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RESEARCH ARTICLE

Medical ethics teaching in the new undergraduate physiology competency-based curriculum in medical institutions in Delhi: A pilot, feasibility study.

SATENDRA SINGH, MANISH SOLANKI, NEELAM VANEY, ANANT BHAN

Abstract

Background: Medical ethics teaching has received little attention in India's undergraduate medical curriculum, so the National Medical Commission's formal inclusion of medical ethics in the new competency-based curriculum (CBME) is creditable. However, the policymakers have left out the most crucial stakeholders — the teachers. This study was conducted to find out how physiology educators in Delhi felt about the implementation of ethics teaching in physiology in the CBME.

Methods: This was a pilot, cross-sectional, observational, feasibility study conducted using a questionnaire, involving faculty and senior residents (post-MD) in the departments of Physiology at nine medical colleges in Delhi, conducted over the period from February to October 2020.

Results: The response rate was 76% (60/79), of which 40% (24/60) were senior residents and 60% (36/60) were faculty. Around 55% (n=33) felt bioethics and clinical ethics are not synonymous; 53% (n=32) believed ethics education can be accomplished in a large group setting; 75% (n=45) believed it should be the responsibility of the physiology faculty, rather than the clinical faculty, and 61.7% (n=37) wanted it to be included in the formative assessment. The respondents shared ethical concerns that should be included in the physiology curriculum and the best candidates to teach them to achieve integration. Despite the challenges, the majority 65% (n=39) felt ethics in the physiology CBME should be an inseparable part of teaching in all instructional modalities.

Conclusion: Early clinical exposure was considered preferable to the Attitude, Ethics, and Communication (AETCOM) programme. Using the five W's and one H method, we talk about how our findings can be used as a road map to help physiologists teach ethics to medical students in the new CBME.

Keywords: medical ethics, clinical ethics, undergraduate medical education, physiology, competency-based medical education

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Introduction

The Flexner Report of 1910 revolutionised medical education in the United States (US) and Canada, but Abraham Flexner's ethical and compassionate practice guidelines were widely ignored, as the focus shifted to "curative rather than caring medicine" [1]. In later papers, he stressed on the importance of humanities and ethics in professional identity formation but his 1910 report did not. Add to that the basic medical science teachers' exclusive emphasis on the rituals of dissection and vivisection, which may have led to the desensitisation of medical students and raised questions about dehumanisation at the "preclinical" level [1]. This was intensified by the call to action in the early 1990s against medicine's "inhumanity", when medical ethics was still an optional subject [2]. At the same time, a survey of 32 Indian medical colleges found that introducing medical ethics was necessary to broaden the scope and humanise preclinical practicals to overcome compartmentalisation [3]. The global community began to take notice of these developments [4].

Keeping up with global reforms, the erstwhile Medical Council of India [now, the National Medical Commission (NMC)], revamped the curriculum into competency-based medical education (CBME), which came into effect in August 2019 across the country [5]. The new teaching/learning approaches included in the CBME cover Early Clinical Exposure (ECE in Professional Phase-I) and a structured continuing programme on Attitude, Ethics, and Communication (AETCOM) throughout the curriculum [6]. The global competencies in the CBME enable harmony between the five roles of an Indian Medical Graduate (which are in sync with the six Accreditation Council of Graduate Medical Education competencies in the US and the six CanMEDS roles in Canadian framework) and the integration of medical ethics right from the first year of training as AETCOM [7]. However, are faculty members prepared and trained to take on this new challenge who have been historically wrongly assumed to be in "non-clinical departments"?

Incorporating ethics into the CBME is particularly important since first-year medical students are completely new to the subject. However, while the 90 hours of ECE in Phase I of the CBME are to be divided equally among all three subjects, the 34 hours of the AETCOM module are only listed as a longitudinal programme. It is unclear how these 34 hours will be shared between the Professional Year 1 disciplines of Anatomy, Physiology, Biochemistry, and Community Medicine; and who will take what module within AETCOM sessions is not mentioned clearly in the NMC guidelines — will it be faculty from the phase I disciplines, or interdepartmental curriculum committee or medical education unit members? Even the World Health Organization's (WHO) module for teaching medical ethics to undergraduates needs at least 20 hours of training in "core topics" [4].

