Original Article

Evaluation of medical ethics education using the CIPP model: a study on the perspectives of medical students

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Abstract

Many medical schools are adopting varied teaching strategies to enhance students' understanding of the humanitarian aspects of their specialties. This study evaluated medical ethics education at Kerman University of Medical Sciences (Iran) from the students' perspectives using the CIPP model

A cross-sectional study involving 136 clerkship medical students used convenience sampling and a validated, researcher-made questionnaire based on the CIPP model. The questionnaire, divided into context, input, process, and product sections, assessed the achievement of the program's goals, requirements, implementation, and outcomes of the medical ethics training program.

The results revealed that the product domain scored the highest (79.17±21.82), while the input domain scored the lowest (54.30±29.00). The medical ethics program successfully communicated ethical concepts and enhanced students' understanding, excelling in the product domain. However, it requires improvements in the context, input, and process areas, such as aligning materials with cultural norms, and boosting students.

It is hypothesized that the medical ethics program at Kerman University of Medical Sciences is robust and aligns well with the CIPP model standards. While the program excels in educational outcomes, there is room for improvement in the context, input, and process dimensions. This study offers pivotal insights for advancing and refining future medical ethics programs.

Keywords: *Medical ethics; Education; Students; CIPP model.*

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Introduction

While the practice of medical ethics training dates back nearly 2,500 years, the inclusion of modern medical ethics education in general medical programs is a relatively recent development. Medical ethics play a pivotal role in training competent physicians who are dedicated to enhancing societal well-being and prosperity, while steadfastly upholding the principles of justice, dignity, and human rights (1,2). If physicians act unethically, their actions can significantly undermine public trust in medical professionals. Therefore, the crux of medical ethics education lies in emphasizing ethical issues and equipping physicians with the skills to navigate morally complex situations (3). Over the past 50 years, formal ethics education has become a standard component of the medical curriculum in many Western countries. The establishment of a structured curriculum has facilitated a comprehensive empirical understanding of the most effective methods for teaching medical ethics. In countries such as the UK and the USA, ethics education is expected to be conceptually coherent, multidisciplinary, academically rigorous, and integrated both vertically and horizontally throughout preclinical and clinical training. It should also reflect compassionate and value-conscious medical practice (4).

Due to the unique needs and structures of different medical schools, medical ethics programs and their teaching methodologies vary around the world (5). Various studies on different methods of teaching medical ethics courses show that students prefer approaches such as group learning, discussions on media, literature, or moral dilemmas, and even virtual learning initiatives over traditional methods (6-8). Furthermore, investigating the efficacy of medical ethics education has consistently been a topic of interest, leading to numerous studies conducted in this field over time.

The Medical Ethics and History of Medicine Research Center at Tehran University of Medical Sciences (TUMS, Tehran, Iran), in collaboration with the Medical Education Development Office, designed and implemented a reform project to enhance the medical ethics education program. The center reported this paradigm shift in 2011 (9). This medical ethics curriculum has also been incorporated at other universities in Iran. Meanwhile, the medical ethics education programs at various institutions have been evaluated by their

respective lecturers. A review of the challenges facing medical ethics curricula identified five dimensions—comprehensiveness of objectives, integrated structure, appropriateness of content, active teaching methodology, and a comprehensive evaluation system—as potential pitfalls. This study demonstrated that these shortcomings in the medical ethics curriculum could pose significant barriers to students' moral development (10). In another study, the quality of the medical ethics curriculum was examined in relation to the nine elements of Frances Klein's model for internal quality and the Kirkpatrick model for external quality, as perceived by internship students in Mashhad, Iran. The results indicated that the medical ethics curriculum was inadequate in both internal and external quality (11). While there has been progress in developing medical ethics education programs in Iran, numerous challenges remain to be addressed for their successful implementation in universities of medical sciences. The evidence mentioned above highlights a noticeable knowledge gap regarding the impact of learning cultures on local programs. Indeed, a significant challenge exists in assessing medical ethics education, further complicated by the limited literature on effective strategies for medical ethics programs (12). The CIPP educational evaluation model is a management-oriented approach that helps identify the strengths and weaknesses of educational programs. The CIPP model was introduced by Stufflebeam et al. in the late 1960s as a powerful and comprehensive framework for evaluating educational initiatives. It comprises four key elements-context, input, process, and product evaluations-each serving a distinct yet interconnected role. Context evaluation examines the needs of the target audience and the environment in which the program is implemented, ensuring that it is well-suited to its intended setting. Input evaluation assesses the program's resources, including funding, personnel, and materials, to determine their adequacy and alignment with program goals. Process evaluation evaluates the implementation of the program, monitoring its adherence to the planned approach and identifying areas for improvement. Product evaluation rigorously assesses the program's outcomes, determining whether it has met its intended objectives and goals. The CIPP model is notable for its comprehensiveness, flexibility, and emphasis on decision-making. It serves as an interactive framework that can be tailored to the specific needs of any educational program, whether at the individual classroom level, across entire districts, or even at state-wide education systems (13). For

