



# A Mixed Methods Study to Introduce Bioethics training in Undergraduate Medical Teaching of Community Medicine

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## ABSTRACT

**Introduction:** Bioethical principals are an integral part of medical practice. Young doctors face a lot of ethical dilemmas during their budding years highlighting the need for bioethics teaching during undergraduate period. The present study was done to evaluate the basic knowledge and attitude of MBBS students about bioethics and its inclusion in medical curriculum.

**Methods:** Four week training in bioethics was provided to MBBS Final Prof Part-I students through lectures, group discussions, informative videos etc. For data collection, a pre-test and post-test proforma was filled by the students which was analysed by the investigators.

**Results:** Statistically significant improvement was seen in knowledge regarding basics of bioethics. There was a clear improvement in the students' perception about importance of bioethics and attitude about following bioethics in clinical practice after the training. Nearly half of the students agreed that bioethics should be taught throughout the MBBS curriculum.

**Conclusion:** The study highlights the importance of introduction of bioethics training in curriculum of undergraduate students. Students in the study were willing to learn more and wanted this training to continue throughout MBBS course. Knowledge of bioethics will help these future doctors in dealing with routine ethical dilemmas.

**Key Words:** Bioethics, Community Medicine, knowledge, training, undergraduate

## INTRODUCTION

Bioethics is a moral code of conduct by which certain ethical dilemmas can be handled so as to provide the best patient care. Effective practices of bioethics lead to better doctor-patient relationship and better patient outcome. The need to teach bioethics to undergraduate medical students and to inculcate ethics training into medical curriculum uniformly is being recognized all over the world.<sup>1</sup> Studies from across the world suggest that students feel their ethical values being challenged in the hospital environment. They show the lack of clear understanding in relation to questions regarding role of basic ethics in their professional lives.<sup>2-5</sup>

Feudtner *et al.* surveying third and fourth year medical students in six medical colleges of eastern Pennsylvania, USA, reported that 58% students felt that they were doing something they considered unethical and 62% believed that at least some of their ethical principles had been eroded or lost.<sup>2</sup> Studies have shown the lack of awareness and knowledge about the existence of institutional ethics committee and its role among medical students. Students also show the lack of clear understanding in relation to questions regarding role of basic ethics in their professional lives.<sup>4,5</sup>

So, the present mixed method study was undertaken to gain more insight into the prevailing knowledge and awareness about principles of bio-

ethics among medical graduates. Objectives of the study were to study the baseline knowledge and evaluate the change in knowledge about principles of bioethics among undergraduate (UG) medical students after introduction of bioethics training. Any change in attitude of UG medical students about practicing bioethics in clinical practice after the training was also observed.

## METHODS

This prospective study was conducted in a tertiary care teaching hospital over a period of five months from April to August 2016 among MBBS students of Final Prof part-I after getting due approval from Institutional Ethics Committee. A module for introducing Bioethics teaching was finalized in consultation with medical education unit and faculty members of the department of Community Medicine. The four weeks training programme included interactive lectures on bioethics, case studies for group discussions, informative videos and test scenarios for testing comprehension to principles of bioethics.

The batch consisted of 70 medical students out of which 58 students appeared for pre-test examination and 54 students appeared for post-test examination as the attendance was not compulsory. Pre-test proforma consisted of 22 item questionnaire, out of which, 16 questions were multiple choice questions (MCQs) based on knowledge of bioethics, 5 questions addressed the perception and attitude of participants and the last one was an open ended question on participants' expectations from the bioethics training. The interactive lectures were delivered during the Community Medicine classes and stressed on the importance of good communication skills, history of medical ethics, principles of bioethics and examples on ethical dilemmas faced by physicians.

Various teaching skills such as case scenarios, group discussions and role play were used in these sessions. Video clips were also shown displaying good ethical practices during doctor-patient interaction. The students were given some case scenarios with ethical dilemmas and maximum student participation was encouraged. Following this, the participants were asked to complete post-test questionnaire which consisted of 16 MCQs based on knowledge, five questions addressing the perception and attitudes of the participants and three subjective questions seeking feedback and suggestions from the students. Likert scale<sup>6</sup> was used for responding to the questions on perception and attitude. The questionnaire comprised of various aspects of bioethics including basics, principles, in-

formed consent, research ethics, confidentiality and breaking bad news.

