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Article abstract

Introduction: The rapid advancement of intricate technologies and the emergence of novel surgical methodologies necessitate nuanced ethical decision-making under high-stress scenarios. Consequently, cultivating an understanding of professional ethics within the surgical environment is crucial for all practitioners involved in patient care. This study was initiated with the aim of designing a comprehensive curriculum for Iranian medical schools, focusing on professional ethics within the operating room. **Methods:** This mixed-method exploratory research was executed in distinct qualitative and quantitative phases. The first stage involved conducting 12 structured interviews with Iranian faculty members who were experts in education of professional ethics and operating room staffs for assessing the current needs and reviewing extant curricula. The subsequent quantitative phase entailed evaluating the elements of each curriculum axis via the Delphi method. **Results:** The qualitative phase led to the identification of 45 primary codes, 14 subcategories, and 5 primary categories. The quantitative phase confirmed 3 instructional goal domains, 12 instructional content areas, 8 teaching methodologies, and 10 evaluation methods through the Delphi process. These confirmed components were eventually incorporated into various theoretical and clinical courses as longitudinal integration themes. **Conclusion:** Based on our findings, we recommend the development of educational objectives targeting cognitive, affective, and psychomotor domains and the longitudinal integration of a professional ethics course.

ARTICLE (ÉVALUÉ PAR LES PAIRS / PEER-REVIEWED)

Development of Professional Ethics Curriculum in the Operating Room for the Current Era of Surgery: A Mixed Method Study

Leila Sadati[a], Morteza Motaharipour[b], Ayesha Younas[c], Hoorvash Farajidana[d], Fakhrolsadat Hosseini[e], Rana Abjar[f]

Résumé

Introduction : Les progrès rapides des technologies complexes et l'émergence de nouvelles méthodologies chirurgicales nécessitent une prise de décision éthique nuancée dans des scénarios très stressants. Par conséquent, la compréhension de l'éthique professionnelle dans l'environnement chirurgical est cruciale pour tous les praticiens impliqués dans les soins aux patients. Cette étude a été lancée dans le but de concevoir un programme complet pour les facultés de médecine iraniennes, axé sur l'éthique professionnelle au sein de la salle d'opération. **Méthodes :** Cette recherche exploratoire à méthode mixte a été exécutée en phases qualitatives et quantitatives distinctes. La première étape a consisté à mener 12 entretiens semi-structurés avec des professeurs iraniens experts dans la formation à l'éthique professionnelle et le personnel des salles d'opération afin d'évaluer les besoins actuels et d'examiner les programmes existants. La phase quantitative suivante a consisté à évaluer les éléments de chaque axe du programme d'études par le biais de la méthode Delphi. **Résultats :** La phase qualitative a permis d'identifier 45 codes primaires, 14 sous-catégories et 5 catégories primaires. La phase quantitative a confirmé 3 domaines d'objectifs pédagogiques, 12 domaines de contenu pédagogique, 8 méthodologies d'enseignement et 10 méthodes d'évaluation par le biais du processus Delphi. Ces éléments confirmés ont finalement été incorporés dans divers cours théoriques et cliniques en tant que thèmes d'intégration longitudinale. **Conclusion :** Sur la base de nos résultats, nous recommandons l'élaboration d'objectifs pédagogiques ciblant les domaines cognitif, affectif et psychomoteur et l'intégration longitudinale d'un cours d'éthique professionnelle.

Mots-clés
programme d'études, éthique professionnelle, intégration, salle d'opération, étude à méthodes mixtes, Iran

Abstract

Introduction: The rapid advancement of intricate technologies and the emergence of novel surgical methodologies necessitate nuanced ethical decision-making under high-stress scenarios. Consequently, cultivating an understanding of professional ethics within the surgical environment is crucial for all practitioners involved in patient care. This study was initiated with the aim of designing a comprehensive curriculum for Iranian medical schools, focusing on professional ethics within the operating room. **Methods:** This mixed-method exploratory research was executed in distinct qualitative and quantitative phases. The first stage involved conducting 12 structured interviews with Iranian faculty members who were experts in education of professional ethics and operating room staffs for assessing the current needs and reviewing extant curricula. The subsequent quantitative phase entailed evaluating the elements of each curriculum axis via the Delphi method. **Results:** The qualitative phase led to the identification of 45 primary codes, 14 subcategories, and 5 primary categories. The quantitative phase confirmed 3 instructional goal domains, 12 instructional content areas, 8 teaching methodologies, and 10 evaluation methods through the Delphi process. These confirmed components were eventually incorporated into various theoretical and clinical courses as longitudinal integration themes. **Conclusion:** Based on our findings, we recommend the development of educational objectives targeting cognitive, affective, and psychomotor domains and the longitudinal integration of a professional ethics course.

Keywords
curriculum, professional ethics, integration, operating room, mixed-methods study, Iran

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INTRODUCTION

Healthcare settings are experiencing rapid transformations due to emerging needs, which often lead healthcare teams into a myriad of ethical quandaries. These are often further compounded by technological innovations and an evolving knowledge base, making medical ethics a particularly important discipline in the 21st century (1). In the operating theatre, ethical challenges may arise in various forms. One such challenge is the question of informed consent, particularly in emergency situations where the patient may be unconscious and unable to provide consent (2). Another example is the ethical dilemma of resource allocation, such as deciding who gets priority when there are limited operating rooms or surgical equipment (3). The advent of Artificial Intelligence (AI) in surgery, particularly in oral and maxillofacial cosmetic surgery, has introduced new ethical considerations, including concerns about data protection, diversity, and transparency (4). In gender-affirming medical care, healthcare professionals face ethical challenges related to decision-making, including dividing and defining decisional roles and bounds, negotiating decision-making in a multidisciplinary team, and navigating various decision-making temporalities (5).