nearly 15 years, Kerman University of Medical Sciences in Kerman, Iran, has been a leader in advancing medical ethics education by implementing a diverse array of innovative pedagogical strategies. Recognizing the essential role of student feedback in the ongoing improvement of medical ethics programs, it has become clear that significant modifications to the teaching approach may be necessary. Therefore, this study was initiated to evaluate the program using the CIPP model from the students' perspectives, aiming to assess the achievement of program objectives, identify essential requirements, and analyze both the implementation and outcomes of the medical ethics training. This research is designed to offer valuable insights and strategic guidance for the future refinement and enhancement of medical ethics education.

Methods

Study design and setting

A cross-sectional study conducted in 2022 included a total of 136 medical students, representing 62.4% of the 218 students enrolled in the clerkship program at Kerman University of Medical Sciences (Kerman, Iran). Participants were selected using a non-probability convenience sampling method. To qualify for the study, students needed to have completed two credits of the medical ethics course as outlined in the approved curriculum (9) during their clerkship period. Additionally, they were required to provide oral informed consent and must not have received any prior training in general medical ethics. Students with more than 10% of questions unanswered were excluded from the study.

The medical ethics course is offered to clerkship medical students once per semester, spanning 16 weeks. The curriculum is designed to cover a range of ethical topics, including the history of medicine, ethical analysis and its tools, informed consent, confidentiality and truth-telling, the physician-patient relationship, conflicts of interest in medicine, medical errors and the law, ethical issues in end-of-life care, breaking bad news, elderly care, ethical issues at the beginning of life, and ethical considerations in disasters and blood transfusions, as well as professionalism.

The course was delivered in an interactive, face-to-face classroom setting. The instructor utilized various teaching methods, including case-based training, video and film presentations, painting exercises (14), examination of journal articles, the use of a logbook, and discussions in both small and large groups.

Data collection

A 38-item, researcher-made questionnaire was utilized in this study, designed according to the CIPP model introduced by Stufflebeam DL et al. (13). The questionnaire comprised four sections: context, input, process, and product, each addressing the achievement of program goals, necessary requirements, implementation, and outcomes of the medical ethics training program at Kerman University of Medical Sciences.

The questionnaire was made utilizing the medical ethics curriculum prevalent in Iran, along with relevant literature sources (9,15). The detailed confirmation and reporting of the instrument's psychometric properties (CVI=0.97, CVR=0.89, the confirmatory factor analysis $\chi 2/df=1090.83/557=1.96$, $P=0.001$, MSEA=0.08, SRMR=0.09, CFI=0.93, IFI=0.93, RFI=0.90, NFI=0.9) can be found in a separate publication (16).

The CIPP model, divided into four main components, elucidates the essential requirements of the program, the defensibility of the course, its effective execution, and its significant impact. The scoring system for each item is based on a three-point scale: "Yes" is scored as 2, "No idea" as 1, and "No" as 0. In the product domain, three items are reverse-scored. Ultimately, the total score for each domain is calculated and then normalized to a scale of 0 to 100 to facilitate more effective comparisons. As a result, each domain receives a score ranging from 0 to 100. In this scoring system, a score below 50 is deemed unsatisfactory, a score between 51 and 70 is considered moderately satisfactory, and a score between 71 and 100 is classified as satisfactory.

