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Medical residents' attitude toward professionalism and assessment of their professional behaviors: a cross-sectional survey

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Abstract

Background: Professionalism training is a core component of medical education. This study's aim was to determine medical residents' attitudes toward professionalism and self-reported professional behaviors.

Methods: In a cross-sectional survey at Qazvin University of Medical Sciences, 100 medical residents in their first through third years were invited to participate in a survey between April and June of 2015. Participants responded to a written questionnaire consisting of 7 demographic and 42 content items in 4 domains. Content items were rated on a 5-point Likert scale. Results with a mean of less than three were considered undesirable. A non-parametric Kruskal-Wallis test was used to compare distributions in the study groups. All statistical analyses were performed using SPSS version 22.

Results: With a response rate of 87%, a mean age of 31.9 (SD: 3.0) was recorded. The mean Likert score for the perception of residents on the ethical importance of "colleague report" and "reporting error" was undesirable. The percentage of residents' self-reported unprofessional behaviors during their training was high. Moreover, 71% (95% CI: 61-80) of residents believed that ethics should be formally taught in the medical school curriculum. Over 97% (95% CI: 94-100) believed that learning medical ethics and professionalism requires more than a theoretical course. A longitudinal approach was the most agreed-upon format.

Conclusion: Based on the findings of this research, despite a relatively acceptable rate of professional behaviors, residents perceive a need for a more comprehensive curricular attention to practical ethics and ethically important professional development during residency training.

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Introduction

Medical professionalism and its role as a subject for study during medical residency has recently attracted considerable attention in medical literature.[1] Ethics, communication skills, knowledge, and technical skills are considered the basis for professionalism. In recent years, professionalism education has become a fundamental element of medical residents' training.[2] Despite the increase in attention, there are still gaps in the information on this topic. A theoretical or practical model to integrate professionalism into medical school curricula does not exist.[3] Ethical and professional aspects are rarely discussed in current residents' courses, and educational programs mostly do not cover many topics in medical ethics and professionalism.[4] Such practical topics are diverse, including encompassing ethical considerations in practicing procedures on patients, charity, accepting commercial aids and awards from visitors, and residents' societal duties.

By understanding how residents learn medical professionalism and ethics, program developers can plan ways to help them to learn effectively. There is limited evidence on the views of medical residents on practical ethics, professional development, and training of ethics in Iranian universities. There is also a knowledge gap in clarifying ethical dilemmas that medical residents may

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encounter while working in the field. Based on one local report, Iranian medical students and faculty members do not have a favorable view of the quality of medical ethics and professionalism education and the courses they feel are needed in medical school curricula. Participants described the internal quality of the medical ethics curriculum as undesirable in terms of objectives, content, learning activities, learning strategies, instructional materials and methods, resources, time, location, and evaluation. Participants also felt that the external quality of the ethics curriculum was at a moderate level for both the knowledge and attitudes components, and was undesirable in the skills component.[5]

As mentioned above, there is a gap in the evidence in the perception of Iranian medical residents regarding their own professional competence and behavior as well as content and methods of teaching and assessment of professionalism. A comprehensive survey was conducted among residents to discern their views on ethics education and to create an effective approach for formal ethics training in medical residency programs. Other aims of this study were to evaluate residents' self-assessment of their professionalism in dealing with patients, and to evaluate residents' attitudes toward professionalism education in different disciplines.

Materials and Methods

This cross-sectional study was done at Qazvin University of Medical Sciences (QUMS), School of Medicine in 2015. All medical residents in their first through third years were invited to voluntarily participate in the study by completing an anonymous questionnaire. Questionnaires were distributed to residents in eight residency programs: internal medicine, cardiology, pediatrics, psychiatry, infectious disease, anesthesiology, obstetrics and gynecology (OB/GYN), and general surgery and they were asked to fill and return them. The residents were divided into "clinical" [cognitive] specialties (internal medicine, cardiology, pediatrics, psychiatry, and infectious disease) and "surgical" [skill-based] specialties (anesthesiology, OB/GYN, and general surgery).

Introducing the measurement tool

The researchers designed a questionnaire using current literature and questionnaires that were used for studying professionalism in other studies.[6] The instrument was adjusted according to the basics of professionalism, the purpose of the study, and ethical and cultural issues. The survey consisted of 7 demographic and 51 content items in 4 domains (D1, 2, 3, and 4): Domains 1 and 2 investigated respondents' perceptions on "attitude", and "professional behavior" (with 16, and 13 questions respectively), while D3 and D4 covered professional education (programs and role modeling, with 13 and 5 questions, respectively). The response options were based on a 5-point Likert-type scale: 5 was the highest level and 1 represented the lowest. Other questions were answered using a 3-point scale: "frequently-rarely-never" as well as some with a yes/no format.

