

**PHD PROGRAM
BIOETHICS**

EVALUATION OF TEACHING LEARNING AND ASSESSMENT OF BIOETHICS FOR UNDERGRADUATE MEDICAL STUDENTS IN INDIAN MEDICAL SCHOOLS

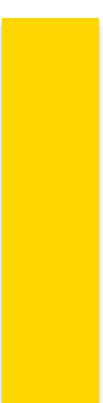
Barna Ganguly

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**EVALUATION OF TEACHING LEARNING AND ASSESSMENT OF BIOETHICS
FOR UNDERGRADUATE MEDICAL STUDENTS IN INDIAN MEDICAL SCHOOLS**

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Doctoral thesis presented to the Faculty of Medicine of the University of Porto
to obtain the Ph.D degree in Bioethics.

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Ph.D PROGRAM IN BIOETHICS

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QUOTATION

**Ethics teaching is weakened
if it is tied up with dogmas
that will not bear examination**

Margaret E Knight

PUBLICATIONS INCLUDED IN THIS THESIS

Under art. 8, n. 2 of Decree-Law n. 388/70 of August 18, the following papers are an integral part of this thesis:

1. Book Chapter: Education for Bioethics in Indian Medical Schools : Ganguly B, D'Souza R, Nunes R (SUBMITTED FOR PUBLICATION)
2. Students' feedback on Bioethics in Indian undergraduate medical curriculum: a contextual insight. Ganguly B, Duarte I, D'Souza R, Nunes R.
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ABBREVIATIONS USED:

AETCOM: Attitude, Ethics and Communication skill

MEU: Medical Education Unit

IMG: Indian Medical Graduate

T/L method: Teaching Learning method

S.P.I.C.E.S: Student centric Problem based Integrated Community based
Electives Systematic

KH: Knows How

OSCE: Objective Structured Clinical Examination

OSPE: Objective Structured Practical Examination

ABSTRACT:

Introduction: Bioethics, as a subject, emerged as substantive theme in medical education in India in 2018-2019. The operational measurement of this has become a major concern for those who are in medical education. The objectives of teaching medical ethics should be to enable students to develop the ability to identify underlying ethical and problems in medical practice, consider the alternatives under the given circumstances and make decisions based on acceptable moral concepts and also traditional practices. A systematic and standard approach with an organized way of dealing with ethical issues was missing in the Indian Medical curriculum. The National Medical Commission of India introduced Competency Based Curriculum in Medical Education for undergraduate medical students in 2019 with a new module namely Attitude, Ethics and Communication (AETCOM) across the country. The objectives of teaching medical ethics should be to enable students to develop the ability to identify underlying ethical problems in medical practice, consider the alternatives under the given circumstances or ethical dilemma and make decisions based on acceptable moral concepts and also traditional practices. There was a consensus for teaching medical ethics in an integrated way, suggesting dedicated hours in each phase of undergraduate training. The AETCOM module was prepared and circulated as a guide to acquire necessary competency in attitudinal, ethical and communication domains. This was first of its kind to implement bioethics as a subject in medical curriculum in India. The module was structured into competencies and incorporated in the curriculum design, with a definite aim to ensure enrichment of the learner with desired communicative and altruistic skills, with proper orientation pertaining to ethics, professionalism, leadership skills.

By evaluation we mean a series of activities that are designed to measure the effectiveness of the instructional system or training as a whole, whereas, we measure how much a student has learnt through assessment. So, the data from assessment system is a part of evaluation. In comparison, evaluation would measure the quality of training. Process evaluation is an important procedure that assesses the factors affecting program implementation and how the program is received by those who are involved. The results of process evaluation enable the development of adaptations to enhance the reach and acceptability of the program. It is necessary to take feedback from the students which can serve as a communication and a tool for evaluation of implementation process.

Methods: This study was aimed to evaluate the process of teaching and assessment of recently introduced Indian Module AETCOM in medical curriculum through exploring the perceptions

and feedback of students and medical teachers. We also intended to identify the challenges in teaching and learning process of the newly implemented AETCOM module. It was a mixed method designed study with structured questionnaires for students, who underwent the introduction of AETCOM module for the first time and teachers at various medical schools in India. Total of 357 students 47 Medical teachers responded for the questionnaire. Data were analysed quantitatively. Students' responses on the observed key areas of the feedback data were further analysed through inductive reasoning by the Investigator in order to align their perception with the implementation of the module. Following the analysis of medical teachers' responses, in-depth interviews with medical teachers were undertaken through telephonic interviews.

Results: There were mixed responses on perception as well as feedbacks. Majority of the students felt that Bioethics teaching is necessary, but not to be taught in closed classroom like traditional teaching. A few students did not find interest in the theoretical deliberation of this subject. They preferred more of bedside teaching on ethical issues instead of classroom teaching based on theories. Challenges were perceived by both students and teachers. The students had a mixed perception, facing difficulties in passive learning with scarce resource materials. Challenges identified by teachers were a lack of knowledge and skills required for teaching bioethics, the logistics of managing large numbers of students in the stipulated time frame, interdisciplinary integration: both horizontal and vertical, and assessment program in terms competency-based education.

Conclusion: The identified key areas could lead to the conclusion that there is need of innovative teaching methods of bioethics through more interactive sessions in small groups encouraging active learning strategy. In summary, the implementation of AETCOM in new system of competency based medical education was a welcome initiative by National Medical Commission. We find a mixed perception following implementation. The hidden curriculum of professional attributes, bioethics and communication skills came into action in a structured format as a new subject, which was a necessity. At the same time, certain teaching issues were also boiling into definite challenges in different areas pertaining to teaching, learning, assessment and overall curriculum. Since it was a multidisciplinary module, special attention was necessary to ensure the approach on integration of the topics both horizontally and vertically and thereby strengthening the relevance for future practice.

From our study, it may be concluded that more Faculty Development Program for teachers

from all the subjects was necessary specially to teach bioethics and professionalism in a different or innovative way. Assessment of AETCOM module also required some expertise. There is dearth of resource materials pertaining to specific ethical problems in Indian scenario. These draw the attention of all stakeholders for revision and further improvement of the module and the curriculum as a whole, for setting a standard model in medical education in India.

Keywords: Assessment, bioethics, challenges in education, learning, medical students, teaching.

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INTRODUCTION

Medical education is taking initiatives worldwide on the issues of promotion of interpersonal skills, professional behaviours and attitudes.(1) These are addressed with increased emphasis on the personal development of medical students, including self-awareness, personal growth and wellbeing. (2) Since the late 1950s, there has been an explosion of discussion and arguments in the field of bioethics. In recent decades, the medical profession has been criticized for perceived and real breaches of professionalism and ethics. These led to the development for including bioethics in undergraduate medical curriculum in last two decades.(3) The inclusion of medical ethics as a subject in the medical curriculum has produced a growing number of ethics curricula. Within these curricula there have been a diversity of goals and methods used. (4)

The objectives of teaching medical ethics should be to enable students to develop the ability to identify underlying ethical and problems in medical practice, consider the alternatives under the given circumstances or ethical dilemma and make decisions based on acceptable moral concepts and also traditional practices.

In India, earlier, the earliest code of medical ethics was mentioned in the treatise of Siddha, and Charaka Samhita.(5) Ethics education in that way was part of teaching some basics of medicines in the indigenous Indian system of medicines, Ayurveda and Siddha. However, that bioethics education in India did not carry over in a structured way in the modern medical education system.

The Medical Council of India (MCI) regulations on undergraduate medical courses emphasizes that medical graduates become exemplary citizens by the observation of medical ethics, and fulfilling social and professional obligations, so as to respond to national aspirations.(6) This was one of the objectives of medical education. Students also need to develop a rational approach to solve medical dilemmas that they will face in the future. Just as they learn various subjects to tackle medical problems, they also need ethics to solve the moral quandaries that they are likely to face in their practice in the future.

Moreover, the application of the Consumer Protection Act to the medical profession has stimulated professional bodies to consider medical ethics in their annual deliberations. Also,

the ethical issues in biomedical research have come into the limelight due to a large number of clinical trials conducted by large number of contract research organizations.(7)

A systematic and standard approach with an organized way of dealing with ethical issues was also missing in the Indian Medical curriculum. In order to address the gaps, the National Medical Commission of India introduced Competency Based Curriculum in Medical Education for undergraduate medical students in 2019 with a new module namely Attitude, Ethics and Communication (AETCOM) across the country.

This study aimed to evaluate the process of teaching and assessment of recently (2018-19) introduced Indian Module AETCOM in medical curriculum.

The state of art section is followed by the chapter on Bioethics teaching in India. This is followed by Methodology, Result and Discussion.

This was an explanatory study with a mixed methods design comprising (a) Step I quantitative (QUAN) based on questionnaire study and (b) Step II qualitative (QUAL), a descriptive study involving interviews semi-structured one to one interview.

The result and discussion section comprise of general discussion of the whole study with research articles.

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STATE OF ART

I. BIOETHICS IN MEDICAL EDUCATION

In recent decades, the medical profession has been criticized for perceived and real breaches of professionalism and ethics. In response to this criticism, interest in preserving, promoting, teaching, assessing and researching medical professionalism has increased.(8) Doctors and health professionals are confronted with many ethical problems. It is, therefore necessary, to be prepared to deal with these problems. There are multiple reasons for teaching bioethics and professionalism and assessing it in medical students and physicians in training. Thus, bioethics has emerged as substantive theme in medical education, operational measurement of which have become a major concern for those who are in medical education.

There has been significant development for including bioethics in undergraduate medical curriculum in last two decades.(3) Before that time, there was no formal medical ethics teaching. Although in some (particularly Mediterranean) European countries, medical ethics was already taught in incidental courses in “medical deontology” (emphasizing the duties of medical doctors), but, that was in connection to law, forensic medicine, or history of medicine.(9) Ethics teaching was initially introduced in undergraduate medical education, but later it was expanded into the graduate curricula as well as specialization programs, emphasizing clinical ethics.(10) With substantial international support, many countries, however, were able to achieve significant improvement and expansion in bioethics education(11) The gradual expansion and dissemination of bioethics education in medical schools was associated with an ever-widening scope, for instance, a structured discipline of bioethics was introduced in the core curriculum of bioethics at the Faculty of Medicine of the University of Porto in 1996 (Nunes 2002). (12)

II. TRAJECTORY OF BIOETHICS AS A SUBJECT IN MEDICAL EDUCATION

The system of education has also been changed and is continuously changing over the time. There are different theories on development of system of medical education, which are the result of various epistemological, philosophical, social and personal beliefs and attitudes of those who have formed it. These theories are very diverse ranging from neuroscience to social construction of knowledge. In reality, all learning theories are reflections of different lenses through which learning can be understood.(13)

Models and theories followed in structuring medical education system

Logic Model Theory of Education: A new pedagogy was born. With the evolution of medical science, the system of medical education also changed from being teacher-centric to being Problem-based Learning (PBL). Thus, created a huge ‘paradigm-shift’ in terms of methodology of teaching. This is one of the methods of ‘Logic Model of Education’ in medicine. There are several approaches in Logic Model or the learning theories of medical education and they have their own strengths. The Logic Model has multiple perspectives and ‘provides medical educators with different teaching strategies that can be retrieved from their educational “tool boxes,” depending on the specific learning outcomes that are desired.’^[7] The article on Current learning theories discussed about different approaches in learning– (a) Behaviourist Orientation, (b) Cognitivist Orientation, (c) Humanist Orientation and (d) Social Learning Orientation, and (e) Constructivist Orientation. Each theory has its appropriate application depending on what the educators and the students want to achieve through the process. Under the present situation of medicine education ‘medical educators need to become conversant with different learning theories in order to create appropriate learning environments and optimize learning’. For example, ‘if educators want a learner to perform a new skill, then choosing a behavioural approach makes sense. Similarly, for developing critical thinking and clinical problem-solving skills, a cognitive approach may be the best choice and so on. Thus, it is evident that, learning theories provide medical educators with a plethora of approaches that form the philosophical basis for curriculum design and evaluation of learning activities. Ultimately, the artfulness of the teacher will determine which strategy and approach is best for each learner and each situation.’⁽¹⁴⁾

I. Contemporary theories of Humanism and Behavioural change and Medical Education: In, teacher-centric learning, there had been less scope for interaction from students for sharing their own inside question/queries or experience, which resulted in lesser dialogue between teacher and student. Rather, it was more of following the teacher’s experience that was generally instilled in the thoughts of students. The medical education system, till 19th century, was following this ‘teacher-student’ communication system as explained by Abraham Flexner and William Osler. In that, scientifically learned and clinically skilled physicians used to exchange their knowledge to the next generations’ students and it was more like ‘teacher-student’ communication system. In the traditional medicine learning system (teacher-student

process), there was no room for self-learning or problem-based learning. The student's insight never got a chance to be expressed.

At “the turn of the millennium, sweeping changes have constituted a revolution in medical education”.⁽¹⁵⁾ The suggestions of Flexner and Osler was to include ‘two key components or pillars of medical education namely, the basic or foundational sciences and the clinical sciences’. There was a demand for a change in the teaching methodology and the change in the content of the established curriculum. Also, there was a demand for more active learning and less passive learning.

Chris Hare in his ‘An Introduction to Humanistic Learning Theory’ discussed about Humanistic approach learning as presented by Abraham Maslow, Carl Rogers, and James F. T. Bugental. He mentioned about the concept as ‘Humanistic Learning Theory, often called Humanism. This focuses on the specific human capabilities including creativity, personal growth and choice. Maslow’s research into hierarchical needs is a major concept in this learning theory, especially his concept of self-actualization, as it is only at this level the individual can truly experience growth. This makes the Humanistic Approach truly learner-centric.⁽¹⁶⁾ To validate this, Hare further summarized Humanistic Learning Theory in the following three points:

1. Learners can be trusted to find their own goals and should have some options or choices in what they learn at school.
2. Learners should set their own standards and should evaluate their work.
3. The school experience should help learners to develop positive relations with their peers. Thus, ‘the Humanistic Approach is learner-centric, with the emphasis on the individual’s potential rather than the specific learning materials, sowing for a meaning and useful learning experience the student can apply across many situations.’.

Keeping this in mind, a variety of changes in curriculum was introduced with variety of approaches – ‘including small group sessions, problem-based learning, self-directed learning, team-based learning, and flipped classrooms as replacements for the traditional lecture format –’.⁽¹⁷⁾

Thus, began a new pedagogical reform that developed the requisite skill for future practitioners of medicine. Subsequently, a mass movement happened towards ‘adoption of a radically redesigned curriculum’ can be termed as a post-Flexnerian approach to medical education ⁽¹⁰⁾ The major goal of the curriculum was to produce physicians who could deliver an

‘individualized caring’ plan that would reflect the physician’s mastery of basic physiology, awareness of the best current evidence, skilful patient communication, and shared decision making. In the new pedagogy the ‘topics included population health, health policy, healthcare delivery systems, and interdisciplinary care’. This reform, basically, changed the traditional subject-based and lecture-based curriculum to accomplish the desired outcome of producing physicians for the twenty-first century. The new curriculum was for developing the holistic, ethical physicians with clear communication skills inspired with empathy and compassion for patients.

‘Medicine bridges the gap between science and society’, as mentioned in Contemporary Theory, is referred to as Humanism in Medical Education. This is the knowledge of science reflecting in medicine when it is used in society it ‘concerns the experiences, feelings, and interpretations of human beings. In the context of medical education, there are many types of theories of learning available for teachers/trainers. It is very important to identify ‘the principles of learning and understand how individual differences affect the learning process.’(18)

Theories in the learning field of ‘behaviourism’ and ‘humanism’ have been explored. Behaviourist practitioners concentrate on the outside behaviour of a person from the outside; they do not consider mental activity. Behaviourism focuses on repeated behaviour which eventually becomes habit.’(18) Some scholars analysed ‘behaviourism’ as a one-dimensional approach to behaviour since there is scope for reinforcement. They also commented that it cannot be useful for all types of learning since it has not accounted for ‘mind activity’. Medical professionalism and humanism have long been integral to the practice of medicine and they will continue to shape practice in the 21st century. The humanist approach is for the learner to become autonomous and self-directed and humanist activities facilitate collaborative learning. Self-directed learning is one of the most important and well-known educational principles of the humanist orientation. This process could be related to motivation and self-identity in the sense that ‘something that happens within a person and not something that is done to him’. ‘Behaviourism can effectively condition learners to do things in certain ways and familiarize us with the contents of a profession (recognize/know what). However, humanism is especially suited to help us deal with whatever problems come our way (formulate/reflection-in-action).’(19) The serious criticisms of the humanist approach is that there is lack of empirical evidence to support its claims, as the theory relies mainly on observations and assumptions about human behaviour. ‘Nurturing the humanistic predispositions seems to be the key to

ensuring that future individuals manifest the attributes of professionalism, as professionalism and humanism share common values and that each can enrich each other.’(19)

David A Cook and Anthony R Artino wrote on the contemporary theories, like, motivation as the process of goal-directed activities that is initiated and sustained. ‘In expectancy-value theory, motivation is a function of the expectation of success and perceived value.’(20)

Cook and Artino took five different contemporary theories of motivation –

1. Expectancy-Value theory: This explains the perception of general competence and represents a future-oriented conviction that one can accomplish the anticipated task.
2. Social-Cognitive Theory: Social-cognitive theory speaks of learners learning through reciprocal interactions with their environment and by observing others, rather than simply through direct reinforcement of behaviors as proposed by behaviorist theories of learning.
3. Goal Orientation (Achievement Goal) Theories: In this meaning of ‘goals’ in goal orientation theories (also called achievement goal theory) is different from that in most other motivation theories. This is more of ‘cluster theories’ of learning. This has multiple goals-oriented learning.
4. Self-Determination Theory: Self-determination theory that put forward motivations that varies not only in quantity (magnitude) but also in quality (type and orientation). Humans inherently desire to be autonomous – to use their will (the capacity to choose how to satisfy needs) as they interact with their environment – and tend to pursue activities they think inherently enjoyable.
5. Integration across Theory.

For the last 25 years, the above five contemporary motivation theories have increasingly shared and borrowed key concepts, also highlighting the reciprocal interactions between individuals and their socio-environmental context.

Kohlberg theory of moral development: Morality could be defined as principles derived from a code of conduct from a particular philosophy, religion or culture, and also a belief of a person. Morality may also be specifically synonymous with "goodness" or "rightness".(9) Thus moral development or morality asks for its allied few aspects such as ‘values and principles of

conduct'; concepts of 'right and wrong', religion and culture etc. Jean Piaget, a Swiss psychologist developed the famous theory of cognitive development that looked at how children develop intellectually throughout the course of childhood. American psychologist Lawrence Kohlberg went beyond Piaget and tried to explain how children develop moral reasoning.(21,22) He developed three primary levels moral development and with each primary level has two stages.

Level 1: Pre-conventional Morality - At the age of 9, children's decisions are primarily shaped by the adults and the consequences for breaking the rules. There are two stages within this level:

Stage 1: Obedience and Punishment: obedience and punishment are especially common in young children, but adults are also capable of expressing this type of reasoning. According to Kohlberg, people at this stage see rules as fixed and absolute. Obeying the rules is important because it is a way to avoid punishment.

Stage 2: Individualism and Exchange: Children argued that the best course of action was the choice that best served needs. Reciprocity that is practice of exchanging things with others for mutual benefit but only if it serves one's own interests.

Level 2: Conventional Morality: In this level they learn the acceptance of social rules regarding what is good and moral. The adolescents and adults internalize the moral standards they have learned from their role models and from society. They focus on the acceptance of authority and conforming to the norms of the group. There are two stages at this level of morality:

Stage 3: Developing Good Interpersonal Relationships: This stage of the interpersonal relationship of moral development is focused on living up to social expectations and roles. In other words, they feel their social roles are the part they play as members of a social group. With each social role they adopt, their behavior change to adapt to the expectations that they themselves and others have about that role.

Stage 4: Maintaining Social Order: In this they are focused on maintaining the social order. In this stage children begin to consider society while making

judgments. Their focus is towards maintaining law and order by following the rules, doing one's duty, and respecting authority.

Level 3: Post-conventional Morality: In this stage people develop understanding of abstract principles of morality. The two stages at this level are:

Stage 5: Social Contract and Individual Rights: Here they learn of a social contract and individual rights and thoughts of the differing values, opinions, and beliefs of other people they feel in mind. They learn the value of a society and value of the rules of the society.

Stage 6: Universal Principles: Kohlberg's final level of moral reasoning is based on universal ethical principles and abstract reasoning. At this stage, people follow these internalized principles of justice, even if they conflict with laws and rules.

Kohlberg's theory has an important role in moral psychology, but has been critiqued for many reasons. Moral reasoning does not equal moral behaviour: it talked about moral thinking, but it has less discussion on 'ought to do versus our actual actions' – hence moral reasoning does not correlate to moral behaviour. Critics have pointed out that Kohlberg's theory of moral development overemphasized the concept of justice while making moral choices. The theory may present a good view of compassion, caring, and other interpersonal feelings playing an important part in moral reasoning; however, the theory has a narrow worldview based on upper-middle class value systems and perspectives.(22) Nonetheless, despite all these criticisms, Kohlberg's theory did play an important role in the emergence of the field of moral psychology.(22)

As mentioned above, moral development is a complex and multifaceted process that involves the formation of an individual's moral principles, values, and behaviours. It is shaped by a combination of various factors like genetic, environmental and social factors. Moreover, it is influenced by various stages of cognitive, emotional and social development.

According to Kohlberg's theory of moral development, individuals progress through six stages of moral reasoning, ranging from a focus on obedience and punishment to a focus on universal principles and social contracts as mentioned above.

In the context of medical teaching, moral development is crucial for healthcare professionals to develop the necessary skills and values to provide compassionate and ethical care. Medical students and professionals must navigate complex moral dilemmas, prioritize patient well-being and balance individual and societal needs. The application of moral development theory to medical teaching can be strategized in the following ways:

1. Integrating ethics into the curriculum: Medical curriculum should incorporate ethics and moral development using case studies, discussions, and role-playing to promote critical thinking and moral reasoning.
2. Promoting a culture of empathy and compassion: Medical schools and healthcare institutions should promote a culture of empathy and compassion, recognizing the importance of emotional intelligence and interpersonal skills in healthcare.
3. Providing opportunities on feedback: Medical students and professionals should be provided with opportunities to receive feedback on their moral reasoning and decision-making skills, using simulation-based training, mentorship and peer review.
4. Encouraging reflection and self-awareness: Medical students and professionals should be encouraged to reflect on their own values and biases and to develop self-awareness of their moral principles and behaviours.
5. Encouraging lifelong learning and professional development: Medical professionals should be encouraged to engage in ongoing learning and professional development, staying up-to-date with the latest research, guidelines and best practices in ethics and moral development.

By applying the principles of moral development to medical teaching, medical students and other healthcare professionals can develop the necessary skills and values to provide high-quality, patient-centred care that is guided by a strong moral compass. Ultimately, this can lead to improved patient outcomes, enhanced patient satisfaction and a more compassionate and ethical healthcare system.

So, if we focus on the objectives of teaching medical ethics, it should be to enable students to develop the ability to identify underlying ethical and problems in medical practice, consider the alternatives under the given circumstances and make decisions based on acceptable moral concepts and also traditional practices.

III. BIOETHICS EDUCATION IN INDIA

In India, the earliest code of medical ethics was mentioned in the treatise of Siddha, and Charaka Samhita.⁽⁵⁾ Ethics education, in that way, was part of teaching some basics of medicines in the indigenous Indian system of medicines, Ayurveda and Siddha.⁽²³⁾ The Code of Conduct mentioned in Charaka Samhita for the future physicians were as follows:

1. Your action must be free from ego, vanity, worry, agitation of mind or envy; your actions must be carefully planned, with concern of patient and keeping with the instructor's advice.
2. Your unceasing efforts must, at all costs (*sarvatmana*) be directed towards giving health to the suffering patients (*aturanam Arogya*).
3. You must never harbour feelings of ill-will towards your patients, whatever the provocation, even if it entails risk to your life.
4. Never should you entertain thoughts (*manasapi*) of sexual misconduct, or thoughts of appropriating property that does not belong to you.
5. Your speech must be soft, pleasant, virtuous, truthful, useful and moderate.
6. Your efforts must be unremitting (*nityam yatnavata cha*).
7. Do not reveal to others what goes on in the patients' household (*aturakula pravathayah*).
8. Even when you are learned and proficient, do not show off.