**Analysis:** The analysis of the data was done using a mixed methods approach. A mixed methods study refers to a methodology of research that uses the systematic integration, or mixing of quantitative and qualitative data within a single investigation. This integration permits a more complete and synergistic utilization of data than do separate quantitative and qualitative data collection and analysis.<sup>7</sup>

The quantitative analysis of the data was done by using Epi Info™ 7 and Statistical Package for the Social Sciences (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.). The change in knowledge was measured by comparing the pre-test and post-test mean scores. The change in attitude was studied by analyzing the responses to questions on perceptions about ethics as well as the subjective questions. The qualitative analysis was conducted by coding the response to the open ended questions to bring out important suggestions and themes about implementation of bioethics teaching in the MBBS curriculum.

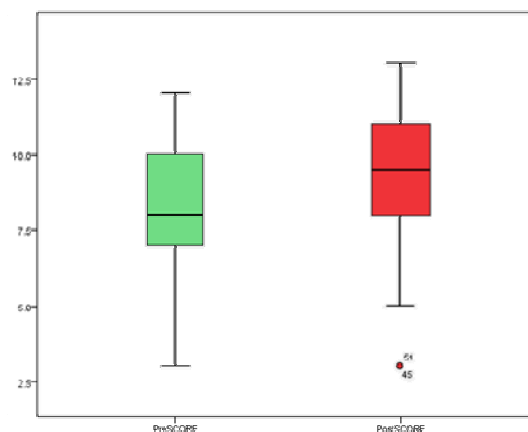
## RESULTS

A total of 58 students were present during the pre-test examination and the mean score was calculated as 8.09±1.91 (7.64±1.53 and 8.36±2.09 for male and female students respectively).

**Table 1: Mean Score of the Students**

Gender	Pre-test Mean (SD)	Gender	Post-test Mean (SD)
Male (n=22)	7.64 (1.53)	Male (n=22)	8.23 (2.35)
Female(n=36)	8.36 (2.09)	Female(n=32)	9.88 (1.85)
Total* (n=58)	8.09 (1.91)	Total* (n=54)	9.20 (2.20)

$t(110)^* = 2.873, p = 0.005 (HS)$



**Figure 1: Boxplot showing Median scores and Percentiles for Pre-test (Green) and Post-test (Red)**

The post-test examination was attended by 54 students, overall mean score was 9.2±2.2 (8.23±2.35 and 9.88±1.85 for male and female students respectively) as shown in table 1. Students' knowledge was further analyzed by clubbing the relevant questionnaire items into groups and comparing the pre-test and post-test performance.

Maximum improvement (47.7% in pre-test to 68.5% in post-test) was seen in knowledge regarding basics of bioethics which was also significant statistically. Slight improvement was seen in knowledge about autonomy and informed consent whereas slight decrease was observed in knowledge about beneficence and research ethics but all these changes were statistically non-significant (Table 2).

**Table 2: Students' Knowledge regarding different aspects of Bioethics**

Variable	Pretest Score (n = 58)		Post-test Score(n = 54)		p value	Odds Ratio (C.I)
	Score (%)	Total Score	Score (%)	Total Score		
Basics of Bioethics	166 (47.7)	348	222 (68.5)	324	<0.001	2.38 (1.74-3.27)
Autonomy	125 (71.8)	174	119 (73.5)	162	>0.05	1.08 (0.67-1.75)
Beneficence	16 (13.8)	116	11 (10.2)	108	>0.05	0.71 (0.31-1.6)
Informed Consent	114 (65.5)	174	111 (68.5)	162	>0.05	1.46 (0.73-1.81)
Research Ethics	48 (41.4)	116	34 (31.5)	108	>0.05	0.65 (0.38-1.13)

**Table 3: Students' Knowledge about Institutional Ethics Committee**

	Response		Total
	Yes	No	
Pretest	28 (48.3)	30 (51.7)	58
Post-test	42 (77.8)	12 (22.2)	54

Figures in parentheses indicate percentages; p<0.01 (HS)

Students were asked about importance of knowledge of bioethics in their profession. In pre-test, 58.6% of students said it to be very important, 32.8% rated it as important, 5.2% said somewhat important and 3.7% as not important while the corresponding figures in the post-test examination were 81.5%, 16.7%, 0% and 1.8% respectively (table 4). So there was improvement in the students' perception about importance of bioethics after the training.