The current study was conducted as a pilot feasibility study against the backdrop of the introduction of a new curriculum

to describe the "gap" between what exists and what is needed. Using the domains from Bowen et al's paper on feasibility studies [8], we examine the preparedness of physiology educators, and their acceptance, adaptation, integration, and barriers faced by them in implementing ethics teaching in physiology in the CBME.

Methods

This was a cross-sectional, observational, online pilot study using a questionnaire, involving faculty and senior residents (post-MD) in the departments of Physiology at nine of the 10 medical colleges in Delhi, conducted over the period February 2020 to October 2020. The nine medical colleges included those under the administrative control of the Central Government — the University of Delhi (Maulana Azad Medical College, Lady Hardinge Medical College, and the University College of Medical Sciences), State University — Guru Gobind Singh Indraprastha University (Atal Bihari Vajpayee Institute of Medical Sciences, Army College of Medical Sciences, and Vardhman Mahavir Medical College), of the Government of Delhi (Dr Baba Saheb Ambedkar Medical College), Municipal Corporation (North Delhi Municipal Corporation Medical College), and a private medical college (Hamdard Institute of Medical Sciences & Research). As the All India Institute of Medical Sciences, New Delhi is an autonomous institution, not within the purview of the National Medical Commission, and not using the competency-based medical curriculum, it was excluded.

The senior residents (post-MD) and faculty at these nine institutions were recruited through email and through social media. As senior residents are involved in teaching physiology to undergraduate medical students, they were also recruited along with faculty. Participants were directed via a link to a questionnaire on a Google form. We asked 16 questions under the domains of feasibility studies on *preparedness (Q1)*, *acceptance (Q2,3,4,5,6,9,12)*, *implementation (7,8,10,11)*, *adaptation and integration (13,14,16)* and *challenges (Q15)*. Most of the questions were based on the Likert scale, ranging from "strongly disagree" to "strongly agree", except for three open-ended questions assessing adaptation, integration, and challenges. Overall, the participants had to spend less than 10 minutes at a time that was convenient for them.

A waiver of ethics clearance was received from the lead author's institution (IEC-HR/2019/41/131R). We did not collect any personal identifiers through the questionnaire, and the data collected in the study was kept completely confidential. There was no risk involved for the participants, and they were free to withdraw from the research at any time without any penalty. The data was securely downloaded and maintained in a password-protected Excel document, and was analysed using descriptive analysis.

Results

Seventy-nine eligible physiology educators at the nine

Table 1: Summary of physiology educators' preparedness, acceptance, and implementation of teaching ethics in physiology in the CBME

Feasibility Questionnaire item [n (%)]	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Domain: Preparedness					
Bioethics and clinical medical ethics are synonymous	4 (6.7)	29 (48.3)	6 (10)	19 (31.7)	2 (3.3)
Domain: Acceptance					
Ethical issues are fundamental to the process of physiological research	1 (1.7)	5 (8.3)	1 (1.7)	24 (40)	29 (48.3)
Ethics teaching in physiology should be part of undergraduate education	4 (6.7)	5 (8.3)	1 (1.7)	24 (40)	26 (43.3)
Ethics teaching should be reserved for clinical subjects	21 (35)	27 (45)	3 (5)	7 (11.7)	2 (3.3)
Ethics teaching in physiology should be part of postgraduate education	3 (5)	3 (5)	1 (1.7)	27 (45)	26 (43.3)
Ethics teaching is not the responsibility of physiology faculty or residents	15 (25)	30 (50)	9 (15)	4 (6.7)	2 (3.3)
First year medical students are not equipped to understand ethics in physiology	10 (16.7)	29 (48.3)	6 (10)	9 (15)	6 (10)
Ethics cannot be taught in a class of 150 or more students	2 (3.3)	30 (50)	8 (13.3)	11 (18.3)	9 (15)
Domain: Implementation					
The inclusion of AETCOM modules in the existing physiology curriculum is problematic	8 (13.6)	20 (33.9)	13 (22)	17 (28.8)	1 (1.7)
Ethics needs to be integrated into physiology lectures and practicals throughout the professional year 1	2 (3.3)	12 (20)	7 (11.7)	25 (41.7)	14 (23.3)
The ethics sessions in physiology should be included in the formative assessment	3 (5)	14 (23.3)	6 (10)	34 (56.7)	3 (5)
The ethics sessions in physiology should be included in the summative assessment	3 (5)	20 (33.3)	9 (15)	23 (38.3)	5 (8.3)