In the context of bariatric surgery, patients face challenges in maintaining dietary changes and weight loss, highlighting the need for personalized dietary advice and ongoing psychological support (6). In low-middle income countries, the ethical challenge lies in ensuring equitable access to surgical care and the implementation of educational and training programs for local healthcare providers (7). These specific examples underscore the complexity of ethical decision-making in the operating theatre, highlighting the need for ongoing ethical reflection and discussion in surgical practice. Recent scholarship has significantly emphasized professional ethics or professionalism within medical education (8). It is increasingly acknowledged that medical education should include ethical curricula designed to cultivate clinical decision-making skills, foster professional ethics, and instill core values in medical and paramedical students (9).

However, critical questions persist regarding ethical instruction. Key issues include the specifics of what should be taught, who should teach it, and how this content should be imparted (10). Complicating matters, current professional ethics curricula often suffer from incoherence, insensitivity to societal needs, and isolated treatment of ethical topics (11,12). Thus, a coherent, up-to-date curriculum for professional ethics is a prerequisite for teaching ethical skills to various medical and paramedical groups, including nursing (13). Some experts argue that professional ethics teaching and evaluation should be integrated into undergraduate medical and dental curricula, with an emphasis on active learning and student engagement via case-based teaching (14).

Global research also underscores the significance of using diverse educational strategies for enhancing ethical learning experiences. Notably, top nursing schools worldwide have adopted methods such as integration, student-centred, community-centred, outcome-based, and problem-solving strategies (1). Employing varied educational models and assessment tools is crucial to promote professional ethics among medical students, as recommended by Ansari et al., with methods including reflection, feedback, clinical encounters, role-playing, bedside teaching, film and video usage, portfolio analysis, interactive seminars, mentoring, and problem-solving (15). These approaches have been corroborated by other scholars, who emphasize role-playing, mentoring, and reflection in ethics education (16), and the effectiveness of team-based teaching methods for self-directed learning and learning in action (17).

Successful course implementation for medical ethics and professional ethics also hinges on other factors, notably the timing of course presentation, which might be standalone theory courses or integrated with clinical courses throughout an academic semester. The latter approach has been advocated by AlMahmoud et al., who emphasize the effectiveness of integrated learning within clinical subjects over isolated theoretical courses (18). Integration, implying the organization of taught subjects and the creation of connections between different subjects in different courses, fosters mental coherence and deep understanding. Two forms of integration exist – horizontal and vertical – and both have been used extensively in medical schools to reinforce learning of basic science courses (19,20).

Notwithstanding, empirical evidence from the operating room illustrates the disappointing reality that, in Iran, extensive teaching of professional ethics has failed to produce graduates capable of comprehending and making ethical decisions in the challenging surgical environment (21,22). As future practitioners, medical graduates will frequently encounter a wide range of ethical topics in their daily routines, from respecting patient autonomy and confidentiality to teamwork, communication, and making appropriate decisions concerning abortions, assisted reproductive methods, organ transplants, emerging technologies, innovative surgical methods, surgical and anesthesia research, and cases involving crime victims (23). Accordingly, this study aims to develop a professional ethics curriculum tailored to the field of operating room technology for Iranian medical schools.

MATERIALS AND METHODS

The current research is an exploratory mixed-method study executed in two phases: qualitative and quantitative, in alignment with the Kern curriculum model (24).

The study was carried out from November 14 2021 to October 14 2022 at Alborz University of Medical Sciences, in Karaj, Iran, with the ethics code IR.ABZUMS.REC.1400.190.

Qualitative Phase

The initial phase comprised a general needs assessment conducted via a comparative study and a literature review of global professional ethics courses in English and Persian. Extracted data from this section was published in another article, in Persian (25). This process helped identify primary axes integral to the Kern-based curriculum design (24). Guided content analysis, following the methodology proposed by Hsieh and Shannon (26), was used to identify gaps in national curricula and practical domains in Iran. Twelve structured interviews were conducted, focusing on educational goals, content, teaching and assessment methodologies, and the presentation of the professional ethics course throughout academic semesters. The participants included 7 faculty members from operating room departments in four different universities, two operating room staff from two general hospitals, and three professional ethics and medical ethics course instructors from three medical and nursing schools in Iran. Guided content analysis facilitated data division into five categories: learning objectives, educational content, teaching methods, assessment methods, and the approach to delivering the course during the academic period. Data analysis commenced with the first interview and continued until the twelfth, when saturation was reached, and no new themes emerged.

Study Validity and Reliability

The study's accuracy was confirmed using Lincoln and Guba's four criteria: credibility, dependability, confirmability, and transferability (27). Prolonged engagement with data was used to ensure credibility, while member checking was used to increase dependability during the initial coding stage. External supervisor review confirmed the correctness of coding, and to meet the confirmability criterion, the entire data collection and analysis process was meticulously described. Full participant details were provided to facilitate data transferability.

Quantitative Phase

The Delphi method, widely used in literature to establish consensus on curriculum structure in various medical and nursing programs (28), was employed in the quantitative phase. An initial draft of the designed curriculum was based on the list of titles and themes extracted from the first phase, encompassing content, educational goals, teaching and assessment methods, and instructional strategy, along with a proposed academic period.

