voluntary participant in a conducted research due to their fear of bleeding, exercise or any exertions. More 50% participated only as a gesture for their friend's request. 82% of them said incentives will attract more students to participate in research as participants.

## Practice of medical research and voluntary participation

Alarming 78% reported that they have not participated in any research conducted within the campus with a reasons like that they were not aware of any research happening in the campus, that they were not approached by any investigator seeking their participation and a few (18%) also considered that there is no compulsion to participate to pass their university examinations (Table 3).

Majority of them reported the lack of time as their prime problem for not being a participant in research, followed by lack of interest and lack of research in curriculum. Our results were in agreement with that of the Tarig Osman's report where 59.8% students report time as an important factor that deprived them from participating in any research activity.<sup>[11-14]</sup>

## Gender differences in perception towards medical research and voluntary participation

Significant percentage of girl students reported that voluntary participation in research by medical students is as essential as their academics (Table 4). There was not any gender differences in their opinions towards the following,

1. Participation in research projects will help them learn new protocols.
2. Factor that prevented them from taking part in any research in the campus.

However the non-participation in conferences or any medical research project in the campus were non significantly lower in both the genders which needs administrative policy decisions to overcome the same in near future.

## Implications

Voluntary participation of medical undergraduate students in any research that happens inside a medical college campus gives them opportunity not only to participate but also to learn research oriented skills. Early introduction of research and research methodology will improve the student's perceptions on public health issues in a better way. Apart from that the ethical handling of a voluntary participant at an early stage of his/her career in research helps he/she involved with, also helps him understand the autonomy and rights that a patient of his will have. Moreover with raising incidents of patient and their visitor's attacks on doctors and also with reported cases of unethical conduct of clinical trials, the need for imparting ethics in medical curriculum is also appreciated. Due respect, autonomy and right to withdrawal to the research participants if practiced at an early stage by a medical undergraduate in his early life will definitely give him/her enough understanding about the niche of medical research.

Also including the research in an undergraduate medical curriculum will definitely necessitates the teachers to enhance the research skills and that in turn will increase the competency of teachers. More research at campus will make students active and also imparts them with new and latest knowledge on many public health problems which will be more

than what their theory based classes would teach them. Students would start to respect their voluntary participants and deal them with enough respect and dignity.

## Recommendations

1. Institutions can have special units like what we have started in our medical college, Medical Research Unit (MRU) which will cater to the capacity building of undergraduates, postgraduates and faculty as well in the areas of Medical research.
2. If the medical curriculum for undergraduates demands completion of a small research project and publication of the same by every student before being awarded the medical degree could be implemented, there could be some fruitful results in near future.
3. Practical classes can be more technologically driven and research oriented rather than being in books that goes to the shelves.
4. Group research with a teacher as a guide and 4-5 students performing a yearlong task that could be published can be promoted which could be even executed by the existing mentor-mentee system that's already existing in most of the medical colleges.
5. Community oriented problems should be discussed and solutions derived virtually by debating and critically thinking in specially formed forums moderated by group of teachers will help students to think in terms of research for the benefit of the society.

## CONCLUSION

This study finds medical undergraduate student perception on medical research and voluntary participation in any research conducted within the campus. In general there is an expectation among the students to participate and acquire knowledge and skill through research activities. Majority of them expect a research integrated curriculum that could cater their enrollment and participation in research activities. Though they find lack of time as their primary problem to get engaged into any research, there is a general expectation that if research gets into their syllabus they will be given time to do the same.

There was no significant difference in opinion among the males and females against their likeliness to be a part of medical research as a voluntary participant.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## ABBREVIATIONS

**ROME:** Research Oriented Medical education; **ICMR:** Indian council of Medical Research.

## SUMMARY

A questionnaire based study was done among undergraduate medical students regarding their knowledge, attitude and practices on voluntary participation in medical research. Findings suggest the avenues for creating awareness among medical students for better understanding about the importance of voluntary participation in medical research. The gender differences were also ruled out in this study on the different aspects of voluntary participation and conduct of research in medical sciences.

**Table 4: Relation between gender and perceptions towards research (n=200).**

Sl No.	Question details	Males (YES)% (n=79)	Females (YES)% (n=121)	P value
1	Does voluntary participation in research by medical students is essential	82	95	0.004*
2	Does participation in the research projects as subjects will to learn the protocols followed in a particular research project	81	90	0.07
3	Ever participated in any of the medical research conducted in the campus	28	19	0.13
4	Have attended any student conferences organised by any of the medical colleges	51	59	0.25

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