medical institutions in Delhi were approached. Out of these, 60 responded (76% response rate), which included 24 (40%) senior residents and 36 (60%) faculty. The latter included assistant professors (8, 22%), associate professors (5, 14%), and professors/director professors (23, 64%).

Preparedness

Around half of the respondents (33, 55%) believed bioethics and clinical medical ethics are not synonymous, but one-third (21, 35%) believed they are. Nearly one-third of the

Table 2: Summary of physiology educators' responses on ethics content along with suitable facilitators to teach ethics in physiology in the CBME

Feasibility questionnaire item	Educators' responses	Exemplar quotes
Domain: Adaptation and Integration		
The following ethical issues could be integrated into the physiology course	informed consent, doctor-patient relationship, patient privacy and confidentiality, autonomy, patient rights, rights and responsibilities of doctors, professional misconduct, end of life issues, plagiarism, respect for life and death, teaching by humiliation, [responsible] animal experimentation, teacher-student relationship, wellness, professional use of social media, work ethics, research ethics, sample collection, issues in clinical examination, and communication	<i>"Both clinical Medical and bioethics need to be integrated."</i> <i>"Ethics in education, professional place and personal life also need to be understood by the students."</i> <i>"Examination of patients in presence of attendant"</i> <i>Communication with the patient - explaining procedure and other things during sample collection"</i> <i>"Last but not the least teaching them that they ought to be GOOD HUMANS - at all times"</i> <i>"Reporting the exact values obtained in physiology practical rather than the ideal ones"</i> <i>"[Research participants] right to give or withhold consent"</i> <i>"Teacher student relationship- [avoiding] teaching by humiliation)"</i> <i>"Using social media professionally"</i>
The following are the best people to teach ethics/ learn ethics from	Faculty trained in ethics, bioethicists (external experts/philosophers/counselors), patients, clinical faculty (from general medicine and psychiatry departments), medical teachers (from forensic medicine, community medicine, physiology departments), Medical Education Unit members, retired faculty, researchers, ethics committee members, parents, public figures/role models.	<i>"I think ethics should be reinforced by all people that surround a medical student, so that it becomes a behaviour rather than just lessons. So, all faculty and residents of all professionals of MBBS should participate in the reinforcement"</i> <i>"Those who themselves follow ethics (rare to find one)"</i>
Ethics teaching in the physiology curriculum should be included in a) lectures b) practicals c) early clinical exposure d) AETCOM module e) all of the above		
Domain: Challenges		
What are the challenges in the incorporation of ethics in physiology undergraduate education?	Lack of trained faculty/residents in ethics, time constraints, very naive young students, overburdened curriculum, large class size, lack of patient interaction in the first year, non-medical teachers in CBME.	<i>"Time limitations, lack of structured course for teaching and evaluation and lack of motivation on the part of faculty and students beyond the classroom."</i> <i>"Students are already burdened with the existing curriculum"</i> <i>"Ethics teaching in Foundation course and then in subsequent classes is repetitive, leading to boredom and loss of interest amongst students."</i> <i>"To find an educator who follows ethics [is a challenge]"</i> <i>"Non-MBBS faculty being employed to teach CBME in Physiology, Biochemistry and Microbiology"</i> <i>"First year MBBS students are too young to fully grasp the importance of ethics."</i> <i>"Nevertheless, efforts should be made to mold their young minds as per ethics and introduce them to ethical dilemmas."</i>