Delphi Participants

Expert selection considered educational qualifications, experience in professional ethics and operating room fields, and willingness to participate in the Delphi process. Three Delphi rounds were conducted over five months, with eighteen Iranian expert panel members participating in the first round from six nursing, medical and allied health schools in Iran. Experts evaluated the list of titles and themes extracted from the initial phase based on educational goals, teaching and assessment methods, and the proposed academic period, using a Likert scale with low (Score 1), medium (Score 2), and high (Score 3) options. They were also encouraged to note flawed items and provide corrective suggestions.

The mean scores were computed using Microsoft Excel, and cases with a mean score of 2 and above were approved based on expert panel consensus. The approved cases, along with recommended modifications, were then emailed to the experts for the second round, with fifteen responding. Mean scores were calculated a second time using Microsoft Excel, with cases holding a mean score of 2 and above approved based on the expert panel consensus. Descriptive statistics, such as mean/median and standard deviation, are advised for consensus calculations in the Delphi method (29). Following the approval of cases and review of some in the first and second rounds, the final curriculum was formulated and prepared in the Delphi survey's third round.

The presented data outlines a comprehensive and detailed integrated curriculum for professional ethics in Iranian operating rooms, derived from both qualitative and quantitative phases of research.

RESULTS

Qualitative Phase

The qualitative phase comprised a targeted review of curricula documents from undergraduate surgical technology programs globally, with the aim of identifying professional ethics modules and courses. Specifically, we reviewed program curricula from seven countries across three continents with different cultures (USA, Canada, Australia, Scotland, Pakistan, India, and Iran) to get a broad perspective on how professional ethics education is incorporated internationally. The review focused on identifying the structure, content, delivery methods, and learning outcomes related to professional ethics. Detailed findings from this review have been published separately in Iranian journals, in Persian (25).

Further, twelve structured interviews were conducted and analyzed using the directional content analysis method. This approach yielded a granular view of the components of a professional ethics curriculum, resulting in 145 primary codes, grouped under 14 subcategories and the five aforementioned main categories (Table 1).

Table 1: Extracted Categories and Subcategories in Qualitative Phase 1

Categories	Subcategories	Primary codes
Educational strategy	Discipline-base	Teaching in two separate courses
		Teaching in specialized courses
	Integration	Introducing ethics topics in every specialized course
		Presenting ethics topics with internship courses
Contents	Communication skills	Team working
		Therapeutic communication
		Verbal skills
		Non-verbal skills
		Empathy
		cooperation
	Medical ethics	Illegal abortion
		The four principles of ethics
		Victims of sexual assault and domestic violence
		Assisted reproductive methods
		informed consent
		Ethics in research
	Law and Ethics	Ethics codes
		Financial crimes
		Liability insurance
		Legal authorities for managing complaints
		Medical errors and malpractice
		informed consent
		Human rights
	Professional Behaviour	Values in disciplines
		Professional development
		Role modeling
Teaching methods	Passive	Lecture
	Active	Scenario-based teaching
		Role modeling
		Group discussion
		Demonstration
		Reflection
Assessment methods	Formative	Written tests (MCQ, essay)
		Expressing real experiences
		Direct observation
		Journal clubs
		Reflection
	Summative	Written tests (MCQ, essay)
		Direct observation
		Expressing real experiences
		Personal and Group Project
		Reflection in portfolio
		Seminar presentation
Educational Goals	Cognitive	Knowledge of legal and rule principle
		Awareness of the ethics approach
		Understanding of ethical issues in the operating room
	Affective	Interested in job
		Empathy reaction
		Attention to the patient's right
	Psychomotor	communication and teamwork
		Protecting patient privacy
		Doing right in a critical situation

Quantitative Phase

The Delphi process commenced with an expert panel of 18 participants, which decreased to 15 in the second round and concluded with 13 panelists in the final round, over a period of five months. Demographic details of the final 13 experts who participated in the last round of the Delphi survey are provided in Table 2.

Quantitative Phase – Analysis

Initial analysis of the survey items across five axes in the first round, using a mean index above 2 (from a maximum of 3), facilitated the agreement and acceptance of 11 educational content, 69 educational objectives, 6 teaching methodologies, 8 evaluation methods, and a strategy for vertical integration. During this stage, we expanded the initial table to include one additional educational content, two teaching methodologies, and two assessment methods.

Heeding the expert panel's suggestions, we further differentiated the learning objectives into cognitive, affective, and psychomotor domains, implementing a structured taxonomy. We determined and assigned suitable courses across different academic semesters, extending the table with the following categories: 'Main Concepts,' 'Academic Semester,' 'Course,' 'Course Type,' 'Learning Objectives,' 'Objective Domain,' 'Taxonomy,' 'Teaching Methods,' and 'Assessment Methods.' Subsequently, these revised items underwent a third review by the expert panel.