The post-test questionnaire contained three feedback questions regarding the training. Nearly 96% students either strongly agreed or agreed that they found this training interesting and only two students were in disagreement. In response to the question whether they found the topics discussed as relevant, 53.7% strongly agreed, 37% agreed, 7.4% somewhat agreed and only one student disagreed. In response to the question regarding ideal time to introduce the bioethics training in medical curriculum, 44.4% students were of the opinion that it should continue throughout the MBBS course including internship training, 22.2% were

The questionnaire included questions on perceptions and attitudes of the students about bioethics. In the pre-test questionnaire, 44 students (75.9%) stated that they were familiar with the term bioethics. Only 13 students (22.4%) said that they were taught bioethics whereas 26 students (44.8%) responded in negative and rest 19 (32.8%) students were not sure about it.

Students were also asked if they would follow bioethics in clinical practice, to which 79.3% students gave a positive response in pre-test which improved to 94.4% in the post-test. Knowledge about existence of Institutional Ethics Committee (IEC) showed significant improvement from pre-test (48.3%) to post test (77.8%) examination (Table 3).

of the opinion that this training should be imparted only during internship while rest of the students felt that it should be introduced during other profs. Only one student said that it should not be provided at all (Table 5). So the students' opinion was divided regarding ideal time for introduction of bioethics into medical curriculum but maximum students wanted that it should be provided throughout the MBBS curriculum.

**Qualitative analysis:**

Nearly 47% students stated the training would help them build a good doctor-patient relationship, improve communication and decision making and 31% students opined that this training would help them understand the issues of legal implications, malpractice, conflict of interest, medical research and informed consent.

Some responses of students verbatim are:

*Bioethics training will enable us to make the right choice and decision in our clinical practice. When there are many conflicts throughout the practice, it is essential to have set guidelines. It will also prevent legal implications and lawsuits.*

In post-test questionnaire students were asked an open ended question on what had they benefited from the course. 75% students stated that this course had highlighted the importance of principles of bioethics and would be helpful in improving doctor patient relationship.

**Table 4: Students' Perception about Importance of Bioethics**

	Response				Total
	Very Important	Important	Somewhat Important	Not Important	
Pretest	34 (58.6)	19 (32.8)	3 (5.2)	2 (3.4)	58
Post-test	44 (81.5)	9 (16.7)	0	1 (1.8)	54

Figures in parentheses indicate percentages;  $\chi^2$  (with Yates' correction) = 5.271,  $p > 0.05$  (NS)

**Table 5: Ideal time for introduction of bioethics training to medical students**

Period of MBBS	Students
1 <sup>st</sup> Prof.	2 (3.7)
2 <sup>nd</sup> Prof.	2 (3.7)
Final Prof. Part-I	10 (18.5)
Final Prof. Part-II	3 (5.6)
Internship Training	12 (22.2)
All throughout MBBS Course & internship	24 (44.4)
Not be inducted	1 (1.9)

Figures in parentheses indicate percentages

About 26% students were of the opinion that this training would be helpful in handling medicolegal dilemmas and thoughtful decision making.

Some responses of the students were:

*We learned about understanding and respecting the patient's decisions. Learned about having alternate options of treatment and introduce them to the patients in respectable manner. We learned to disclose any bad news, if there, in the safest words.*

*I came to know about Bioethics and Code of ethics- It will help me in my future career as a doctor (in cases of ethical dilemma) and help in research work (consent and volunteer recruitment).*

Students were also asked if their expectations regarding bioethics from this training had been met. Most of the responses were positive (94.4%). A few students (14.8%) added that there should have been more videos and more practical scenarios. Some of the responses were:

*Yes, after the training classes I am aware of all the rights of the patient and that informed consent is required at each and every step and that patient's opinion should always be respected and considered.*

*Bioethics training was a good initiative but a never ending thing which cannot be completed and taught as whole in such a short time*

Some students suggested:

*More of the practical scenarios should be included and this should be taught throughout all the courses as it helps the doctor to combat all conflicts and dilemmas.*