However, bioethics education in India was not carried over in a structured way in the modern medical education system. Medical curricula are overloaded with scientific and technological matters. Less time is devoted for thought and reflection on ethical problems. Many doctors are conscious that they have received little training on ethical issues in practice of medicine. It is often thought that ethics is assimilated by a kind of diffusion or osmosis from the teachers. A great deal can be caught by observing the teachers. But it is also true that we can learn a lot from systemic teachings of the principles of medical ethics and their application. Teaching of ethics calls attention to the implication of our actions, professional and personal.

Since the late 1950s there has been an explosion in the field of bioethics. The Medical Council of India (MCI) regulations on undergraduate medical courses also emphasized that medical graduates become exemplary citizens by the observation of medical ethics, and fulfilling social and professional obligations, so as to respond to national aspirations.(5) This was one of the objectives of medical education. Students also need to develop a rational approach to solve medical dilemmas that they will face in the future. Just as they learn various subjects to tackle medical problems, they also need ethics to solve the moral quandaries that they are likely to face in their practice in the future. The exact goal is mentioned from the guidance as: (5)

“The overall goal of undergraduate medical education program as envisaged in the revised Graduate Medical Education Regulations - 2017 is to create an “Indian Medical Graduate” (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. In order to fulfil this goal, the IMG must be able to function appropriately, ethically and effectively in her/his roles as clinician, leader and member of the health care team and system, communicator, lifelong learner and as a professional. In order to effectively fulfil the above-mentioned roles, the IMG must obtain a set of competencies at the time of graduation. In order to ensure that training is in alignment with the goals and competencies, Medical Council of India has proposed new teaching learning approaches including a structured longitudinal programme on attitude, ethics and communication”. (5)

The recent advances in biology and medicine have produced and are producing innumerable ethical problems. Medicine in India today is regarded as

1. Being overly protective of its own rights, status and income;
2. Guilty of ignoring the wider social problems;
3. Inherently conservative; and
4. Failing to regulate itself effectively:
 - a) Protecting unethical and incompetent colleagues;
 - b) Failing to accept responsibility for inequalities in the health care system.

It is necessary for the professional associations, those responsible for the education of health professionals and for all the members of the profession to understand their role in society as healer professional. Moreover, the application of the Consumer Protection Act to the medical profession has stimulated professional bodies to consider medical ethics in their annual

deliberations. Also, the ethical issues in biomedical research have come into the limelight due to a large number of clinical trials conducted by a large number of contract research organizations.⁽¹⁹⁾ Ethics in science and research is not, obviously, an exclusive Indian problem (Nunes 2017). Therefore, there should be a worldwide consensus on the ethics and integrity in science, namely regarding the use of generative artificial intelligence that is reshaping the way sciences are delivered and patents obtained. ⁽²⁴⁾

In a way, bioethics education has not received due recognition and development in higher educational institutions of any discipline or field. The ‘quality research’ although is taking place due to awareness created by Indian Council of Medical Research, is not being translated into policies. There was a need for institutions (especially universities) to create formal, structured academic courses in bioethics. The focus has to shift from duty-based medical ethics to the broader aspect of bioethics that will include areas like patient autonomy, appreciation of human dignity, ethical decision-making at start-of-life and end-of-life, ethics in biomedical research, and concepts of ethical theories.

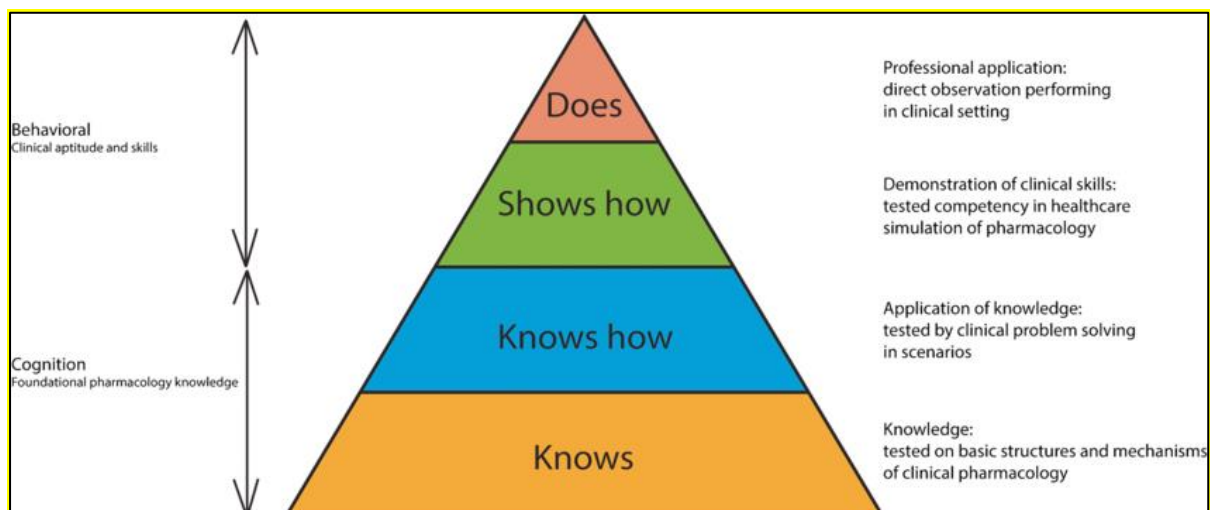
Finally, there is need for a firm commitment at all levels to encourage and support ethics education. It was found that a systematic and standard approach with an organized way of dealing with ethical issues was missing in the Indian Medical curriculum. In order to address the gaps, from 2019, AETCOM (Attitude, Ethics and Communication) method was introduced as one of the modules in Competency based medical curriculum in India.

AETCOM MODULE: To our knowledge, AETCOM module was the first structured formal module on ethics, professionalism and communication skills, implemented in Indian medical curriculum in 2019 along with Competency Based Medical Education (CBME).⁽⁶⁾ In 2018, the then Medical Council of India (MCI), presently as National Medical Council (NMC) introduced Competency Based Medical Education (CBME), a landmark in the history of Medical Education in India. In this, a “Conative Domain” as described by the then President of MCI, Dr Jaysree Mehta has been specifically dispensed off with a structured module, entitled “Attitude, Ethics and Communication Model” (AETCOM Module).

The concept of AETCOM module, as mentioned by the then Chairman of MCI, Dr V.P. Mishra in the booklet, is based on the fundamental principle that changing a person's attitude can change his or her behaviour.⁽⁵⁾ Ethical dimensions play a crucial role in behavioural evolution. The module was structured into competencies and incorporated in the curriculum design, with

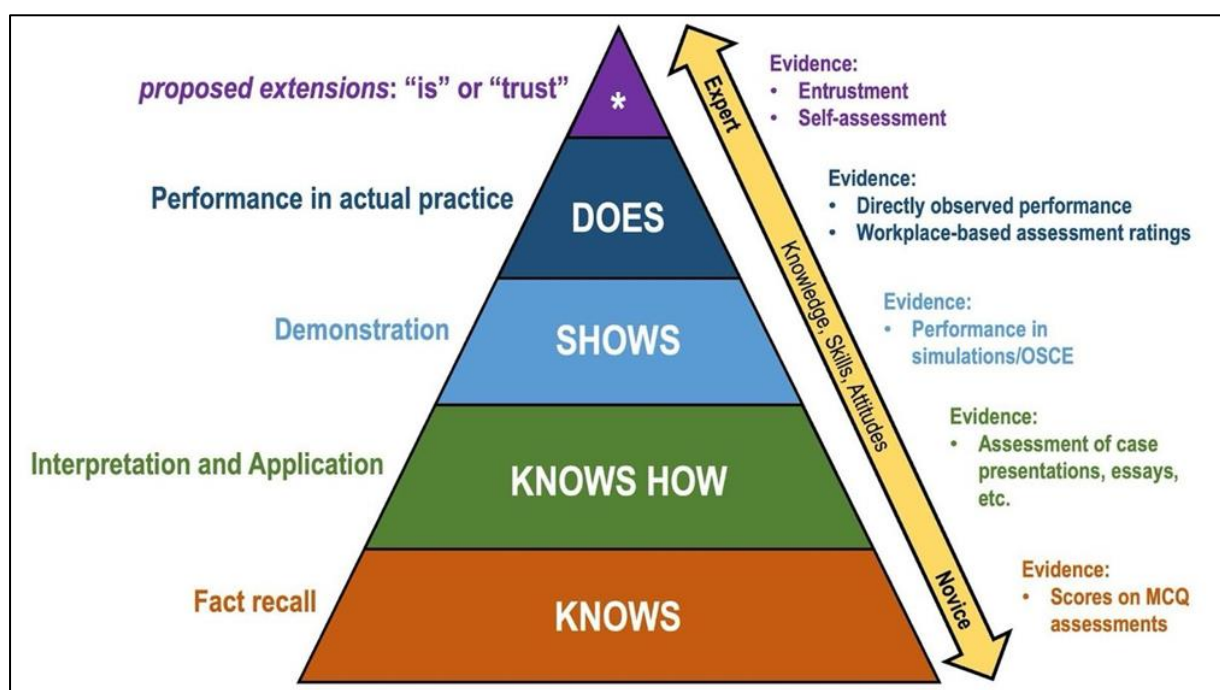
a definite aim to ensure enrichment of the learner with desired communicative and altruistic skills, with proper orientation pertaining to ethics, professionalism, leadership skills and also the attribute that shall inculcate in him/her the essence of lifelong learning. Bioethics was included as an integral part along with communication skill. There are total of 27 topics with competencies related to ethics, professionalism and communication skills, which learners have to complete in 140 hours in a longitudinal process over the entire course. It was structured in phases, so that different aspects of bioethics, communication skill and attitude or professionalism aspects could be taught in different phases. A few ethical principles like human dignity, respect for persons, individual privacy and certain aspects of communication skill were included in phase I of the curriculum. The module was structured into competencies and incorporated in the curriculum design. The aim was to ensure enrichment of the learner with desired communicative and altruistic skills, with proper orientation pertaining to ethics, professionalism, leadership skills. Bioethics was included as an integral part along with communication skill. There are total of 27 topics with competencies related to Ethics, Professionalism and Communication skill, which learners have to complete in 140 hours in a longitudinal process over the entire course of four and a half years. It was structured in phases, so that different aspects of Bioethics, communication skill and attitude or professionalism aspects could be taught in different phases. A few ethical principles like dignity, respect, privacy and certain aspects of communication skill were included in phase I to be taught in 34 hours.(25) The competencies are stated in the form of specific instructional objectives which would be clear to all teachers irrespective of their background pedagogic training and skills are assessed in terms of Miller's pyramid (Figure 1) which is easier to observe and certify. (26)

Figure 1: Miller's pyramid for clinical skill assessment (27)



Miller's pyramid is a hierarchical framework for clinical skill assessment characterized by 4 levels of assessment in medical education ("knows," "knows how," "shows how," "does". Each tier of the pyramid indicates the level of the learner's skill development. The frame work created a worldwide awareness of the need to have different assessment approaches for different expected outcomes of education and training. With the rise of competency-based medical education (CBME), the need for approaches to determine the competence of learners in the clinical workplace has intensified. (27) It has also been used to assist in the assessment of professionalism. The recent emphasis on professional identity formation has raised questions about the appropriateness of "Does" as the highest level of aspiration. It is believed that a reliable indicator of professional behaviour is the incorporation of the values and attitudes of the professional. It is therefore proposed that a fifth level be added at the apex of the pyramid. This level can reflect the presence of a professional identity, should be "Is," and methods of assessing progress toward a professional identity and the nature of the identity in formation should be guided by currently available methods. (28) In 2016, Al-Eraky and Marei proposed incorporating trust in Miller's pyramid. (29)

Figure 2 gives the proposed extension of Miller's pyramid. (30)



[Original Diagram by Michael Quinn and Michael Cassara. Adapted from: Miller's pyramid of clinical competence. (n.d.). In The iDea Book. University of Saskatchewan. Retrieved

February 16, 2022, from <https://openpress.usask.ca/ideabook/chapter/millers-pyramid-of-clinical-competence/>

This module emphasizes domains beyond medical knowledge and clinical skills, e.g. communication, professionalism and a focus on health systems.(15,17,31) In this way the system of medical education has been changed emphasizing on needs of patients and knowledge and skill with an increased concern in the accountability to the society. With this, a specifically structured module, entitled “Attitude, Ethics and Communication Model” (AETCOM Module) (5) was introduced as a “Conative Domain” in Indian medical curriculum.

IV. EVALUATION OF TEACHING MODULE

In educational practice, students are not always evaluated. A survey among North American medical schools found that only half of the schools formally evaluate students. If there is evaluation, it is focused on moral reasoning abilities. Only a third of the schools assess students’ behaviour in ethically difficult situations.(32)

By evaluation we mean a series of activities that are designed to measure the effectiveness of the instructional system or training as a whole. In assessment we measure how much a student has learnt. The data from the assessment is thus a part of evaluation. In comparison, evaluation would measure the quality of training. Process evaluation is an important procedure that assesses the factors affecting program implementation and how the program is received by those involved; the results of process evaluation enable the development of adaptations to enhance the reach and acceptability of the program.(33,34)

Program evaluation is defined as “the identification, clarification, and application of defensible criteria to determine an evaluation object’s value (worth or merit) in relation to those criteria”. In broad terms, this process involves determining standards to assess the quality, collecting appropriate information, and applying the standards to evaluate the effectiveness and value of the evaluation object.(35)

Recently there is an emphasis on measuring program implementation, in part because of great variability in program implementation and policy adoption in various school and community settings.(36,37) There is a universal agreement that teaching programs need to be assessed,

otherwise, the effect of the programs remains unclear and there is no indication how they can be improved. So, because of this widespread agreement, it is necessary to assess the outcomes of the programs in the students. Otherwise, it remains unclear what and how far the students have learnt. Programs, that are not evaluating students, are not taken seriously and have a marginal status in the curriculum as a whole. Similar should be the situation with the medical schools, where it is required to continuously assess program effectiveness.

V. RELEVANCE AND RATIONALE FOR CARRYING OUT THE PROJECT

It is agreed that evaluation is an integral part of curricular design and revision. There are many program evaluation models like objectives-oriented approaches, management-oriented approaches, participant-oriented approaches, expertise-oriented approaches, and logic models. These models have been adopted in various educational fields and have enjoyed widespread usage. Program evaluation models for medical education also exist but are much more limited. Durning, Hemmer, and Pangaro rightly note that research related to program evaluation in medical education is less developed than other educational fields.(38)

There is limited exposure of program evaluation models in medical education, the purpose of the current study was to briefly describe one model of program evaluation, the utilization-focused method. Utilization-focused evaluation begins with the assumption that evaluations should be judged by their actual use and utility.(36,37)

Feedback is an integral part of education. It is a common practice in India to study and emphasize on teachers' perception on any change in educational process including medical education. Studies or observation on students' feedback is equally important in current educational system, that it can open constructive conversations about strengths and possible areas of improvement in the subject of bioethics that can directly impact student learning.

Studies have shown that medical students generally have a positive perception of bioethics education, but there are some areas for improvement. For example, a systematic review of 22 studies on medical students' perceptions of bioethics education found that students valued the importance of bioethics in medical practice, but felt that the teaching methods used were often inadequate.(39) Another study found that students perceived bioethics education as relevant to their future practice, but felt that it was not adequately integrated into the medical curriculum.(40) We are unaware of any comprehensive evaluation on following

implementation of bioethics as a subject in Indian medical curriculum. Utilization-focused evaluation is context specific, not limited to a particular approach or methodology which may work best within the context of a particular program. Given the limited exposure of program evaluation models in medical education, we felt that this model is well-suited for implementation of AETCOM model in medical education in India because of its flexibility in approach.

Based on that, we designed a mixed method type of study to capture the data of current situation with regards to teaching and assessment and to identify the current challenges or gaps, if any, prevailing in implementation of the module.

Hypothesis

Despite the importance of bioethics in medical education, there is a lack of research on most effective teaching methodologies and assessment tools to evaluate students' moral development in India. This study explores the effectiveness of different teaching methodologies in promoting moral development in medical students, with a hypothesis that case-based learning, small group discussions and role-playing will be more effective than traditional teaching methodologies. The newly implemented module on Bioethics in undergraduate medical curriculum will improve medical students' knowledge, attitudes, and skills in bioethics and will enhance medical students' ability to apply bioethical principles in clinical practice, leading to better patient care and outcomes. The module will increase medical students' confidence in addressing bioethical issues in patient care, resulting in improved communication and decision-making skills.

Objectives

Therefore, the objectives of the present study were:

- i. To identify teaching learning process of the subject, bioethics in undergraduate curriculum through AETCOM Module
- ii. To identify and explain assessment process of the same
- iii. To explore the challenges in teaching, learning and assessment process of Bioethics.

Specific objectives determined were:

1. Perception of the teachers and students on Bioethics curriculum
2. Challenges in teaching and assessment

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METHODOLOGY

It was performed as explanatory study with a mixed methods design comprising (a) Step I quantitative (QUAN) based on questionnaire study and (b) Step II qualitative (QUAL), a descriptive study involving interviews semi-structured one to one interview. Data collection period was from October 2020 to August 2021.

Two questionnaires were designed and validated (more than or equal to 0.75 was considered to be acceptable). The links were sent to the coordinators of MEU of different medical colleges who thereby distributed the questionnaire. Total of 47 teachers and 357 students responded to the questionnaire.

Following basic analysis of quantitative data, in order to identify the gaps, narrative, semi-structured interviews with medical teachers were conducted. On the basis of personal judgement, eight teachers were selected as per convenience. Separate consent was taken for the inductive study, and the interview was recorded. The conceptual framework of themes and codes were derived from the transcripts manually and were analysed. Three main categories were framed namely teaching learning methodology, assessment and challenges. Once the categories were formed, three subcategories of teaching-learning, two subcategories of assessment and two subcategories on challenges were generated. The codes were identified and placed accordingly.

This study has certain limitations. The questionnaire study through Google form was planned because of coincidental occurrence of COVID 19 pandemic, which restricted the movement of the investigator from personal contacts and interview. We got a smaller number of teachers' responses. The sample for qualitative study was drawn from former respondents based on questionnaire-based survey. Interviewees were only those who were available and agreed to talk over telephone. Students were not included for interview.

Link for questionnaires: (VIDE APPENDIX)

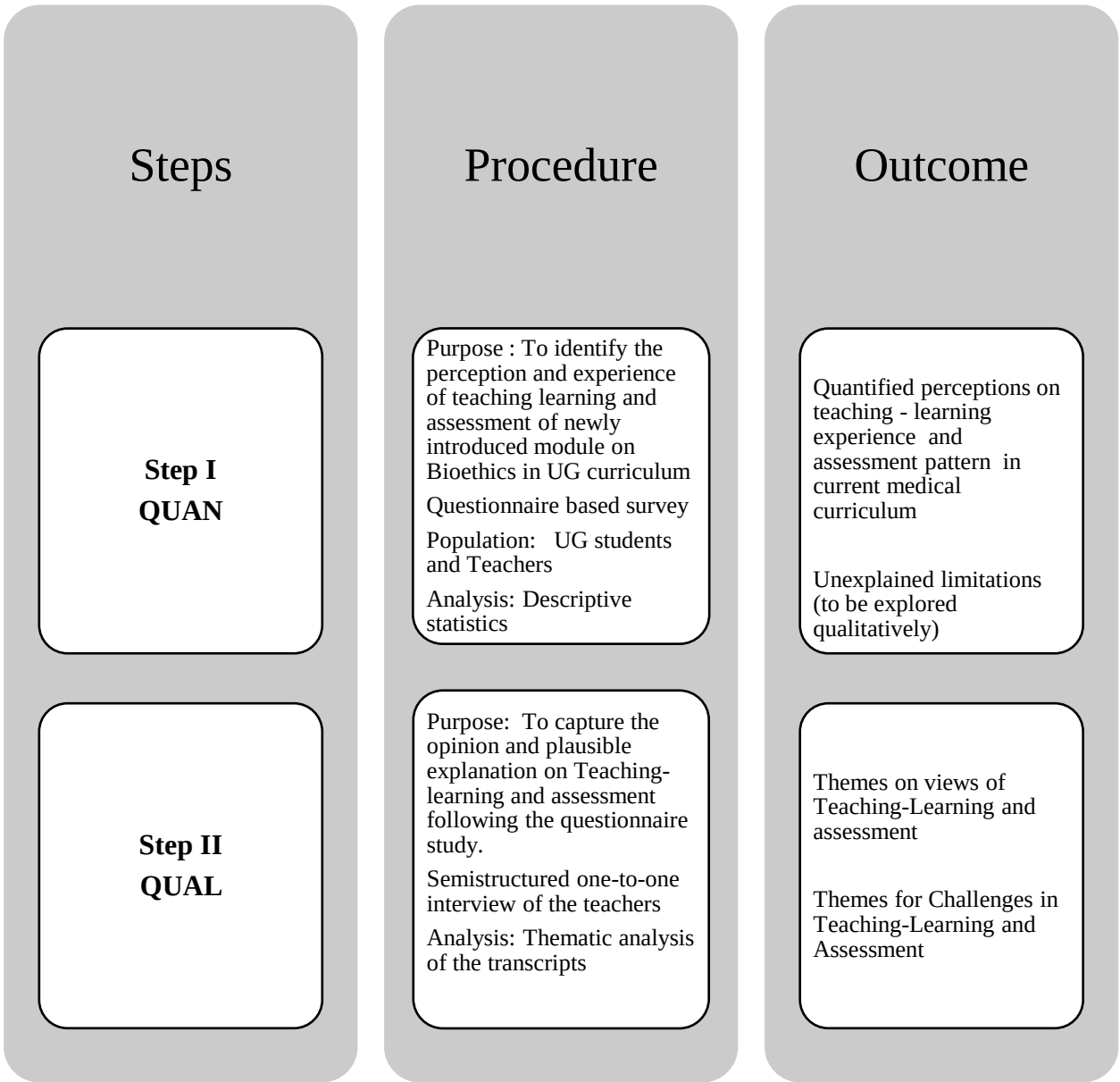
For teachers:

<https://forms.gle/V5xu5EGADfh2V5JF9>

For students:

<https://forms.gle/yxELpbAR3CAvhEno6>

Fig: The visual diagram of the study design



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RESULT AND DISCUSSION

I. Students' Feedback:

Feedback is an integral part of education.(41) It is essential to get effective feedback from students and consider that as one of the important platforms for evaluating the process of implementation of a new module. We found a mixed feeling amongst the students and teachers through their perceptions in different areas.

Out of 357 students, who responded to the questionnaire, 84.3% students have been exposed to formal teaching of bioethics, and 15.7% were not. The probable reason for not being exposed to the formal teaching would be the period of COVID 19 pandemic. Another reason could be that some of the sessions were taken online and the students were not properly sensitised to attend those mandatorily.(25) The issues were to find out the feedback of bioethics, as a subject with teaching learning experience.(42) This included their perception ranging from strongly agree to strongly disagree on importance of ethical issues in practice, ability to identify ethical issue, bioethics teaching and assessment.

As regards to feedback on process of teaching, 8.7% and 1.4% students find the teaching method, boring and nonessential respectively, rest of them, like 65.3% and 24.6% mentioned that the subject was important and interesting respectively. Majority of the students, 86.8% expressed that bioethics was as essential as clinical subject in medical curriculum. It was found that a higher percentage of students (50.1%) preferred to have case scenario-based teaching, only 1.1% supported for didactic teaching of Bioethics. Other teaching methods, preferred by students were role play (10.9%) and audio-visual film-based teaching (19%). Similarly, on choice of method of assessment, majority of the students (70.3 %) supported for peer assessment. Formative assessment only was preferred by 37.8%, followed by both formative and summative by 34.1%. Less number of students, 28.1% supported only summative assessment. Rashmi et al 2021, studied on assessment of students' perspectives on competency based medical curriculum as a whole, in which AETCOM was one of the elements of assessment. According to them, three fourth of the students agreed to the need of the module, AETCOM (Rashmi et al 2021). This is similar to our findings on need assessment.(43) The quantitative data threw light to some important areas out of the feedback, that appeared to be very much relevant in medical education particularly on implementation of bioethics teaching. These were used to construct a list of elements which were thought to be important, for correlating the process of implementation. We identified mainly four key areas through the

observed results of the questionnaire from students' perspectives for further discussion and inductive reasoning:

1. Need assessment of bioethics teaching learning process in medical students of India;
2. Students' likes and dislikes;
3. Preferences on teaching learning method; and
4. Scope of improvement.