Table 2: Demographic Properties of Experts Participating in Delphi Rounds

Specialty	Number	Department	Gender	Mean age(year) ± SD	Experience(year)
Perioperative nurse	3	Country's Operating Room Board	2 Females 1 Male	53 ±1.4	26 ±2.7
Medical ethics	2	Medical Ethics Group	1 Female 1 Male	48.3 ±0/3	19.6 ±1.4
Perioperative nurse	3	Operating Room Group	3 Females	41.3 ±5.6	17.3 ±6.3
Medical Education	3	Medical Educational Development Centre	2 Females 1 Male	43.7 ±1/8	13 ±3.9
Forensic Medicine	1	Forensic Medicine Group	1 Female	45.9	11.6
Islamic Ethics	1	Islamic Ethics Group	1 Male	51.6	21.3

During the third and final round of the Delphi process, the expert panel approved the proposed vertically integrated professional ethics curriculum. This curriculum comprised ethical concepts, learning objectives across different taxonomies and domains, teaching methodologies, and assessment methods. These components can be concurrently taught across various academic semesters, dovetailing with other related theoretical and practical courses (Table 3).

Table 3: Integrated Curriculum of Professional Ethics in the Operating Room

Main concepts	Semester	Course title	Course type	Learning objective	Objective domain	Taxonomy	Teaching methods	Assessment methods
Communication	1	Introduction to surgery	Theory	Explain the main elements in the process of communication	Cognitive	1	Interactive lecture	Written test
				Compare types of communication with each other	Cognitive	1	Interactive lecture	Written test
				Discuss the importance of therapeutic communication with patients	Affective	2	Interactive lecture	Written test
				List the barriers to effective communication	Cognitive	1	Interactive lecture	Written test
				Explain the importance of communication and teamwork in patient safety	Cognitive	2	Interactive lecture	Written test
				List the common errors in communicating and doing teamwork in the operating room	Cognitive	1	Interactive lecture	Written test
	2	The internship of behaviour in the operating room	Practice	Respect the operating room staff	Psychomotor	3	Demonstration	Direct observation
				Criticize the strengths and weaknesses related to the admission of a patient to the operating room	Affective	4	Demonstration	Analytical report
				Listen carefully to the patient	Affective/ psychomotor	1	Demonstration	Direct observation
				Analyze the strengths and weaknesses of teamwork skills during your internship	Affective	4	Demonstration	Reflection in portfolio
				Demonstrate the skills of delivering bad news to the patient's family	Psychomotor	3	Demonstration	Direct observation
	2	Psycho health in the operating room	Theory	Voluntarily participate in a scenario to demonstrate correct and incorrect communication with the patient	Affective	2	Demonstration	Direct observation
				List the skills of giving bad news to companions	Cognitive	1	Demonstration	Written test
Human rights	3		Practice	Criticize informed consent taken from the patients during internship	Cognitive	4	Demonstration	Reflection in portfolio

		The internship of principles of Circulate technologist performance in the operating room		Develop practical guidelines to support the patients' rights	Cognitive	5	Demonstration	Reflection in portfolio
				Criticize the observance of the principle of confidentiality at the bedside with an example	Cognitive	4	Demonstration	Reflection in portfolio
				Respect patient privacy when admitting a female patient to the operating room	Psychomotor	3	Demonstration	Direct observation
	4	Professional ethics in the operating room	Theory	Explain the concept of informed consent	Cognitive	2	Interactive lecture	Written test
				Mention the main principles of informed consent	Cognitive	1	Interactive lecture	Written test
				Compare different types of medical consents	Cognitive	2	Lecture	Written test
				Explain the importance of the principle of confidentiality in the care and treatment of patients	Cognitive	2	Interactive lecture	Written test
				Describe the exceptions to non-compliance with the principle of confidentiality	Cognitive	1	Interactive lecture/group discussion	Written test
				Explain the importance of the patient's proper clothing and his/her personal privacy	Cognitive	1	Interactive lecture	Written test
Principle of medical ethics and professionalism	4	Professional ethics in the operating room	Theory	Explain the history of medical ethics in the world and Iran	Cognitive	1	Interactive lecture/group discussion	Written test
				Describe the four principles of medical ethics	Cognitive	1	Interactive lecture	Written test
				Compare the approaches of different schools to the ethics	Cognitive	2	Interactive lecture	Written test
				Define the concept of professional ethics and its elements	Cognitive	1	Interactive lecture	Written test
	4	Internship: principles of circulation technologist performance in the operating room	Practice	Apply the principle of justice to admitting patients to the operating room	Psychomotor	3	Demonstration	Direct observation
	5	Internship: operating room management	Practice	Analyze the current issues and challenges of surgery and anesthesia ethics in the world and Iran	Cognitive	3	Interactive lecture	Critical report
Ethics codes	4	Professional ethics in operating room	Theory	Explain the concept of codes of ethics in medical and paramedical professions.	Cognitive	2	Interactive lecture	Written test
				List the ethical codes approved by the American Association of operating room nurses	Cognitive	2	Interactive lecture	Written test
	6	Internship: emergency unit and PACU	Practice	React to non-compliance with the ethical codes in the operating room.	Affective	2	Case-based discussion	Daily note-taking
Medical negligence and documentation	4	Professional ethics in operating room	Theory	Explain the difference between negligence and crime	Cognitive	2	Interactive lecture	Written test
				Explain the types of malpractices in the operating room with examples	Cognitive	2	Interactive lecture	Written test
				Explain the role of documentation in legal proceedings related to negligence	Cognitive	2	Interactive lecture	Written test