Determining the validity and reliability of the measuring instrument

A psychometric evaluation included reliability, which was evaluated by internal consistency (Cronbach's alpha coefficient) which tested content and construct validity to assess whether all the items were contributing to the professionalism domain. Content validity of the questionnaire was demonstrated by comprehensively reviewing published reports on professionalism and by developing items that reflected published domains of professionalism. The first phase of questionnaire development was the selection of a panel of experts. This panel was composed of one infectious disease specialist and one community medicine specialist. Both experts had a master's degree in medical education. They evaluated the validity of each item as well as the entire questionnaire. A pilot study was conducted using the questionnaire on 15 volunteers among the residents. The questionnaire's reliability was calculated at more than 85% using Cronbach's alpha.[7] The formula used to calculate means was: [(number of residents who selected response 1)*(weighting of response 1) + (number of residents who selected response 2)*(weighting of response 2)… (number of residents who selected response n)*(weighting of response n)] / (total number of respondents). Cronbach's alpha showed an acceptable (0.70 or greater) internal reliability for all sections. Internal consistency for the 16-item perceptions on ethically important professional practices and behaviors was 0.82 and for the 13-item effectiveness of ethics and professionalism education was 0.92.

An exploratory factor analysis was conducted to determine whether the instrument items were aligned into appropriate constructs as intended and could be suitable to group together. For measures of sampling adequacy (MSAs), we used Kaiser–Meyer–Olkin (KMO) (greater than 0.6) and Bartlett's test of sphericity (should be significant). The analysis was conducted using principal component extraction method. The number of factors to be extracted was based on the Kaiser rule (eigenvalues >1.0). Communalities showed how much of the variance in the variables were accounted for by the extracted factors (where the communalities of all items were more than 0.5 and all items were considered for further analysis; if not, these variables were to be removed from further steps).

Data analysis

Continuous variables were summarized as means (standard deviation) and categorical variables as frequencies (percentages). A result with a mean of less than 3 was considered undesirable. Distributions of continuous data were assessed for normal distribution

using the Kolmogorov-Smirnov test.

Analysis of non-normally distributed variables among the resident groups was performed using the Kruskal-Wallis test, with $P < 0.05$ considered significant. All analyses were performed using SPSS version 22.

Results

Of 100 individuals who registered for the session, 96 participated in the survey and 87 completed the entire questionnaire (response rate: 87%). The mean age was 31.9 (SD 3.0) and a quarter of residents were in the internal medicine department (Table 1).

Resident perceptions of ethically important professional practices and behaviors are shown in Table 2. All items were found to be suitable for the factor analysis (KMO =0.745; Bartlett test significant, $P < 0.00$). The factor analysis showed that the items could be grouped into 5 factors that represented 66% of the total variance (good practice, responsibility, documentation, management and altruism). The commonalities of all items (except item 1) were more than 0.5 and all items were considered for further analysis (Table 3).

The mean score for "colleague report" and "reporting an error" was less than three. Different disciplines had statistically significant differences for some behaviors, including "taking care of patients regardless of their ability to pay", "lifelong learning", "feeling socially responsible", "respecting social justice" and "avoiding use of medical terms instead of patient's name".

Residents' self-reported unethical and unprofessional behaviors during their years of training were unacceptably high for several items, such as "sending an email to patients to follow up" (never: 97.7 %), "reading new articles" (none: 70.1%), "disclosing real or potential conflicts of interest" (no: 63.2%), "using online journals" (rarely or never: 78.2%), "online learning" (rarely or never: 62.1%), "using apps for making clinical decision" (rarely or never: 55.2%), and "requesting unnecessary MRI when a patient insists" (yes, with distaste: 44.8%). Some behaviors including "sending an email to patients to follow up", "online learning" and "using apps for making clinical decision" were statistically different based on the clinical discipline of the respondent. Residents' self-reported professional behaviors are shown in Table 4.

Most residents reported feeling that ethics should not be taught in a separate course. The majority of participants believed that learning medical ethics and professionalism needed more than only one theoretical course. A longitudinal approach for teaching medical ethics and professionalism was the most agreed format compared to other approaches (e.g., a short course in a limited time at the beginning of the residency training). There was a significant difference between the attitudes of residents of surgical fields (0%) and others (15.4%) in terms of need for professionalism & ethics education (P=0.046). The item "need for yearly and semester evaluation" was statistically different based on clinical discipline (Table 5).

Residents expressed their perceptions about the effectiveness of the ethics and professionalism educational programs as shown in Table 6. All items were found to be suitable for the factor analysis (KMO = 0.888; Bartlett test significant, $P < 0.00$). The factor analysis showed that the items could be grouped into three factors (role modeling, role modeling & curriculum, and curriculum) that represented 74% of the total variance. The commonalities of all items were more than 0.5 and all items were considered for further analysis.