Need assessment of bioethics teaching learning process: Assessment is a fundamental component of both learning and teaching as it frames what students learn and their certification.(44) Broadly speaking, assessment refers to the processes employed to make judgements about the achievements of students over a course of study.(45)

In our study, there were both agreement and disagreement by the students for accepting bioethics as a subject. For identifying ethical issues and decision making in clinical practice, formal bioethics training is required. It was agreed upon by a large group of students, and we found similar perception mentioned by Ashfak et al.(46) Disagreement in 11% students in our study might be due to lack of understanding of bioethics. Similar finding was apparent in another study by,(47) who explained that might be due to paternalistic attitude of the doctor or a lack of understanding, or might simply be emotional outbursts. Interestingly, those students, also mentioned that ethical issue was not associated with the knowledge. On the contrary, some of the students opined that they wanted to have dedicated time and course on bioethics without the load of other medical subjects, which indicated their interest in learning the subject.

So, it cannot be denied that the importance of bioethics as a formal subject has been recognized throughout the world.(48) Hence implementation of bioethics as a subject was a welcome initiative by NMC.

Likes and dislikes of students: It must be noted that nearing half of the students, who attended the classes didn't like the classes of bioethics teaching. The reasons, we could understand, were the forceful pre-eminent reformation due to universal COVID-19 pandemic. This was implemented in 2019- 2020 when there was only online teaching including medical education. Suddenly, students were all together catapulted to the confinement of their own homes, albeit reluctantly. There were hardly any meaningful interactions of formulated thoughts and opinions on online learning. So, the online classes might be a factor for reluctance. Active learning techniques involve students in doing things and make them think about the things they are doing. The students become proficient in skills by practicing them, rather than being a mute

spectator to the skill – by listening to the teacher or by reading about the skill.(49) From the open-ended comments, we could gather similar opinions that the students would like to discuss and debate more (a) on ethical issues related to real life cases instead of theoretical didactic lectures and (b) in clinical settings, away from classrooms.

So, this called for promotion of more engaging lessons and enterprising activities, in other words active learning, that are highly motivating for students to understand ethical issues in medical fraternity.

Preference for T/L method: There were some common perception and feedback from the students on preferences of teaching learning(T/L) method. Interestingly, very few students (only 1.1%) opted for didactic lectures. It was understood by the students that they would like to develop and employ their knowledge, acquire skills needed to apply in developing reasoning skill to address ethical dilemma. These are only possible with different teaching learning methods, other than didactic lectures. Regarding the educational strategy to be adopted, (50) S.P.I.C.E.S model, can be used as a basis to review the consensus on the educational strategies:

1. Student-centered/teacher-centered;
2. Problem solving/information gathering;
3. Integrated teaching/discipline-based;
4. Community-based/hospital-based.

Macpherson (51) opined on variability in delivering bioethics curricula that vary in whether and how explicitly and extensively they address topics, including professionalism, cultural competence, medical humanities, spirituality, death and dying, and community service, and in the number and topics of vignettes, controversies, assignments, and course activities. But Case-based discussions were the widely accepted strategy to learn ethics.(52) Reference to Kolb's theory,(53) our study findings also reflected that debates, case-based teaching with real life case vignettes, role plays were such teaching methods, that were preferred by the students and could give better learning opportunities on development of critical thinking. Debates are a popular approach to teaching ethics, as they encourage critical thinking, research, and public speaking skills. According to Guidry-Grimes, L.K., & Veatch, R.M. (2019). debates can be an effective way to teach ethics, as they allow students to engage with complex moral issues and develop well-supported arguments. However, as noted by the Journal of Business Ethics

Education (2017).(54,55) Debates can also be limited by the lack of depth and nuance in the discussion, and may not provide students with a comprehensive understanding of the ethical issues

Simulations in bioethics education use technology or immersive experiences to recreate real-world scenarios. This approach allows students to practice their decision-making skills in a safe and controlled environment. Simulations can be particularly useful for teaching students about high-stakes bioethics issues, such as responding to a pandemic or managing a medical emergency. By using simulations, students can develop their critical thinking and problem-solving skills without putting patients or others at risk.(56)

Structured feedback should follow the case discussion, which would help students to build ethical reasoning.(57) There are diverse methods to teach bioethics, and there is no single accepted approach towards its learning and assessment. However, it is recognized that there is no single best model of teaching and learning of bioethics.(4,58)

Factors Influencing Students' Perception of Bioethics Education

Several factors can influence students' perception of bioethics education, including:

- Teaching methods: Students prefer interactive and engaging teaching methods, such as small group discussions and case studies, over traditional lectures.
- Relevance to clinical practice: Students value bioethics education that is relevant to their future practice, and feel that it should be integrated into the medical curriculum. (59)
- Level of support and feedback: Students appreciate feedback and support from teachers, and feel that it helps them develop their bioethics skills.(60)

Scope of improvement:

Understanding students' perceptions of bioethics education is essential for developing effective teaching methods and improving student outcomes. By identifying areas for improvement and incorporating student suggestions into bioethics education, educators can help medical students develop the skills and knowledge necessary to make informed decisions about patient care. Though less in number of responses by the students, but their comments on teaching and demonstrating ethical issues in bed site or in clinical setup definitely threw light on prioritization on planning of delivery, especially teaching learning methodology. Their

preferences were towards (i) more interactive and engaging teaching methods, such as small group discussions and case studies(61) and (ii) more opportunities to practice and apply bioethics skills such as through simulations and role-playing exercises.(62)

This could definitely influence the process of implementation and thereby scope of improvement.

II. Teachers' Feedback:

It is a common practice in India to study and emphasize on teachers' perception on any change in educational process including medical education (Latika et al 2018).(63)

Teaching Learning Process: Total of 47 teachers responded to the questionnaire. According to answers of questionnaire, it was found that there was no core group or unit of medical teachers dedicated for teaching AETCOM module. Around 51% underwent some training or short course on bioethics, but only 29.8% taught this subject for undergraduate medical students as per directive of Medical Education Unit of the institution. However, 72.3% teachers wished to teach topics beyond AETCOM curriculum. The majority of the teachers (83%) agreed that emphasis to be given on development of moral reasoning skill, which should be one of the mainstays in teaching bioethics. Therefore, they opted for different active learning processes (46.8%), however, 10.6% still supported to follow didactic lectures. The teachers, who participated in in-depth interview, perceived that there was a dire need of teaching and training on attitude, ethics and communication skill for the undergraduate medical students and they welcomed the implementation of new module of AETCOM in Indian Medical Curriculum. In recent years, there has been a growing interest in innovative approaches to teaching ethics, including the use of debates, case studies, service-learning projects, and simulations. This discussion will explore the effectiveness of these approaches in teaching ethics, with a focus on the references provided. Most of them agreed that there should be innovative way of teaching this subject unlike traditional teaching and that should be conducted in small groups. Participatory learning has got a definite place here for better learning process. According to them, didactic teaching in this area should be avoided as far as possible, it might not do justice to the topic and might not be made interesting to the students when it referred to attitudinal domain. They, also, opined that more time should be allocated for participatory learning in the form of case-based teaching, problem solving, debates etc.

Case studies are another approach to teaching ethics, as they provide students with real-life examples of ethical dilemmas and encourage them to develop problem-solving and decision-making skills.(64,65) According to the Society for Ethics Across the Curriculum (2018), case studies can be an effective way to teach ethics, as they allow students to engage with complex moral issues in a practical and applied way. (65) However, as noted by Sethy, (2018), case studies can also be limited by the lack of context and nuance in the discussion, and may not provide students with a comprehensive understanding of the ethical issues.(21)

Bebeau 2014, opined that problem based practice (using cases) could be especially useful in helping students recognise and subsequently avoid personal interest arguments while conducting research.(66) In order to attain competency, the training could be started simultaneously during the field visits and early clinical exposure of the students, as defined in the curriculum of phase I. This could give them a feel of active learning experience. By working in small groups with a mentor or facilitator, one could keep the process active. More than one respondent opined that development of moral reasoning skill on ethical dilemma for undergraduate students was very challenging. In the beginning, students could only able to understand the medical problem but, often, they were not be able to identify the ethical issue and thereby how to address the ethical problem and dilemma. The bioethics course facilitates a medical student to develop critical thinking and decisions-making competencies expected of the medical profession (Martin et al 2021).(67)

Early clinical exposure could help the students to identify the ethical or communication problems, but not the solution as “Knows How” (KH) according to Miller’s pyramid mentioned in competency-based curriculum.(68) This called for enhanced teaching skills and innovative methodology. “Content of the module is minimal” was agreed by seven of the interviewers except one, who opined on content of syllabus of AETCOM module. Ethical issues like equality, justice, non-discrimination, stigmatization, or vulnerability were not addressed in the curriculum. From evidences, there seemed to be a clear link between teaching learning methodology and challenges with regards to content, teaching learning methods and experience of the teachers. All the Medical teachers, who participated from different phases of the course, unanimously agreed with the challenging issues related to process of T/L, expertise, curricular content and time, man power as well as the assessment process except one. One of the Teachers, did not agreed in difficulty or challenges in man power and small group teaching covering the batch of 150 students. In this context, we can refer the study stating that teaching was still very heterogeneous between different universities, use of various methodologies in the process of

teaching/learning, teaching disconnected from the medical practice of students showing the need to integrate the curriculum with clinical practice and challenges of teaching-learning process.(69) Similar opinion was stated by Anne, 2020. that there is a need to develop effective assessment strategies for ethics that would not only evaluate the knowledge and skills attained but the impact of their ethics education in their actual practise.(70)

Another difficult area identified by the teachers was integration with other subjects. According to them, identifying the ethical principles and linking them with different subject and context was found to be tough and needs a thorough brainstorming and curricular revision. They felt that there was a need of training for the faculty member for further development of expertise for implementing the new module, which was not addressed in various basic course workshops for the teachers.

Lack of teaching capacity in the field of bioethics has been identified a major challenge within resource constrained settings including India. (42,71)

Assessment: There was split opinion on assessment of the subject. The necessity of assessment was supported by 83% of the teachers and 38.3% opined that assessment guides the learning process. They also agreed on the facts that assessment develops student's critical thinking and has got a huge impact on quality of learning. Reasoning and decision-making skill could be well assessed – was agreed upon by 80.8% of the teachers. At the same time, many of them around 76.6% opined that assessment did not meet the desired outcome of teaching learning bioethics in terms of Miller's Pyramid. Finally, 65.9 % teachers opined for formative way of assessment, and 25.5% opted for both. Rest 8.5% teachers thought of summative assessment only. Out of them, only 23 (48.9%) teachers responded (as against 51% not responded to the question) to suggestions on type of assessment which could be introduced. They are listed as follows:

1. Formative based on their participation in session;
2. Summative assessment by giving questions on various topics like principles of bioethics, rights of doctors and patient etc.;
3. Direct observation: Debate/discussion with peers;
4. Coding method, thematic comparison, compare reports;

5. Personal moral development: Sort the photocopies of all home work;
6. Direct observation of workplace assessment in clinics, mentoring;
7. Maintenance of log book;
8. Communication exercises like role play, reflective writing, portfolios;
9. 360-degree feedback;
10. Structured viva, Mini CEX.

We took five pertinent issues on teaching and assessment for comparing the perceptions of students and teachers. They are as follows:

1. Subject: Need for bioethics course: While about 11% students perceived that such course is not necessary for their practice as a clinician, significantly more students felt that bioethics course could help solve ethical dilemma as compared to teachers, [Students' response vs Teachers' response: 331 (92.7%) vs 39 (83%), $p=0.02$] (Table III).
2. Method of teaching: Most students and teachers favoured practical application-based learning. Students mainly favoured Teacher guided learning [193(54%)], Self-directed learning [44(12.3%)] and Project based teaching learning [88(24.6%)]. Teachers echoed similar feelings and mainly favoured Brain storming and debates illustrating ethical concerns [12(25.5%)] and Case based teaching and debates 16(34%). Only one teacher favoured didactic way of teaching.
3. Assessment: Whether assessment is necessary: Students were bit hesitant about assessment of bioethics course. Less number of students perceived assessment necessary as compared to teachers albeit the difference was not statistically significant (70% vs 83%, $p=0.06$).
4. Assessment by non-teaching personnel: Both the students and teachers felt equally comfortable with assessment by Non-teaching personnel (70.3% vs 74.5%, $p=0.55$).

5. Type of assessment: There is significant difference in assessment choices between faculty and students ($P=0.001$). It appears that students are more inclined to formative assessment only whereas faculty is divided almost equally between the choices.

Assessment is a critical component of bioethics education, as it helps to evaluate students' knowledge, skills, and attitudes in bioethics.(72) In terms of the assessment system, there are various approaches that can be used, including:

1. Summative assessment: This involves assessing students' knowledge, skills, and attitudes at the end of a course or program(73)
2. Formative assessment: This involves assessing students' knowledge, skills, and attitudes throughout a course or program(74)
3. Competency-based assessment: This involves assessing students' ability to demonstrate specific competencies in bioethics including written exams, oral presentations, and case studies. The importance of using competency-based assessment is to ensure that students have achieved the necessary knowledge, skills, and attitudes to practice bioethics effectively.(75,76) Competency based assessment with large number of students was found to be difficult and challenging, and there are several limitations to consider. For example, bioethics is a complex and nuanced field, and assessing students' knowledge and skills can be difficult. Additionally, there is a lack of standardization in bioethics education, which can make it challenging to develop valid and reliable assessments(76)

In present set up, it was possible to assess only the knowledge part (Knows/K of Miller's pyramid), if not the higher level. It might take some time for the faculty also to get skilled and equipped with skill station to assess the steps of solution and decision making on ethical dilemma. One of the teachers expressed that the prescribed assessment system could focus on assessment of lower cognitive domains of Bloom's taxonomy (Ruhl 2021) only, such as remembering and understanding. There was very little scope to assess "Shows How" on current bioethics curriculum, except for some limited and specific Communication skill in OSPE.

OSPE in Bioethics is a type of assessment that is used to evaluate the knowledge, skills, and attitudes of students in the field of bioethics. In an OSPE in Bioethics, students are presented with a series of scenarios or cases that require them to apply their knowledge of bioethics principles and concepts to real-world situations. The OSPE in Bioethics is designed to assess the student's ability to think critically and make sound ethical decisions in a clinical or laboratory setting.

The OSPE in Bioethics has several benefits, including the following:

1. Improved assessment of clinical skills providing a more comprehensive and nuanced assessment of the student's clinical skills and competencies than traditional written exams.(77)
2. Increased validity and reliability: The OSPE in Bioethics is a more valid and reliable assessment of the student's knowledge, skills, and attitudes than traditional written exams, as it is based on the student's actual performance in a clinical or laboratory setting.

But there were important limiting issues like, the time factor in assessment process for a batch of 150 to 250 students in respective colleges and proportionate number of faculty members required for that. For the clinical subjects, this was found to be a major challenging issue. They felt that they were not well versed on assessment of soft skill. They mentioned about the following issues like “It is difficult to assess affective and psychomotor domain of teaching learning”, “May not be uniform”, “Students get nervous in OSCE stations, so proper assessment of communication skill is not done” and “OSPE stations are too much formal and away from real life”.

Interviews revealed that the medical teachers’ preference was more towards formative assessment and less in summative assessment. Two of the medical teachers opined that there is very less scope of assessment of soft skill on this area, only the knowledge part can be assessed at the most. Two of them expressed that assessment was mostly done in English which sometimes became too technical and mechanical, many important views and opinions of the students get missed out during assessment because of language barrier and hence due to nervousness and hesitancy. So, they suggested vernacular language might give better idea of teaching learning of soft skills and be implemented in the process. According to them, peer assessment might be a welcome method, but simultaneously, there would be chances of bias which ultimately carried no value. The most difficult part in assessment system was found to be that of man power i.e. teacher student ratio which is not an ideal one both for teaching as well as assessment. Second difficulty was pointed out as time constraint in practical examination. Moreover, skill development on assessment by the teachers also was an area which was a matter of concern. One study aimed to identify and synthesize the existing literature on assessing bioethics knowledge in health professions. The review included 15 studies that evaluated the effectiveness of various assessment methods, including multiple-choice questions, short-answer questions, and essays. The results showed that multiple-choice questions were the most commonly used assessment method, but that they had limited validity and reliability. The review recommended that educators use a variety of assessment methods, including case studies and simulations, to evaluate bioethics knowledge. (78)

Teaching professionalism and bioethics included development in critical thinking, problem solving abilities. Active learning techniques are the one appropriate for such evolution.(79) whereas didactic lecture on this subject was not welcomed by both students and teachers. Lecture has long been a standard way of teaching and concentrates primarily on conveying information in a one-way format.(80) All teachers criticized on taking lectures and agreed that to the fact that case or problem-based activity or debates could give students an opportunity to discuss the issues, provoke conflicts and controversies on ethical problems and professional attributes and enable the students to share their view point addressing the issues of morality. Experiential learning of bioethics in health professions is an educational approach that involves hands-on, real-world experiences to teach students about the ethical principles and practices that guide healthcare decision-making. This approach is based on the idea that students learn best by doing, rather than just reading or listening, and that experiential learning can help students develop the critical thinking, problem-solving, and communication skills needed to navigate complex bioethics issues. This type of learning of bioethics can take many forms, including clinical rotations, internships, and service-learning projects. A study published in the Journal of Nursing Education found that a service-learning project in bioethics helped nursing students develop the critical thinking and problem-solving skills needed to address complex bioethics issues.(81)

David Kolb, in his learning style inventor of “Experiential Learning Theory”, mentioned four stage cycle of learning and four separate learning style. His theory is concerned with dynamic view of learning based on a learning cycle driven by the resolution of the dual dialectics of action/reflection and experience/abstraction. In this way, the learner’s internal cognitive processes are involved in acquisition of abstract concepts that can be applied flexibly in a range of situations.(82) The theory explained learning process as a holistic process of adaptation, involving the integrated functioning of thinking, feeling, perceiving and behaving. It encompasses other specialized models of adaptation from the scientific method to problems solving, decision making and creativity.(83) Reference to Kolb’s theory, our study findings also reflected that debates, case-based teaching with real life case vignettes, role plays were such teaching methods, preferred by both teachers and students which could give better learning opportunities on development of critical thinking. It might not be possible to assess the same very formally but definitely could help in his or her learning process. At the same time, it is important to note that the limitations and challenges faced by the teachers in conducting such.

The teachers emphasized the need of faculty development, behavioural change and curricular restructuring for a successful implementation. Similar opinion was also evident in the study by Shrivastava et al 2022.(84) Integration of the module with different subjects with the list of competencies was one of the recommendations for better understanding and relevance of a topic. This was an area of serious concern for the faculty members who were not much trained in “how to” and “how much” to integrate with different subjects and thereby assessment per se. It should be emphasized that the aim of integration was to facilitate learning and explain relevance of a topic to future practice. (85) There is little training and sensitisation on how to conduct AETCOM effectively, through the five *W*’s (what, why, where, when, and who) and one *H* (how) approach in order to implement ethics teaching in CBME.(86) This gap reinforced the need of training and workshops for the teachers explaining the steps of Harden’s ladder of integration, transdisciplinary and interdisciplinary integration.(85,87) We know that assessment is a fundamental component of both learning and teaching as it frames what students learn and their certification.(44) It refers to the processes employed to make judgments on the achievements of students over a course of study.(45) In traditional teaching, softer skills of communication or professionalism or ethical dilemma were not emphasized in teaching or assessment. But AETCOM, has prompted not only to teach and incorporate in undergraduate medical education but also emphasized on assessment because in competency-based medical education, the outcome is expressed through proficiency of competencies. Assessment in medical education has been under criticism as a lot of newer methods of assessment are in place across the globe which are proved to be effective in assessing the behavioural practice of trainees in clinical settings.(88) Continuous and comprehensive internal assessments in other words, formative assessment, could prove effective in assessing the core areas of attitude and communication. But this would require additional infrastructural, personnel and logistic support from the institution. Faculty, as assessors, needed to be trained in using newer methods of assessment and assessment tools. Perhaps that was why, there was a mixed reaction in our study, specially from the teachers, who were lacking the experience and expertise in this field. According to them, only knowledge could be assessed in present set up, though Medical Educators from UK, Epstein and Hundert opined in one of the studies that knowledge and skills were far easier to assess attitudes or professionalism.(89) The students as well as the teachers preferred for formative assessment in the study, though they felt that it was more time consuming and increased workload, but they find it advantageous, reference to their performance, feedback and guidance on how to improve. There is still dearth of existing literature on the assessment strategies for ethics education. It is necessary to develop effective

assessment strategies for bioethics that would not only evaluate the knowledge and skills attained by the students, but the impact of their ethics education in their actual practise.(90) The teaching of bioethics and professionalism is difficult, and equally complex is the assessment process. The question arises whether assessment of AETCOM carries predictive value for the practice of medicine by the student in long term. If yes, prospective assessment of students' performance would be required, comparing performance results with subsequent professional conduct. But Parker opined that this was the biggest challenge in present system. In order to retain "internal morality" of the medical profession with a meaningful commitment to uphold the standards of care, further academic rigor would be required. It needs to be applied to teaching, assessment, and ongoing promotion of the ethical and professional conduct of medical students.(91)

Evaluation of teaching AETCOM module as per Kirkpatrick model

Evaluation of a teaching module is a crucial step in the educational process, as it helps to assess the effectiveness of the module in achieving its intended learning outcomes.(92)The importance of evaluation of a teaching module can be understood from the following points:

1. Improvement of teaching and learning.(93)
2. Assessment of student learning;(94)
3. Quality assurance:(95).
4. Curriculum development; (96)

The present study attempted to develop a framework to evaluate the training of newly implemented AETCOM module in Indian Medical curriculum and education using Kirkpatrick's learning and training evaluation model. Aim of the study was to explore on training evaluation by providing a framework on teaching learning and assessment of the module, in which evaluation was embedded in execution phase. Though scope of program evaluation in this study was limited to feedback and perception of the participants only, but the findings opened an interesting way, related to exploring and improving quality of implementation by customizing evaluation model of Kirkpatrick model. Gauging effectiveness at Level 2 of Kirkpatrick model gave a reasonable result but actual results would be what trainee students practice in real life after their graduation. The organizations must strive to capture training results at this level which is the 3rd level of Kirkpatrick model.(97) It was also

said that if a student did not change their behaviour after training, it did not necessarily mean that the training has failed.(98)

The result of assessment through this model could demonstrate mainly the level of reaction, if not, how far the participants or students correctly understood the subject. There would also be a scope of knowing how far the students learnt from the training, but it was not initially included in the study. It is not very easy to gather accurate information for assessing level 3 and 4. To carry out evaluation at this level, learners must be followed up regularly – which requires longer duration of study and more cost. It is difficult to link a particular training to actual practice results clearly and with 100% accuracy. This would need a lot of analysis and expertise with man power.

An effective bioethics curriculum for undergraduate medical education should run longitudinally across the whole course duration It should be integrated in the subjects and clerkships. Basic acquisition of knowledge and skills takes place in Years 1 & 2 with reinforcement and application in Years 3–5. (99,100)

This exercise provided an opportunity to generate ideas and suggestions to refine the content and structure of AETCOM that would help to encounter the challenges in implementing the AETCOM more effectively.

CONCLUSION

The intent and implementation of AETCOM in new system of competency based medical education was a welcome initiative by Medical Council of India, and then National Medical Commission. We found a mixed perception following implementation. The hidden curriculum of professional attributes, bioethics and communication skill came into action in a structured format as a new subject. But heterogeneity still exists in the planning and implementation of the curricula, teaching, and assessment methods. At the same time, certain road blocks were existing, boiling into definite challenges in implementation in different areas pertaining to teaching, learning, assessment and overall curriculum. This study highlights the methodology and gaps of implementation of AETCOM in Indian medical curriculum, mostly in the area of teaching, assessment and challenges. This could be drawn towards the attention of all stakeholders for revision and further improvement for setting a standard model in medical education in India.

This study provided an insight from both students' and teachers' perspectives on Bioethics, a new module of AETCOM in undergraduate medical curriculum in India. In summary, what we could gather are as follows:

1. Teaching Methodology:

Simulation-based learning can be an effective way to teach bioethics, as it allows students to practice and apply their knowledge in a safe and controlled environment. Role-playing and debates can be used to teach bioethics, as they allow students to explore different perspectives and develop their critical thinking and communication skills. Case-based teaching methodology is an effective way to develop critical thinking and problem-solving skills in students, as it presents them with real-life scenarios that require analysis and decision-making. This method can also help students develop ethical reasoning and decision-making skills, prepares students for real-world practice.

2. Assessment: Use of multiple assessment methods, such as written exams, case studies, and group discussions, can help to evaluate students' critical thinking and problem-solving skills in both formative and summative ways. Peer assessment can be used to evaluate students' activities and provide them with feedback from their peers. Group assessments as formative assessment can be used to evaluate students' ability to work in teams and develop their collaboration and communication skills for AETCOM module.