	4	Internship: principles of scrub technologist performance in operating room	Practice	Analyze the reports registered in the files in terms of compliance with the standard principles of report writing	Cognitive	4	Demonstration	Reflection in portfolio
	5	Internship: surgery technics	Practice	React to the mistakes made by the surgical team members	Affective	2	Demonstration	Reflection in portfolio
	7	Internship: operating room management	Practice	give a speech regarding cases of malpractice in one's internship and preventive solutions	Cognitive	5	Clinical experience/self-study	Direct observation
Laws and authorities for dealing with medical malpractice	4	Professional ethics in the operating room	Theory	List the authorities for handling medical malpractice	Cognitive	1	Interactive lecture	Written test
				Explain the reasons for the increase in patients' complaints	Cognitive	1	Interactive lecture	Written test
Euthanasia and organ transplantation	4	Professional ethics in the operating room	Theory	Define the concept of euthanasia	Cognitive	1	Interactive lecture	Written test
				Actively participate in euthanasia-related topics	Affective	2	Interactive lecture	Observation
				Exemplify the types of euthanasia	Cognitive	1	Interactive lecture	Written test
				Criticize the different viewpoints related to the acceptance of euthanasia	Cognitive	4	Interactive lecture	Written test
	4	Cardiopulmonary resuscitation		State the conditions and rules related to organ transplantation in Iran	Cognitive	1	Interactive lecture	Written test
				Compare the criteria and conditions of the end of life in organ transplantation and euthanasia	Cognitive	2	Interactive lecture	Written test
Ethics in assisted reproduction methods	4	Technology of gynecological and urology surgery	Theory	Explain the principles of ethics in assisted reproductive techniques	Cognitive	2	Interactive lecture	Written test
				Compare the types of assisted reproductive techniques with legal permission in the world & Iran	Cognitive	2	Interactive lecture	Written test
				Explain the legal conditions for the possibility of using surrogacy and sperm bank	Cognitive	2	Interactive lecture	Written test
				Interested in discussing the topics of assisted reproductive methods	Affective	2	Interactive lecture	Observation
				Compare the views of different jurists on the use of assisted reproductive methods	Cognitive	2	Interactive lecture	Written test
Abortion	4	Technology of gynecological and urology surgery	Theory	React to the issue of abortion freedom	Affective	2	Interactive lecture/group discussion	Observation
				Accept or reject abortion with reasons	Affective	2	Interactive lecture	Written test
				Compare views of jurists and different religions on abortion	Cognitive	2	Interactive lecture	Written test
				Explain the legal rules and conditions of abortion in Iran	Cognitive	1	Interactive lecture	Written test
	7	Internship: operating room management	Practice	Control client's medical record in terms of fetal death in utero when admitting cases with emergency curettage	Psychomotor	4	Interactive lecture	Direct observation
Admission of the injured and victims of crime	5	Operating room management	Theory	List signs of crime in family violence against children and women	Cognitive	2	Interactive lecture	Written test
				Explain ethical issues involved when treating suspicious individuals and victims of crime	Cognitive	2	Interactive lecture	Written test

				Explain how to keep cases when dealing with injured and victims of family violence	Cognitive	2	Interactive lecture	Written test
				Explain legal and ethical proceedings when admitting victims of sexual violence to the operating room	Cognitive	2	Interactive lecture	Written test
	7	Internship: operating room management		Discuss a lived experience of admitting cases of crime or family violence to operating room	Cognitive	4	Interactive lecture	Project
Professionalism	4	Professional ethics in the operating room	Theory	Describe the concept of professionalism in medical science	Cognitive	2	Interactive lecture	Written test
				Explain role models in the professional development of students	Cognitive	2	Interactive lecture	Written test
		Internship: operating room management	Practice	Suggest your own role models during internship based on the role model's properties	Affective	3	Narration	Critical report -reflection
Ethical Considerations of Research	3	Research method in the operating room		Describe ethical principles and rules in different medical research	Cognitive	2	Interactive lecture	Written test
				Exemplify ethical challenges related to modern medications, tools, technologies, and techniques in the operating room	Cognitive	2	Case-based discussion	Review article
				Apply ethical considerations in research to clinical studies	Cognitive	3	Case-based discussion	Proposal
				Exemplify conflict of interest in clinical studies on the operating room	Cognitive	2	Case-based discussion	Proposal

DISCUSSION

The main objective of our study was to refine the delivery of a professional ethics course in an Iranian medical school by integrating various longitudinal themes into the undergraduate curriculum for operating room technology. This was executed in two stages: qualitative and quantitative. In the qualitative stage, we reviewed the existing curriculum of professional ethics specific to operating room nursing. We also analyzed participant interviews, resulting in the identification of five curriculum development categories: course content, educational objectives, teaching strategies, evaluation methods, and course delivery methods. These categories align with global curriculum evaluation frameworks (30,31).

During the quantitative phase, we affirmed 12 educational content titles, each associated with cognitive, psychomotor, and emotional objectives. This validation process used 8 teaching methods and 10 evaluation methods through a longitudinally integrated approach. Our educational content, sub-categorized into communication skills, ethics and law, medical ethics fields, and professional commitment, mirrors global curricula in certain aspects and aligns with the cognitive, psychomotor, and emotional educational objectives (32-38). Furthermore, this content closely parallels Iran's current curriculum, although Iranian curriculum for professional ethics in the operating room primarily focuses on cognitive objectives (21).