*I would like bioethics to be started from late 1<sup>st</sup> Prof or early 2<sup>nd</sup> Prof to be continued till internship so that a strong base is formed from the beginning.*

## DISCUSSION

Bioethics is a subsection of Ethics that uses ethical principles and decision making to solve actual or anticipated dilemmas in medicine and biology. Integration of ethics, attitudes and professionalism into all phases of learning to enable the Indian Medical Graduate (IMG) to function professionally and ethically has been proposed in the 'Vision 2015' document of MCI.<sup>8</sup> In medical practice one is constantly facing critical decision making that is free from bias and always keeping the patient's welfare in mind. The decision taken should not only be 'to do no harm' but also 'to do good' to the patient.<sup>9</sup> Teaching medical ethics and communication skills would improve the moral reasoning of physicians when facing ethical dilemmas in their practice.<sup>10</sup> It was presumed previously that students will learn professionalism and ethics passively through watching their seniors, teachers and experiences so called "the hidden curriculum," leaving a lot to chance. However, over the time, it has been advocated that graduates need to be formally trained in the concepts of professionalism and ethics.<sup>11</sup>

In the present study, 58 students attended the pre-test and 54 students attended the post-test and their overall score improved significantly after they were sensitized about bioethics which reflects better understanding of bioethics after training. In a study by Ahsinet.al., a significant percentage of students (82%) showed improvement in their knowledge and skills of bioethical issues.<sup>10</sup>

In our study, most of the medical students were familiar with the term bioethics while only 22.4% said that they were ever taught bioethics which shows that in the existing curriculum of MBBS, inclusion of teaching about bioethics is very low. In a study done in South India, 67.6% medical students reported that they had never attended any bioethics training.<sup>12</sup>

Improvement was seen in commitment to follow bioethical principles in clinical practice after the training in the current study. Perception about importance of bioethics also showed an increase from pre-test to post-test. Similarly in a study conducted in Saudi Arabia, students expressed strong agreement on the importance and their need to learn the principles of medical ethics for their future professional practice.<sup>13</sup> In a study conducted by Johnston

and Haughton, 52% students thought that bioethics training was very important while 35% thought it as important.<sup>14</sup> Knowledge about existence of Institutional Ethics Committee (IEC) also showed improvement from 48.3% before training to 77.8% after training in the present study. In a study by Janakiram and Gardens, more than 97% students were aware about the existence of IEC in their institute.<sup>12</sup> In another study by Chatterjee and Sarkar, only 10.9 % were aware of the existence of an institutional ethics committee.<sup>15</sup> In the present study, majority of students agreed that they found this training interesting and the topics of bioethics discussed as relevant. Similarly, Johnston and Haughton reported that 81% of students considered bioethics relevant to medical practice.<sup>14</sup>

The ideal time to introduce ethics teaching in medical curriculum has been a subject of many debates. In the present study also the students had a divided opinion about ideal time of introduction of training into curriculum although nearly 44% students wanted teaching of bioethics to continue throughout the MBBS course and internship. In a review published in Indian Journal of Urology, it was stressed that ethics training should be introduced during the undergraduate curriculum and requires reinforcing during internship also.<sup>16</sup> Al-Haqwi and Al-Shehri in their study reported that majority of medical students suggested the teaching of ethics to be done in the last two years of the curriculum.<sup>13</sup>

In the qualitative analysis in present study, students wanted to learn about bioethics so that it would help them in their practice, be helpful in dealing with ethical dilemmas and improved doctor-patient relationship. After the training sessions students stated that they had been benefited from the course and their expectation had been met to a large extent, and they wanted inclusion of more case scenarios and videos in the training course. Students also desired that bioethics should be taught throughout MBBS and internship so that they can have a stronger base. A study of 16 teaching hospitals in Japan showed that 75% of participant postgraduates wanted to have a more comprehensive education in medical ethics.<sup>17</sup>

## CONCLUSIONS

Present study highlights that the students are willing to learn more about bioethical principles and inculcate the values learnt in their clinical practice. Therefore bioethics teaching should be introduced as a necessary part of medical curriculum throughout the undergraduate medical teaching. This in turn will help in improving the doctor-patient relationship and patient care.

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