

RESEARCH ARTICLE

EVALUATION OF MODULE BASED MEDICAL ETHICS TRAINING AMONG MEDICAL STUDENTS OF A TERTIARY CARE TEACHING HOSPITAL IN NATIONAL CAPITAL REGION, INDIA.

Sachin Manocha¹, Ekta Arora¹, Ashok Kumar Dubey¹, Ravinder Sah², Umesh Suranagi^{2*}

¹Department of Pharmacology, School of Medical Sciences & Research and Sharda Hospital, Sharda University, Greater Noida, U.P India – 201306.

²Department of Pharmacology, Lady Hardinge Medical College, New Delhi, India- 110001.

*Corresponding author email: uuu.bliss@gmail.com, phone: +91-9654785878; +91-7892004044

ABSTRACT

Introduction: The medical education world-wide is adapting competency based learning; it is high-time that the medical syllabus is inculcated with integrated-medical ethics training. An educational training program with a pre- and post-test method of analysis has better student outcome with respect to retention, thinking and understanding. **Objective:** To assess the understanding and application of medical ethics in students after structured module based training.

Methods: One hundred and fifty students of 1st professional Bachelor of Medicine and Bachelor of Surgery (MBBS) were provided a 10 hours' duration module based teaching of basic principles and core concepts of medical ethics in patient care. The assessment was conducted using a pre and post analysis questionnaire having 15 multiple choice questions with one correct response. Data were analysed using paired student's t-test for comparing pre- and post-test scores. $P < 0.05$ was considered as significant

Results: Total post-test correct responses were highly significant than pre-test responses. Gender wise, both males and females- post-test response significantly improved ($p < 0.001$), indicating that there is improvement in understanding the principles and key concepts of medical ethics provided during the training. Upon completion of the training, most students strongly agreed that the training has inspired them towards the moral code of conduct, attitude and behavioural change and it provided necessary information on medical ethics.

Conclusion: Our study demonstrates that the structured medical ethics training module yielded a significant enhancement of not only the knowledge and understanding level of the students but also in their perception, attitude and behavioural interest about the importance of ethical medical practice in the future patient care.

Keywords: *Medical ethics; medical students; pedagogy, pre/ post analysis; competency based medical education (CBME).*

ABSTRAK

Latar Belakang: Pendidikan kedokteran di seluruh dunia mengadaptasi pembelajaran berbasis kompetensi, namun sudah saatnya silabus pendidikan kedokteran berintegrasi dengan pelatihan berbasis etika. Program pelatihan dengan metode analisis pre- dan posttest menunjukkan hasil yang lebih baik, terutama dari sisi retensi, cara berpikir dan pemahaman mahasiswa. **Tujuan:** Untuk menilai pemahaman dan penerapan etika medik setelah mahasiswa mendapat modul terstruktur yang berbasis pelatihan.

Metode: Sebanyak 150 mahasiswa MBBS profesional pertama menempuh 10 jam pelatihan modul mengenai prinsip dasar dan konsep inti etika medik pada perawatan pasien. Penilaian dilakukan melalui

analisis kuesioner pre dan post menggunakan 15 pertanyaan pilihan ganda dengan 1 jawaban benar. Data nilai pre- dan posttest mahasiswa dianalisis dengan paired T-test, dianggap signifikan jika $P < 0,05$.

Hasil: Total jawaban posttest yang benar, secara signifikan lebih tinggi, daripada jawaban pretest. Jika dilihat dari jenis kelamin, jawaban posttest baik laki-laki maupun wanita, secara signifikan lebih baik dibandingkan jawaban pretest ($p < 0,001$), menunjukkan terjadi perbaikan pada pemahaman prinsip dan konsep inti etika medik yang diberikan selama pelatihan. Setelah pelatihan selesai, mayoritas mahasiswa setuju bahwa pelatihan telah menginspirasi mereka memahami *moral code of conduct*, mengubah sikap dan perilaku, serta pelatihan memberi informasi yang memadai tentang etika medik.