Additionally, three open-ended questions were formulated to allow students to provide descriptive responses. Students could select from multiple options. These questions, aimed at enriching the product section of the instrument, included: "What strategies could enhance the teaching of medical ethics?", "What barriers hinder the achievement of the course's objectives?", and "What other suggestions do you have regarding the objectives of the course?" (16).

Statistical analysis

Data were analyzed using SPSS Version 22, employing independent t-tests and Pearson's correlation coefficient tests. A significance level of $P\leq 0.05$P was considered statistically significant in this study.

Ethical considerations

Upon receiving the ethical approval code (IR.KMU.AH.1400.019), the researcher guided the participants in completing the questionnaires,

which took approximately 15 to 20 minutes. Participants provided their responses voluntarily and anonymously.

Results

A total of 136 trainees participated in the study, with a majority being female (61.8%) and a mean age of 23.77 ± 1.06 years. Table 1 presents the indicators of central tendency, dispersion, and distribution, along with the desirability levels of scores across various domains. No significant differences were found in the mean scores of different domains based on age and gender ($P > 0.05$). Additionally, the desirability levels across these domains showed no significant differences based on the aforementioned variables ($P > 0.05$). Medical ethics education was deemed satisfactory in the product domain but only slightly satisfactory in the context, input, and process domains.

Table 1: Indicators of central tendency, dispersion, and distribution, along with desirability levels of CIPP model scores.

		Context	Input	Process	Product
Mean		63.91	54.30	58.27	79.17
N		136	136	136	136
Std. Deviation		28.17	29.00	27.54	21.82
Median		65.38	57.14	62.500	85.71
Minimum		.00	.00	.00	14.29
Maximum		100.00	100.00	100.00	100.00
Desirability level N (%)	Undesirable	39 (28.7)	59 (43.4)	63 (46.3)	15 (11.0)
	Relatively desirable	40 (29.4)	26 (19.1)	26 (19.10)	12 (8.8)
	Desirable	57(41.9)	51(37.5)	47(34.6)	109 (80.1)

Table 2 presents the distribution of students' responses regarding the medical ethics course at Kerman University of Medical Sciences. According to the table, the highest scores were recorded for item 11 in the context area, item 1 in the input area, item 2 in the process area, and items 5 and 6 in the product area, respectively.

Furthermore, students at Kerman University of Medical Sciences provided positive feedback on several important aspects of the medical ethics program. In the input area, items 1 (67.7%), 9 (58.1%), 3 (83%), and 4 (62%) received favorable responses. Additionally, in the process area, item 1 garnered positive feedback from 85% of students. However, certain aspects of the medical ethics program did not receive positive responses, including item 1 (47.8%) and item 7 (45.6%) from the context area, as well as item 2 (45.6%), item 6 (60.3%), and item 7 (52.2%) from the input area.

Table 2: The distribution of students' responses concerning the medical ethics program at Kerman University of Medical Sciences