3. Challenges:

- Faculty training and support: Faculty training and support are essential for effective implementation of bioethics teaching in different methods.
- Need for resources and infrastructure: Adequate resources and infrastructure are necessary to support the use of innovative teaching methods, such as simulation-based learning and online and digital resources.
- Need for assessment and evaluation: Regular assessment and evaluation are necessary to ensure that teaching and learning are effective in achieving learning objectives.
- Need for student feedback and involvement: Student feedback and involvement are essential for improving and refining different teaching methods and assessment process.

Overall, for teaching Bioethics, it requires careful planning, implementation, and evaluation to ensure their success. By providing faculty training and support, adequate resources and infrastructure, and regular assessment and evaluation, educators can help students develop the

knowledge, skills, and attitudes necessary to navigate complex bioethical issues in their future careers.

RECOMMENDATIONS

Hence from this study we can convey the following Recommendations:

1. Need for trained faculty: There is a need for trained faculty members who can teach Bioethics effectively, as Bioethics is a multidisciplinary field that requires expertise in ethics, law, medicine, and social sciences.
2. Faculty development programs: Faculty development programs can help to enhance the teaching skills of faculty members and provide them with the necessary expertise to teach Bioethics. So, more Faculty Development Program for teachers from all the subjects is necessary specially to train in a different or innovative way of teaching and assessment of AETCOM module. Since it is a multidisciplinary module, special attention is necessary to ensure the approach on integration of the topics both horizontally and vertically and thereby strengthening the relevance for future practice.
3. Resource Development: There is a need of collection and compilation of resource or study materials for the students and teachers as well. Students and teachers should be encouraged to develop online and digital resources, such as videos, podcasts etc for teaching bioethics, as they provide students with flexible and accessible learning opportunities.
4. Standardized assessment tools: There is a need for standardized assessment tools to evaluate students' knowledge and understanding of Bioethics. Development of rubrics can help to ensure consistency and fairness in the assessment of students' activities.
5. Revision of the curriculum: The regulating body and the policy makers should revise the modules incorporating more areas of bioethical principles and issues in the content, relevant to Indian scenario and common professional lapses.

Limitations of the study

This study has certain limitations. The questionnaire study was planned because of coincidental occurrence of COVID 19 pandemic, which restricted the movement of the Investigator from personal contacts and interview. We got a smaller number of teachers' responses. The sample for qualitative study was drawn from former respondents based on questionnaire-based survey. Interviewees were only those, who were available and agreed to talk over telephone. Students were not included for interview.

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REFERENCES:

1. Cate ThJ ten, DE HAES JCJM. Summative assessment of medical students in the affective domain. *Med Teach* [Internet]. 2000 Jan 1;22(1):40–3. Available from: <https://doi.org/10.1080/01421590078805>
2. Novack DH, Epstein RM, Paulsen RH. Toward creating physician-healers: fostering medical students' self-awareness, personal growth, and well-being. *Academic Medicine*. 1999;74(5):516–20.
3. Mattick K, Bligh J. Teaching and assessing medical ethics: where are we now? *J Med Ethics*. 2006;32(3):181–5.
4. El Tarhouny SA, Mansour TM, Wassif GA, Desouky MK. Teaching bioethics for undergraduate medical students. *Biomedical Research*. 2017;28(22):9840–4.
5. Richardson RG, Guthrie DJ, Rhodes P. *Encyclopedia Britannica*. 2020 [cited 2021 Aug 25]. history of medicine. Available from: <https://www.britannica.com/science/history-of-medicine>
6. National Medical Commission. Salient Features of Regulations on Graduate Medical Education, 1997(Amended Upto May 2018) [Internet]. 1997. Available from: <https://www.nmc.org.in/rules-regulations/graduate-medical-education-regulations-1997/>
7. Have H ten. Springer, Dordrecht. 2013 [cited 2021 Sep 18]. *Bioethics Education in a Global Perspective*. Available from: <https://link.springer.com/book/10.1007/978-94-017-9232-5>
8. Mueller PS. Incorporating professionalism into medical education: the Mayo Clinic experience. *Keio J Med*. 2009;58(3):133–43.
9. Ten Have H, Gordijn B. *Handbook of global bioethics*. Vol. 4. Springer Netherlands; 2014.
10. Pegoraro R, Putoto G. Findings from a European survey on current bioethics training activities in hospitals. *Med Health Care Philos*. 2007;10:91–6.
11. Borovecki A, ten Have H, Oreskovic S. Ethics and the European countries in transition—the past and the future. *Bull Med Ethics*. 2006;214:15–20.
12. Nunes RML. Bioética e deontologia profissional [Internet]. Gráfica de Coimbra; 2002. (Colectânea Bioética Hoje). Available from: <https://books.google.co.in/books?id=MSmiAAAACAAJ>
13. Mann M, Hosman CMH, Schaalma HP, de Vries NK. Self-esteem in a broad-spectrum approach for mental health promotion. *Health Educ Res*. 2004 Aug;19(4):357–72.
14. Defining Professionalism [Internet]. Available from: https://www.queensu.ca/teachingandlearning/modules/ethics/11_s3_03_defining_professionalism.ht%0Aml
15. Frank JR, Snell LS, Cate O Ten, Holmboe ES, Carraccio C, Swing SR, et al. Competency-based medical education: theory to practice. *Med Teach*. 2010;32(8):638–45.
16. Gourevitch D. The history of medical teaching. *The Lancet*. 1999;354:SIV33.
17. Harden RM. Outcome-Based Education: the future is today. *Med Teach*. 2007 Sep;29(7):625–9.

18. Scarborough H, Gregg A, Turner E. Encyclopedia Britannica. 2020. History of medical education. Available from: <https://www.britannica.com/science/medical-education>
19. Ten Have H, Gordijn B. Handbook of global bioethics. Vol. 4. Springer Netherlands; 2014.
20. Howell J. History of medical education: Introduction. Br Med J. 1999;74(5):521.
21. Hilton S, Southgate L. Professionalism in medical education. Teach Teach Educ. 2007;23(3):265–79.
22. Jakovljević M, Ostojić L. Professionalism in contemporary medicine: If it is an important academic issue, then surely it is a “hot” issue as well. Psychiatr Danub. 2013;25(suppl 1):6–17.
23. Ganguly B, D’Souza RF, Nunes R. Education for Bioethics in Indian Medical Schools. In: Educational Models in Bioethics. Springer; 2025.
24. Nunes R. Ethics in science. Porto Biomed J. 2017;2(4):97–8.
25. Ganguly B, Duarte I, D’Souza RF, Nunes R. Students’ feedback on Bioethics, in Indian undergraduate medical curriculum: a contextual insight. Asian Bioethics.
26. Andrews LB, Barta L. Simulation as a tool to illustrate clinical pharmacology concepts to healthcare program learners. Curr Pharmacol Rep. 2020;6(4):182–91.
27. Ten Cate O, Carraccio C, Damodaran A, Gofton W, Hamstra SJ, Hart DE, et al. Entrustment decision making: extending Miller’s pyramid. Academic Medicine. 2021;96(2):199–204.
28. Cruess RL, Cruess SR, Steinert Y. Amending Miller’s pyramid to include professional identity formation. Academic Medicine. 2016;91(2):180–5.
29. Al-Eraky M, Marei H. A fresh look at Miller’s pyramid: assessment at the ‘Is’ and ‘Do’ levels. Med Educ. 2016;50(12):1253–7.
30. Miller GE. The assessment of clinical skills/competence/performance. Academic Medicine [Internet]. 1990;65(9). Available from: https://journals.lww.com/academicmedicine/fulltext/1990/09000/the_assessment_of_clinical.45.aspx
31. Supe A. Graduate Medical Education Regulations 2019: Competency-driven contextual curriculum. Natl Med J India. 2019;32(5):257–61.
32. Lehmann LS, Kasoff WS, Koch P, Federman DD. A survey of medical ethics education at US and Canadian medical schools. Academic Medicine. 2004;79(7):682–9.
33. Gibson KA, Boyle P, Black DA, Cunningham M, Grimm MC, McNeil HP. Enhancing evaluation in an undergraduate medical education program. Academic Medicine. 2008;83(8):787–93.
34. Musick DW. A conceptual model for program evaluation in graduate medical education. Academic Medicine. 2006;81(8):759–65.
35. Fitzpatrick JL, Sanders JR, Worthen BR, Wingate LA. Program Evaluation: Alternative Approaches and Practical Guidelines. 4th ed. Pearson; 2021. 5 p.
36. Heilman JG, Patton MQ. Utilization-focused evaluation. Patton MQ, editor. West Polit Q [Internet]. 2024 May 28;32(4):509–11. Available from: <http://www.jstor.org/stable/447919>

37. Patton MQ. The roots of utilization-focused evaluation. *Evaluation roots: A wider perspective of theorists' views and influences*. 2013;293–303.
38. Durning SJ, Hemmer P, Pangaro LN. The structure of program evaluation: an approach for evaluating a course, clerkship, or components of a residency or fellowship training program. *Teach Learn Med*. 2007;19(3):308–18.
39. Wong MK, Hong DZH, Wu J, Ting JJQ, Goh JL, Ong ZY, et al. A systematic scoping review of undergraduate medical ethics education programs from 1990 to 2020. *Med Teach* [Internet]. 2022 Feb 1;44(2):167–86. Available from: <https://doi.org/10.1080/0142159X.2021.1970729>
40. Saied NH. Medical students' attitudes to medical ethics education. *Annals of the College of Medicine Mosul*. 2013;39(2):101–6.
41. Johnson CE, Keating JL, Boud DJ, Dalton M, Kiegaldie D, Hay M, et al. Identifying educator behaviours for high quality verbal feedback in health professions education: literature review and expert refinement. *BMC Med Educ*. 2016;16:1–11.
42. Ganguly B, D'Souza R, Nunes R. Challenges in the Teaching–Learning Process of the Newly Implemented Module on Bioethics in the Undergraduate Medical Curriculum in India. *Asian Bioeth Rev*. 2023;15(2):155–68.
43. Ramanathan R, Shanmugam J, Gopalakrishna SM, Palanisami K, Narayanan S. Exploring the learners' perspectives on competency-based medical education. *J Educ Health Promot*. 2021;10(1):109.
44. Norcini JJ. Peer assessment of competence. *Med Educ*. 2003;37(6):539–43.
45. Harlen W. Teachers' summative practices and assessment for learning–tensions and synergies. *Curriculum Journal*. 2005;16(2):207–23.
46. Ashfaq T, Ishaq A, Shahzad F, Saleem F. Knowledge and perception about bioethics: A comparative study of private and government medical college students of Karachi Pakistan. *J Family Med Prim Care*. 2021;10(3):1161.
47. Janakiram C, Gardens SJ. Knowledge, attitudes and practices related to healthcare ethics among medical and dental postgraduate students in south India. *Indian J Med Ethics*. 2014;11(2):99–104.
48. Ghias K, Ali SK, Khan KS, Khan R, Khan MM, Farooqui A, et al. How we developed a bioethics theme in an undergraduate medical curriculum. *Med Teach*. 2011;33(12):974–7.
49. Harmin M, Toth M. *Inspiring active learning: A complete handbook for today's teachers*. ASCD; 2006.
50. Harden RM, Sowden S, Dunn WR. Educational strategies in curriculum development: the SPICES model. *Med Educ*. 1984;18(4):284–97.
51. Macpherson CC, Veatch RM. Medical student attitudes about bioethics. *Cambridge Quarterly of Healthcare Ethics*. 2010;19(4):488–96.
52. Vergano M, Naretto G, Elia F, Gandolfo E, Calliera CN, Gristina GR. ELS (Ethical Life Support): a new teaching tool for medical ethics. Vol. 23, *Critical Care*. Springer; 2019. p. 1–3.

53. Kurt S. Kolb's experiential learning theory & learning styles. Educational Technology <https://educationaltechnology.net/kolbs-experiential-learning-theory-learning-styles>. 2020;
54. Guidry-Grimes LK, Veatch RM. The Basics of Bioethics. 2019;
55. Hendy NT, Basuray MT, Smith WP. Teaching a business ethics course using team debates: A preliminary study. Journal of Business Ethics Education. 2017;14:5–22.
56. Vlachopoulos D, Makri A. The effect of games and simulations on higher education: a systematic literature review. International Journal of Educational Technology in Higher Education. 2017;14:1–33.
57. Smith S, Fryer-Edwards K, Diekema DS, Braddock III CH. Finding effective strategies for teaching ethics: a comparison trial of two interventions. Academic Medicine. 2004;79(3):265–71.
58. Winardy GCB, Septiana E. Role, play, and games: Comparison between role-playing games and role-play in education. Social Sciences & Humanities Open. 2023;8(1):100527.
59. Manoharan A, Iyengar MM, Nirupama AY, Nithya K. Knowledge and attitude of medical students towards bioethics- A cross sectional study from a medical college in northern Tamil Nadu. Indian J Community Health [Internet]. 2021;33(3):534–538. Available from: <https://www.iapsmupuk.org/journal/index.php/IJCH/article/view/2192>
60. Tanrikulu F, Gündoğdu H, YağmurZiyai N, Erol F, Dikmen Y. The Reflection of Ethics Education on Clinical Practices in Undergraduate Nursing Education: A Qualitative Study. Bangladesh Journal of Medical Science [Internet]. 2022;21(4):711–718. Available from: <https://www.banglajol.info/index.php/BJMS/article/view/60274>
61. Self DJ, Wolinsky FD, Baldwin DCJ. The effect of teaching medical ethics on medical students' moral reasoning. Acad Med. 1989 Dec;64(12):755–9.
62. Saleem S, Rasool IG, Nisar O, Rao SRR, Nisar S. Medical Students' Views on Medical Ethics Education-A Mixed Method Study. Journal of Shalamar Medical & Dental College-JSHMDC. 2022;3(2):81–90.
63. Mohan L, Kathrotia R, Mittal S. Medical education/original article student feedback in medical teaching evaluation: Designing the perfect mechanism. Indian J Physiol Pharmacol. 2018;62(1):149–55.
64. Harvard Kennedy School [Internet]. Case Teaching Resources. Available from: https://www.hks.harvard.edu/more/about/leadership-administration/academic-deans-office/slate/teaching-resources/teaching-cases?utm_source=chatgpt.com
65. Boylan M, Donahue JA. Ethics Across the Curriculum: A Practice-based Approach [Internet]. Lexington Books; 2003. (G - Reference, Information and Interdisciplinary Subjects Series). Available from: <https://books.google.co.in/books?id=51GqWDxZgUoC>
66. Bebeau MJ. An evidence-based guide for ethics instruction. J Microbiol Biol Educ. 2014;15(2):124–9.
67. Martins V, Santos C, Ricou M, Bataglia P, Duarte I. Bioethics Education on Medical Students: Opinions About Ethical Dilemmas. Sage Open [Internet]. 2021 Oct 1;11(4):21582440211057120. Available from: <https://doi.org/10.1177/21582440211057118>

68. Carley S. Educational theories you must know. Bloom's Taxonomy. St Emlyn's. 2015;
69. de Lemos Tavares ACAL, Travassos AGA, Tavares R da S, Rêgo MFMP da S, Nunes RML. TEACHING OF ETHICS IN MEDICAL UNDERGRADUATE PROGRAMS. *Acta Bioeth.* 2021;27(1).
70. Souza AD, Vaswani V. Diversity in approach to teaching and assessing ethics education for medical undergraduates: A scoping review. *Annals of medicine and surgery.* 2020;56:178–85.
71. Shirazi B, Riaz Q, Jafarey AM, Ahmed R, Shamim MS. The current status and challenges of bioethics education in undergraduate medical education in Karachi, Pakistan. *BMC Med Educ.* 2024;24(1):737.
72. Thangavelu PD, Janakiraman B, Pawar R, Shingare PH, Bhosale S, Souza RD, et al. Understanding, being, and doing of bioethics; a state-level cross-sectional study of knowledge, attitude, and practice among healthcare professionals. *BMC Med Ethics* [Internet]. 2024;25(1):30. Available from: <https://doi.org/10.1186/s12910-024-01028-w>
73. Katelin Hoskins MSN. Ethics education in nursing: Instruction for future generations of nurses. *Online J Issues Nurs.* 2018;23(1):1–11.
74. Esquerda M, Pifarré J, Roig H, Busquets E, Yuguero O, Viñas J. Evaluando la enseñanza de la bioética: formando «médicos virtuosos» o solamente médicos con habilidades éticas prácticas. *Aten Primaria* [Internet]. 2019;51(2):99–104. Available from: <https://www.sciencedirect.com/science/article/pii/S0212656717301014>
75. Gravina E. Competency-Based Education and Its Effect on Nursing Education: A Literature Review. *Teaching and Learning in Nursing.* 2016 Dec 1;12.
76. Olivier B, Naidoo V, Mudzi W, Van Aswegen H, Potterton J, Myezwa H, et al. The implementation of the Objective Structured Practical Examination (OSPE) method: students' and examiners' experiences. *Afr J Health Prof Educ.* 2015;7(1):16–21.
77. Shenoy PJ, Kamath P, Sayeli V, Pai S. Standardization and validation of objective structured practical examination in pharmacology: Our experience and lessons learned. *Indian J Pharmacol.* 2017;49(4):270–4.
78. González-Blázquez FJ, Ruiz-Hontangas A, López-Mora C. Bioethical knowledge in students and health professionals: a systematic review. *Front Med (Lausanne).* 2024;11:1252386.
79. Heuer S. A case study method for teaching bioethics. Ames, Iowa <https://lib.dr.iastate.edu/rcc/42>. 2008;
80. Hessler K. How to write a case study. Iowa State University. 2006;
81. Merritt LS, Murphy NL. International Service-Learning for Nurse Practitioner Students: Enhancing Clinical Practice Skills and Cultural Competence. *J Nurs Educ.* 2019 Sep;58(9):548–51.
82. Macleod F, Golby M. Theories of Learning and Pedagogy: issues for teacher development. *Teacher Development.* 2003;7(3):345–61.
83. Kodesia S. Kolb's Experiential Learning Theory and learning styles model. James Cook University, Australia [Internet]. 2013; Available from: http://www.jcu.edu.au/wiledpack/modules/fsl/JCU_090344.html

84. Shrivastava SR, Shrivastava PS. Ensuring Training of Medical Students in Bioethics Competencies as an Integral Part of Medical Curriculum. *Current Medical Issues*. 2022;20(3):201–4.
85. Ananthakrishnan N. Competency based undergraduate curriculum for the Indian Medical Graduate, the new MCI curricular document: Positives and areas of concern. *J Basic Clin Appl Health Sci*. 2018;1(1):34–42.
86. Singh S, Solanki M, Vaney N, Bhan A. Medical ethics teaching in the new undergraduate physiology competency-based curriculum in medical institutions in Delhi: A pilot, feasibility study. *Indian J Med Ethics*. 2023;
87. Harden RM. The integration ladder: a tool for curriculum planning and evaluation. *Med Educ*. 2000;34(7).
88. Zayapragassarazan Z, Menon V, Kar SS, Batmanabane G. Understanding Critical Thinking to Create Better Doctors. *Online Submission*. 2016;1(3):9–13.
89. Epstein RM, Hundert EM. Defining and assessing professional competence. *JAMA*. 2002;287(2):226–35.
90. Vaswani V, Vaswani R. Bioethics education in India. In: *Bioethics Education in a Global Perspective: Challenges in global bioethics*. Springer; 2014. p. 37–50.
91. Parker M. Assessing medical students' professional development and behaviour: a theoretical foundation. *Focus on Health Professional Education*. 2000;2(2):28–38.
92. Rego S, Palacios M. Contributions to the planning and evaluation of bioethics teaching. *Revista Bioética*. 2017;25:234–43.
93. Al Shahrani AS. Development and evaluation of an evidence-based medicine module in the undergraduate medical curriculum. *BMC Med Educ* [Internet]. 2020;20(1):256. Available from: <https://doi.org/10.1186/s12909-020-02181-7>
94. Al Hmamat N, Melhem O, Rosita A, Devada B, Abboud H. Curriculum evaluation: assessing the students' achievement of a program level learning outcomes in the baccalaureate degree of nursing. *International Journal of Nursing and Health Care Research*. 2021;4:1267.
95. Williams J, Harvey L. Quality assurance in higher education. *The Palgrave international handbook of higher education policy and governance*. 2015;506–25.
96. Afsahi SE. *The Role of Evaluation in Curriculum Design*. 2016.
97. Bates R. A critical analysis of evaluation practice: the Kirkpatrick model and the principle of beneficence. *Eval Program Plann*. 2004;27(3):341–7.
98. Du J. Research and practice of training effect evaluation system based on Kirkpatrick model—taking teacher training system of Zhejiang open university as an example. *Chinese Studies*. 2021;10(2):123–46.
99. Allana AA, Ali SK, Ghias K. Bioethics curriculum for undergraduate medical students: an evaluation study utilizing mixed methods approach. *BMC Med Educ*. 2024;24(1):385.
100. Paranitharan P, Perera WNS. Revising curricular on medical ethics: a way forward. 2020;

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BOOK CHAPTER

Education for Bioethics in Indian Medical Schools: Ganguly B, D'Souza R, Nunes R (in press at Educational Models in Bioethics, Springer 2025)

“Sukarthah Sarvabutanam

Matah sarvah pravarthayah

Sukham ca na vina dharmat

Thasmad dharmaparo bhavet”

- Bhagvata in Astanga Hridaya

(All activities of man are directed to the end of attaining happiness, whereas happiness is never achieved without righteousness. It is the bounden duty of man to be righteous in his action)

Title: *Education for Bioethics in Indian Medical Schools*



Sushruta is the father of surgery.

2600 years ago he and health scientists of his time conducted complicated surgeries like cesareans, cataract, artificial limbs, fractures, urinary stones and even plastic surgery and brain surgery. Usage of anesthesia was well known in ancient India

Ancient Indian Medical Education: Although it is difficult to identify the origin of medical education, however teaching authorities usually consider that it might have begun with the ancient Greeks' method of rational inquiry, introducing the practice of observation and reasoning regarding disease. In India, medical literature was mostly popularised by the writings of eminent Hindu physician Charaka similar to Hippocrates in Greece. In Ayurveda practices, Charaka (800BCE) recommended typical skills in students for medicine and the learning through 'teacher-student' relations. India's history of medicine is a very long one. Its earliest concepts started from one of the Vedas that is 'Atharvaveda' that deals with medicine possibly dates back to 2nd millennium BCE. 'The golden age of Indian medicine, from 800 BCE until about 1000 CE, was marked especially by the production of the medical treatises known as the Charaka-samhita and Sushruta-samhita, attributed respectively to Charaka, a physician, and Sushruta, a surgeon.'^[1] Students gained all these knowledge and experience from their seniors.

As mentioned above, the earliest code of medical ethics was mentioned in the treatise of Siddha and Charaka Samhita^[1]. Ethics education in that way was part of teaching some basics of medicines in the indigenous Indian system of medicines, Ayurveda and Siddha. However, that bioethics education in India was not carried over in a structured way in the modern medical education system.

In Europe, medical education began assuming the application of an increasing knowledge of natural science to the actual care of patients. In the mid-19th century an ordered pattern of science-oriented teaching was established. Gradually, in the Western part of the globe there was a paradigm shift from being completely teacher centric to being learner- centric, in the 20th century. It eventually percolated in the Indian Medical Education Curriculum too. It is necessary to understand and reflect on evolution of Bioethics as a subject in medical education. Against this back drop, it is important to chart the trajectory of evolution of teaching medical ethics in undergraduate medical curriculum in global and Indian context.