McNeil et al. further delineated elements such as medical knowledge, communication skills, ethical and legal comprehension, and ethical values (e.g., honesty and integrity, responsibility and participation, respect, sensitivity, compassion, and empathy) as integral to professionalism and professional ethics (39). Regarding educational goals, our study participants underscored the importance of cognitive, emotional, and psychomotor goals. A comprehensive coverage of these areas cannot be achieved solely by focusing on cognitive objectives. Our interview analysis and a review of programs at special organisations – e.g., AORN (The Association of periOperative Registered Nurses) and EORNA (European Operating Room Nurses Association), and various universities in India, Australia, Scotland, Canada, Pakistan, USA and Iran – corroborate the importance of addressing educational goals across these three domains (32-38). This sentiment aligns with Mahajan et al. who stressed the importance of learning objectives in knowledge, skills, and attitudes (40).

Our research revealed that course presentation methods fell into two subcategories: separate and mixed presentations. These include such options as mixed course presentations combining theory with internship courses. Based on our data analysis, educators and practitioners in this specialized field emphasized the integration of teaching and evaluation during the course and alongside other theoretical and practical courses. This approach contrasts with the current operating room technology curriculum in Iran, where this course is presented as a single, theoretical unit (21). However, at six universities examined in this study, this course is offered as an integrated, longitudinal theme (32–38). Khaqani et al. note that in our curricula, medical ethics is presented as an isolated unit, separated from other specialized courses. In contrast, many international curricula

infuse medical ethics topics specific to a course into all specialized courses. For instance, foreign reference books on "Obstetrics and Gynecology" address ethical topics related to women and childbirth in their introductions and intersperse medical ethics points throughout their text. This approach to embedding ethics is mirrored in foreign radiology books, which present topics on medical ethics during patient radiation and on communication with patients (12).

Abolqasmi et al., taking into account the shift in teaching and evaluating the professional ethics course in nursing, propose an integrated model as an effective method for presenting this course (1). In their study titled "The Experience of Academic Staff Members in Teaching Professional Obligations to Medical Students," Allami et al. found that an ethics course, scattered and translated from foreign texts, lacks a coherent identity and can confuse students (41). Similarly, Kavas et al. in Turkey argued that a solely theoretical course, presented in a separate semester, would not suffice for instilling ethics in the future careers of medical and paramedical groups (9) . Echoing this sentiment, AlMahmoud et al. underline that learning in the form of integration in clinical subjects is more effective than separate, theoretical course presentations (18). In line with this, Mahajan et al. advocate for a coherent integration of professionalism and ethics into the curriculum (40).

The teaching method category in our study encompasses two subcategories: teacher-centred and student-centred methods. These primary codes include group discussion, interactive lectures, case-based learning, role-playing, and demonstration. The participants emphasized the importance of participatory methods that actively involve students, as opposed to relying solely on lectures. Despite this, our surveys showed that the majority of universities in Iran primarily use a lecture format. However, the curricula we reviewed use several teaching methods such as lectures, problem-based learning, experience-based learning, conferences, discussions in clinical skills units and real clinical settings, group discussions, case-based learning, guided learning, and team learning (32-38). The findings from Khaganizadeh et al.'s research highlight that the learning activities and strategies used to present ethics courses in our country are suboptimal. They suggest that instead of solely relying on lectures, newer teaching methods such as active learning, individual participation, group interactions, and a problem-based approach should be implemented (42). Allami et al. further argue that one of the significant issues in ethics education is the traditional, preachy approach towards professional challenges (41). In line with this, Ayesha argues that teaching professional ethics should not just concentrate on the cognitive domain, but also on developing skills and attitudes (14).

Several studies have addressed the efficacy of different teaching methods in the field of professional ethics. Byrne, John, et al. found the lecture method to be the least effective in teaching ethical topics in obstetrics and gynecology assistant programs (43). Domenc Rodrigues et al. posited that, in terms of effectiveness, case-based learning holds an advantage over traditional lectures (44). Sawant et al. emphasized the significance of participatory teaching and the role of professors as role models and mentors for learners (45), while Ercan Avci highlighted the importance of active and case-based methods in his study (46). Chowdhury suggested that ethics and values could be imparted through a variety of educational techniques such as role models, demonstrations, simulations, educational games, discussions, projects, group works, educational visits, interviews, and brainstorming, using resources like poetry, stories, music, photos, posters, and slogans (47). In a review titled "Application of Narrative in Medical Ethics," Daryazadeh explored the usage of diverse teaching methods like storytelling and problem-solving in teaching medical ethics concepts (48). Furthermore, Garza et al. introduced various teaching methods, including group discussion methods, case-based learning, and sharing personal experiences (30). Simon underscored the importance of team-based teaching methods as one of the collaborative approaches in learning ethics topics, arguing that this method facilitates self-directed and in-action learning (17).

The category of evaluation methods encompasses both formative and summative assessment subcategories, which include primary codes such as written tests, reports, direct observation during internships, and expression of experiences. In their study, Abul Qasemi et al. evaluated a variety of assessment tools, such as multiple-choice and written tests, essay writing, practical demonstration in clinical skills units, case studies, poster presentations, reflections, portfolios, continuous review of practical skills, class activities, and objectively structured clinical examinations (1). In the analysis of the curriculum of the professional ethics course for operating room studies in various universities in Iran, USA, India, Pakistan, Scotland and Australia, assessment techniques such as final exams with multiple-choice questions, discussions and written tests, essay writing, and portfolio construction were also highlighted (32-38). Nevertheless, written tests seem to be the prevalent form of assessment for this course. Mohibi Amin's study underscored the deficiency of appropriate evaluation in ethics education and highlighted international experiences that emphasize the use of diverse and comprehensive evaluation methods (10). Consequently, it appears necessary to revisit the course presentation method, teaching techniques, and evaluation strategies involved in the delivery of this course.