For the item "correct encounter with medical error" the mean Likert score was less than three. Some behaviors, including "welfare of patients", "considering patient as an equal person", "responsibility" "honesty and confidentiality", and "respectfulness", were statistically different based on the clinical discipline of the respondent (Table 7).

Discussion

This article reports the opinions of residents' attitudes toward the subject of medical professionalism and preferences for learning and assessment methods for the topics of ethics, professionalism and professional behaviors.

We assessed those ideas and behaviors under two axes: *"what is needed, what exists, and what can be expected" and "self-reported ethical behavior"*.

Table 1. Respondents' specialty-based characteristics (age and sex)

Clinical discipline	No. (%) - Age Mean (SD)		
	Male	Female	Total
Internal medicine	9(24) - 30.6(3.4)	14(28) - 31.1(2.9)	23(26) - 30.9(3.0)
OB/GYN	-	12(24) - 32.0(2.0)	12(14) - 32.0(2.0)
General surgery	11(30) - 32.3(3.4)	-	11(13)- 32.3(3.4)
Psychiatry	5(13) - 35.8(5.4)	5(10) - 31.2(1.6)	10(11) - 33.5(4.4)
Pediatrics	4(11) - 30.5(0.7)	5(10) - 31.8(1.8)	9(10) - 31.4(1.6)
Cardiology	6(16) - 33.0(3.7)	3(6) - 31.0(1.0)	9(10) - 32.3(3.2)
Anesthesiology	2(5) - 29.5(0.7)	6(12) - 32.2(1.8)	8(9) - 31.5(2.0)
Infectious disease	-	5(10) - 31.0(2.6)	5(6) - 31.0(2.6)
Total	37(100) - 32.3(3.9)	50(100) - 31.5(2.1)	87(100) - 31.9(3.0)

Abbreviation: OB/GYN, Obstetrics and Gynecology.

Table 2. Medical resident perceptions on ethically important professional practices and behavior

Item	Communality	Clinical discipline Mean (SD)								Total	*P*
		Internal	Pediatrics	Surgery	OB/GYN	Infectious	Cardio	Psych	Anesth		
Tendency to take up recertification courses	0.6	3.2 (1.1)	4.3 (0.9)	3.4 (0.7)	3.7 (1.1)	3.2 (0.4)	3.6 (0.9)	3.6 (0.8)	3.2 (0.7)	3.5 (0.9)	0.17
Reporting their own medical errors	0.8	2.7 (0.7)	3.8 (0.8)	2.5 (0.9)	3.1 (1.1)	2.8 (0.8)	2.9 (1.3)	2.4 (1.0)	2.5 (0.5)	2.8 (0.9)	0.06
Reporting about unqualified colleagues to the related organizations	0.6	2.3 (0.8)	3.4 (1.1)	2.1 (0.8)	1.9 (1.0)	2.4 (0.5)	2.2 (1.5)	2.1 (1.0)	2.0 (0)	2.3 (1.0)	0.07
Not considering gender and racial differences in patients' medical care	0.7	4.3 (1.1)	4.2 (1.3)	4.1 (0.8)	3.9 (1.0)	4.2 (0.4)	3.7 (1.3)	4.4 (1.1)	4.5 (0.5)	4.2 (1.0)	0.41
Taking care of patients regardless of their ability to pay	0.7	4.6 (0.5)	4.3 (0.7)	4.6 (0.5)	3.5 (1.0)	4.0 (0.7)	4.2 (0.8)	4.3 (0.9)	4.6 (0.5)	4.3 (0.8)	0.03*
Lifelong learning and having updated knowledge	0.6	4.0 (0.8)	4.4 (0.7)	3.6 (0.9)	4.4 (1.0)	4.2 (0.4)	4.1 (0.6)	4.6 (0.5)	3.5 (0.5)	4.1 (0.8)	0.02*
Practice based on evidence-based medicine principles	0.8	4.1 (0.7)	4.6 (0.7)	3.6 (0.8)	4.2 (1.1)	4.2 (0.4)	4.2 (0.7)	4.4 (0.7)	3.6 (0.7)	4.1 (0.8)	0.07
Feeling socially responsible	0.7	4.0 (0.9)	4.6 (0.7)	3.5 (0.9)	4.2 (0.9)	4.2 (0.8)	4.4 (0.5)	4.7 (0.5)	3.6 (0.7)	4.1 (0.9)	0.03*
Respecting social justice	0.7	3.9 (1.0)	4.7 (0.7)	3.4 (0.8)	3.9 (1.0)	4.0 (0.7)	4.4 (0.5)	4.3 (0.8)	3.6 (0.7)	4.0 (0.9)	0.03*
Being informed of one's history of profession and specialty	0.5	3.3 (0.9)	3.7 (1.0)	3.0 (0.9)	3.2 (1.2)	3.0 (0)	4.0 (0.7)	2.7 (0.7)	2.9 (0.8)	3.2 (0.9)	0.07
Being updated in technical skills	0.5	4.2 (0.6)	4.3 (0.9)	4.0 (0.9)	4.2 (1.1)	4.2 (0.8)	4.4 (0.5)	4.6 (0.5)	3.7 (0.5)	4.2 (0.7)	0.27
Adjustability and adaptability	0.5	4.0 (0.5)	4.2 (0.7)	4.4 (0.7)	4.4 (0.5)	3.8 (0.8)	3.9 (0.6)	4.4 (0.8)	3.7 (0.5)	4.1 (0.6)	0.05
Feeling satisfied with disciplinary supervision of own activities	0.6	3.7 (0.8)	2.9 (1.4)	3.1 (1.0)	4.1 (0.7)	3.8 (0.4)	3.7 (0.7)	3.5 (1.0)	3.2 (0.5)	3.5 (0.9)	0.07
Manage the conflict of interest	0.7	3.5 (0.7)	4.1 (0.8)	3.4 (0.5)	3.9 (0.8)	3.8 (0.4)	3.3 (1.1)	4.0 (1.0)	3.2 (0.5)	3.6 (0.8)	0.11
Cooperation with health care team	0.8	4.0 (0.6)	4.3 (0.9)	3.9 (0.8)	4.1 (0.8)	3.8 (0.4)	3.8 (1.1)	4.2 (0.9)	4.4 (0.5)	4.1 (0.8)	0.59
Avoiding use of medical terms instead of patients' name	0.6	3.6 (0.8)	4.1 (0.8)	3.3 (1.1)	3.9 (0.8)	3.6 (0.5)	3.8 (1.2)	4.4 (1.0)	2.4 (0.5)	3.7 (1.0)	<0.01