respondents (n=20) claimed that ethics could not be taught in a class of 150 or more students, which is a genuine concern in most medical colleges in India, where some class sizes could have up to 275-300 students. However, 32 (53%) respondents thought ethics teaching could still be achieved in large group settings.

Acceptance

Acceptability examines how the intervention (CBME) affects the intended individual recipients (physiology educators) in programme (AETCOM) implementation. According to the vast majority of physiology educators (53, 88%), ethics training is central to the method of physiological study (Table 1). Even though students in the United States enter medical college at a later age than in India (around 17-18 years), most respondents (39, 65%) claimed, contrary to common belief, that first-year undergraduate medical students are qualified to understand ethics in physiology.

Nearly half of the respondents (n=26) strongly agree that ethics teaching should be included in both undergraduate and postgraduate physiology education. The majority of the respondents (48, 80%) refuted the idea that ethics teaching should be limited to clinical subjects and 45 (75%) believed ethics teaching should be the responsibility of physiology faculty and/or residents.

Implementation

The degree, probability, and manner in which an intervention can be completely executed as designed and proposed are referred to as implementation. Despite their belief in the value of ethics education in physiology, educators' views were divided as far as assessment methods were concerned. Nearly two-thirds (37, 61.7%) thought ethics should be part of formative assessment, while 28 (47%) thought it should be part of summative assessment. Around two-thirds of the respondents (39, 65%) accepted

that ethics should be incorporated into physiology lectures and practicals throughout first professional year. However, 18 (30.5%) felt that the integration of AETCOM modules into the current physiology curriculum is problematic, although 28 (47.5%) disagreed with this supposition.

Adaptation and integration

Whereas adaptation is the process of modifying the contents of a programme to make them suitable for a new scenario, *integration* is the level of system change required to incorporate a new process into an existing infrastructure or programme. Table 2 lists the ethical concerns that respondents think should be included in physiology courses to adapt well to CBME, as well as the best candidates to teach them to achieve integration. Despite the challenges, the majority (39, 65%) of respondents felt that ethics teaching in the physiology curriculum should be included in all instructional modalities be it didactic lectures (3, 5%), practicals (6, 10%), ECE (16, 26.7%), or AETCOM module (10, 16.7%). Respondents believed that all instructional modalities are useful for teaching ethics, but ECE provides a better opportunity than the NMC proposed AETCOM module.

Challenges

Major challenges suggested by respondents (n=48) in the incorporation of ethics in physiology undergraduate education (in descending order) accompanied by few exemplar quotes are listed in Table 2.

Discussion

"Just like every case is a physiology case, every case is an ethics case."[9]

- Dr. Edward Hundert (Dean of Medical Education, Harvard Medical School)

In India's undergraduate medical curriculum, teaching and learning of medical ethics have received insufficient consideration. The new curriculum changes the status of physiology as a "non-clinical" or "preclinical" subject. The revamp of the curriculum through innovations such as the introduction of clinical physiology, and of medical ethics longitudinally throughout the medical curriculum heralds a new era of applied medicine. As there is little training and sensitisation on how to conduct AETCOM effectively, we utilise the five *W*'s (what, why, where, when, and who) and one *H* (how) approach to discuss our findings as a road map to help physiologists implement ethics teaching in CBME in general and physiology in particular.