LIMITATIONS

This study's limitations stem from the unique nature of the operating room technologist curriculum in Iran and its differences from analogous curriculums around the world. These variances might pose challenges in generalizing the findings of the study on a global scale; but they nonetheless tell us much about the state of medical training in Iran and opportunities to improve professional ethics education of health professionals.

CONCLUSION

This comprehensive study sought to evaluate the structure, delivery, and impact of a professional ethics course in the undergraduate curriculum of operating room technology in Iran. The research process involved a two-tiered approach, qualitative and quantitative, to provide a balanced insight into the effectiveness of the course. The results revealed significant gaps in the course's presentation, content, teaching, and evaluation methodologies. For instance, the course content, while covering important themes such as communication skills, ethics, law, medical ethics, and professional commitment, largely addressed cognitive goals, neglecting the equally crucial psychomotor and emotional aspects. This finding is particularly concerning as professional ethics courses in many other countries strive to balance these three domains. Moreover, the presentation of the course in Iran is limited, with the curriculum typically offering it as a theoretical, independent unit. This contrasts with global trends where professional ethics is integrated longitudinally across all specialties, an approach that has been associated with more effective learning outcomes. The traditional lecture-based teaching method employed in Iran further adds to the limitations, with our research and several other studies emphasizing the need for more participatory and interactive teaching methods such as group discussion, case-based learning, and role-playing. The assessment of the course also warrants revision. At present, written tests are predominantly used for evaluation, which may not accurately measure a student's understanding and application of professional ethics. Other forms of assessment, such as direct observations, reflective reports, and portfolios, could provide a more comprehensive appraisal of a student's competency. Nonetheless, the study's findings should be interpreted with caution given the unique context of the operating room technologist curriculum in Iran, which differs significantly from its counterparts globally. This distinctive curriculum presents challenges in generalizing the findings on a global scale. Based on the shortcomings to profession ethics education identified by our study, it is recommended that the professional ethics course in the operating room technology curriculum in Iran be revisited and revised. These changes should aim to transform the course into a longitudinally integrated component across all paramedical and nursing disciplines. This revision should encompass a holistic reconsideration of the course's presentation, content, teaching, and assessment methods, shifting towards a more engaging, interactive, and comprehensive approach to professional ethics. This reform could potentially enhance the ethical grounding of future operating room technologists, ultimately leading to more professional and ethical healthcare practices in the country.

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REFERENCES

1. Abolghasemi A, Karimi S, Afshar L. Comparative study of professional ethics curriculum of undergraduate nursing programs in ten selected nursing schools (2016). J Med Educ. 2018;17(1):e105603.
2. Faden RR, Beauchamp TL. A History and Theory of Informed Consent. Oxford: Oxford University Press; 1986.
3. Sarker, Sudip K. Legal & ethical dilemmas in incidental findings during surgery. Int J Surg. 75:107-13.
4. Rokhshad R, Keyhan SO, Yousefi P. Artificial intelligence applications and ethical challenges in oral and maxillo-facial cosmetic surgery: a narrative review. Maxillofac Plast Reconstr Surg. 2023;45(1):14.

5. Gerritse K, Martens C, Bremmer MA, Kreukels BPC, de Boer F, Molewijk BC. Sharing decisions amid uncertainties: a qualitative interview study of healthcare professionals' ethical challenges and norms regarding decision-making in gender-affirming medical care. BMC Med Ethics. 2022;23(1):139.

6. Ansari M, Serjeant S. Patient experiences of weight loss and eating after bariatric surgery: A systematic review and qualitative synthesis. J Hum Nutr Diet. 2023;36(4):1438-50.

7. Pulvirenti R, Gortan M, Cumba D, Gamba P, Tognon C. Pediatric surgery and anesthesia in low-middle income countries: current situation and ethical challenges. Front Pediatr. 2022;10:908699.

8. Faraj Por A, Mostafavian Z, Rah Chamani M. The professionalism and medical ethics education through cadaveric dissection. J Med Educ Dev. 2018;12(4):246-56.

9. Kavas MV, Ulman YI, Demir F, et al. The state of ethics education at medical schools in Turkey: Taking stock and looking forward. BMC Med Educ. 2020;20(1):162.

10. Mohebbi Amin S, Rabiei M, Keizoori AH. A review of students' evaluation of the medical ethics curriculum. J Med Ethics Hist Med. 2015;8(3):77-86.

11. Khaghanizaeh M, Maleki H, Abbasi M, Abbaspoor A. Identity of medical ethics curriculum based on the experiences of medical ethics educators, qualitative study. Iran J Med Ethics. 2012;1(1):56-67.

12. Khaghani M, Maleki H. Critical on content of medical ethics curriculum from the perspective of medical ethics experts: A qualitative study. J High Educ Curric Stud. 2013;7(4):70-84.

13. Aldughaither SK, Almazyiad MA, Alsultan SA, et al. Student perspectives on a course on medical ethics in Saudi Arabia. J Taibah Univ Med Sci. 2012;7(2):113-7.

14. Younas A, Ansar A. Developing a curriculum for professional ethics in undergraduate medical and dental education: evidence from literature. Pakistan Armed Forces Med J. 2020;70(4):1211-3.

15. Ansari SK, Hussain M, Qureshi N. Teaching professional ethics to undergraduate medical students. Natl Med J India. 2018;31(2):101-2.