Charting Modern Medical Education: A big change in medical history came after legendary Hippocrates came into practice of medicine in Greece during 460 BCE. He was called the ‘Father of Medicine’. His way of learning was through ‘his own powers of observation and logical reasoning’. ‘Perhaps the greatest legacy of Hippocrates is the charter of medical conduct embodied in the so-called Hippocratic Oath, which has been adopted as a pattern by physicians throughout the ages.’^[3] With this long rich legacy of development in the last few centuries combined with the inventions in radiology and different innovations in bio-engineering technology etc., the concept of medical education has undergone mammoth changes. Furthermore, with the ‘spectacular advances in diagnosis and treatment, the vast new field of psychiatry opened up by Sigmund Freud.’^[1] Medicine science and its education plateaued into enhancing health and hygiene within humanity. Along with this, the system of education also changed and has been changing over the time. There are different theories on development of system of medical education, which are the result of various epistemological, philosophical, social and personal beliefs and attitudes of those who have formed it. These theories are very diverse ranging from neuroscience to social construction of knowledge. In reality, all learning theories are reflections of different lenses through which learning can be understood (Mann, 2004).^[2]

Models and theories followed in structuring medical education system

1. Logic Model Theory of Education: Gradually with the evolution of medical science the system of medical education also changed from being teacher-centric to being Problem-based Learning (PBL), thus creating a huge ‘paradigm-shift’ in terms of methodology of teaching – a new pedagogy was born. This is one of the methods of ‘Logic Model of Education’ in medicine. There are several approaches in Logic Model or the learning theories of medical education and they have their own strengths. The Logic Model has multiple perspectives and ‘provides medical educators with different teaching strategies that can be retrieved from their educational “tool boxes,” depending on the specific learning outcomes that are desired.’^[3] The article on Current learning theories discussed about different approaches in learning— (a) Behaviorist Orientation, (b) Cognitivist Orientation, (c) Humanist Orientation and (d) Social Learning Orientation, and (e) Constructivist Orientation. Each theory has its appropriate application depending on what the educators and the students want to achieve through the process. Under the present situation of medicine education ‘medical educators need to become conversant with different learning theories in order to create appropriate learning environments and optimize learning’. For example, ‘if educators want a learner to perform a new skill, then choosing a behavioral approach makes sense. Similarly for developing critical thinking and clinical problem-solving skills, a cognitive approach may be the best choice and so on. Thus, it is evident that, learning theories provide medical educators with a plethora of approaches that form the philosophical basis for curriculum design and evaluation of learning activities. Ultimately, the artfulness of the teacher will determine which strategy and approach is best for each learner and each situation.’^[3]

1. Contemporary theories of Humanism and Behavioural change and Medical Education: In Teacher-centric learning, there had been less scope for interaction from students for sharing their own inside question/queries or experience, which resulted in lesser dialogue between teacher and student; rather it was more of following the teacher’s experience that was generally instilled in the thoughts of students. The medical education system till 19th century was following this ‘teacher-student’ communication system as explained by Abraham Flexner and William Osler in that scientifically learned and clinically skilled physicians used to

exchange their knowledge to the next generations' students and it was more like 'teacher- student' communication system. In the traditional medicine learning system (teacher-student process), there was no room for self-learning or problem based learning. The student's insight never got a chance to be expressed.

At "the turn of the millennium a sweeping changes have constituted a revolution in medical education".^[4] The suggestions of Flexner and Osler was to include 'two key components or pillars of medical education namely, the basic or foundational sciences and the clinical sciences'. And there was a demand for a change in the teaching methodology and the change in the content of the established curriculum. There was a demand for more active learning and less passive learning

Chris Hare in his 'An Introduction to Humanistic Learning Theory' discussed about Humanistic approach learning as presented by Abraham Maslow, Carl Rogers, and James F. T. Bugental. He mentioned about the concept as 'Humanistic Learning Theory, often called Humanism, focuses on the specific human capabilities including creativity, personal growth and choice. Maslow's research into hierarchical needs is a major concept in this learning theory, especially his concept of Self-Actualization, as it is only at this level the individual can truly experience growth.' This made the Humanistic Approach towards learner-centric.^[5] To validate this, Hare further summarized Humanistic Learning Theory in the following three points:

1. Learners can be trusted to find their own goals and should have some options or choices in what they learn at school.
2. Learners should set their own standards and should evaluate their work.
3. The school experience should help learners to develop positive relations with their peers. Thus, 'the Humanistic approach is learner-centric, with the emphasis on the individual's potential rather than the specific learning materials, sowing for a meaning and useful learning experience the student can apply across many situations.'

Keeping this in mind a variety of changes in curriculum was introduced with variety of approaches –'including small group sessions, problem-based learning, self-directed learning, team-based learning, and flipped classrooms as replacements for the traditional lecture format'.^[6]

Thus began a new pedagogical reform that developed the requisite skill for future practitioners of medicine. Subsequently, a mass movement happened towards ‘adoption of a radically redesigned curriculum’ can be termed as a post-Flexnerian approach to medical education ^[3,7] The major goal of the curriculum was to produce physicians who could deliver an ‘individualized caring’ plan that would reflect the physician’s mastery of basic physiology, awareness of the best current evidence, skillful patient communication, and shared decision making. In the new pedagogy the “topics included population health, health policy, healthcare delivery systems, and interdisciplinary care. This reform basically changed the traditional subject-based and lecture-based curriculum to accomplish the desired outcome of producing physicians for the twenty-first century. The new curriculum was for developing the holistic, ethical physicians with clear communication skills inspired with empathy and compassion for patients.

‘Medicine bridges the gap between science and society’ as mentioned in Contemporary Theory is referred to as Humanism in Medical Education. This is the knowledge of science reflecting in medicine when it is used in society it ‘concerns the experiences, feelings, and interpretations of human beings. In the context of Medical Education, there are many types of theories of learning available for teachers/trainers. It is very important to identify ‘the principles of learning and understand how individual differences affect the learning process.’^[8] Theories in the learning field of ‘Behaviorism’ and ‘Humanism’ have been explored. Behaviorist practitioners concentrate on the outside behavior of a person from the outside; they do not consider mental activity. Behaviorism focuses on repeated behavior which eventually becomes habit.’ ^[8] Some scholars analyzed ‘behaviorism’ as a one dimensional approach to behavior since there is scope for reinforcement. They also commented that it cannot be useful for all types of learning since it has not accounted for ‘mind activity’. Medical professionalism and humanism have long been integral to the practice of medicine, and they will continue to shape practice in the 21st century. The humanist approach is for the learner to become autonomous and self-directed and humanist activities facilitate collaborative learning. Self-directed learning is one of the most important and well-known educational principles of the humanist orientation. This process could be related to motivation and self-identity in the sense that ‘something that happens within a person and not something that is done to him’. ‘Behaviorism can

effectively condition learners to do things in certain ways and familiarize us with the contents of a profession (recognize/know what). However, humanism is especially suited to help us deal with whatever problems come our way (formulate/reflection-in-action).’^[9] The serious criticisms of the humanist approach is that there is lack of empirical evidence to support its claims, as the theory relies mainly on observations and assumptions about human behavior. ‘Nurturing the humanistic predispositions seems to be the key to ensuring that future individuals manifest the attributes of professionalism, as professionalism and humanism share common values and that each can enrich each other.’^[9]

David A Cook and Anthony R Artino^[10] wrote on the contemporary theories as motivation is the process of goal-directed activities that is initiated and sustained. ‘In expectancy-value theory, motivation is a function of the expectation of success and perceived value.’^[10]

Cook and Artino took five different contemporary theories of motivation –

- (1) Expectancy-Value theory: This explains the perception of general competence and represents a future-oriented conviction that one can accomplish the anticipated task.
- (2) Social-Cognitive Theory: Social-cognitive theory speaks of learners learning through reciprocal interactions with their environment and by observing others, rather than simply through direct reinforcement of behaviors as proposed by behaviorist theories of learning.
- (3) Goal Orientation (Achievement Goal) Theories: In this meaning of ‘goals’ in goal orientation theories (also called achievement goal theory) is different from that in most other motivation theories. This is more of ‘cluster theories’ of learning. This has multiple goals oriented learning.
- (4) Self-Determination Theory: Self-determination theory that put forward motivations that varies not only in quantity (magnitude) but also in quality (type and orientation). Humans inherently desire to be autonomous – to use their will (the capacity to choose how to satisfy needs) as they interact with their environment – and tend to pursue activities they think inherently enjoyable.
- (5) Integration across Theory.

For the last 25 years, the above five contemporary motivation theories have increasingly shared and borrowed key concepts, also highlighting the reciprocal

interactions between individuals and their socio-environmental context.

2. Kohlberg theory of moral development: Morality could be defined as principles derived from a code of conduct from a particular philosophy, religion or culture, and also a belief of a person. Morality may also be specifically synonymous with "goodness" or "rightness".^[11] Thus moral development or morality asks for its allied few aspects such as 'values and principles of conduct'; concepts of 'right and wrong', religion and culture etc. Jean Piaget, a Swiss psychologist developed the famous theory of cognitive development that looked at how children develop intellectually throughout the course of childhood. American psychologist Lawrence Kohlberg went beyond Piaget and tried to explain how children develop moral reasoning.^[12,13] He developed three primary levels moral development and with each primary level has two stages.

Level 1: Pre-conventional Morality - At the age of 9, children's decisions are primarily shaped by the adults and the consequences for breaking the rules. There are two stages within this level: Stage 1: Obedience and Punishment: obedience and punishment are especially common in young children, but adults are also capable of expressing this type of reasoning. According to Kohlberg, people at this stage see rules as fixed and absolute. Obeying the rules is important because it is a way to avoid punishment.

Stage 2: Individualism and Exchange: Children argued that the best course of action was the choice that best served needs. Reciprocity that is practice of exchanging things with others for mutual benefit but only if it serves one's own interests.

Level 2: Conventional Morality: In this level they learn the acceptance of social rules regarding what is good and moral. The adolescents and adults internalize the moral standards they have learned from their role models and from society. They focus on the acceptance of authority and conforming to the norms of the group. There are two stages at this level of morality:

Stage 3: Developing Good Interpersonal Relationships: This stage of the interpersonal relationship of moral development is focused on living up to social expectations and roles. In other words, they feel their social roles are the part they

play as members of a social group. With each social role they adopt, their behavior change to adapt to the expectations that they themselves and others have about that role.

Stage 4: Maintaining Social Order: In this they are focused on maintaining the social order. In this children begin to consider society while making judgments. Their focus is towards maintaining law and order by following the rules, doing one's duty, and respecting authority.

Level 3: Post-conventional Morality: In this stage people develop understanding of abstract principles of morality. The two stages at this level are:

Stage 5: Social Contract and Individual Rights: Here they learn of a social contract and individual rights and thoughts of the differing values, opinions, and beliefs of other people they feel in mind. They learn the value of a society and value of the rules of the society.

Stage 6: Universal Principles: Kohlberg's final level of moral reasoning is based on universal ethical principles and abstract reasoning. At this stage, people follow these internalized principles of justice, even if they conflict with laws and rules.

Kohlberg's theory has an important role in moral psychology, but has been critiqued for many reasons. Moral reasoning does not equal moral behavior: it talked about moral thinking, but it has less discussion on 'ought to do versus our actual actions' – hence moral reasoning does not correlate to moral behavior. Critics have pointed out that Kohlberg's theory of moral development overemphasized the concept of justice while making moral choices. The theory may present a good view of compassion, caring, and other interpersonal feelings playing an important part in moral reasoning; however, the theory has a narrow worldview based on uppermiddle-class value systems and perspectives.^[13] Nonetheless, despite all these criticisms, Kohlberg's theory did play an important role in the emergence of the field of moral psychology.^[13]

Bioethics in Medical Education: The Greek physician Hippocrates insisted that healing should be a scientific activity based on observation of nature and the natural effects of the attempt to cure the illness. He tried to take medicine away from the religion but not from its moral origins. Hippocrates wrote – “Love of the medical

art, is the love of humankind". The physicians must avoid all harms and injustice and do the benefit to the sufferer.^[14]

In Hippocrates's words, there is a hidden indication of 'moral ethics' which later modified as bioethics. The term Bioethics (Greek bios, life; ethos, behavior) was coined in 1926 by Fritz Jahr in an article about a "bioethical imperative" regarding the use of animals and plants in scientific research. In 1970, the American biochemist Van Rensselaer Potter used the term to describe the relationship between the biosphere and a growing human population. He was the first person who introduced and elaborated the concept of bioethics in his book published in 1970s.^[15] Potter's work laid the foundation for global ethics, a discipline centered on the link between biology, ecology, medicine, and human values. The subject has become much popular during the last about 50 years. The subject is dealing now with broader inquiry of human being ranging from abortion, euthanasia, surrogacy, organ donation, health care rationing, to the right to refuse medical care on the reasoning of religious and other cultural causes. Since the 1970s, the field of bioethics has grown significantly said in the UNESCO's General Conference on 19 October 2005.^[16] The UNESCO came into Bioethics code because the fact that ethical issues related to the advances in life sciences and their applications were and still are highly topical. The depth and extent of their roots in the cultural, philosophical and religious bedrocks of various human communities were the reasons, enough for UNESCO, whose fields of competence include the social and human sciences, true to its ethical vocation, to take the lead in this initiative. [from ibid UNESCO report]. The development of bioethics education led to the acceptance of Bioethics as a regular discipline in its own right in medicine education and has been included in curriculum very recently, becoming a new name for medical ethics. It is looking after many aspects of medical discipline and the social criteria including social laws.^[15]

In medical schools of the United States, ethics teaching programs rapidly grew in the early 1970s. Currently, these schools are required to include bioethics in their curricula in order to be accredited. Other countries followed this pattern of dissemination. Consequently, the scope of bioethics education has widened significantly. Ethics teaching came to be offered not only in the undergraduate programmes but also in graduate, specialization and postgraduate education, and especially in clinical settings. Bioethics teaching was furthermore introduced in the

professional training programs of other health professions such as nursing and scientific disciplines such as biology, genetics, and life sciences. This growth of bioethics education is in line with the wider notion of bioethics as a new discipline that combines scientific knowledge with philosophy and ethics in order to analyze and comprehend the contemporary challenges of science and technology for health, life, and care.^[15]

Professionalism in Contemporary Medicine: The ‘professionalism’ is commonly understood as an individual’s adherence to a set of standards, code of conduct or collection of qualities that characterize accepted practice within a particular area of activity.^[17]

This also attributes as being knowledgeable and skillful. A professional person should be respectful, honest, compassionate, committed to excellence, and updated about professional development; and responsive to the needs of patients and society which is above his self-interest.^[18]

In the world of medicine – teaching and learning, ‘professionalism’ is very much necessary. Its importance has been understood in India more strongly since 1990s and much more in 21st century. In Europe and the United States its practice started much early. Cruess et al mentioned that ‘globalization’ made medicine from ‘a cottage industry’ to a big open market – and physicians were to be familiar with new environment.^[19] The physicians are to work with three concerns: (a) their ability to provide quality care;

(b) the threats to their clinical autonomy; and (c) the survival of the values to which they committed themselves when they recited the Hippocratic Oath or its modern equivalent. They were to put effort to rearticulate and reemphasize the values that have traditionally characterized medicine.^[20] It was also reinforced that physician has ‘to fill two roles — that of a healer and a professional’. With the growing introduction of governments and the corporate sector in healthcare, the explanation of professionalism has shown a significant shift. Both the public and physicians feel the changes needed in healthcare system. They feel altruism and ethical conduct must serve as the backdrop against which medicine is practiced, and quoting William Sullivan, a prominent medical sociologist: “Neither economic incentives nor technology nor administrative control has proved an effective surrogate for the commitment to integrity evoked in the ideal of professionalism.”

^[21] The topic of ‘professionalism’ in contemporary medicine after globalization has

become a topic of discussion worldwide.^[22]

Since 2002 many changes have come in medical professionalism particularly from the physician's responsibility for the society besides medicines.^[23] . The current definitions of medical professionalism have been developed from autonomy to accountability, from expert opinion to evidence-based medicine, and from self-interest to teamwork and shared responsibility. Modern medical care is a team work, that too based on hi-technology. Single-doctor's model has changed to the collaborative nature of modern health care by a team of professional medical doctors. But studies have shown that physicians face challenges as they seek to put the principles of professionalism into practice.^[24]

The growing potential for conflicts of interest, advent of Social Media, lack of professionalism education beyond medical school and residency, lack of organizational support – all together created 'a challenge' in medical professionalism. Ideally medical students and physicians must understand professionalism and value in society along with medicine. It is also very important that medical teachers worldwide exchange ideas and experiences regarding the promotion of medical professionalism'.^[24]

Bioethics education in India: reconciliation of past and present approaches: In India, as mentioned earlier, the earliest code of medical ethics was mentioned in the treatise of Siddha, and Charaka Samhita^[1] . Ethics education in that way was part of teaching some basics of medicines in the indigenous Indian system of medicines, Ayurveda and Siddha. However, that bioethics education in India did not carried over in a structured way in the modern medical education system.

Since the late 1950s there has been an explosion in the field of bioethics. The Medical Council of India (MCI) regulations on undergraduate medical courses emphasizes that medical graduates become exemplary citizens by the observation of medical ethics, and fulfilling social and professional obligations, so as to respond to national aspirations.^[25] This was one of the objectives of medical education. Students also need to develop a rational approach to solve medical dilemmas that they will face in the future. Just as they learn various subjects to tackle medical

problems, they also need ethics to solve the moral quandaries that they are likely to face in their practice in the future.

Moreover, the application of the Consumer Protection Act to the medical profession has stimulated professional bodies to consider medical ethics in their annual deliberations. Also, the ethical issues in biomedical research have come into the limelight due to a large of number of clinical trials conducted by large number of contract research organizations (CROs).^[15]

The growing disagreement among patients against their physicians has led to numerous incidents of violence against doctors in India. In May 2015, the Times of India reported that over 75% of doctors have faced violence at work. Up to 50% faced violence from patients or their relatives in either the emergency or the Intensive Care Unit. The Indian Medical Association took up this issue, but there is no solution in sight. The growing profound difference between doctors and patients, the wishes of many patients to be treated as partners in their care, the commercialization of medicine, and importantly, the rapid breakthroughs in medical technology have created an urgent need for an ethical framework to guide the clinician's behavior and decisions.⁽²⁶⁾ In a way, bioethics education has not received due recognition and development in higher educational institutions of any discipline or field. The 'quality research' although is taking place due to awareness created by Indian Council of Medical Research. There was a need for institutions (especially universities) to create formal, structured academic courses in bioethics. The focus would be to shift from duty-based medical ethics to the broader aspect of bioethics that would include areas like patient autonomy, appreciation of human dignity, ethical decision-making at start-of-life and end-of-life, ethics in biomedical research, and concepts of ethical theories. Finally, it called for a firm commitment at all levels to encourage and support ethics education.

In 2018, the then Medical Council of India (MCI), presently as National Medical Council (NMC) introduced Competency Based Medical Education (CBME), a landmark in the history of Medical Education in India. In this, a "Conative Domain" as described by the then President of MCI, Dr. Jaysree Mehta has been specifically dispensed off with a structured module, entitled "Attitude, Ethics and Communication Model" (AETCOM Module). The concept of AETCOM module,

as mentioned by the then Chairman of MCI, Dr. V.P. Mishra in the booklet, was based on the fundamental principle that changing a person's attitude can change his or her behavior. Ethical dimensions play a crucial role in behavioral evolution.

Overview of AETCOM module: The Medical Council of India decided to implement Attitude, Ethics and Communication module (AETCOM) in all medical schools across the country in 2017-18. This module was based on the idea that changing a person's attitude could change individual behavior, and was structured into competencies and incorporated in the curriculum design, with a definite aim to ensure enrichment of the learner with desired communicative and altruistic skills, with proper orientation pertaining to ethics, professionalism, leadership skills and also the attribute that shall inculcate in him/her the essence of lifelong learning. It is a comprehensive module, to strike a balance between the five identified roles of an 'Indian Medical Graduate (IMG)' viz; Clinician, Leader and Member of health care team, Communicator, Life-long learner and Professional, right from the first professional year of training. (27, 28)

The competencies are stated in the form of specific instructional objectives which would be clear to all teachers irrespective of their background pedagogic training and skills are assessed in terms of Miller's pyramid which is easier to observe and certify. This module emphasizes domains beyond medical knowledge and clinical skills, e.g. communication, professionalism and a focus on health systems.(28-30) The competencies identified were enunciated in 27 modules to be transacted in four professional years of study-spanning over different phases of teaching-Preclinical, Paraclinical, and Clinical phases. The modules worth mentioned are as follows: Professional qualities and role of a physician in health care system, Cadaver as First teacher, Indian Medical Graduate as Communicator, Educator, Doctor patient relationship, in Preclinical phase. In paraclinical and clinical phase the modules on autonomy, decision making, empathy, confidentiality, disclosure of medical errors, fiduciary duties, end of life ethics and communication skill etc. The program recommends a hybrid problem-oriented approach on various competency-based case scenarios to be conducted in small groups in the class rooms for students to explore the various facets of "real-life issues" that will confront them in their careers, is the most effective way of learning Attitudes, Ethics, and

Communication (AETCOM). Total time mandated for transacting these modules amounts to 140 hours was spread over to different phases of learning. (29)

As assessment is a vital component of competency based education, the proposed teaching-learning and assessment methods for implementation of this module were also given across the three professional years. In addition to making the pass/fail decisions, a very important role of assessment is to provide feedback to the learner and help him/her to improve learning. The teachers should use this opportunity to observe the performance and provide feedback based on their observations. In case a student has demonstrated a performance, which is considered below expectation, corrective action including counselling should be initiated. Many of the tools in this module may appear subjective but coupled with the experience of the assessor, they will serve a very useful purpose. It was envisaged that the successful implementation of the AETCOM module would be the forerunner of the transition to competency based undergraduate medical education program proposed by and implemented now by the Regulator. In this way the system of medical education has been changed emphasizing on needs of patients and knowledge and skill with an increased concern in the accountability to the society

Teaching learning & assessment of Bioethics :

The common teaching learning methods are didactic lecture, case scenario as a study method, debates, role play, audio visual (films), small group discussions and so on. Teaching Bioethics include development in critical thinking, problem solving abilities. Active learning techniques are the one appropriate for such evolution (30). Lecture has long been a standard way of teaching and concentrates primarily on conveying information in a one-way format (31) Didactic lecture on this subject is not very much welcomed by both students and teachers. Teachers criticized on taking lectures and agreed that to the fact that case or problem based activity or debates could give students a better opportunity to discuss the issues, provoke conflicts and controversies on ethical problems and professional attributes and enable the students to share their view point addressing the issues of morality. Integration of the module with different subjects with the list of competencies was one of the recommendations for better understanding and relevance of a topic. In order to attain competency, the training is started during the field visits of the students in first year of MBBS itself, so that, they learn to

communicate at the same time. By working in small groups with a mentor or facilitator, one can keep the process active. David Kolb in his learning style inventor of “Experiential Learning theory” mentioned on four stage cycle of learning and four separate learning style. His theory is concerned with dynamic view of learning based on a learning cycle driven by the resolution of the dual dialectics of action/reflection and experience/abstraction (32). In this way, the learner’s internal cognitive processes are involved in acquisition of abstract concepts that can be applied flexibly in a range of situations. The theory, explained learning process as a holistic process of adaptation, involving the integrated functioning of thinking, feeling, perceiving and behaving. It encompasses other specialized models of adaptation from the scientific method to problems solving, decision making and creativity. (33) Reference to Kolb’s theory, it has now become a routine practice to incorporate debates, case based teaching with real life case vignettes, role plays as teaching methods. These methods are preferred by both teachers and students and can give better learning opportunities on development of critical thinking.

Assessment is a fundamental component of both learning and teaching as it frames what students learn and their certification (34). AETCOM has prompted not only to teach and incorporate in undergraduate medical education but also to assessment. In competency-based medical education, the outcome is expressed through proficiency of competencies. The teaching of Bioethics and professionalism is difficult, and equally complex is the assessment process. The question arises whether assessment of AETCOM carries predictive value for the practice of medicine by the student in long term. If yes, prospective assessment of students’ performance would be required, comparing performance results with subsequent professional conduct which is the biggest challenge in present system.