The rationale for teaching medical ethics in physiology (why)

Respondents from 45 countries in a survey confirmed that there was a need for ethics in medical education, and ethics in physiology were not integrated into the physiology curriculum in most cases (69%) [10]. While ethical considerations are crucial to the physiological research method [11], their focus is mostly on research ethics. However,

by 1999, the World Medical Association had proposed that medical ethics and human rights be taught as a mandatory part of the medical curriculum in every medical college — a resolution that was later reiterated and updated in October 2015 [12]. Most respondents in our survey also believed that ethics education in physiology should be part of both undergraduate and postgraduate education.

Development of clinical medical ethics in physiology (what)

The Council of the International Union of Physiological Sciences proposed an ethical resolution in 2001, but it was only for physiological studies on humans and animals [13]. The impact of teaching ethics goes beyond research ethics. Over the years, there has been a renewed focus on Clinical Medical Ethics which is not primarily seen as a branch of bioethics, philosophical ethics, legal ethics or theoretical ethics. Mark Siegler developed this field as a central component of clinical care that must be practised and applied by licensed clinicians in their ordinary encounters with patients [14]. Rather than simply "studying" medical ethics, students should be "practising" it [15]. The competency-based curriculum and its tenets like early clinical exposure and integrated teaching put the focus back on physiology as a precursor of applied medicine rather than a non-clinical subject. Educators have also proposed ways to develop humanistic competencies within the CBME right from the first year [16].

Who should teach medical ethics in physiology?

This is a never-ending debate, but respondents in our study have proposed a diverse set of facilitators. Proponents of bioethics suggest that philosophers, lawyers, and other non-medical people instil such concepts, but those behind the Clinical Medical Ethics movements find it feasible to practise "walking the talk" in clinical scenarios [14], especially after the advent of the competency-based curriculum. Even the NMC in India has further reduced the appointment of non-medical teachers in the departments of Anatomy, Physiology, Biochemistry, Pharmacology, and Microbiology post-CBME. The advent of CBME abolishes the boundary between clinical and non-clinical departments as students get clinical education right from the first professional year. This necessitates adequate training of all non-medical faculty in CBME and they must undergo at least the existing three-day revised basic training in medical education within a month of joining.

In its present form, medical ethics is largely rooted in western culture in high-income countries where it is widely taught [17]. Hence, there is a need for the medical ethics programme to be tailored to the specific needs and characteristics of the society in which it is delivered [18]. For example, Western perspectives are influenced by philosophers such as Kant, Mills, etc, and Eastern perspectives are shaped by Buddhism, Hinduism, and the philosophy of Asian philosophers such as Confucius, Lao Tzu,

etc. Therefore, an adequate mix of interdisciplinary diverse facilitators who can adapt and contextualise the content is essential.

Where should medical ethics be incorporated in physiology?

Ethics must not be a mere "add-on". Teaching ethics separately as AETCOM has limitations. It excludes the discipline as an elite, exclusive specialisation and the realm of a few [19]. Moreover, many faculty consider it under the domain of Medical Education Units and completely dissociate themselves from it. Most examples of well-integrated ethics systems have come from high-income developed countries [20, 21]. Before the advent of CBME, St. John's Medical College in Southern India was the first to incorporate medical ethics into the physiology teaching-learning curriculum as a pilot, proof-of-concept programme called "Thinking Ethics" [15]. This was in comparison to the Medical Ethics department's separate ethics courses. According to the students surveyed, it was "thought-provoking, novel, relevant, and well-integrated".