Kesimpulan: Penelitian ini menunjukkan pelatihan etika medik terstruktur memberikan perbaikan yang signifikan tidak hanya pada pengetahuan dan pemahaman mahasiswa, namun juga pada persepsi, sikap dan perilaku, serta pentingnya etika medik dalam praktek kedokteran ketika menghadapi pasien di kemudian hari.

Kata Kunci: *Etika medik; mahasiswa kedokteran; pedagogi; analisis pre/post; pendidikan kedokteran berbasis kompetensi.*

INTRODUCTION

Patient is the centre of medical universe. The professional relationship between physician and patient revolves around the ethical principles and practice of medicine. Owing to the ever changing pace of advancements in patient care, the emphasis on inculcation of appropriate professional attitudes and skills will assist the medical students to cope up with challenges ahead (Haque et al., 2016) (Jahan et al., 2016) (Peters et al., 2015). The medical academic curricula across the world teach abstract principles of medical ethics (AlMahmoud et al., 2017), there seems to be a selective and contracted approach in teaching only informal ways, predominantly experiential and context dependent modalities. which seem grossly inadequate when it comes for students to handle the real world scenarios when they enter the professional life (Chiapponi et al., 2016) (Vogel & Harendza, 2016). Recent medical technology advancements in the field of assisted reproduction, advanced life support and end of the life-care has given rise to newer ethical dilemmas. Ethical conflicts in fields of gynaecology, geriatrics, paediatrics viz. abortion, contraception, terminal illness, neonatal medicine, as well as special situations like professional misconduct, confidentiality breach etc. have posed serious difficulties in essential practice of medicine (Janakiram & Gardens, 2014). Ethical training and professional conduct will enhance the patient centred care and direct a humane approach towards clinical medicine. A regular integrated and streamlined medical ethics curriculum will change the landscape of medical education.

The concept of medical ethics training was introduced in undergraduate curriculum by the Medical Council of India (MCI) in the year 2014 (Code of Medical Ethics Regulations, 2002; amendment), but the training has not yet standardised and there is concern about the absence of medical ethics in the curriculum of undergraduate and postgraduate medical students (Singh et al., 2016). As a welcoming step, the competency based medical education (CBME) system recommended by the regulatory body for medical education- the National Medical Commission (NMC) erstwhile MCI recently considers and promotes the biomedical ethics as core concept of medical education in India (Shah et al., 2016). There is undeniable paucity and lack of focus on adoption and inculcation of regular and integrated medical ethics training as a part of core medical curriculum. However, there seems to be a general consensus for the necessity of medical ethics training as an integral part of medical education curriculum. Despite this, there is a lack of data/studies recommending choice of effective pedagogical approaches for the same (Hartford et al., 2017) (De La Garza et al., 2017). One such effective pedagogical method could be the structured module based training with pre/post analysis (Shivaraju et al., 2017).

This study conducted in a tertiary care teaching hospital in the national capital region (NCR) of India intended to provide an intensely structured medical ethics training for 1st professional medical students and assess their understanding and perception of medical ethics before and after the training.

The effective teaching/learning methodology of structured module based training with pre/post analysis was adopted for 1st professional MBBS students in their foundation course to assess and inculcate

the basic principles and core concepts of Medical ethics in undergraduate MBBS curriculum. This was aimed to improve their understanding and application of medical ethics in their professional course and medical practice in future.

METHODS

Training Module & study design

The training was conducted by the Department of Pharmacology, School of Medical Sciences and Research, Sharda University; Greater Noida, NCR, India in 1st professional MBBS students during the foundation course in the month of September 2020 after IEC approval. The topics covered in the training module for teaching “Medical ethics in patient care” were finalized through Focus Group Discussions (FGDs) with the core faculty and the members of Medical Education Unit (MEU). Module was of ten hours’ duration and involved interactive lectures, PowerPoint presentations and case-based learning as the most common teaching-learning methods (Table 1). The assessment was conducted using a pre and post analysis questionnaire having 15 multiple choice questions with one correct response.