	Items	Yes	No Idea	No
Context	1- Clarity of educational goals	92 (67.6%)	7(5.1%)	37 (27.2%)
	2- Practicality of resources and materials	51(37.5%)	20 (14.7%)	65 (47.8%)
	3- Appropriateness of workload and content	62 (45.6%)	21(15.4%)	53 (39.0%)
	4- Effectiveness of the teacher-student relationship	88 (64.7%)	13 (9.6%)	35 (25.7%)
	5- Satisfaction with course assessments	65 (47.8%)	11 (8.1%)	60 (44.1%)
	6- Ability to perform clinical ethical analysis	64 (47.1%)	19 (14%)	53 (39%)
	7- Proficiency in using tools for clinical ethical analysis	61 (44.8%)	13 (9.6%)	62 (45.6%)
	8- Awareness of the importance of respecting patients' rights	101 (74.3%)	5 (3.7%)	30 (22.1%)
	9- Awareness of the need to respect other healthcare professionals	79 (58.1%)	10 (7.4%)	47 (34.6%)
	10- Understanding the significance of informed consent in the physician-patient relationship	103 (75.7%)	5 (3.7%)	28 (20.6%)
	11- Understanding the importance of maintaining confidentiality and respecting patients' privacy	113 (83.1%)	4 (2.9%)	19 (14%)
	12- Comprehension of managing conflicts of interest in the physician-patient relationship	84 (61.8%)	12 (8.8%)	40 (29.4%)
	13- Awareness of how professional behavior influences public trust	93 (68.4%)	8 (5.9%)	35 (25.7%)
Input	1- Alignment of course content with educational objectives *	99 (72.8%)	7 (5.1%)	30 (22.1%)
	2- Customization of course content to address students' needs	63 (46.3%)	11 (8.1%)	62 (45.6%)
	3- Achievement of the course's teaching objectives	83 (61%)	11 (8.1%)	42 (30.9%)
	4- Appropriateness of the course volume	62 (45.5%)	10 (7.4%)	64 (47.1%)
	5- Teachers' qualifications and expertise	83 (61%)	13 (9.6%)	40 (29.4%)
	6- Adequacy of student motivation to engage with the course	41 (30.1%)	13 (9.6%)	82 (60.3%)
	7- Addressing ethical needs of patients	42 (30.9%)	23 (16.9%)	71 (52.2%)
Process	1- Clarity of course materials	85 (62.5%)	12 (8.8%)	39 (28.7%)
	2- Use of diverse instructional methods	100 (73.5%)	7 (5.1%)	29 (21.3%)
	3- Incorporation of various student activities	99 (72.8%)	14 (10.3%)	23 (16.9%)
	4- Collaboration between teaching hospitals and faculty	34 (25.0%)	22 (16.2%)	80 (58.8%)
	5- Satisfaction with faculty services	51 (37.5%)	18 (13.2%)	67 (49.3%)
	6- Practical relevance of the course	60 (44.1%)	15 (11.0%)	61 (44.9%)
	7- Overall satisfaction with the educational experience	55 (40.4%)	18 (13.2%)	63 (46.3%)
	8- Awareness of ethical challenges in healthcare settings	92 (67.6%)	10 (7.4%)	34 (25.0%)
Pr od	1- Preparation for becoming an ethically conscious physician	85 (62.5%)	22 (16.2%)	29 (21.3%)

2- Understanding the ethical conditions for using anonymous tissue samples in research	74 (54.4%)	12 (8.8%)	50 (36.8%)
3- Awareness of prioritizing patient safety in educational environments **	18 (13.2%)	10 (7.4%)	98 (72.1%)
4- Recognizing the importance of maintaining patient privacy in multi-bed rooms	108 (79.4%)	6 (4.4%)	22 (16.2%)
5- Understanding the significance of informing patients about harm caused by medical errors	110 (80.9%)	9 (6.6%)	17 (12.5%)
6- Understanding the importance of addressing unprofessional behaviors appropriately	110 (80.9%)	9 (6.6%)	17 (12.5%)
7- Recognizing the need to treat patients with inappropriate behaviors fairly	108 (79.4%)	12 (8.8%)	16 (11.8%)

** More details about the item can be found in the reference No. 16.*

***Missing value: 10(7.4)*

The students' responses to the three open-ended questions highlighted several strategies to improve the teaching of medical ethics. These included involving clinical professors in education (93%), conducting clinical ethics case presentations (87%), and having lessons taught by professors from various specialties (73%). The obstacles hindering the course objectives were identified as the lack of clinical professors' participation in teaching (75%), the inappropriate scheduling of the medical ethics course within the general medicine curriculum (62%), and a lack of student motivation (62%). In response to the final question, students suggested incorporating medical ethics topics into multiple sessions across each clinical department and ensuring that clinical professors and other healthcare providers in teaching hospitals adhere to ethical professional standards.