P values are calculated by Kruskal-Wallis test. Extraction Method: Principal Component Analysis.
Internal: Internal medicine, Surgery: General surgery, Infectious: Infectious disease, OB/GYN: Obstetrics and Gynecology, Cardio: Cardiology, Psych: Psychiatry, Anesth: Anesthesiology.

Table 3. Rotated Component Matrix of Medical Resident Perceptions on Ethically Important Professional Practices and Behaviors

	Component				
	Good practice	Responsibility	Documentation	Management	Altruism
Reporting their own medical errors			0.82		
Reporting about unqualified colleagues to the related organizations			0.79		
Not considering gender and racial differences in patients' medical care					0.66
Taking care of patients regardless of their ability to pay					0.79
Lifelong learning and having updated knowledge	0.53				
Practicing based on "evidence-based medicine" principles	0.59		0.52		
Feeling socially responsible		0.59			
Respecting social justice		0.68			
Being informed of one's history of profession and specialty		0.65			
Being updated in technical skills	0.66				
Adjustability and adaptability	0.61				
Feeling satisfied with disciplinary supervision of own activities	0.63				
Manage the conflict of interest				0.61	
Cooperation with health care team				0.87	
Avoiding use of medical terms instead of patients' name		0.67			

Table 4. Residents self-reported their professional behaviors (excellence and conflict of interest items)