Table 1. Medical ethics in patient care’ student Training Module

Sessions (S)	Pedagogy method	Duration
S1 Introduction & Principles of Bioethics	Interactive lecture, PowerPoint	1 hour
S2 Autonomy, Informed consent, Privacy, Confidentiality	Videos, Role play, Problem based Learning	1 hour
S3 Benefit & harm, beneficence, non-maleficence	Interactive lecture, Case based learning	1 hour
S4 Vulnerability and Protection	Interactive lecture, PowerPoint	1 hour
S5 Patients roles & responsibilities	Interactive lecture, Case based learning	1 hour
S6 Confidentiality & Informed consent	Interactive lecture, Case based learning	1 hour
S7 Solidarity, cooperation, social responsibility and Health	Interactive lecture, PowerPoint	1 hour
S8 Research ethics	Interactive lecture, PowerPoint	1 hour
S9 Professional Conduct	Case based learning	1 hour
S10 Special issues in medical ethics	Case based learning, Videos	1 hour

Study Population

The study subjects were 150 MBBS students of 1st professional year, out of which 70 were males and 80 were females (Table 3). Informed consent was obtained from all the participants.

Study instrument

The pre-test questionnaire consisted of 15 items of multiple choice types covering the key points pertaining to the core concepts of medical ethics. A comprehensive ten-hour training module of ‘Medical ethics in patient care’ which covered the basic principles and concepts of medical ethics was conducted in batches. Following which, a post-test comprising a similar set of questions as the pre-test was administered and

responses were collected and assessed. The post test was conducted on the next day of completion of last session (S10) of the training module. Students were instructed to answer all the questions in the questionnaire. The questionnaire was pilot tested to ensure understanding of the items, wording and adequacy of response among the course conducting faculty, both internal and external validity was established (Table 2). The post-test questionnaire also comprised of an additional agree/neutral/disagree responses to assess the perception and reflection of students regarding the importance of medical ethics after the training.

Table 2. Assessment Questionnaire

Questions	Correct response
Q1. Ethics is mandatory for medical students because -	It increases their awareness of code and conduct with respect to patients and themselves
Q2. Doctor - Patient relationship -	Underlying the best role for mutual trust and understanding between both
Q3. Pillars of Principles of Ethics are -	Autonomy, Beneficence and Non Maleficence
Q4. Patient autonomy -	Is Irrespective of any background or education level
Q5. Confidentiality is -	To keep patient's records and history with concerned doctor's knowledge only
Q6. Informed Consent is -	The consent is recorded after information about treatment is given, personally
Q7. Patient's rights -	Should be displayed outside clinics and hospitals
Q8. Patients responsibilities are -	Equally important as Patient's rights
Q9. Doctors Code of Conduct -	Is a must for giving moral and ethical treatment to patients
Q10. Medical Negligence -	Is governed by Medical Councils & laws of state
Q11. Professional Misconduct -	Applies to all Medical Professionals
Q12. HIV/AIDS Patients -	Should be treated with empathy and equitable justice
Q13. Research Ethics is -	Specific principles governing rules of research in humans and animals
Q14. Informed Consent -	Prior information about therapy and consequences is a must
Q15. Special Issues in Ethics practice involves all,	Reproductive Assistive Techniques, stem cells research, umbilical cord sampling

Statistical analysis

Responses of students were recorded and entered in Microsoft Excel 2007®. Means and standard deviations were calculated. Data were analysed using paired student's t-test for comparing pre- and post-test scores. P values were calculated using SPSS 21. P < 0.05 was considered as significant.

Ethical considerations

This research was approved by the Institutional Ethics Committee- School of Medical Sciences and Research, Sharda University (Decision Number: Ref.No.SU/SMS&R/76-A/2020/11, Decision Date: 21.05.2020).

RESULTS

A total of 150 MBBS students belonging to 1st professional year participated in a 10 hour focused medical ethics training, pre- test and post-test multiple-choice type questionnaire based assessments were conducted and responses were collected.

The medical ethics training improved the learning and understanding of the students which was reflected in their perception regarding the training. The majority of students in our study agreed that training has provided them with the crucial information needed and positively changed them for the improving professional conduct. Most of students (98.7 %) agreed that this training inspired them towards the moral code of conduct. Majority (86.6%) of students also agreed that such type of training could bring a positive behavioural change and attitude towards their patient care in future (Table 6).