Discussion

Four areas of medical education quality were assessed in this study using the CIPP model. The findings revealed that the medical ethics education program was satisfactory in the product domain, but only slightly satisfactory in the context, input, and process domains. In the context area, many students agreed on the importance of respecting patients' rights, adhering to professional standards, obtaining informed consent, maintaining confidentiality, and resolving conflicts of interest. However, more than half of the students reported that the resources and materials used in the medical ethics course were not practical for real-world application. Additionally, while students expected the course to foster effective communication between professors and students, clarify educational goals, and ensure the appropriateness of group work, they found the course's educational

resources to be impractical. This observation aligns with the findings of a study by Khaghanizade et al. (10). Another qualitative study, conducted through interviews with experts in medical ethics education, revealed that the medical ethics curriculum lacks a strong cultural and religious identity. This absence has led to the sporadic inclusion of medical ethics topics without a cohesive foundation. As a result, the curriculum's structure may be unclear, potentially causing confusion for students studying medical ethics. (17). Moreover, a review of the strengths and shortcomings of medical ethics training, based on the strengths, weaknesses, opportunities, and threats (SWOT) model, highlighted that one of its key weaknesses is the lack of a comprehensive educational curriculum and adequate rich resources (18). These findings align with the results of our study. In the Input domain, most students acknowledged that the content of the medical ethics course was relevant to the educational objectives of the medical school. However, 45.6% felt that the course was not tailored to their specific needs, and 52.2% believed they were not adequately equipped to address patients' ethical needs. Additionally, while the majority of students agreed that the course content significantly aligned with the educational goals and that the teachers were qualified, the ability to achieve these goals remained a concern for some. Previous studies in Iran have echoed these results, suggesting that educators should reassess the medical ethics curriculum and conduct a thorough needs assessment with medical students to address ethical issues more effectively in clinical settings (10,11,19). It seems that conducting a needs assessment study in our settings could aid medical ethics educators in developing and implementing the medical ethics education program, examining the educational resources and materials, and achieving the objectives of medical ethics education. The students in these studies expressed a preference for medical ethics education that focuses on real-world situations they encounter daily. Consequently, educators can present ethical dilemmas that medical students may face. Additionally, in the input area, nearly 60% of our students indicated a lack of motivation to engage with medical ethics courses. This observation is consistent with findings from a study conducted at Glasgow University (20), which also highlighted insufficient student motivation in medical ethics education. The alignment between these findings suggests that students may perceive these courses as failing to meet their needs, leading to a reluctance to invest further in their studies.

Additionally, we did not receive positive responses from students in the process area regarding items such as the clarity and understandability of the medical ethics course materials, satisfaction with the medical ethics department's services, and satisfaction with the medical ethics educational experience. These issues may relate to the absence of this course in clinical settings. Moreover, within the process area of our study, the majority of students reported a clear understanding of the course material, attributing this clarity to the diverse activities incorporated into the curriculum. They expressed strong approval of the varied teaching methods employed, the effective use of instructional aids, and the demonstration of necessary teaching skills by their instructors. Additionally, students noted a significant increase in their familiarity with ethical issues in healthcare upon completing the course. However, less than half of the students expressed dissatisfaction with the level of collaboration between the teaching hospital and the medical school regarding medical ethics education. Furthermore, they felt they lacked the ability to meet patients' needs, which could be attributed to the absence of teaching in a clinical setting, the brevity of the medical ethics course, and a lack of sufficient motivation among students to engage with medical ethics courses. These challenges indicate a need for greater interdepartmental collaboration and coordination, particularly within teaching hospitals, to integrate the educational process. In a survey conducted in Isfahan, the effectiveness of strategies for enhancing medical ethics education was highly commended. These strategies included bedside ethics education, tailoring lesson content to meet students' needs, and the preparation and revision of educational themes. The teaching of medical ethics by a multidisciplinary team, including medical ethics scholars and clinical educators, could also be facilitated (18). The results of this study are consistent with our findings.

Additionally, a questionnaire study on medical ethics teaching in a Turkish medical school indicated the need for integrated ethics training in the six-year medical curriculum provided by a multidisciplinary team. According to this study, many medical schools struggle to effectively instill moral attitudes in students through their teaching, assessment, and evaluation methods in medical ethics training (21). The results of this study are consistent with our findings.