It was followed up by a scaled-up integrated ethics curriculum in three different medical colleges in Karnataka, India, and both students and observers found it to be feasible [22]. Students from both India and the United States acknowledged that ethics should not be limited to physiology alone, but should be incorporated into the entire critical thinking process [15,19,23] and not as separate, exclusive AETCOM sessions. These successful endeavours were largely ignored by curriculum reformers while bringing in CBME, and therefore, we suggest tried and tested innovations in the Indian context first, rather than yet to be fully tested AETCOM. In the past three years since the launch of AETCOM, we have used medical ethics teaching in the foundation course (student debate on professionalism and social media; trigger films to teach ethics to medical and nursing students); in the disability competencies module; in didactics [history of medicine, Differences (rather disorders) of Sex Development and transgender health in Reproductive Physiology]; in practical classes while highlighting ethical dilemmas on subjects (confidentiality, privacy, gender identity and expression, coercion); haematological disabilities (saviour sibling, pre-natal diagnosis in haemoglobinopathies); AETCOM (Doctor-Patient relationship); Early Clinical Exposure (Dialysis and renal transplantation); and even in summative assessment (short answer question in term examination).

How and when should medical ethics in physiology be taught?

Both small and large group setting can help in teaching ethics in physiology education. However, we need to shift towards student-centred, open-ended, self-directed learning, and sometimes inconclusive sessions [15,19]. The AETCOM module's instructional modality is primarily focused on case studies, a "problem-solving" model that humanists have criticised as a challenge to critical thought [16]. Case studies

primarily based on western contexts could stifle innovation and creativity and are antithetical to the very concept of ethics and diversity. Respondents to our survey highlighted various concepts, such as teaching by humiliation, and inappropriate use of social media that need to be discussed and debated in classrooms. The history of medicine provides enough starting points in physiology to talk about diverse ethical issues. The exciting and growing field of health humanities provides diverse, and engaging tools like theatre of the oppressed, poetry, narrative medicine, disability studies, intersex studies, and the use of films to teach and imbibe ethics [16]. We have used Forum Theatre, poetry, visual arts, storytelling, trigger films, and reflective narratives to teach medical ethics in physiology [24].

Goswami et al [10] and Savitha et al [22, 25] provide content to include in ethics sessions that is in sync with our respondents. We believe ethics is an inseparable part of medical education which can be part of all instructional modalities. The evidence has already been provided by an Indian study that found that integrated ethics sessions did not interfere with regular physiology teaching for 59 to 66% of students across three separate medical colleges [25]. Physiology educators from Delhi in our study reiterated the same point with respect to CBME and the majority believed that ethics education should be part of didactics, practicals, ECE, and AETCOM rather than in AETCOM alone.

Strengths and limitations of the study

Our research looked at the perspectives of senior residents (post-MD) who regularly participate in didactic and practical sessions and interact with students more frequently and closely than senior faculty. Previous studies have largely ignored these important stakeholders. Residents serve as near-peers to undergraduate students, and literature supports the use of near-peers to take ethics teaching sessions to bridge the education-action gap [26, 27]. This also compensates for the faculty shortage (and cutdown by NMC) in pre- and para-clinical subjects. Also, Delhi being the capital of India, is the hub of policymaking, and quite a few respondents are from the key institutions in the city. For curricular reforms, policymakers frequently appear to place greater trust in two institutions of national importance in and around Delhi. Unfortunately, the first has not yet revised its curriculum to be competency-based, but it does sit on committees to develop one for other medical schools, and the second does not even have undergraduate teaching. Our study complements the voices of those who are doing, rather than those who preach. Our study is not without limitations. First, it has a small sample size as it only captures the needs assessment by physiology educators within Delhi, and secondly, it does not take students' viewpoints into account. However, we navigated this lacuna by incorporating Indian studies involving student feedback into our discussion.

Conclusion

The NMC deserves credit for formalising medical ethics in the new CBME. However, they ignored the most important stakeholders, the faculty, who, in practice, will be implementing CBME. Unlike what is prescribed, respondents believed that ethics should be an inseparable part of physiology teaching in didactics, practicals, ECE, and AETCOM and should not just be a standalone separate AETCOM module. Teaching ethics is a shared responsibility and must not be relegated to only a few. Faculty and resident capacity building, as well as the use of innovative tools, are required to instil a culture of change. We hope this study, among the only ones of its kind in the country, can help inform further refinements to the approach to teaching ethics to undergraduate medical students in India.

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