Table 3. Demographics of the student population

	Male	Female	Total
Students (n)	70	80	150
Age			
18 years	58	72	130
19 years	9	8	17
20 years	3	0	3
Education level			
12 th Standard	70	80	150

Table 4 Pre- test and post-test responses of the Students (n=150)

Questions	Correct responses (n)		P value (groups difference)
	Pre-test	Post-test	
Q1.	133	150	0.0001*
Q2.	103	134	
Q3.	104	142	
Q4.	102	139	
Q5.	114	138	
Q6.	106	142	
Q7.	99	135	
Q8.	106	138	
Q9.	97	146	
Q10.	98	130	
Q11.	104	139	
Q12.	132	150	
Q13.	116	144	
Q14.	111	140	
Q15.	101	134	

*This difference is considered to be extremely statistically significant

Total post-test correct responses were highly significant ($P < 0.05$) than pre-test responses (Table 3). Almost all the topics covered in the training showed significant difference in learning, particularly in the concepts viz. patient's rights and patient's responsibilities (Q7, Q8-Tables 2,4). Doctor's code of conduct and medical negligence (Q9, Q10-Tables 3,4), students showed remarkable improvement. Other concepts like Doctor-patient relationship, Confidentiality, ethics regarding HIV patients (Q2, Q5, Q12-Tables 2,4) it seemed that the students already had some fair knowledge prior to the training.

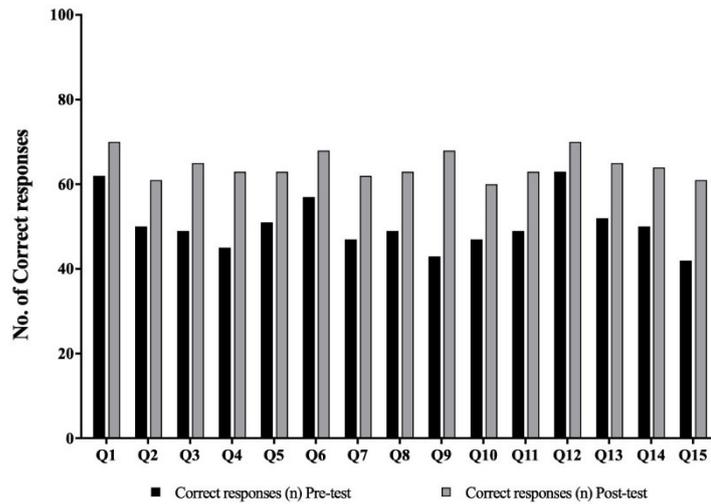


Fig 1: Pre- and post-test response among Male students (n=70) ($P < 0.0001$)

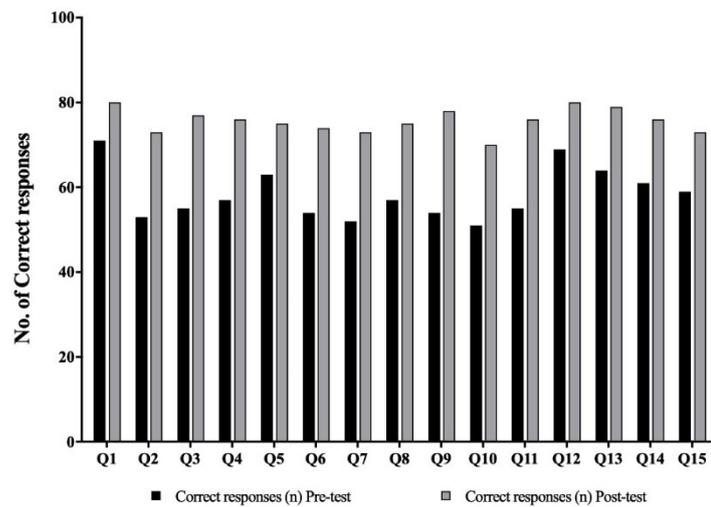


Fig 2: Pre- and post-test response among Female students (n=80) ($P < 0.0001$)

Gender wise both males ($P < 0.0001$) and females ($P < 0.0001$) post-test response improved significantly, indicating the improvement in understanding the principles and key concepts of medical ethics provided during the training (Figure 1 & 2). Post-test score showed more significant change in the female students (Figure 2). The overall mean scores showed highly significant improvement in the post-test scores of all the students compared to their pre-test scores indicating the success of training (Table 5).