16. Wald HS. Professional identity (trans)formation in medical education: Reflection, relationship, resilience. Acad Med. 2015;90(6):701-6.

17. Simon M. Team-based learning in medical ethics education: evaluation and preferences of students in Oman. J Med Educ. 2020;19(3):e106280.

18. AlMahmoud T, Jawad Hashim M, Elzubeir MA, Branicki F. Ethics teaching in a medical education environment: preferences for diversity of learning and assessment methods. Med Educ Online. 2017;22(1):1328257.

19. Yamani N, Shater-Jalali M. Curriculum integration, with emphasis on integration in medical education. Iran J Med Educ. 2012;11(9):1202–13.

20. Dent J, Harden R, Hunt D. A Practical Guide for Medical Teachers. Toronto: Elsevier Health Sciences; 2017.

21. Operating room technologists' curriculum in Iran. Supreme Planning Council of Medical Sciences; 2014.

22. Fazel E, Abbassioun K, Sehhat S, et al. Operating room the base of morality and the basis of humanistic professional duties. Iran J Surg. 2017;25(1):131-87.

23. Phillips N. Berry & Kohn's Operating Room Technique. Elsevier; 2017.

24. Thomas PA, Kern DE, Hughes MT, Chen BY. Curriculum Development for Medical Education: A Six-Step Approach. 3rd ed. Baltimore, MD: Johns Hopkins University Press; 2016.

25. Sadati L, Motaharipour M, Edalattalab F, Farajidana H, Abjar R. A comparative study of professional ethics curriculum in the operating room technology undergraduate degree program in Iran and in the similar disciplines in the selected universities around the world. Q J Med Ethics. 2023;16(47):1-11.

26. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. Qual Heal Res. 2005;15(9):1277-88.

27. Lincoln Y, Guba E. Naturalistic Inquiry. Beverly Hills, CA: Sage; 1985.

28. Chan TM, Yarris LM, Humphrey-Murto S. Delving into Delphis. Can J Emerg Med. 2019;21(2):167-9.

29. von der Gracht HA. Consensus measurement in Delphi studies. Review and implications for future quality assurance. Technol Forecast Soc Change. 2012;79(8):1525-36.

30. De La Garza S, Phuoc V, Throneberry S, Blumenthal-Barby J, McCullough L, Coverdale J. Teaching medical ethics in graduate and undergraduate medical education: a systematic review of effectiveness. Acad Psychiatry. 2017;41(4):520-25.

31. Giubilini A, Milnes S, Savulescu J. The medical ethics curriculum in medical schools: present and future. J Clin Ethics. 2016;27(2):129-45.

32. Schroeter K, Flowers J, Davidson J, Van Wicklin S. AORN's Perioperative Explications for the ANA Code of Ethics for Nurses with Interpretive Statements. AORN; 2017.

33. Willems C. EORNA Common Core Curriculum for Perioperative Nursing. European Operating Room Nurses Association; 2019.

34. Core Curriculum for Surgical Technology. 7th edition. Association of Surgical Technologists; 2021.

35. Curriculum of 4 Years B.Sc. Hons Operation Theatre Technology. King Edward Medical University Lahore; 2018

36. Syllabus & Course Framework: Bachelor of Vocational Degree in Operation Theatre Technology. Pondicherry University Community College; 2019.

37. Choice Based Credit System (CBCS) Curriculum B.Sc. Operation Theater Technology, 2020-21. BLDE (Deemed to be University).

38. Model Curriculum Handbook: Operation Theatre Technology. Ministry of Health and Family Welfare Allied Health Section 2015-16.

39. Macneill P, Joseph R, Lysaght T, Samarasekera DD, Hooi SC. A professionalism program in medical education and training – From broad values to specific applications: YLL School of Medicine, Singapore. Med Teach. 2020;42(5):561-71.

40. Mahajan R, Aruldhas B, Sharma M, Badyal D, Singh T. Professionalism and ethics: A proposed curriculum for undergraduates. Int J Appl Basic Med Res. 2016;6(3):157-63.

41. Allami A, Mohammadi N, Shirazi M. Faculty members experience about teaching of medical professionalism in Qazvin University of Medical Sciences. Res Med Educ. 2015;7(2):1–11.

42. Khaghanizadeh M, Maleki H, Abbasi M, Abbasi-Pour A, Mesri M. The challenges of medical ethics curriculum: a qualitative study of instructors view. Iran J Med Ethics Hist. 2012;5(2):70-79 [in Persian].

43. Byrne J, Straub H, Digiovanni L, Chor J. Evaluation of ethics education in obstetrics and gynecology residency programs. Am J Obstet Gynecol. 2015;212(3):397.e1-e8.

44. Domenech Rodríguez MM, Erickson Cornish JA, Thomas JT, Forrest L, Anderson A, Bow JN. Ethics education in professional psychology: A survey of American psychological association accredited programs. Train Educ Prof Psychol. 2014;8(4):241-7.

45. Sawant S, Rizvi S. Ethics for medical educators. Anat Physiol Curr Res. 2017;7(2):1-3.

46. Avci E. Learning from experiences to determine quality in ethics education. Int J Ethics Educ. 2017;2(1):3-16.

47. Chowdhury M. Emphasizing morals, values, ethics, and character education in science education and science teaching. Malaysian Online J Educ Sci. 2016;4(2):1-16.

48. Daryazadeh S. Application of narrative in medical ethics. J Med Ethics Hist Med. 2019;12:13.