Furthermore, a scoping study on undergraduate medical ethics training underscored the significance of a multidisciplinary teaching team with expertise in areas such as ethics, law,

communication, professional commitment, and health systems (22). Another study conducted in Turkey explored students' perspectives on medical ethics education during the preclinical phase using a focus group approach. In this study, students suggested various methods to enhance learning, including group studies with case discussions, role-playing, clinical visits, patient interactions, and conferences featuring case presentations and discussions (6). This study revealed additional obstacles in medical ethics education, the most important of which were the interrelationship between medical ethics and clinical departments and the teaching methodology employed. Overall, medical ethics educators can achieve their teaching objectives and enhance the competence of medical students by recognizing ethical clinical challenges. This can be accomplished through collaboration with clinical professors and by motivating students using various instructional methods.

According to the product area in this study, the majority of the students believed that this course helps them accept their future role as ethical physicians. They significantly recognized the priority of patient safety in the educational environment, the importance of patients being aware of the harm caused by medical errors, the need to treat patients with inappropriate behaviors fairly, and the importance of responding appropriately to unprofessional behaviors. Thus, the product domain of our study indicates that the medical ethics training course could effectively enhance students' knowledge and understanding of clinical ethical challenges.

In the present study, the students suggested addressing medical ethics topics in multiple sessions across various clinical areas. One strategy employed by instructors, as revealed in a previous study (23), involved organizing medical ethics meetings within the clinical department and examining medical ethics issues in a clinical context. Generally, the integration of medical ethics education into clinical training is crucial for students to effectively apply ethical principles to real-world scenarios.

Another barrier to achieving the educational objectives of the medical ethics course, as identified by students, is the lack of adherence to ethical principles by clinical professors and other healthcare providers in teaching hospitals, which results in ineffective medical ethics education. Indeed, an inappropriate clinical role model can create moral conflicts in medical trainees, thereby perpetuating a vicious cycle. Consequently, one of the main reasons for the students' inability to act ethically in certain Scenarios based on patients'

needs highlight the stark contrast between what students are taught and what they experience in professional settings. Moreover, role models play an instrumental role in molding and shaping students' professional identities (24, 25), as well as in influencing their selection of future career paths (26-29).

Limitation Title

First, the generalizability of our findings is limited. This study was conducted at a single center, with a small participant pool and without a control group. Additionally, there are few studies using the CIPP model for teaching medical ethics in Iran and other parts of the world. Consequently, the applicability of these findings to other contexts remains uncertain. Second, factors such as students' learning method preferences, the use of course study resources, and the brief duration of participation in medical ethics classes might have influenced the students' responses to the questionnaire. These variables were beyond the control of the researchers. Third, reaching the participants was challenging, as the target audience consisted of medical students. Finally, the students might not have had the necessary concentration to complete the questionnaire due to their busy schedules or other reasons. To mitigate this challenge, we consulted with the students prior to distributing the questionnaires. After obtaining their consent and ensuring their preparedness, the questionnaires were completed anonymously.

Conclusion

This study's model effectively identifies several aspects that contribute to the efficacy of the medical ethics course. From the context area, it highlights that "passing the medical ethics course helps to understand the effectiveness of maintaining confidentiality and observing patients' privacy in the physician-patient relationship." The input area emphasizes "the relevance of the course content to the educational objectives." In the process area, it notes "employing a variety of instructional teaching methods." The product area reveals top-rated aspects, including "understanding the significance of patients being aware of the harm caused by medical errors" and "understanding the importance of responding appropriately to unprofessional behaviors." These positive evaluations across key dimensions of the CIPP model suggest a promising level of success for our medical ethics program. Given the positive outcomes observed in the product domain, the medical ethics education program at Kerman University of Medical Sciences has effectively

imparted ethical concepts, fostered ethical sensitivity among students, and enhanced their understanding of ethical challenges in clinical settings. This success indicates that the program can make a significant impact. However, students' slightly satisfactory ratings in the context, input, and process domains of the CIPP model reveal areas needing improvement. Key factors for more effective learning include the need for reference materials and educational content that align with cultural and social norms, enhanced student motivation to engage with academic texts, and increased collaboration with various organizations and departments. Specifically, greater interaction with teaching hospitals, medical ethics groups, and clinical departments, as well as involving clinical professors as role models, is essential. Additionally, revising ethical standards and procedures could further enhance the program. This feedback provides valuable insights for refining the program and improving the teaching of medical ethics, guiding future developments to ensure a more impactful and effective educational experience.

Conflict of interests

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