Table 5. Comparison of students' scores in pre and post medical ethics training

Gender	Mean \pm SD		t	df	P value
	Pre-test	Post-test			
Females	58.33 \pm 6.10	75.67 \pm 2.85	12.7	14	0.0001*
Males	50.07 \pm 5.86	64.40 \pm 3.22	15.2	14	0.0001*
Total	108.40 \pm 11.21	140.07 \pm 5.78	15.3	14	0.0001*

Results are expressed as mean and standard deviation of the total scores obtained in pre- and post-tests. Significance (P value) obtained using a paired t-test. *Highly significant, SD: Standard deviation

Table 6. Student's perception and reflection on importance of medical ethics after the medical ethics training

Student's perception & reflection	n (%)		
	Strongly agree	Neutral	Strongly disagree
The training has inspired towards the moral code of conduct	148 (98.7)	2 (1.3)	0
The training has to provided necessary information on medical ethics	134 (89.4)	13 (8.6)	3 (2)
The training can bring change in the behaviour and attitude of the students towards patient care.	130 (86.6)	15 (10)	5 (3.4)

DISCUSSION

With the introduction of CBME based curriculum by the National Medical Commission (NMC), it has become the need of the hour to introduce training of medical ethics in a structured manner for both undergraduates and post graduate students. Various organisations including the WHO have provided module based guidance with regard to the same (Organization, 2010). Despite this there is dearth of inculcation of medical ethics training (Carrese et al., 2015)

The present study appeals for a focused module based training of medical ethics in 1st professional MBBS students followed by analysis using pre- and post-training assessments. All students participated in this study improved their understanding of core concepts of basic medical ethics. We demonstrated that intense organised and structured training increases the grasp of knowledge about medical ethics. We were also successful in achieving our objective of inculcating the positive approach and to generate interest in 1st professional MBBS students regarding the overview of ethical principles in medical practice. The results of this study display the successful use of scientific methods i.e. various modalities of pedagogy (Table 1) conducted for a specified period of time can bring about significant changes in learning attitude and behaviour. The findings of our study resonate with similar cross sectional studies conducted across many countries to assess the knowledge attitude and practices regarding medical ethics in both physicians and nurses (Iswarya & Bhuvaneshwari, 2018) (Ranasinghe et al., 2020) (Sherer et al., 2017) (Adhikari et al., 2016). Our findings also align with the results of a similar study which analysed pre- and post-test scores after a medical ethics training module (Kaur et al., 2019).

This study also indicates that inspirational behavioural change and better moral code of conduct can be inculcated in early medical life if these pedagogical methods are appropriately used in teaching medical ethics. The various challenges faced in the areas of morality and ethics in the medical professional life was conceptualised and integrated into the training, the important concepts were consolidated into module and post training perception of these pedagogical methods was obtained from the students as a feedback. Our findings in this regard agrees with the previous study conducted to know the training perception in Likert scale (Kaur et al., 2019) It is pertinent to note the feedback of student understanding and assimilation of concepts in a positive manner. The positive feedback received regarding the understanding of medical ethics after the training in our study resonates with the earlier studies conducted to explore the awareness and deficiency of medical ethics in regular curriculum (Gupta et al., 2015) (Mahajan et al., 2017). As per our knowledge this is the first study to make a gender-wise assessment of the medical ethics the training in first professional MBBS students. Both the genders reported a significant overall post-test response improvement. It is pertinent to note that the post-test scores showed more significant change in the female students. The implications of these gender based findings needs to be further elaborated in studies with larger sample size.