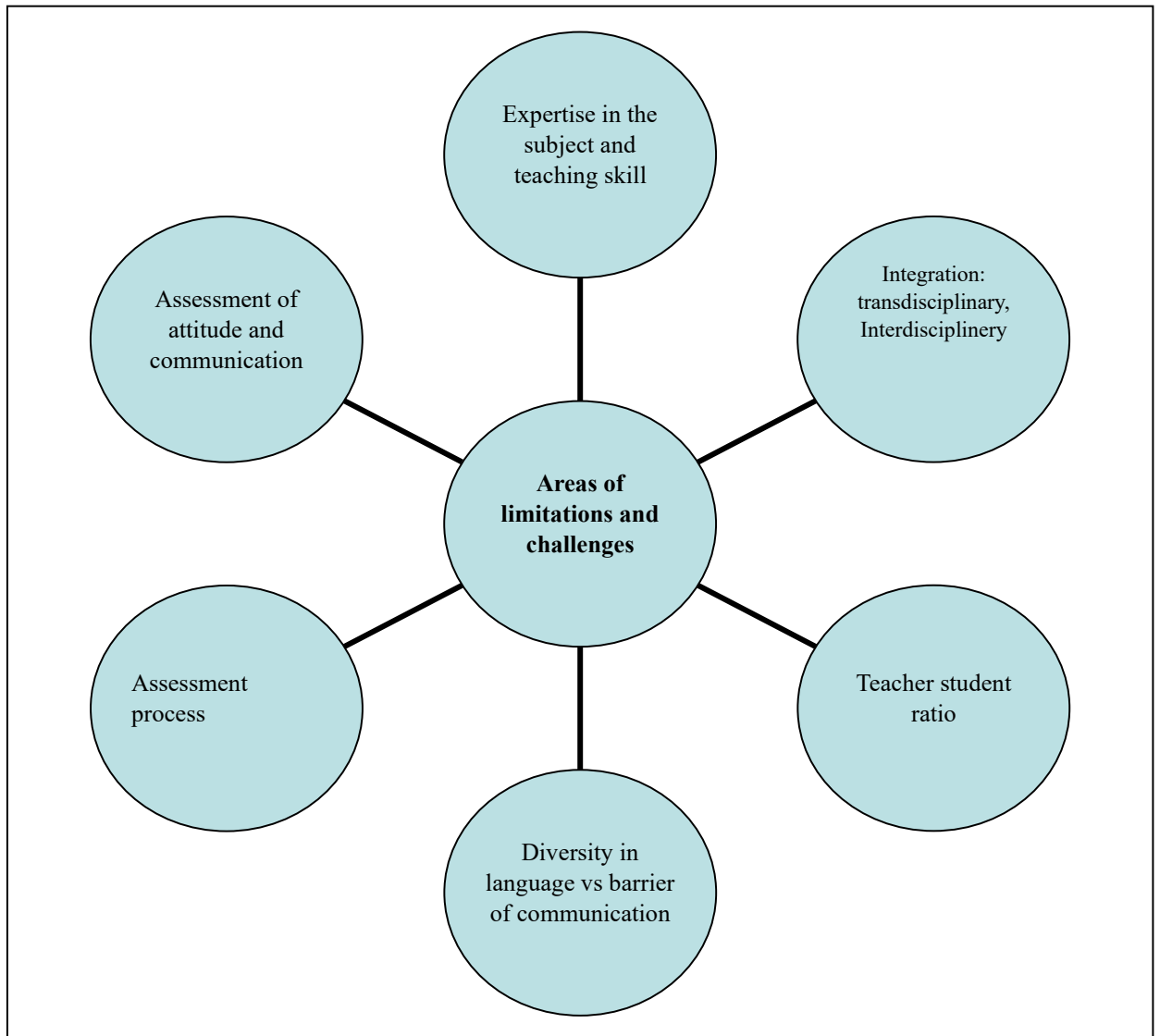
In this context, it is worth mentioning that a study undertaken by the same authors found that the students as well as the teachers in India prefer different types of active learning processes to passive learning for the subject of Bioethics. Similarly, the students and teachers are opting more for formative assessment than summative assessment, though they felt that it is more time consuming and of increased workload, but they find it advantageous reference to their performance, feedback and guidance on how to improve.

Limitations & challenges of AETCOM teaching : Development of moral reasoning skill on ethical dilemma for undergraduate students is very challenging. At this level, at the outset students can understand the medical problem but they often cannot identify the ethical issue and thereby how to address the ethical problem and dilemma. Early clinical

exposure can help the students to identify the ethical or communication problems, but not the solution. This calls for enhanced teaching skills and innovative methodology for the teachers. Majority of the teachers in every subjects are neither exposed to any training or expertise to teaching learning of Bioethics or Communication.

As per recommendation of AETCOM, integration with other subjects appears as a difficult area. Identifying the ethical principles and linking them in different context and respective subject area was found to be tough. Higher levels of integration through interdisciplinary, transdisciplinary approach are challenging in the Indian scenario. This was an area of serious concern for the faculty members who were not much trained in “how to” and “how much” to integrate with different subjects and thereby assessment per se. This needs a thorough brainstorming and curricular revision. In order to accomplish that, it requires training and workshops for the teachers explaining the steps of Harden’s ladder of integration, transdisciplinary and interdisciplinary integration (33, 35).

Box : Challenges and limitations



Assessment in medical education has been under criticism as a lot of newer methods of assessment are in place across the globe which are proved to be effective in assessing the behavioral practice of trainees in clinical settings. (21). Continuous and comprehensive internal assessments in other words, formative assessment, could prove effective in assessing the core areas of attitude and communication. The most difficult part in assessment system was found to be that of man power ie Teacher - Student ratio which is not an ideal one both for teaching as well as assessment. Every year the intake of admission in undergraduate medical course in each institution lies from 150 to 250 students, as against average 10 to 12 teaching staffs in each department. One of the deficiencies, however, in this module is the mismatch between the intended competency

and the method of evaluation recommended for their certification in students. Besides, some of the competencies require work place based assessment (WPBA). This has to be formalized in the recommendations on formative evaluation.

India is a land of diversity with respect to language, culture and creed. It has been perceived that assessment in vernacular language may give better idea of teaching learning of soft skills of attitude and communication. Moreover, peer assessment might be a welcome method, but simultaneously there would be chances of bias. There is also a need for structuring the standards of assessment particularly of soft skills. There is limitation of interaction with patients, so minimal opportunity for improvement or learning by doing. There is poor connection between formal knowledge and experiential learning. All these would require additional infrastructural, personnel and logistic support from different corners of the institution and authorities. Faculty, as assessors, needed to be trained in using newer methods of assessment and assessment tools.

Way Forward: Bioethics has been reclaiming from its lost position as a regular discipline in its own right, within the Indian Medical Education Curriculum. The AETCOM module, published in 2018 (available on NMC Website, Annexure IV) and implemented in Indian Medical Curriculum in 2019 was a very significant development. It was mandatorily introduced in the Faculty Development Program after conduct of each 3-day revised Basic Course Workshop, with competency-based instruction as a component, initially at the Regional and Nodal Centers since 2018. It is expected that this module plays an important role in providing a meaningful and coherent picture through a new vista relevant to health needs of modern society. So, this module of Bioethics in undergraduate medical curriculum calls for further refinement and upgrade according to contextual requirement. For effective outcome, it must be emphasized and featured prominently throughout the curriculum with strong support through interdisciplinary collaboration and integration. So, recalling Arnold and Stern (36), it is suggested that one needs to have two elements to develop as a medical professional. They are demonstrating (i) mastery in three foundational areas—clinical, knowledge and competence in medicine with communication skills, and (2) understanding the ethical and legal responsibilities of a physician. In addition to these, there are aspirations and goals that can strive to improve excellence, humanism, accountability, and altruism. That is how the AETCOM module was conceptualized. Therefore we suggest further actions towards the new endeavour for achieving excellence:

1. Faculty development program
2. Innovations on formal ethics instruction and strengthening of integration at all levels to facilitate learning and explain relevance of a topic to future practice
3. Reflective opportunities for, and assessment of professionalism, in the context of longitudinal mentoring and advising.
4. Advancement of professional identity formation
5. Address the underlying messages expressed as limitations and challenges and strive to align the espoused and enacted values of the clinical environment.

Finally, the strategy should be to create collaborative learning environments committed to excellence and continuous improvement.

“Thoughts without content are empty, intuitions without concepts are blind”

..... Immanuel Kant

References:

1. Robert G. Richardson. History of medicine – in India [Internet]. Encyclopedia Britannica. 2020 [cited 2021 Aug 25]. Available from: <https://www.britannica.com/science/history-of-medicine>
2. Mann K V. The role of educational theory in continuing medical education: has it helped us? J Contin Educ Health Prof. 2004;24:S22-30.
3. Harold Scarborough. History of medical education [Internet]. Encyclopedia Britannica. 2020 [cited 2021 Aug 25]. Available from: <https://www.britannica.com/science/medical-education>
4. Buja LM. Medical education today: All that glitters is not gold. BMC Med Educ. 2019;19(1):1–11
5. Chris Hare. An Introduction to Humanistic Learning Theory [Internet]. Medium. 2019 [cited 2021 Sep 2]. Available from: <https://medium.com/age-of-awareness/anintroduction-to-humanistic-learning-theory-1489cdde6359>
6. Schwartzstein RM, Roberts DH. Saying Goodbye to Lectures in Medical School — Paradigm Shift or Passing Fad? N Engl J Med [Internet]. 2017 Aug 16;377(7):605–7. Available from: <https://doi.org/10.1056/NEJMp1706474>
7. Torre DM, Daley BJ, Sebastian JL, Elnicki DM. Overview of Current Learning Theories for Medical Educators. Am J Med. 2006;119(10):903–7.
8. Rostami K. The implications of Behaviorism and Humanism theories in medical education. Gastroenterol Hepatol from bed to bench. 2010;3(2).
9. Howell JD. History of medical education: Introduction. Br Med J. 1999;74(5):521.
10. Cook DA, Artino AR. Motivation to learn: an overview of contemporary theories. Med Educ. 2016;50(10):997–1014.
11. Morality [Internet]. Wikipedia. [cited 2021 Sep 4]. Available from: <https://en.wikipedia.org/wiki/Morality>
12. Serhat Kurt. Stages of Moral Development – Lawrence Kohlberg [Internet]. 2020 [cited 2021 Sep 15]. Available from: <https://educationaltechnology.net/stages-of-moral-development-lawrence-kohlberg/>

13. Kendra Cherry. Kohlberg's Theory of Moral Development [Internet]. verywellmind. 2021 [cited 2021 Sep 11]. Available from: <https://www.verywellmind.com/kohlbergstheory-of-moral-development-2795071>
14. Jonsen A. Introduction to the History of Bioethics [Internet]. [cited 2021 Sep 18]. Available from: [https://books.google.co.in/books?hl=en&lr=&id=Ee_VYiK_vMUC&oi=fnd&pg=PA3&dq=history+of+bioethics&ots=w1fDw4qCf4&sig=qNRdTU-%0AL1k2AHnerxz0ovCrLGA#v=onepage&q=history of bioethics&f=false](https://books.google.co.in/books?hl=en&lr=&id=Ee_VYiK_vMUC&oi=fnd&pg=PA3&dq=history+of+bioethics&ots=w1fDw4qCf4&sig=qNRdTU-%0AL1k2AHnerxz0ovCrLGA#v=onepage&q=history%20of%20bioethics&f=false)
15. Have H ten. Bioethics Education in a Global Perspective [Internet]. Springer, Dordrecht. 2013 [cited 2021 Sep 18]. Available from: <https://link.springer.com/book/10.1007/978-94-017-9232-5>
16. Universal Declaration on Bioethics and Human Rights [Internet]. Unesco. 2005 [cited 2021 Sep 18]. Available from: <https://en.unesco.org/themes/ethics-science-and-technology/bioethics-and-human-rights>
17. Defining Professionalism [Internet]. [cited 2021 Sep 16]. Available from: https://www.queensu.ca/teachingandlearning/modules/ethics/11_s3_03_defining_professionalism.html
18. No Title [Internet]. [cited 2021 Sep 16]. Available from: http://www.psychiatriadanubina.com/UserDocsImages/pdf/dnb_vol25_Suppl_1_no/dnb_vol25_Suppl_1_no_6.pdf
19. Cruess SR, Johnston S, Cruess RL. Professionalism for medicine: Opportunities and obligations. *Med J Aust*. 2002;177(4):208–11.
20. Sullivan WM. *Work and Integrity: The Crisis and Promise of Professionalism in America*. New York: Harper Collins; 1995. 16 p.
21. Jakovljević M, Ostojić L. Professionalism in contemporary medicine: if it is an important academic issue, then surely it is a “hot” issue as well. *Med Acad Most*. 2013;1(1):6–17.
22. Johnson MJ, May CR. Promoting professional behavior change in healthcare: what interventions work, and why? A theory-led overview of systematic reviews. *BMJ Open* 2015;5 [cited 2021

- August 12] :e008592.doi:10.1136/bmjopen-2015- 008592
23. Reed DA, Mueller PS, Hafferty FW, Brennan MD. Contemporary issues in medical professionalism challenges and opportunities. *Minn Med*. 2013 Nov;96(11):44–7.
 24. Hilton S, Southgate L. Professionalism in medical education. *Teach Teach Educ*. 2007;23(3):265–79.
 25. SALIENT FEATURES OF REGULATIONS ON GRADUATE MEDICAL EDUCATION [Internet]. Medical Council of India. 1997. Available from: <https://www.nmc.org.in/rules-regulations/graduate-medical-education-regulations-1997/>
 26. Deshpande SN The UNESCO movement for bioethics in medical education and the Indian scenario. *Indian J Psychiatry*. 2016 Oct-Dec; 58(4): 359–362. doi: [10.4103/0019-5545.196722](https://doi.org/10.4103/0019-5545.196722)
 27. Medical Council of India; 2018. Medical Council of India. Attitude, Ethics and Communication (AETCOM) competencies for the Indian Medical Graduate. [[Google Scholar](#)]
 28. Medical Council of India. *Competency Based Undergraduate Curriculum for the Indian Medical Graduate*. Vol. 1. Dwarka. New Delhi: Medical Council of India; 2018.
 29. Lal S, Sehgal P. Integration of Attitude, Ethics, and Communication Competencies into Competency-based UG Curriculum. *Indian J Community Med*. 2022 Jan-Mar;47(1):4-7. doi: [10.4103/ijcm.ijcm_1022_21](https://doi.org/10.4103/ijcm.ijcm_1022_21). Epub 2022 Mar 16. PMID: 35368474; PMCID: PMC8971870.
 30. A Case Study Method For Teaching Bioethics. Sarah Heuer. Iowa State University Ames, Iowa 2008. (accessed on 24.11.2021)
 31. Hessler, K. How to Write a Case Study. Iowa State University. 2006 (accessed on 24.11.2021)
 32. Kolb, DA. Experiential Learning Theory and the Learning Style Inventory: A reply to Freedman and Stumpf. *Academy of Management Review*. 1981; 6(2): 289 –296
 33. Ananthakrishnan N. Competency based undergraduate curriculum for the Indian Medical Graduate, the new MCI curricular document: Positives and areas of concern. *J*

Basic Clin Appl Health Sci. 2018;1:34-42 (accessed on 24.11.2021)

34. Norcini JJ. Peer assessment of competence. *Med Educ* 2003 37:539-43.
<http://dx.doi.org/10.1046/j.1365-2923.2003.01536.x> (accessed on 25.10.2021)
35. Harden RM, The integration ladder – a tool for curriculum planning and evaluation. *Med Edu.* 2000; 34: 551-7. (accessed on 24.11.2021.
36. Arnold L, Stern D. What is medical professionalism? In: Stern D, ed. *Measuring Medical Professionalism*. New York, NY: Oxford University Press; 2006.

Other Sources of reading:

1. Daniell Gourevitch. The history of medical teaching. *Lancet*. 1999;354:SIV33.
2. Frank JR, Snell LS, Cate O Ten, Holmboe ES, Carraccio C, Swing SR, et al. Competency-based medical education: theory to practice. *Med Teach*. 2010;32(8):638–45.
3. Harden RM. Outcome-Based Education: the future is today. *Med Teach*. 2007 Sep;29(7):625–9.
4. Friedman BDM. (2000). The role of assessment in expanding professional horizons. *Med Teach* 22:472-7. <http://dx.doi.org/10.1080/01421590050110731>
5. Colliver JA. Educational Theory and Medical Education Practice: A Cautionary Note for Medical School Faculty. *Acad Med*. 2002;77(12):1217–20.

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Paper I : Accepted for publication in Asian Bioethics Review in November 2024

[Appendix III: Acceptance letter from Asian Bioethics Review]

Title: Students' feedback on Bioethics, in Indian undergraduate medical curriculum:
a contextual insight

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ABSTRACT

The National Medical Commission of India introduced Competency Based Curriculum in Medical Education for undergraduate medical students in 2019 with a new module namely Attitude, Ethics and Communication (AETCOM), first of its kind to teach Bioethics as subject. It is necessary to take feedback from students for evaluation, that can serve as a communication tool for improvement. This study was aimed to explore the feedback of students on teaching learning methods of Bioethics and align them with implementation through inductive reasoning.

It was a questionnaire-based study on medical students of India who studied AETCOM module for the first time. This was followed by analysis through inductive reasoning on observed key areas of the feedback data. There were mixed responses. Majority of the students felt the necessity of learning bioethics but not to be taught through traditional didactic type of teaching. They preferred active learning process on Bioethics, instead of theoretical deliberation of this subject. The identified key areas could lead to the conclusion that there is a need of innovative teaching learning methods of Bioethics through more interactive sessions in small groups encouraging active learning strategy. Considering students' perspectives, a standard model of Bioethics teaching can be set after revision.

KEY WORDS: Bioethics, students, feedback, teaching learning

Main Manuscript

Introduction: The development of Bioethics education has led to the acceptance of Bioethics as a regular discipline in its own right in medicine education. Ethics teaching came to be offered, not only in the undergraduate programs, but also in graduate, specialization and postgraduate education, especially in clinical settings. Now it is dealing with broader inquiry of human being, ranging from abortion, euthanasia, surrogacy, organ donation, health care rationing, to the right to refuse medical care on the reasoning of religious and other cultural causes. Recently it has been included in curriculum with a new name for medical ethics [1]. The formal inclusion of medical ethics education in the medical curriculum produced a growing number of ethics curricula in different countries. Within these curricula, there were diversities of goals and methods used. It is recognized that there is no single, best model for medical ethics education, consensus is developing at the same time on designing undergraduate ethics curricula [2,3,4].

The Medical Council of India (MCI) regulations (2016) commented that the medical graduates of India become exemplary citizens by observation of medical ethics and fulfilling social and professional obligations as a response to national aspirations. This was considered as one of the objectives of Indian medical curriculum[5]. In 2018, the then Medical Council of India (MCI), presently working as National Medical Commission (NMC), introduced Competency Based Medical Education (CBME), a landmark in the history of Medical Education in India. With this, a specifically structured module, entitled “Attitude, Ethics and Communication Model” (AETCOM Module) [6,7] was introduced as a “Conative Domain”. This module included Bioethics as an integral part along with communication skill. It was structured in phases, so that different aspects of Bioethics, communication skill and attitude or professionalism aspects could be taught in different phases. A few ethical principles like dignity, respect, privacy and certain aspects of communication skill were included in phase I of the curriculum.

Feedback is an integral part of education. It is a common practice in India to study and emphasize on teachers’ perception on any change in educational process including medical education. Studies or observation on students’ feedback is equally important in current educational system, that it can open constructive conversations about strengths and possible areas of improvement in the subject of Bioethics that can directly impact student learning.

Hence, we explored to get an effective feedback from students and consider that as one of the important tools for evaluating the process of implementation of the new module of Bioethics.

Objective: In this study we chose to get the feedback of the undergraduate medical students on teaching learning method of Bioethics, that was introduced in 2019. Based on the feedback, we intended to derive certain logical directions and align them with learning engagement of students through inductive reasoning.

Methodology: **Design:** There were two steps in this paper. The first step was a questionnaire-based study on newly implemented Bioethics module for undergraduate medical students of phase I. The questions were set in different types like dichotomous questions, Likert scale type question, open and closed questions. The questionnaire was validated, Cronbach alpha was calculated as 0.7493 (0.75 was considered to be accepted). In order to capture wider data, the link of the questionnaire in Google form was sent to the Coordinators of MEU of eight medical colleges of 6 different states within the country, who thereby distributed the questionnaire to the medical students of phase I of respective medical colleges. In the beginning of the questionnaire (in section 1), detailed information related to the questionnaire was mentioned, followed by Section 2 comprising informed consent document. This was designed in such a way that if the participant agrees to consent by clicking "I agree...", then he or she could access the rest part of the questionnaire. Therefore, feedback forms which we received, were only from those students, who agreed for participation through consenting by clicking "I agree".

The period of data collection was from October 2020 to July 2021. Institutional Ethics Committee 2 (H.M.Patel Centre of Medical Care and Education, Karamsad) approval was taken prior to the study in September 2020.

Study population: The study population included undergraduate medical students aged 18 years and above, took admission on 2019, when the new module of AETCOM was implemented. Responses of 357 students from eight medical colleges of India were received and analyzed. Basic statistical analysis was done in the form of percentage.

The second step was to focus on the observed key elements derived from the feedback and discuss logically to make meaningful understanding while aligning in implementation process.

RESULTS: A. Step 1 Questionnaire based study:

Out of 357 students, who responded to the questionnaire, 84.3% have been exposed to formal teaching of Bioethics, and 15.7% were not. Important issues related to their feedback on Bioethics as a subject and teaching learning have been shown in Figure 1. It included their present perception on ability to identify ethical issue, bioethics teaching and assessment methods reflecting in the form of strongly agree to strongly disagree (Likert's scale). As regards to feedback, 8.7% students find the teaching method, boring and 1.4% find it nonessential. Rest of them, like 65.3% and 24.6% found the subject important and interesting respectively as depicted in Figure 2.

Figure1: Students' perception on Bioethics as a subject

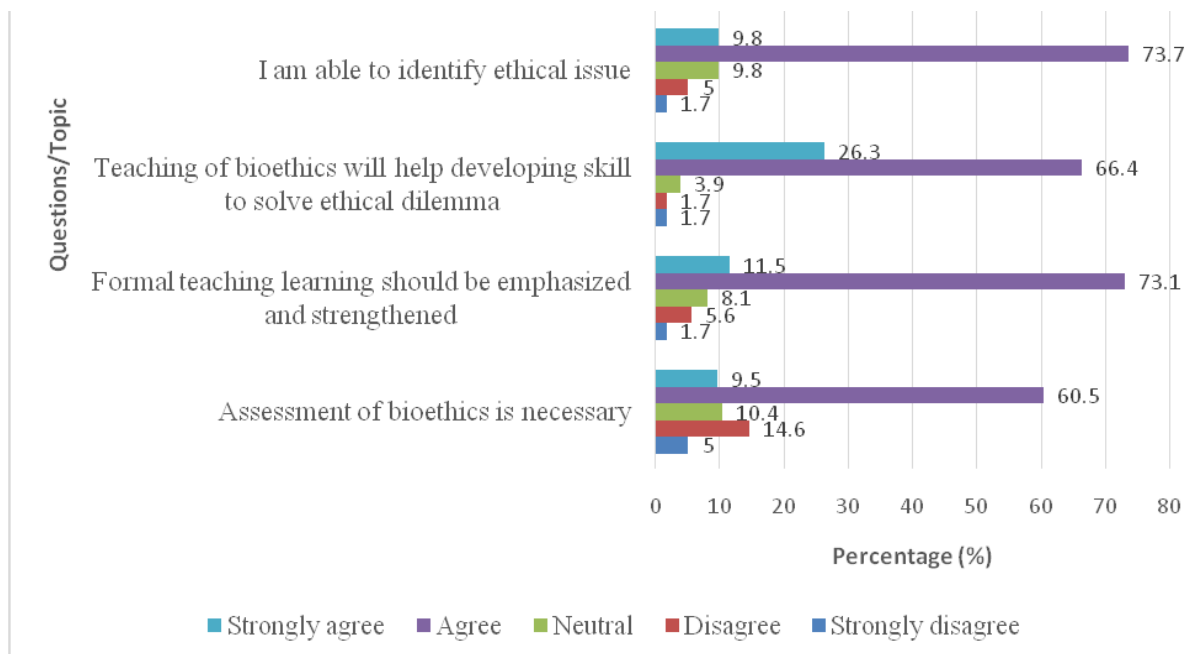
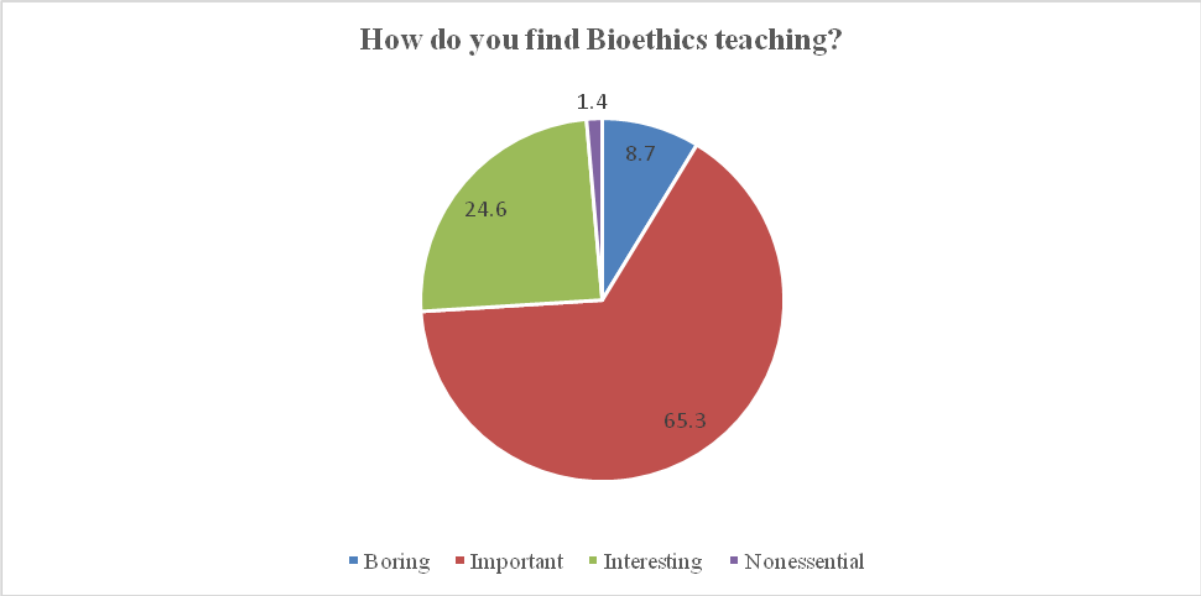


Figure 2: Students' feedback on Bioethics teaching sessions



Majority of the students, 86.8% expressed Bioethics as an essential subject like that of clinical subjects in medical curriculum. Students' feedback on different teaching learning methods has been shown in Table 1. It was found that a higher percentage of students (50%) preferred to have case scenario-based teaching, only 1.1% supported for didactic teaching of Bioethics. Other teaching methods preferred by them were role play (10.9%), audio visual film based teaching (19%), role play or simulated teaching and so on. This indicated that students preferred active learning process in this area. Similarly, related to the choice of method of assessment, formative assessment was preferred by 37.8% of students, followed by 34.1% students who opted for both formative and summative assessment. Less number of students (28.1%) opted for summative assessment, as shown in Table 2. A good number of students (70.3 %) supported for assessment by non teaching faculty, like colleagues, peers, patients etc.