Item		Clinical discipline, No. (%)								Total	
		Internal	Pediatrics	Surgery	OB/GYN	Infectious	Cardio	Psych	Anesth	N	% (95%CI)
Sending an Email to patients to follow up	Frequently& Rarely	0	0	0	0	0	0	2 (20)	0	2	2 (0-7)
	Never	23 (100)	9 (100)	11 (100)	12 (100)	5 (100)	9 (100)	8 (80)	8 (100)	85	98 (93-100)
Using online learning	Frequently	13 (56)	2 (22)	2 (18)	5 (42)	4 (80)	2 (22)	1 (10)	4 (50)	33	38 (28-48)
	Rarely	8 (35)	2 (22)	7 (64)	5 (42)	1 (20)	6 (67)	8 (80)	4 (50)	41	47 (37-58)
	Never	2 (9)	5 (56)	2 (18)	2 (17)	0	1 (11)	1 (10)	0	13	15 (9-24)
Using apps for making clinical decision	Frequently	20 (87)	2 (22)	2 (18)	2 (17)	5 (100)	3 (33)	4 (40)	1 (12)	39	45 (35-55)
	Rarely	3 (13)	1 (11)	6 (54)	7 (58)	0	3 (33)	4 (40)	7 (88)	31	36 (26-46)
	Never	0	6 (67)	3 (27)	3 (25)	0	3 (33)	2 (20)	0	17	20 (12-29)
Use of online journals	Frequently	6 (26)	1 (11)	2 (18)	3 (25)	1 (20)	3 (33)	3 (30)	0	19	22 (14-31)
	Rarely	10 (44)	4 (44)	5 (46)	8 (67)	2 (40)	5 (56)	7 (70)	8 (100)	49	56 (46-66)
	Never	7 (30)	4 (44)	4 (36)	1 (8)	2 (40)	1 (11)	0	0	19	22 (14-31)
Reading new articles (weekly)	None	15 (65)	9 (100)	8 (73)	9 (75)	4 (80)	5 (56)	7 (70)	4 (50)	61	70 (60-79)
	1-4	8 (35)	0	3 (27)	3 (25)	1 (20)	4 (44)	3 (30)	4 (50)	26	30 (21-40)
	4<	0	0	0	0	0	0	0	0	0	0
Readiness for clinical knowledge evaluation	Yes	5 (22)	1 (11)	0	0	1 (20)	2 (22)	3 (30)	2 (25)	14	16 (10-25)
	Borderline	15 (65)	4 (44)	7 (64)	8 (67)	2 (40)	6 (67)	7 (70)	4 (50)	53	61 (50-71)
	No	3 (13)	4 (44)	4 (36)	4 (33)	2 (40)	1 (11)	0	2 (25)	20	23 (15-33)
Using other physicians' notes for improvement of their duties in the past three years	Yes	20 (87)	4 (44)	5 (46)	8 (67)	5 (100)	3 (33)	6 (60)	6 (75)	57	66 (55-75)
	No	3 (13)	5 (56)	6 (54)	4 (33)	0	6 (67)	4 (40)	2 (25)	30	34 (25-45)
Unreported medical error	Yes	6 (26)	1 (11)	6 (54)	5 (42)	2 (40)	5 (56)	2 (20)	2 (25)	29	33 (24-44)
	No	17 (74)	8 (89)	5 (46)	7 (58)	3 (60)	4 (44)	8 (80)	6 (75)	58	67 (56-76)
Disclosure of their own interest to patients when making a referral	Yes	8 (35)	2 (22)	6 (54)	5 (42)	0	5 (56)	3 (30)	3 (38)	32	37 (27-47)
	No	15 (65)	7 (78)	5 (46)	7 (58)	5 (100)	4 (44)	7 (70)	5 (62)	55	63 (53-73)
Changing your clinical decision because of receiving a gift	At Least Once	1 (4)	2 (22)	2 (18)	0	0	1 (11)	0	0	6	7 (2-12)
	No	22 (96)	7 (78)	9 (82)	12 (100)	5 (100)	8 (89)	10 (100)	8 (100)	81	93 (86-97)
History of working in social services	Yes, Town/Regional	6 (26)	1 (11)	4 (36)	3 (25)	1 (20)	4 (44)	3 (30)	2 (25)	54	62 (52-72)
	Yes, Country Area	2 (9)	2 (22)	0	3 (25)	0	0	2 (20)	0	24	28 (19-38)
	No	15 (65)	6 (67)	7 (64)	6 (50)	4 (80)	5 (56)	5 (50)	6 (75)	9	10 (5-18)
Requesting unnecessary MRI when a patient insists	Yes, Without Explanation	1 (4)	0	0	1 (8)	0	0	0	0	2	2 (0-7)
	Yes, With Distaste	12 (52)	4 (44)	5 (46)	4 (33)	1 (20)	5 (56)	4 (40)	4 (50)	39	45 (35-55)
	No	10 (44)	5 (56)	6 (54)	7 (58)	4 (80)	4 (44)	6 (60)	4 (50)	46	53 (42-63)
Patient-physician relationship	Physician Superiority	4 (17)	0	2 (18)	1 (8)	1 (20)	2 (22)	0	1 (12)	11	13 (7-21)
	Mutual Participation	16 (70)	8 (89)	2 (18)	9 (75)	3 (60)	5 (56)	10 (100)	6 (75)	59	68 (58-77)
	Default	3 (13)	1 (11)	7 (64)	2 (17)	1 (20)	2 (22)	0	1 (12)	17	20 (12-29)

Internal: Internal medicine, Surgery: General surgery, Infectious: Infectious disease, OB/GYN: Obstetrics and Gynecology, Cardio: Cardiology, Psych: Psychiatry, Anesth: Anesthesiology, CI: confidence interval (Lower CL-Upper CL).