The medical ethics training module was designed to involve only 1st professional MBBS students. This module can be expanded and tailored to the entire MBBS course. We could also involve multiple

dimensions of teaching into the module. There could have been involvement of multi-disciplinary faculty members for the training and assessment. But time restraints and restrictions imposed by the COVID pandemic, limited the feasibility of some of these aspects. Our module based pedagogy method of training and assessment was reliable and easy to conduct, however, to ensure that students truly understand the concept of medical ethics, the multiple choice questions assessment used consisted of a puzzle case vignette that required students to use their high order thinking. The 15 questions presented in this pre-posttest tend to only assess students' memorizing skill for evaluating 'knowledge' (lowest domain of Bloom Taxonomy) of the basic concepts of medical ethics. These may not be the most effective way in describing students' real understanding of the implementation of ethics for some medical cases which need ethical consideration. We consider this as a limitation of our study. We also believe that such structured trainings if conducted in a regular manner can bring about the reinforcement of ethical medical practice throughout professional life. We recommend that the medical teachers should understand the importance of teaching ethical principles shaping the future of medical practice. Module based focused-integrated ethics training right from the first professional year will convert the principles into utility in terms of translating them as the actual change in professional behaviour. The scenario of medical education today depicts the lack of evidence on how different structure, content, modalities, and materials achieve the goals of medical ethics education. In this regard this module based pedagogy method tends to be one step-progress towards the achieving such a goal.

CONCLUSION

Our study has demonstrated that a structured medical ethics training module yielded significant enhancement not only in the knowledge and understanding level of the students regarding medical ethics; but also in their perception, attitude and behavioural interest about the importance of ethical medical practice in their future patient care. The module based focused training of medical ethics can be inculcated in regular medical teaching curriculum and pre- post assessment method of pedagogy can be effectively implemented.

CONFLICT OF INTEREST STATEMENT

None.

ACKNOWLEDGEMENT

None.

REFERENCES

- Adhikari, S., Paudel, K., Aro, A. R., Adhikari, T. B., Adhikari, B., & Mishra, S. R. (2016). Knowledge, attitude and practice of healthcare ethics among resident doctors and ward nurses from a resource poor setting, Nepal. *BMC Medical Ethics*, 17(1), 1–8. <https://doi.org/10.1186/s12910-016-0154-9>
- AlMahmoud, T., Jawad Hashim, M., Elzubeir, M. A., & Branicki, F. (2017). Ethics teaching in a medical education environment: preferences for diversity of learning and assessment methods. *Medical Education Online*, 22(1), 1328257. <https://doi.org/10.1080/10872981.2017.1328257>
- Carrese, J., Malek, J., Watson, K., Lehmann, L., Green, M., McCullough, L., Geller, G., Braddock, C., & Doukas, D. (2015). The essential role of medical ethics education in achieving professionalism: the Romanell Report. *Academic Medicine : Journal of the Association of American Medical Colleges*, 90(6), 744–752. <https://doi.org/10.1097/ACM.0000000000000715>
- Chiapponi, C., Dimitriadis, K., Özgül, G., Siebeck, R. G., & Siebeck, M. (2016). Awareness of ethical issues in medical education: An interactive teach-the-teacher course. *GMS Zeitschrift Fur Medizinische Ausbildung*, 33(3). <https://doi.org/10.3205/zma001044>
- De La Garza, S., Phuoc, V., Throneberry, S., Blumenthal-Barby, J., McCullough, L., & Coverdale, J.