TABLE 1: Students' feedback on preference of Bioethics teaching learning method

Preference of teaching learning method	Percentage of students opted for the method (%)
Case Scenario as a study method	50
Debates	4.8
Student Teacher interaction	9.8
Role play	10.9
Didactic lecture	1.1
Audio visual (Film)	19.0
Small group discussion	4.4

TABLE 2: Students' feedback on assessment in Bioethics

Topics	YES (%)
Is assessment necessary?	70%
Preference for assessment by peers, colleagues, patients	70.3%
Preference for formative assessment only	37.8%
Preference for summative assessment only	28.1%
Preference for both Formative and summative assessment	34.1%

At the end, the students were given option for open comments and suggestions on teaching learning process of Bioethics. Only 92 (25.7%) students responded and comments are shown in Table 3. From the open comments and feedback, we could gather that students liked to have more interactive sessions with real life context, bed side teaching instead of theoretical deliberation within the classroom. They preferred to have continuous at a stretch for 1 or 2 weeks of teaching learning sessions on Bioethics instead of periodical (weekly classes) sessions. They also mentioned of lack of text book which could be a limiting factor for learning process.

Table 3: Open comments of some students

Areas	2. Students' comments
Topics	3. Topics are interesting 4. I want more real-life incidences and cases on each topic 5. Classes should not be more theoretical, which is boring 6. How are they related with law?
Duration of sessions	7. Why not to increase discussion time on real life cases? 6. I cannot keep pace with loads of other subjects, 7. Good to have three months continuous course, minus other subjects for us
Scope of improvement	6. More discussion away from classrooms 7. Clinical teachers can demonstrate ethical issues in bedside
Study resources	- We don't have text books or references

B. Step 2: The purpose of this step was to assess the feedback of the medical students in a different dimension. The above data have thrown light to construct a list of some elements, which are very important and relevant in medical education, particularly, for correlating the process of implementation of Bioethics teaching. We identified mainly four key areas through the observed results of the questionnaire from students' perspectives for further discussion through inductive reasoning: (i) Need assessment of Bioethics teaching learning process in medical students of India, (ii) students' likes and dislikes, (iii) preferences on teaching learning method and (iv) scope of improvement as shown in Table 4.

Table 4: Observation and pattern through Inductive reasoning

Observation key area	Pattern of response	Conclusion
Need assessment	Mixed responses, but majority of the students wanted to know and study the new subject	Necessary for undergraduates
Students' likes and dislikes	Likes: Interactive sessions on real life case scenario, Dislikes: theoretical deliberation	Preference towards active learning
Preferences on teaching learning method	More interactive group discussion, not didactic lectures Prefer formative assessment, less summative assessment	Bedside teaching and group discussion should be the major style or method of teaching
Scope of improvement	No classroom based theoretical teaching	

Discussion: To our knowledge, AETCOM module was the first structured formal module on Ethics, Professionalism and Communication skill, implemented in Indian medical curriculum in 2019 along with competency based medical education (CBME) [6,7].

Bioethics Teaching Learning process: In our study, there were both agreement and disagreement by the students for accepting Bioethics, as a subject. Identifying ethical issues and decision making in clinical practice requiring formal bioethics training, was agreed upon by a large group of students, and we find similar perception mentioned by Ashfaq et al 2021 [8]. Disagreement in 11% students in our study might be due to lack of understanding of Bioethics. Similar finding was apparent in another study by Janakiram and Gardens, 2014 who explained that might be due to paternalistic attitude of the doctor or a lack of understanding, or may simply be emotional outbursts [9]. Interestingly those students also mentioned that ethical issue was not associated with the knowledge. On the contrary, some of the students opined that they wanted to have dedicated time and course on Bioethics without the load of other medical subjects, which indicate their interest in learning the subject.

So, it cannot be denied that the importance of bioethics as a formal subject has been recognized throughout the world [10]. Hence implementation of bioethics as a subject is a welcome initiative by NMC.

Likes and dislikes: It must be noted that nearing half of the students who attended the classes didn't like the classes of Bioethics teaching. The reasons, we could understand were the forceful pre-eminent reformation due to universal COVID-19 pandemic. This was implemented in 2019- 2020 when there was only online teaching including medical education. Suddenly, students were all together catapulted to the confinement of their own homes, albeit reluctantly. There were hardly any meaningful interactions of formulated thoughts and opinions on online learning. So, the online classes might be a factor for reluctance. Active learning techniques involve students in doing things and make them think about the issues they are coming across. The students become proficient in skills by practicing them, rather than being a mute spectator to the skill – by listening to the teacher or by reading about the skill [11]. From the open ended comments, we could gather similar opinions that the students would like to discuss more on ethical issues related to real life cases instead of theoretical didactic lectures and in clinical settings, away from classrooms.

So, this calls for promoting some engaging lessons and enterprising activities, in other words active learning, that are highly motivating for students to understand ethical issues in medical fraternity.

Preference for T/L Method: There were some common perception and feedback from the students on teaching learning preferences. Interestingly very few students (only 1.1%) opted for didactic lectures. It was understood by the students that they would like to develop and employ their knowledge, acquire skills needed to apply in developing reasoning skill to address ethical dilemma. These are only possible with different teaching learning method , other than didactic lectures. Regarding the educational strategy to be adopted, Harden et al.'s 1984 S.P.I.C.E.S model, can be used as a basis to review the consensus on the educational strategies [12]:

1. Student-centered/teacher-centered
2. Problem solving/information gathering

3. Integrated teaching/discipline-based

4. Community-based/hospital-based

Macpherson and Veatch, 2001 opined on variability in delivering Bioethics curricula that vary in whether and how explicitly and extensively they address topics, including professionalism, cultural competence, medical humanities, spirituality, death and dying, and community service, and in the number and topics of vignettes, controversies, assignments, and course activities [13].

Reference to Kolb's theory, our study findings also reflect that debates, case based teaching with real life case vignettes, role plays are such teaching methods, preferred by the students and can give better learning opportunities on development of critical thinking [14]. This was clearly reflected in preferences of the students as shown in Table I.

Scope of improvement: Though less in number of responses by the students, but their comments on teaching and demonstrating ethical issues in bed site or in clinical setup definitely threw light on prioritization on planning of delivery, specially teaching learning methodology. This can definitely influence the process of implementation and thereby scope of improvement.

Feedback in medical education is an integral and important element of teaching as it encourages and enhances the learners' knowledge, skills and professional performance. Giving constructive feedback has been considered as a commitment between teachers and students for overall academic and professional development [15].

This feedback can be considered as constructive in the process of implementation. Researchers have reported the effectiveness of feedback as a mechanism to improve learning outcome [16]. Frequently, there is a mismatch between teachers' and learners' perceptions of the adequacy of feedback. The literature review on feedback has revealed an increase in numbers of reports of dissatisfaction both from learners as well as teachers' aspects [17].

In complexity of medical education, the need is for better and complete understanding on the processes of giving, receiving, interpreting and using feedback as a basis for real progress toward meaningful evaluation. In the absence of adequate feedback from the students, road blocks, with regard to competency based medical education, go uncorrected for longer period.

In view of recent changes in medical education, we need to create newer opportunities to observe students and thus provide quality deliberation to facilitate learning. Frequently, there is a mismatch between teachers' and learners' perceptions. Through this study, we could assess certain important issues of feedback-giving: learner involvement and feedback balance [18]. Further study is warranted for evaluation of usefulness of feedback on Bioethics teaching by students.

The limitation of this study was that there was no scope of focus group discussion which might have contributed further reasoning to certain areas on feedback and students' involvement. That is why the authors tried to discuss through inductive or logical way on important issues so as to get nearing answers. Further studies need to be done to clarify the gaps.

Conclusion: This study provided an insight from students' perspective on Bioethics, a new module of AETCOM in undergraduate medical curriculum in India. Based on our discussion, we can conclude that this feedback is an important communication and effective tool from students' angle which is often, though a less priority issue, considered for improving Bioethics teaching in Indian medical curriculum. It can be considered as a key to further progression in structuring the teaching learning process as well as the assessment in an innovative way.

Declaration

- Ethics approval and consent to participate: Institutional Ethics Committee (Reg No: ECR/1123/Inst/GJ/2018) approval was duly taken in October 2020 (Letter no: IEC/HMPCMCE/2020/Ex.47/229/20 dated 08 October, 2020) prior to the collection of data

REFERENCES:

1. Have H ten. Bioethics Education in a Global Perspective [Internet]. Springer, Dordrecht 2013. Available from: <https://link.springer.com/book/10.1007/978-94-017-9232-5>
2. Boyd, K.M. Report of a working party on the teaching of medical ethics. *The Pond Report* 1987, IME Publications, London.
3. Fox, E.; Arnold, R.M.; Brody, B. Medical ethics education: past, present, and future. *Acad Med* 1995, 70, 761-769.
4. Miles, S.H.; Lane, L.W; Bickel, J.; Walker, R.M.; Cassel, C.K. Medical ethics education: coming of age. *Acad Med* 1989, 64, 705-714.
5. Salient Features Of Regulations On Graduate Medical Education. *Medical Council of India*. 1997. Available from: <https://www.nmc.org.in/rules-regulations/graduate-medical-education-regulations-1997/>
6. Medical Council of India AETCOM. 2018. http://Www.Mlbmcj.in/Ug_curriculum_guide_2019.Pdf.
7. Medical Council of India AETCOM NMC. 2019.
8. Ashfaq, T.; Ishaq, A.; Shahzad, F.; Saleem, F. Knowledge and perception about bioethics: A comparative study of private and government medical college students of Karachi Pakistan. *J Family Med Prim Care* 2021,10(3), 1161-1166. doi: 10.4103/jfmpc.jfmpc_103_21. Epub 2021 Apr 8. PMID: 34041144; PMCID: PMC8140255.
9. Chandrashekhar, J.; Gardens, S.J. Knowledge, attitudes and practices related to healthcare ethics among medical and dental postgraduate students in south India. *Indian J Med Ethics* 2014, Apr 1;11(2), 99-104. doi: 10.20529/IJME.2014.025. PMID: 24727621.
10. Ghias, K.; Ali, S.K.; Khan, K.S.; Khan R, Khan, M.M.; Farooqui, A.; et al. How we developed a bioethics theme in an undergraduate medical curriculum. *Med Teach* 2011, 33, 974-977.
11. Harmin, M.; Toth, M. Inspiring active learning: A complete handbook for today's teachers. *ASCD*, 2006.
12. Harden, R.M.; Sowden, S.; Dunn, W.R. Educational strategies in curriculum development: the SPICES model. *J Med Edu*. ASME Medical Education Booklet No 18, 1984, 18, 284.

13. Macpherson, C.; Veatch, R. Medical Student Attitudes about Bioethics. *Cambridge Quarterly of Healthcare Ethics* 2010, 19(4), 488-496. doi:10.1017/S0963180110000381
14. Kurt, S. Kolb's Experiential Learning Theory & Learning Styles. *Teaching and learning*. 2020.
15. Hamid, Y.; Mahmood, S. Understanding constructive feedback: a commitment between teachers and students for academic and professional development. *Journal of Pakistan Medical Association* 2010, 60(3), 224-227.
16. Bok, H.G.; Teunissen, P.W.; Spruijt, A. Clarifying students' feedback seeking behavior in clinical clerkship. *Medical education* 2013, 47(3), 282-291.
17. Adcroft A. The mythology of feedback. *Higher Education Research and Development* 2011, 30(4), 405-419.
18. Blatt, B.; Confessore, S.; Kallenberg, G.; Greenberg, L. Verbal interaction analysis: viewing feedback through a different lens. *Teach Learn Med* 2008, 20(4), 329–333.

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PAPER 2: Ganguly B, D’Souza R, Nunes R. Challenges in the Teaching–Learning Process of the Newly Implemented Module on Bioethics in the Undergraduate Medical Curriculum in India. *Asian Bioeth Rev.* 2023;15(2):155–68

Title: Challenges in the Teaching–Learning Process of the Newly Implemented Module on Bioethics in the Undergraduate Medical Curriculum in India

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Abstract:

The National Medical Commission of India introduced the Competency Based Curriculum in Medical Education for undergraduate medical students in 2019 with a new module named Attitude, Ethics and Communication (AETCOM) across the country. There was a consensus for teaching medical ethics in an integrated way, suggesting dedicated hours in each phase of undergraduate training. The AETCOM module was prepared and circulated as a guide to acquire necessary competency in attitudinal, ethical and communication domains. This study was aimed to explore the perceptions of students and medical teachers and identify the challenges in teaching and learning process of the newly implemented AETCOM module. It was a mixed method designed study with structured questionnaires for students and teachers at various medical schools in India. Based on the quantitative data, in-depth interviews with medical teachers were undertaken. Challenges were perceived by both students and teachers. The students had a mixed perception, facing difficulties in passive learning with scarce resource

materials. Challenges identified by teachers were a lack of knowledge and skills required for teaching bioethics, the logistics of managing large numbers of students in the stipulated time frame, interdisciplinary integration—both horizontal and vertical, and assessment program in terms competency- based education. The study draws the attention of all stakeholders for a revision and efforts for further improvement in the teaching and assessment process, and setting a standard model in medical education in India.

Keywords: Assessment · Bioethics · Curriculum · Teaching–learning process

Introduction:

In recent decades, the medical profession has been criticized for perceived breache of professionalism and ethics. Doctors and health professionals are confronted with many ethical dilemmas and challenges. It is, therefore, the need of the hour to prepare them to deal with these problems. In that context, there was increased interest in preserving, promoting, teaching, assessing and researching medical professionalism (Mueller 2009). Medical education started taking initiatives worldwide on the promotion of interpersonal skills, professional behaviours and attitudes (ten Cate and de Haes 2000; Kim 2019), along with an increased emphasis on the personal development of medical students, including self-awareness, personal growth and well-being (Novack et al. 1999).

The objectives of teaching medical ethics should be to enable students to develop the ability to identify underlying ethical problems in medical practice, consider the alternatives under the given circumstances, and make decisions based on acceptable moral concepts and also traditional practices. Over the last two decades, several studies have shown that a majority of medical students (64–84%) believe that ethical practices are critically important in the provision of the highest standards of medical care (AlMahmoud et al. 2017). Similar developments for including bioethics in undergraduate medical curriculum was also mentioned by Mattick and Bligh (2006). Such systematic and standard approach with an organized way of dealing with ethical issues was missing in the Indian Medical curriculum. In order to address the gaps, the National Medical Commission of India introduced the Competency Based Curriculum in Medical Education (CBME) for undergraduate medical students in 2019 with a new module named Attitude, Ethics and Communication (AETCOM) across the country (Medical Council of India 2018). The module was structured into competencies and

incorporated in the curriculum design for the students of the first to final years in undergraduate curriculum. It emphasizes domains beyond medical knowledge and clinical skills, e.g. communication, professionalism and a focus on health systems (Supe 2019; Frank et al. 2010; Harden 2007).

Because of the multi-dimensional construct of assessing bioethics or professionalism, the question arises how much groundwork is done to assess the students with the current pattern of assessment system (Ben-David 2000). Looking into multiple reasons for teaching bioethics and its assessment in medical students, operational measurement has become a major concern for those who are involved in medical education.

Objectives:

The study was aimed to identify the challenges in process of teaching–learning and assessment of the recently (2018–2019) introduced AETCOM module in the undergraduate medical curriculum, which is uniform for all medical colleges in India.

The specific objectives were:

1. Identifying perception and experience of the teachers and undergraduate medical students on bioethics curriculum and teaching
2. Identifying challenges in teaching and assessment

Method:

Design

It was an explanatory study with a mixed methods design comprising (a) a quantitative phase I based on questionnaire study, and (b) a qualitative phase II, a descriptive study involving interviews semi-structured one-to-one interviews (Fig. 1). The data collection period was from October 2020 to August 2021. Institutional Ethics Committee approval from the institution of the first author was obtained in September 2020.

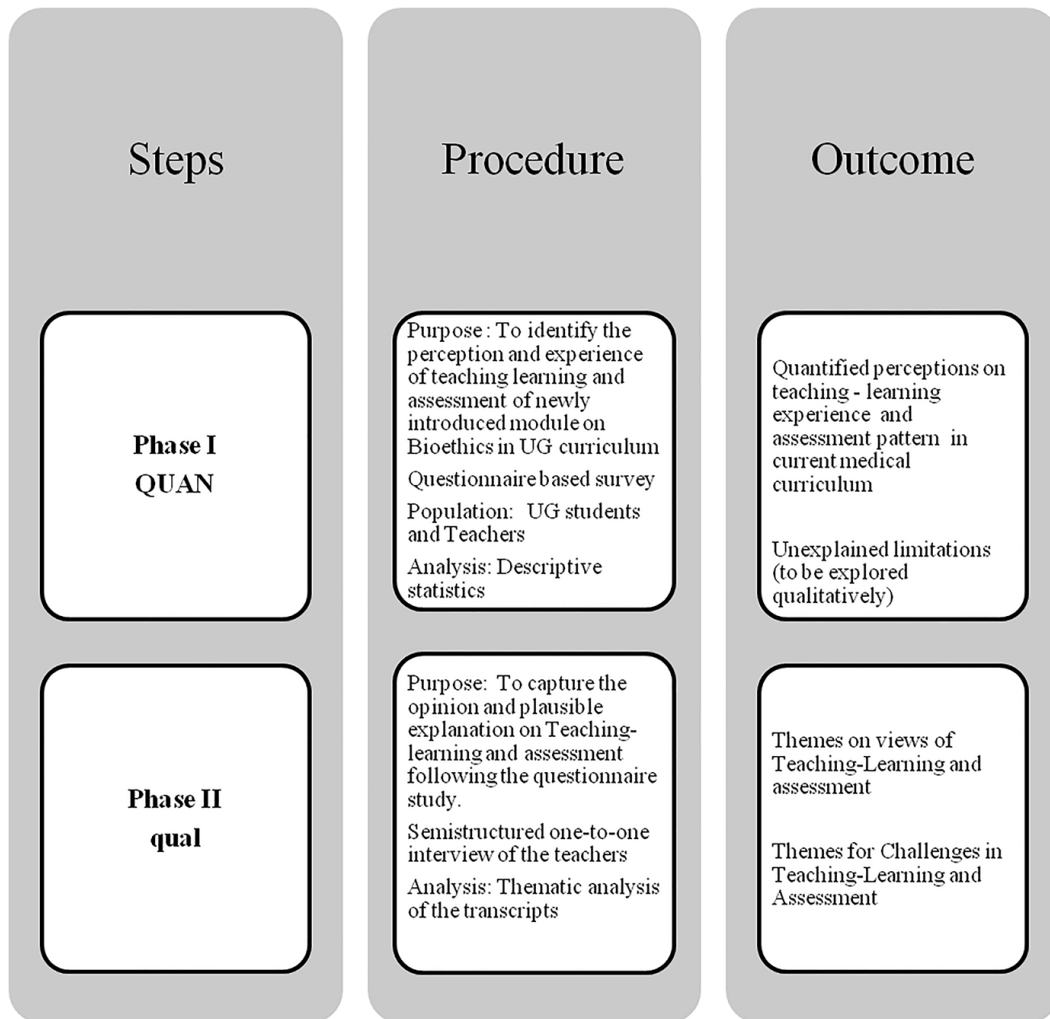


Fig. 1 The visual diagram of the study design

Phase I: Study Population and Sample Size—Quantitative Part

It was with a purposive sampling, ensuring representation from different states of India in order to capture the heterogeneity in the teaching of bioethics across the country. Respondents were undergraduate medical students (357) from eight medical colleges of India, both from Government and private sectors, were included in the study through Coordinators of Medical Education Unit (MEU) of each college. They were the students who took admission in 2019 and were exposed to new CBME curriculum and AETCOM module for the first time in year 1. The number of medical teachers who responded were 47 from those colleges.

There were two separate questionnaires for the medical students and teachers, the links of the Google forms were sent to them separately. The questionnaire consisted of dichotomous,

open and closed questions, Likert-type scale questions and multiple-choice questions. The questionnaires were validated, wherein Cronbach's alpha for students' questionnaire was 0.7493 (0.75 was considered to be accepted) and that of teachers was 0.76. The questionnaire for medical teachers was more detailed, containing four parts on the following: (1) opinion of teachers on curriculum, (2) perception on teaching–learning method of bioethics, (3) perception on assessment process of the subject and (4) challenges and limitations of teaching AETCOM. Statistical analysis of the data was done using STATA 14.2.

Phase II: Qualitative Part:

In order to capture the opinion and plausible explanation on different perception of the medical teachers of different phases from different medical colleges in India following the questionnaire study, the second phase of the research study (qualitative type) was planned. The sampling technique, used in this qualitative part, was also purposeful sampling. Eight faculty participants were identified for semi-structured interview from the questionnaire responses of phase I study. They were selected as per criteria based on availability, willingness to participate, ability to communicate experience and opinions in an articulated and reflective way and had training in medical education (Palinkas et al. 2015). They had different levels of hierarchy like Associate Professor, Professor and Head of the Department, and were from different specialties like Anatomy, Microbiology, Pharmacology, Medicine and Gynaecology, and various affiliations of university.

A telephonic interview was conducted with each of them separately by the principal investigator (who underwent training on qualitative research methodology). Average duration of each interview was 38 min. The interviews were semi-structured, recorded with prior consent and were utilized for obtaining the evidence which were found to be rapid, also yielded high response rate. Descriptive thematic analysis was done. The logic, applied, was that of thematic analysis of the transcripts of the interviews, to explore rich narrative data manually. This was reviewed by one Public Health specialist having expertise on qualitative research to reduce subjective bias and to increase interpretive credibility (Strauss 1987; Strauss and Corbin 1990).

Three main categories were framed namely teaching–learning methodology, assessment and challenges. Once the categories were formed, three subcategories of teaching–learning, two subcategories of assessment and two subcategories on challenges were generated. The codes were identified and placed accordingly.

Results:

Phase I: Quantitative Analysis

Part A: Students' Perception Analysis

The number of students from 8 medical colleges who responded to the questionnaire were 357, who took admission in May 2019. As per their response, 84.3% have been exposed to formal teaching of bioethics, and 15.7% were not. The latter might be because of COVID-19 situation, the institutions did not start the module on time or the students fail to attend those sessions. The majority of the students expressed that bioethics is as essential as clinical subject in medical curriculum though a few of them find the teaching boring and nonessential. Figure 2 includes overall perception on importance of ethical issues in practice, bioethics teaching and assessment.

Perceptions of students on different teaching–learning methods are shown in Table 1. We found that the students preferred to have maximum case scenario-based teaching. Other teaching methods preferred by them were role play and audio-visual film-based teaching. Formative assessment was preferred to both formative and summative. Less number of students supported only summative assessment. Peer assessment was also preferred by the students.