Table 5. Rotated component matrix of resident perceptions about effectiveness of ethics and professionalism education (curriculum and role playing)

	Component		
	Role modeling	**Role modeling & curriculum**	**Curriculum**
Welfare of patients	-	-	0.91
Independency of patients	-	-	0.66
Secrecy of patients	-	-	0.66
Professional responsibility	-	0.58	0.58
Repel with conflict of interest	-	0.81	-
Correct encounter with medical error	-	0.80	-
Standards of medical document	-	0.57	-
Humanism	0.82	-	-
Responsibility	0.89	-	-
Honesty & secrecy	0.82	-	-
Respectfulness	0.73	-	-
Repel with conflict of interest	0.53	0.74	-
Profession eminency	0.63	-	-

Table 6. Resident perceptions about effectiveness of ethics and professionalism education (curriculum and role playing)

Item	**Communality**	**Clinical discipline Mean (SD)**								**Total**	***P***
		Internal	**Pediatrics**	**Surgery**	**OB/GYN**	**Infectious**	**Cardio**	**Psych**	**Anesth**		
Welfare of patients	0.8	3.6 (0.8)	2.8 (1.1)	4.2 (0.7)	3.7 (1.2)	4.0 (0.0)	3.7 (0.9)	3.6 (1.1)	4.4 (0.5)	3.7 (1.0)	0.03*
Independency of patients	0.6	2.8 (0.8)	2.8 (1.0)	3.0 (1.0)	3.1 (1.2)	3.6 (0.5)	3.4 (0.7)	3.5 (1.9)	3.4 (0.9v	3.1 (1.0)	0.25
Secrecy of patients	0.7	3.5 (0.7)	3.2 (1.1)	4.0 (0.9)	3.1 (1.2)	4.0 (0.0)	3.4 (0.7)	3.9 (1.0)	3.5 (0.5)	3.5 (0.9)	0.17
Professional responsibility	0.7	3.6 (0.6)	3.6 (0.9)	4.2 (0.7)	3.6 (1.0)	4.0 (0.0)	3.3 (1.1)	3.9 (1.2)	3.9 (0.6)	3.7 (0.9)	0.39
Repel with conflict of interest	0.8	2.9 (0.8)	3.2 (1.2)	3.2 (1.2)	3.2 (1.3)	3.4 (0.5)	3.2 (0.7)	3.5 (1.3)	3.0 (0.5)	3.2 (1.0)	0.93
Correct encounter with medical error	0.8	3.0 (0.8)	2.7 (1.0)	2.4 (1.0)	2.7 (1.1)	2.8 (0.8)	2.7 (0.5)	3.2 (1.3)	2.9 (0.3)	2.8 (0.9)	0.55
Standards of medical document	0.6	3.6 (0.7)	2.7 (1.1)	3.4 (0.8)	2.8 (1.1)	3.2 (0.8)	2.9 (1.0)	2.9 (1.1)	3.2 (0.7)	3.1 (0.9)	0.15
Humanism	0.8	3.4 (0.7)	2.9 (1.0)	3.6 (0.9)	2.7 (1.1)	4.4 (0.5)	3.9 (0.8)	3.5 (1.3)	4.1 (0.3)	3.5 (1.0)	<0.01*
Responsibility	0.9	3.5 (0.8)	3.6 (0.7)	3.5 (0.8)	2.7 (1.0)	4.4 (0.5)	3.4 (0.7)	3.6 (1.1)	4.0 (0.0)	3.5 (0.9)	0.01*
Honesty & secrecy	0.7	3.5 (0.8)	3.3 (0.5)	3.4 (0.7)	2.8 (1.0)	4.0 (0.0)	4.0 (0.7)	3.8 (0.9)	3.7 (0.5)	3.5 (0.8)	0.03*
Respectfulness	0.8	2.7 (1.0)	3.4 (1.1)	2.4 (1.3)	2.6 (1.4)	4.0 (0.0)	3.2 (0.8)	3.7 (1.2)	3.1 (0.3)	3.0 (1.1)	0.02*
Repel with conflict of interest	0.8	2.9 (1.0)	3.0 (1.3)	2.6 (1.0)	2.9 (1.4)	3.8 (0.4)	2.8 (0.8)	3.7 (1.2)	2.9 (0.3)	3.0 (1.1)	0.21
Profession eminency	0.6	3.2 (0.8)	3.4 (1.1)	2.9 (1.0)	2.9 (1.0)	3.8 (0.4)	3.1 (0.6)	3.4 (1.2)	3.4 (0.5)	3.2 (0.9)	0.44

P values are calculated by Kruskal-Wallis test. Extraction Method: Principal Component Analysis.
Internal: Internal medicine, Surgery: General surgery, Infectious: Infectious disease, OB/GYN: Obstetrics and Gynecology, Cardio: Cardiology, Psych: Psychiatry, Anesth: Anesthesiology.