- (2017). Teaching Medical Ethics in Graduate and Undergraduate Medical Education: A Systematic Review of Effectiveness. In *Academic Psychiatry* (Vol. 41, Issue 4, pp. 520–525). Springer International Publishing. <https://doi.org/10.1007/s40596-016-0608-x>
- Gupta, V. K., Kaur, N., & Gupta, M. (2015). Is a revision in medical curricula sufficient to develop ethical and empathic future physicians? In *Indian Heart Journal* (Vol. 67, Issue 6, pp. 623–625). Elsevier B.V. <https://doi.org/10.1016/j.ihj.2015.08.020>
- Haque, M., Zulkifli, Z., Haque, S. Z., Kamal, Z. M., Salam, A., Bhagat, V., Alattraqchi, A. G., & Rahman, N. I. A. (2016). Professionalism perspectives among medical students of a novel medical graduate school in Malaysia. *Advances in Medical Education and Practice*, 7, 407–422. <https://doi.org/10.2147/AMEP.S90737>
- Hartford, W., Nimmon, L., & Stenfors, T. (2017). Frontline learning of medical teaching: “you pick up as you go through work and practice.” *BMC Medical Education*, 17(1), 171. <https://doi.org/10.1186/s12909-017-1011-3>
- Iswarya, S., & Bhuvaneshwari, S. (2018). Knowledge and attitude related to medical ethics among medical students. *International Journal Of Community Medicine And Public Health*, 5(6), 2222. <https://doi.org/10.18203/2394-6040.ijcmph20182065>
- Jahan, F., Siddiqui, M. A., Al Zadjali, N. M., & Qasim, R. (2016). Recognition of core elements of medical professionalism among medical students and faculty members. *Oman Medical Journal*, 31(3), 196–204. <https://doi.org/10.5001/omj.2016.38>
- Janakiram, C., & Gardens, S. J. (2014). Knowledge, attitudes and practices related to healthcare ethics among medical and dental postgraduate students in south India. *Indian Journal of Medical Ethics*, 11(2), 99–104. <https://doi.org/10.20529/ijme.2014.025>
- Kaur, G., Singh, J., Bhutani, K., Delmotra, N. J., & Goyal, A. (2019). *Development and Introduction of Module on Medical Ethics in Patient Care To 2 nd Professional MBBS Students*. 5(2). <https://doi.org/10.21276/ijmrp.2019.5.2.006>
- Mahajan, R., Goyal, P., Sidhu, T., Kaur, U., Kaur, S., & Gupta, V. (2017). Module for interns in medical ethics: A developmental diegesis. *International Journal of Applied and Basic Medical Research*, 7(5), 52. https://doi.org/10.4103/ijabmr.IJABMR_170_17
- Organization, W. H. (2010). *Facilitators' Guide for teaching medical ethics to undergraduate students in medical colleges in the South-East Asia Region*.
- Peters, D., Ramsewak, S. S., & Youssef, F. F. (2015). Knowledge of and attitudes toward medical professionalism among students and junior doctors in Trinidad and Tobago. *West Indian Medical Journal*, 64(2), 138–144. <https://doi.org/10.7727/wimj.2013.214>
- Ranasinghe, A. W. I. P., Fernando, B., Sumathipala, A., & Gunathunga, W. (2020). Medical ethics: knowledge, attitude and practice among doctors in three teaching hospitals in Sri Lanka. *BMC Medical Ethics*, 21(1), 69. <https://doi.org/10.1186/s12910-020-00511-4>
- Shah, N., Desai, C., Jorwekar, G., Badyal, D., & Singh, T. (2016). Competency-based medical education: An overview and application in pharmacology. In *Indian Journal of Pharmacology* (Vol. 48, Issue 7, pp. S5–S9). Medknow Publications. <https://doi.org/10.4103/0253-7613.193312>
- Sherer, R., Dong, H., Cong, Y., Wan, J., Chen, H., Wang, Y., Ma, Z., Cooper, B., Jiang, I., Roth, H., & Siegler, M. (2017). Medical ethics education in China: Lessons from three schools. *Education for Health*, 30(1), 35. <https://doi.org/10.4103/1357-6283.210501>
- Shivaraju, P. T., Manu, G., Vinaya, M., & Savkar, M. K. (2017). Evaluating the effectiveness of pre- and post-test model of learning in a medical school. *National Journal of Physiology, Pharmacy and Pharmacology*, 7(9), 947–951. <https://doi.org/10.5455/njppp.2017.7.0412802052017>
- Singh, S., Sharma, P., Bhandari, B., & Kaur, R. (2016). Knowledge, awareness and practice of ethics among doctors in tertiary care hospital. *Indian Journal of Pharmacology*, 48(7), S89–S93. <https://doi.org/10.4103/0253-7613.193320>
- Vogel, D., & Harendza, S. (2016). Basic practical skills teaching and learning in undergraduate medical education - A review on methodological evidence. In *GMS Zeitschrift für Medizinische Ausbildung* (Vol. 33, Issue 4). German Medical Science GMS Publishing House. <https://doi.org/10.3205/zma001063>