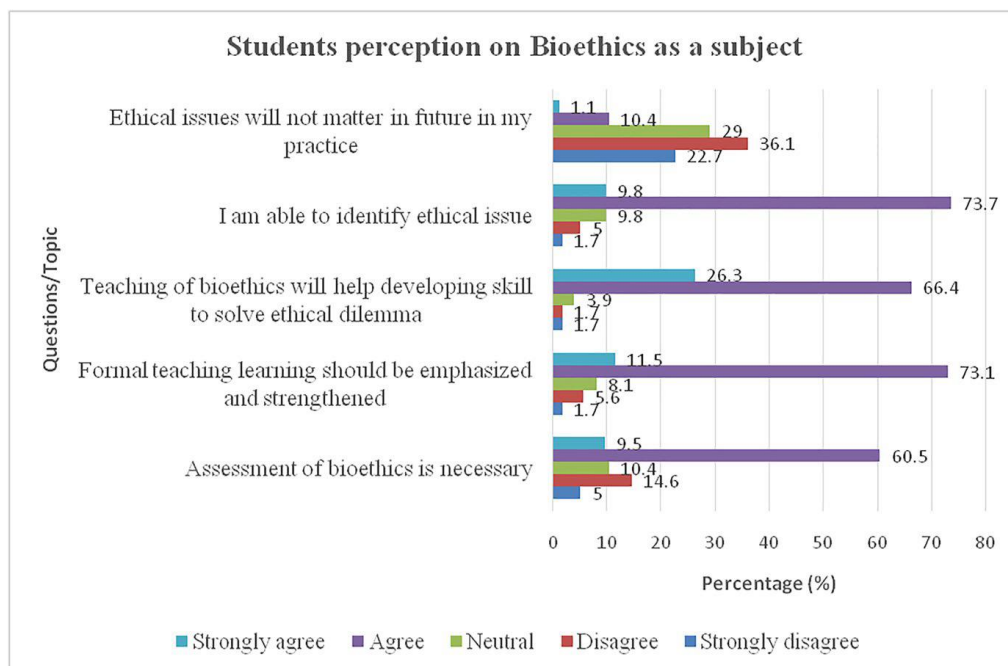


Fig. 2 Students' perception on bioethics as a subject

Questions/topics	Yes		No	
	<i>n</i>	%	<i>n</i>	%
Case scenario as a study method	179	50.1	178	49.9
Debates	17	4.8	340	95.2
Student teacher interaction	35	9.8	322	90.2
Role play	39	10.9	318	89.1
Didactic lecture	4	1.1	353	98.9
Audio-visual (film)	68	19.0	289	81.0
Small group discussion	16	4.5	341	95.5
Assessment by peer group	251	70.3	106	29.7

Table 1 Students' perception on preference of bioethics teaching–learning method

Part B: Perception of Medical Teachers on Teaching–Learning and Assessment of Bioethics

A total of 47 teachers responded to the questionnaire. According to questionnaire, it was found that there was no core group or unit of medical teachers dedicated for teaching AETCOM module in any medical college. We found only a few teachers taught this subject for undergraduate medical students as per directive of Medical Education Unit of the institution. Details of responses are mentioned in Table 2. The majority of the teachers agreed to emphasize on development of moral reasoning skill which should be one of the mainstays in teaching bioethics.

There was a split opinion on assessment of the subject. They also agreed on the facts that assessment develops student's learning and critical thinking as well. It has a huge impact on the quality of learning. Reasoning and decision-making skill could be well assessed—was agreed upon by many the teachers (Fig. 3). At the same time, many of them opined that the assessment did not meet the desired outcome of teaching–learning bioethics in terms of Miller's Pyramid. Therefore, they suggested the following types of assessment which could be introduced:

1. Formative based on their participation in session
2. Summative assessment by giving questions on various topics like principles of

- bioethics, rights of doctors and patient
3. Direct observation: debate/discussion with peers
 4. Coding method, thematic comparison, compare reports
 5. Personal moral development: sort the photocopies of all home work
 6. Direct observation of workplace assessment in clinics, mentoring
 7. Maintenance of log book
 8. Communication exercises like role play, reflective writing, portfolios
 9. 360 degree feedback
 10. Structured viva, Mini CEX

Questions/topics	Yes	
	<i>n</i>	%
Any course or training on bioethics	24	51.1
Whether teach bioethics or not	14	29.8
Whether any full-time teacher for bioethics teaching in med school	20	42.6
Whether students should know history of bioethics	42	89.4
Do you like to take any topic beyond the prescribed curriculum?	34	72.3
Whether assessment is necessary	39	83.0
Whether assessment guides the learning process	18	38.3
Whether assessment meets the desired outcomes of teaching–learning bioethics	11	23.4
Whether can provide professional self-regulation	16	34.0
Do you think students be assessed by personnel like patients, non-teaching staffs and peers?	35	74.5

Table 2 Teachers' perception on teaching–learning of bioethics as a subject (n = 47)

Part C: Comparison of Students' and Teachers' Perception on Specific Areas

We took five pertinent issues on teaching and assessment for comparing the perceptions of students and teachers. They are as follows:

1. Subject: Need for bioethics course: while about 11% students perceived that such course is not necessary for their practice as a clinician, significantly more students felt that bioethics course could help solve ethical dilemma as compared to teachers [students' response vs teachers' response: 331 (92.7%) vs 39 (83%), $p = 0.02$].
2. Method of teaching: most students and teachers favoured practical applicationbased learning. Students mainly favoured teacher-guided learning (193 (54%)), self-directed learning (44 (12.3%)) and project-based teaching learning (88 (24.6%)).

3. Teachers echoed similar feelings and mainly favoured brainstorming and debates illustrating ethical concerns (12 (25.5%)) and case-based teaching and debates (16 (34%)). Only one teacher favoured didactic way of teaching.
4. Assessment: whether assessment is necessary: students were bit hesitant about assessment of bioethics course. Less number of students perceived assessment necessary as compared to teachers albeit the difference was not statistically significant 70% vs 83%, $p = 0.06$).
5. Assessment by non-teaching personnel: both the students and teachers felt equally comfortable with assessment by non-teaching personnel (70.3% vs 74.5%, $p = 0.55$).
6. Type of assessment: there is significant difference in assessment choices between faculty and students. It appears that students are more inclined to formative assessment only whereas faculty is divided almost equally between the choices.

Phase II: Qualitative Analysis

Category 1: Teaching–Learning Methodology

Under this category, there were three subcategories namely (i) active learning, (ii) passive learning and (iii) curriculum. All the teachers who participated opined that there was a dire need of teaching and training on attitude, ethics and communication skill for the undergraduate medical students and they welcomed the implementation of new module of AETCOM in Indian Medical Curriculum.

Active Learning: The codes identified were case-based or problem-based teaching, role plays, village visits and bedside teaching. Respondents felt that there should be innovative way of teaching this subject unlike traditional teaching and that should be conducted in small groups. They identified that participatory learning has got a definite place here for better learning process, so more time should be allocated for this through case-based teaching, problem solving, debates, etc. In order to attain competency, the training can be started during the field visits and early clinical exposure of the students. The representative quotes are as follows:

- I. “Essentially AETCOM module teaching should be in the form of small group teaching based on cases, problems and debates by allowing them to solve the dilemma”
- II. “Videos, narratives, role plays, again reflection writing, are must for actually reaching out to the ultimate aim of being at commoner real sense of teaching learning”
- III. “We have the opportunity of bedside teaching for the attitudinal aspects”;

“Village visits are opportunities for the students to get trained in attitude and communication skill”

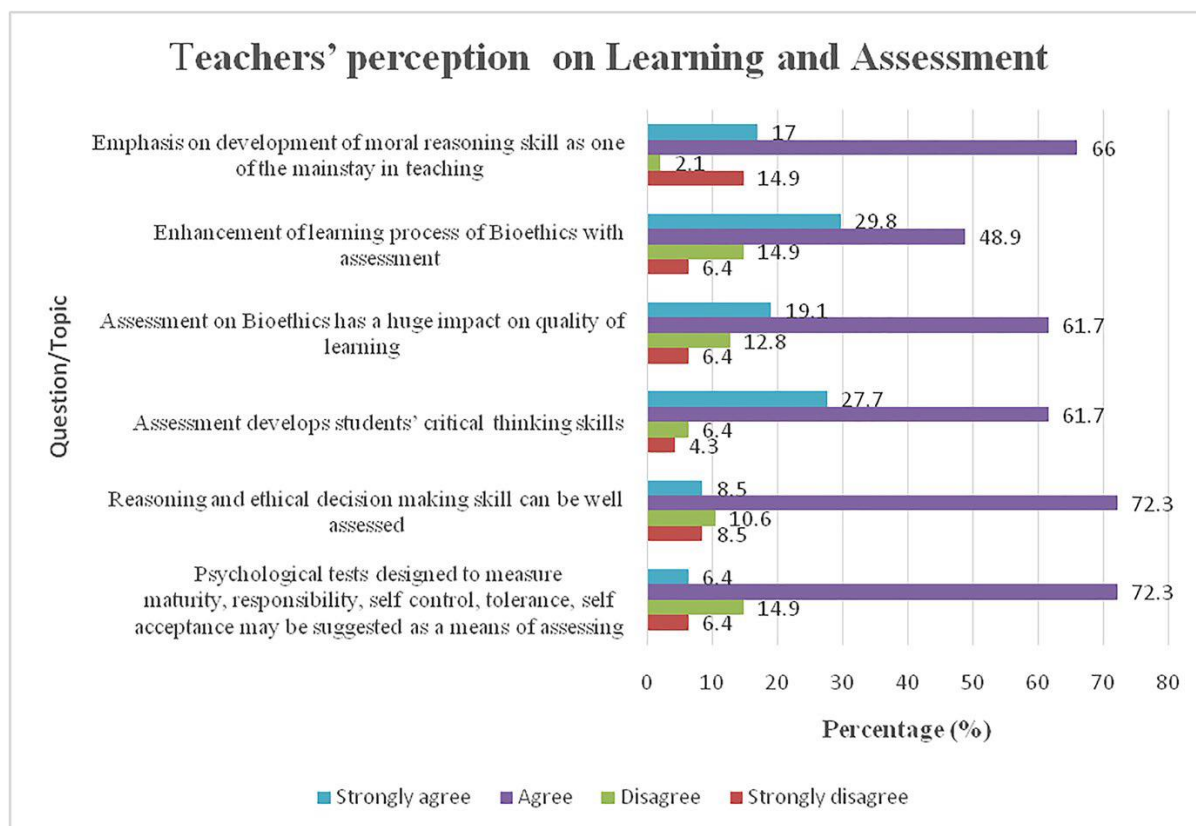


Fig. 3 Teachers’ perception on learning and assessment

Phase II: Qualitative Analysis

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- I. “Essentially AETCOM module teaching should be in the form of small group teaching based on cases, problems and debates by allowing them to solve the dilemma”
- II. “Videos, narratives, role plays, again reflection writing, are must for actually reaching out to the ultimate aim of being at commoner real sense of teaching learning”
- III. “We have the opportunity of bedside teaching for the attitudinal aspects”; “Village visits are opportunities for the students to get trained in attitude and communication skill”

Passive Learning: The codes were mini-lecture, seminar, videos. According to them, didactic teaching in this area should be avoided as far as possible; it might not do justice to the topic and might not be made interesting to the students when it comes to attitudinal domain. Thus, they felt, “All should not be case scenario, all shouldn’t do role play, it will never work. It should be varied”, also “Seminars, videos can have impact on the students”.

Curriculum: The code identified was content. “Content of the module is minimal”, was the opinion of majority of the respondents. According to them, “Issues like equality, justice, non-discrimination, stigmatization, vulnerability are not addressed in the curriculum”. Moreover, they felt, “How to integrate with clinical subjects was not clear in the guidance booklet”.

Category 2: Assessment

Formative Assessment: All the respondents mentioned, “Assessment drives learning”, therefore, must be included. Interviews revealed that the medical teachers preferred formative assessment to summative assessment. Two of them felt that assessment was mostly done in English which sometimes became too technical and mechanical; many important views and opinions of the students get missed out during assessment because of language barrier, nervousness and hesitancy. Therefore, they suggested, “There should be a scope of assessment in vernacular language for assessing soft skills”. Assessment in vernacular language might give better idea of teaching–learning of soft skills and should be implemented in the process. According to them, peer assessment might be a welcome method as mentioned, “Is a good way to know students’ progress” but simultaneously, there remain chances of bias.

The most difficult part in assessment system was found to be that of manpower, i.e. teacher-student ratio which is not an ideal one both for teaching as well as assessment. Moreover, assessment of skill also was an area of concern by the teachers. They mentioned, “It is very difficult in Indian set up with a batch of more than 100 students and less man power” and “We can assess only knowledge part with huge number of students”. Another difficulty, that was pointed out, was in terms of time constraint in practical examination.

Summative Assessment: All the respondents mentioned, “It is necessary and help students for learning purpose”. Two of the respondents opined that there is very less scope of assessment of soft skill on this area, only the knowledge part can be assessed at the most and quoted as “It is not the appropriate or good method of assessment to assess soft skills” and “Not good for assessment of communication skill”.

Category 3: Overall Challenges

Teaching–Learning Process: The codes identified were faculty strength, expertise, infrastructure, content and resource materials and students’ interest.

All the Medical teachers, who participated, unanimously agreed with the challenging issues related to process of T/L, expertise, curricular content, time, manpower and the assessment process. Firstly, the teachers are not well trained in this area, they mentioned, “Most of the teachers are not aware of the subject”.

As mentioned previously, they opined that medical teacher-student ratio is much less than what is required for such training. There are challenges in managing with manpower and small group teaching covering the batch of 150 students. In this context, they felt, “More trained teachers are required” and “There is lack of time for the added area of teaching”.

More than one respondent opined that the students can understand the medical problem but often they are not be able to identify the ethical issues or problem and thereby how to address those. This calls for development of moral reasoning skill on ethical dilemma for the students, which is a challenging issue in current set up. In present setup, it was possible to assess only the knowledge part that is “Knows/K” of Millar’s pyramid (Carley 2015) if not the higher level. It might take some time for the faculty also to get skilled and equipped with skill station to assess the steps of solution and decision-making on ethical dilemma.

Another difficult area identified by the teachers was integration with other subjects. “Content of AETCOM module is minimal and they have suggested only a few issues, not enough and methods of the teaching–learning process. They have not suggested how to integrate the subject with others”. According to them, identifying the ethical principles and linking them with different subject and context was found to be tough and needed a thorough brainstorming and curricular revision. They felt that there was a need of training for the faculty member for further development of expertise for implementing the new module, which was not addressed in various basic course workshops for the teachers. There is lack of resource materials and textbooks. “Selecting resources from net may not be relevant in Indian context always”.

Respondents also commented on infrastructure of some of the medical colleges, as in many older colleges there is lack of set ups and space for small group teaching in newer ways.

Assessment: Respondents identified a few challenges on assessment. They felt that they were not well versed on assessment of soft skill. One of the teachers expressed that the prescribed assessment system could focus only assessment of lower cognitive domains of Bloom's taxonomy (Ruhl 2021) such as remembering and understanding. There was very little scope to assess "Shows How" on Bioethics except for some limited and specific Communication skill in OSPE. They mentioned the following issues like "It is difficult to assess affective and psychomotor domain of teaching learning", "May not be uniform", "Students get nervous in OSCE stations, so proper assessment of communication skill is not done" and "OSPE stations are too much formal and away from real life". Another limiting issue here was the time factor in assessment process for a batch of 150 to 250 students in respective colleges and proportionately the number of faculty members required for that.

Discussion:

To our knowledge, the 2019 AETCOM module was the first structured formal module on Ethics, Professionalism and Communication skill, implemented in the Indian medical curriculum, along with competency-based medical education (CBME) (Medical Council of India 2018). The desired level of proficiencies for various competencies were mentioned in the booklet. The aim of this study was to explore the challenges faced after the implementation of the module. We found a mixed feeling amongst the students and teachers through their perceptions in different areas.

Teaching Professionalism and Bioethics includes development of critical thinking, and problem-solving abilities. Active learning techniques are the ones appropriate for such evolution (Heuer 2008), whereas didactic lecture on this subject was not welcomed by both students and teachers. Lecture has long been a standard way of teaching and concentrates primarily on conveying information in a one-way format. All teachers criticized lectures and agreed that case- or problem-based activities or debates could give students opportunities to discuss the issues, highlight conflicts and controversies on ethical problems and professional attributes, and enable them to share their viewpoint, addressing the issues of morality. Such teaching methods can give better learning opportunities on the development of critical thinking. It might not be possible to assess the same very formally, but definitely could help in students' learning process. At the same time, it is important to note the limitations and challenges faced by the teachers in conducting such teaching. The teachers emphasized the need of faculty development, behavioural change and curricular restructuring for a successful implementation.

Integration of the module with different subjects on the list of competencies was one of the recommendations for better understanding and for relevance of a topic. This was an area of serious concern for the faculty members who were not much trained in "how to" and "how much" to integrate with different subjects, and thereby assessment per se. It needs to be covered in training and workshops

for the teachers, explaining the steps of Harden's ladder of integration, trans-disciplinary, and interdisciplinary integration (Harden 2000; Ananthakrishnan 2018). It should be emphasized that the aim of integration is to facilitate learning and explain the relevance of a topic to future practice (Ananthakrishnan 2018).

We know that assessment is a fundamental component of both learning and teaching as it frames what students learn and for their certification (Norcini 2003). It refers to the processes employed to make judgments on the achievements of students over a course of study (Harlen 2005). In traditional teaching, softer skills of communication or professionalism or ethical dilemma were not emphasized in teaching or assessment. But, AETCOM has prompted not only to teach and incorporate in undergraduate medical education, but also towards assessment. There was a mixed reaction in our study, especially from the teachers, who were lacking the experience and expertise in this field. According to them, only knowledge could be assessed in the present setup, though Medical Educators from the UK opined in one of the studies that knowledge and skills are far easier to assess attitudes or professionalism (Epstein and Hundert 2002). Students as well as teachers preferred formative assessment in the study. They felt that although it was more time consuming and that it increased their workload, but they find it, reference to their performance, feedback and guidance on how to improve.

The teaching of bioethics and professionalism is difficult, and equally complex is the assessment process. The question arises whether the assessment of AETCOM carries predictive value for the practice of medicine by the student in the long term. If yes, prospective assessment of students' performance would be required, comparing performance results with subsequent professional conduct which is the biggest challenge in the present system. In order to retain "internal morality" of the medical profession with a meaningful commitment to uphold the standards of care, further academic rigor will be required to be applied to teaching, assessment and ongoing promotion of the ethical and professional conduct of medical students (Parker 2000).

Limitations of the Study

This study has certain limitations. The questionnaire study was conducted because of the COVID-19 pandemic, which restricted the movement of the investigator from personal contacts and interview. We received less teachers' responses. The sample for qualitative study was drawn from former respondents based on questionnaire-based survey. Interviewees were only those who were available and agreed to talk over the telephone. Students were not included for interview.

In summary, the implementation of AETCOM in the new system of competency-based medical education is a welcome initiative by the Medical Council of India (then National Medical Commission). We find a mixed perception following implementation. The hidden curriculum of professional

attributes, bioethics and communication skill has come into action in a structured format as a new subject. At the same time, certain teething issues are also no less boiling into definite challenges in different areas pertaining to teaching, learning, assessment and the overall curriculum. Since it is a multidisciplinary module, special attention is necessary to ensure the approach on integration of the topics both horizontally and vertically and thereby strengthening the relevance for future practice.

More Faculty Development Programs for teachers for all the subjects is necessary, especially to train in a different or innovative way of teaching and for the assessment of the AETCOM module. This draws the attention of all stakeholders to revision and further improvement for setting a standard model in medical education in India.

References:

- AlMahmoud, Tahra, M. Jawad Hashim, Margaret Ann Elzubeir, and Frank Branicki. 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>.
- Ananthakrishnan, N. 2018. Competency based undergraduate curriculum for the indian medical graduate, the new MCI curricular document: positives and areas of concern. *Journal of Basic, Clinical and Applied Health Science* 1 (1): 34–42. <https://doi.org/10.5005/jp-journals-10082-01149>.
- Ben-David, M.F. 2000. The role of assessment in expanding professional horizons. *Medical Teacher* 22 (5): 472–477. <https://doi.org/10.1080/01421590050110731>.
- Carley, Simon. 2015. Educational theories you must know. Bloom's Taxonomy. St. Emlyn's. <https://www.stemlynshl.org/better-learning/educational-theories-you-must-know-st-emlynshl-educational-theories-you-must-know-blooms-taxonomy-st-emlynshl/>. Accessed 8 Oct 2022.
- Epstein, Ronald M., and Edward M. Hundert. 2002. Defining and assessing professional competence. *JAMA* 287 (2): 226–235. <https://doi.org/10.1001/jama.287.2.226>.
- Frank, Jason R., Linda S. Snell, Olle ten Cate, Eric S. Holmboe, Carol Carraccio, Susan R. Swing, Peter Harris, et al. 2010. Competency-based medical education: Theory to practice. *Medical Teacher* 32(8): 638–645. <https://doi.org/10.3109/0142159X.2010.501190>.
- Harden, Ronald M. 2000. The integration ladder: A tool for curriculum planning and evaluation. *Medical Education* 34 (7): 551–557. <https://doi.org/10.1046/j.1365-2923.2000.00697.x>.
- Harden, Ronald M. 2007. Outcome-based education: The future is today. *Medical Teacher* 29 (7): 625–629. <https://doi.org/10.1080/01421590701729930>.

- Harlen, Wynne. 2005. Teachers' summative practices and assessment for learning- tensions and synergies. *Curriculum Journal* 16 (2): 207–223. <https://doi.org/10.1080/09585170500136093>.
- Heuer, Sarah. 2008. A case study method for teaching bioethics. MSc Thesis, Iowa State University.
- Kim, Daniel Takarabe. 2019. Henk ten Have: Global bioethics: An introduction. *Theoretical Medicine and Bioethics* 40: 63–66. <https://doi.org/10.1007/s11017-018-9455-y>.
- Mattick, K., and J. Bligh. 2006. Teaching and assessing medical ethics: Where are we now? *Journal of Medical Ethics* 32 (3): 181–185. <https://doi.org/10.1136/jme.2005.014597>.
- Medical Council of India. 2018. Attitude, Ethics and Communication (AETCOM) Competencies for the Indian Medical Graduate. <https://www.nmc.org.in/information-desk-for-colleges/ug-curriculum/>. Accessed 8 Oct 2022.
- Mueller, Paul S. 2009. Incorporating professionalism into medical education: The Mayo Clinic experience. *Keio Journal of Medicine* 58 (3): 133–143. <https://doi.org/10.2302/kjm.58.133>.
- Norcini, John J. 2003. Peer assessment of competence. *Medical Education* 37 (6): 539–543. <https://doi.org/10.1046/j.1365-2923.2003.01536.x>.
- Novack, D.H., R.M. Epstein, and R.H. Paulsen. 1999. Toward creating physician-healers: Fostering medical students' self-awareness, personal growth, and well-being. *Academic Medicine* 74 (5): 516–520. <https://doi.org/10.1097/00001888-199905000-00017>.
- Palinkas, Lawrence A., Sarah M. Horwitz, Carla A. Green, Jennifer P. Wisdom, Naihua Duan, and Kimberly Hoagwood. 2015. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health* 42 (5): 533–544. <https://doi.org/10.1007/s10488-013-0528-y>.
- Parker, Malcolm H. 2000. Assessing medical students' professional development and behaviour: A theoretical foundation. *Focus on Health Professional Education* 2 (2): 28–38.
- Ruhl, Charlotte. 2021. Bloom's taxonomy of learning. Simply Psychology, 24 May 2021. www.simplypsychology.org/blooms-taxonomy.html. Accessed 8 Oct 2022.
- Strauss, A.L. 1987. *Qualitative analysis for social services*. Cambridge: Cambridge University Press.
- Strauss, A.L., and J. Corbin. 1990. *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park: Sage.
- Supe, Avinash. 2019. Graduate Medical Education Regulations 2019: Competency-driven contextual curriculum. *National Medical Journal India* 32 (5): 257–261. <https://doi.org/10.4103/0970-258X.295962>.

ten Cate, T.J., and J.C.J.M. de Haes. 2000. Summative assessment of medical students in the affective domain. *Medical Teacher* 22 (1): 40–43. <https://doi.org/10.1080/01421590078805>.

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APPENDIX I (IEC Approval)

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APPENDIX II (Link for Questionnaire)

Link for questionnaires:

For teachers:

<https://forms.gle/V5xu5EGADfh2V5JF9>

For students:

<https://forms.gle/yxELpbAR3CAvhEno6>

APPENDIX III : Acceptance letter/ mail of Paper I from Asian Bioethics Review.