The results of this study affirm positive attitudes towards ethics education in medical residents from a country in the Middle East region. These results compare favorably with others examining medical residents' attitudes towards the subject of ethics and identifying the necessity for its inclusion in medical education.[7]

Medical residents in this study reported encountering frequent ethical conflicts during training. Based on the results, the gap between what is needed, what exists, and what can be expected in teaching hospitals is unacceptable from the residents' viewpoint, although this finding may be due in part to their heavy clinical duties and responsibilities, as well as societal expectations related to their professional identity.[8] For a better understanding, it is necessary to examine studies in other similar settings. A similar study on residents of Guilan University of Medical Sciences, Iran, assessed the importance of determinants in their attitude toward professionalism. The study showed that most of the respondents paid moderate to very high attention to issues such as "interest to get recertified", "not considering gender and racial differences", "providing essential care without considering financial status", "lifelong learning and updating their knowledge", "getting the most reliable information and applying it in their daily duties", "knowing the principles of evidence-based medicine", "being socially responsible and committed

Table 7. The opinion of residents about teaching medical ethics and assessment of professionalism

Item		Clinical discipline, No. (%)								Total	
		Internal	Pediatrics	Surgery	OB/GYN	Infectious	Cardio	Psych	Anesth	N	% (95% CI)
Professionalism & ethics education	Yes	3 (13)	2 (29)	0	0	0	0	3 (37)	0	8	10(5-18)
	No	20 (87)	5 (71)	11 (100)	10 (100)	5 (100)	9 (100)	5 (62)	8 (100)	73	90(82-95)
Education of professionalism	Mandatory	14 (61)	8 (89)	8 (73)	6 (50)	5 (100)	7 (78)	8 (80)	6 (75)	62	71(61-80)
	Elective	9 (39)	1 (11)	3 (27)	6 (50)	0	2 (22)	2 (20)	2 (25)	25	29(20-39)
Type of education	Theory	2 (9)	0	0	0	0	0	0	0	2	2(0-7)
	Practical	5 (22)	1 (11)	3 (27)	4 (36)	1 (20)	3 (33)	0	4 (50)	21	24(16-34)
	Theory-practical	16 (70)	8 (89)	8 (73)	7 (64)	4 (80)	6 (67)	10 (100)	4 (50)	63	73(63-82)
Time of education	At the beginning of the course	6 (26)	3 (33)	4 (36)	0	0	3 (33)	1 (10)	3 (38)	20	23(15-33)
	Longitudinal through the course	14 (61)	5 (56)	4 (36)	7 (64)	5 (100)	4 (44)	9 (90)	5 (62)	53	62(51-71)
	Only role Model	3 (13)	1 (11)	3 (27)	4 (36)	0	2 (22)	0	0	13	15(9-24)
Need to yearly and semester evaluation	Very little and little	14 (70)	4 (57)	9 (82)	7 (58)	0	1 (11)	4 (44)	7 (100)	46	58(47-69)
	Average	5 (25)	2 (29)	1 (9)	3 (25)	3 (75)	6 (67)	2 (22)	0	22	28(19-38)
	Much and too much	1 (5)	1 (14)	1 (9)	2 (17)	1 (25)	2 (22)	3 (33)	0	11	14(8-23)

Internal: Internal medicine, Surgery: General surgery, Infectious: Infectious disease, OB/GYN: Obstetrics and Gynecology, Cardio: Cardiology, Psych: Psychiatry, Anesth: Anesthesiology, CI: confidence interval (Lower CL-Upper CL).

to social justice", "the ability to manage the conflict of interests", "cooperation with other members of the healthcare team", "considering patient as an equal person" and "avoiding calling patients by medical disorder names instead of their own names".[7]

Residents assessed their professional behavior as "poor" in terms of emailing patients, reading new articles, disclosing real or potential conflicts of interest, use of online journals, online learning, use of applications for medical decision making, and requesting unnecessary MRIs when patients asked for these.

In response to the question, "a patient may insist to have an imaging for her low back pain. What do you do?" about half of the residents (44.8%) declared they would order the imaging if a patient insisted. In a study, researchers revealed that more than half of providers were worried about making their patients upset if they wouldn't request such imaging. Nearly two-thirds of respondents said that they thought it would be hard for most patients to accept the "Choosing Wisely" standard and go without a scan. If providers have sufficient time and tools to counsel patients about the risks and benefits of diagnostic tests, more patients may not want to have imaging.[9] Poor performance on behavioral and cognitive measures during internal residency programs were associated with greater risks for state licensing board actions against practicing physicians in a very recent study.[10]

The effectiveness of ethics and professionalism education

In this setting, professionalism and ethics are taught in an integrated fashion through didactic sessions, faculty supervision, and special activities (debate and primary orientation sessions). Medical residents receive, on average, about 6 hours of formal instruction on ethics and professionalism-related topics, mostly at the time of their entrance to the university.

Our residents' beliefs about the teaching of professionalism and ethics were comparable to the findings of prior surveys of Iranian medical residents.[11] They preferred a practical rather than theoretical approach to the education of ethics and professionalism. This may reflect their sense of the power of the hidden curriculum as well as a demand to have the ability to manage moral pressure in medicine[12]. A formal professionalism curriculum alone is insufficient to instill professionalism among trainees[13] and additional strategies, such as role modeling of professional behaviors, and self-assessment are needed to encourage the development of professional practitioners.[1]

Our residents stated that they had received a moderate level of professionalism and ethics training in most related topics (Table 7). However, it is difficult to quantify the amount of personal experience and clinical supervision that focuses on medical ethics during residency.

Residents need to pass practical courses in professionalism to obtain and demonstrate a deeper understanding of the concept and its importance. It often appears that ethics curricula have focused more on what are called the "neon issues" of health care, such as euthanasia, rather than the daily moral conflicts. There are some practical ethical issues that may receive little attention in a formal bioethics curriculum, including learning how to handle an error in care of a patient, how to weigh information provided by a pharmaceutical company about its products, or how to handle a medical error from a colleague. For example, when medical criteria alone are insufficient to show the correct choice, residents can be faced with an ethical

dilemma. In high-pressure intensive care services and beds, deciding whether to discharge a patient who is not quite ready for the general ward to create space for another severely ill patient could be an ethical challenge for a resident.[14]

In this study, there was a significant difference between the attitudes of residents in surgical fields and other residents in terms of the necessity of professionalism and ethics education. Surgery "skills-based" residents expressed a lower need for training of ethics than other specialties. surgery residents' perceptions of their professional ability might be higher than non-surgical residents'; often in surgery, options are more concrete (i.e., surgery versus no surgery) whereas patient management options in non-surgical specialties are often less concrete (i.e., one medication regime versus another medication regime) and perhaps may be more difficult to articulate to patients.[15] In other word, an explanation for the difference could be the fundamental aspects of the field of surgery: the technical abilities inherent in surgical activities and less direct and less personal doctor-patient relationships, which tend to be more standardized and usually pre-programmed.[16] The item "need for yearly and semester evaluation" was statistically different based on the clinical discipline. Residents in different fields encounter different kinds of ethical dilemmas and may experience different needs for ethics preparation.[17]

This study has some limitation. First, it contained a self-report of residents that may not accurately reflect their actual attitudes and behaviors. Recent reviews of self-assessments in the health professions raise questions about the ability of professionals to generate accurate judgments of their own performance.[18] It is important to note that perceptions of residents cannot be the sole guide to curriculum change in higher education; nevertheless, for more effective teaching, education should be meaningful, relevant, useful, and connected to the atmosphere of learners' experience. Second, responses may be influenced by a social desirability bias, and participants possibly under-reported their actual disclosure of information and interactions with patients. This issue was partly resolved by the anonymously completion of the questionnaire. It seems that research on patients' online behavior and attitudes towards online interactions with their doctors would be valuable. Another limitation of this study is that residents' views were solicited at a single point in time and at one medical school. Further research is needed in this regard to test the generalization of the findings for using in other institutions. Unprofessional behaviors can also be examined in qualitative studies. Furthermore, to have a more comprehensive view on the issue, there is a need for other evaluations such as peer, nurse, and even patient reviews.

Conclusion

Most residents in this study considered professionalism an important aspect of their daily work, but only a few were adequately prepared in some aspects of professionalism and ethics, such as correct approach to encounters with medical errors. The results of the study suggest that attitudes and behaviors of residents should be identified to inform their ethical training. This documents the perceived need for more comprehensive curricular attention to practical ethics and ethically important professional development during training.

Ethical approval

Official permission was granted by submission of a letter from the Medical School to the responsible authorities of the study setting to obtain their permission for data collection. All ethical issues were taken into consideration during all phases of the study; the researcher maintained anonymity and confidentiality of the subjects. Inclusion in the study was completely voluntary. The aim of the study was explained to every resident before participation and a verbal agreement was obtained after each resident was assured that the study would cause no actual or potential harm. Residents were assured that they could withdraw at any stage of the research, and the obtained information would be confidential and used for research purposes only.

Competing interests

The authors declare that there is no conflict of interest.

Authors' contributions

NV designed and supervised the study. HR and AA collected and analyzed the data and contributed to drafting the manuscript.

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