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The effect of practice with the simulated patient on the professionalism attitudes of medical students: An intervention study

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Abstract

Introduction: Medical school education is effective in the professionalization development of students. In this study, it was aimed to evaluate the effectiveness of course training and to investigate the effect of interactions with simulated patients on the professional attitudes of medical students.

Methods: The research is an intervention study designed in the pretest-posttest pattern. The sociodemographic questionnaire and Penn State College of Medicine (PSCOM) professionalism attitude scale were used as data collection tools. The scale was applied to the students three times: before the course (1), after the course (2) and after the simulated patient practice (3).

Results: The mean age of the students was 21.40 ± 2.07 years and 54.8% (n = 148) were female. The PSCOM scale scores of the students were 154.11 ± 10.91, 158.59 ± 10.48, and 164.64 ± 10.81 respectively for score 1, score 2 and score 3, and, there was a statistically significant increase in score ($P < 0.001$). The scale dimension's scores all increased after the course and simulated patient (SP) practice. The difference between scores 1, 2, and 3 is statistically significant. The score increased significantly for all dimensions after training and SP' practices, and the difference between scores 1, 2, and 3 was found to be statistically significant ($P < 0.001$ for all). The female students had significantly higher total scores of 1, 2, and 3 than the male students ($P < 0.001$ for scores 1 and 2, $P = 0.005$ for score 3).

Conclusion: Training and simulated patient practices increase medical students' professionalism scores. The highest score was determined after simulated patient applications.

Introduction

Medical professionalism is "all of the behavior that demonstrates that physicians deserve their trust while working for the patient and the public",[1] and as a social contract of medicine, it is a set of attitudes, behaviors and values.[2] Concerns about declining professional values have resulted in a growing interest in professionalism around the world. So much so that medical professionalism has been accepted as a qualification and an accreditation criterion in pre- and post-graduate medical education.[3,4] This situation necessitates teaching and evaluating the concept of professionalism in medical education.[5] It is emphasized that professionalism is the most important non-clinical component of medical education and should be taught at every stage.[3] Although professionalism is one of the competencies in the medical education, it has been criticized for not being actively taught and evaluated.[6]

Professionalism is a basic clinical skill that can be learned and evaluated. Leading medical education organizations have defined the components of professionalism as accountability, respect, altruism, honesty, patient autonomy, priority of patient well-being, and social justice.[3,7] Various methods are used in teaching professionalism. Examples of videos and case studies of professional and unprofessional behaviors, vignettes, reflection sessions, small group studies, simulated and standard patient practices, role playing practices and role modeling can be shown among these.[8,9] Since the structure of professionalism is multidimensional, it is recommended to use multiple and various teaching methods.[10]

Simulated patients, people who pretend to be patients, are commonly used in medical education, and become an increasingly widely used method of training and assessment.[11] Thanks to simulated patients, students can experience history taking, physical examination, develop various professional skills, communication skills, and report bad news without entering the clinical environment and encountering the real patient.[11]

Evaluation is carried out to check whether the objectives aimed to be achieved in the training program have been

achieved, and it is stated that professionalism should also be evaluated.[9] Regarding this, role play practices, simulated/standardized patient interviews, observation of real patient interactions, 360-degree evaluation, and evaluation with checklists, portfolios, and scales can be used in the evaluation of professionalism.[6,12,13]

Interest in studies on professionalism is growing worldwide. However, these are mostly scale development and adaptation studies,[14-16] or students' attitudes and perceptions,[17] or focused on issues such as the conceptual structure of professionalism.[9] Studies evaluating the effectiveness of training methods for professionalism are relatively limited.[18]

Medical professionalism is one of the qualifications and an accreditation criterion in pre- and post-graduate medical education in Turkey. It is included in the national core education program and is among the physician competencies.[19] However, although there are studies investigating the professional attitudes of medical students in Turkey,[17,20,21] studies focusing on the source and the effect of education on these attitudes are quite limited.[18,22] It is recommended that medical professionalism be taught, evaluated and monitored as a competency.[3,9]

Objective

In this study, it was aimed to evaluate the effect of a training program and simulated patient practices on the attitudes of third year medical students towards medical professionalism. Our hypotheses were:

1) Lectures and simulated patient practices are effective in the development of medical students' professional attitudes.
2) There is a difference between the effectiveness of education and simulated patient practices on the professionalism attitudes of medical students.

Materials and Methods

Training program

In the third year of the curriculum of our Faculty of Medicine, there are theoretical and interactive courses on professionalism in medicine (2 hours), video watching, case discussions, vignettes, role play applications and reflections (2 hours). After these trainings, students attend interviews for simulated patient (SP) twice. SP interviews are held in the form of interviews on "bad news" and "difficult patient management". Students make SP's interviews with an educational guide and are evaluated in the presence of a guide. In interactions with the SP, the student's behaviors towards factors such as effective communication, empathy, active listening, producing solutions, patient autonomy, and respect are evaluated. After these practices, immediate feedback is given to the student by the SP, then feedback is given by the trainer and peers through a reflection session. Meanwhile, the student has the opportunity to self-evaluate.

Study design, sample and participants

The study is an intervention study in the pretest-posttest design, conducted with the third-year students of our Faculty of Medicine. Since the courses were online during the COVID-19 pandemic, the study was completed in 2022, after returning to face-to-face education. The sample size was not calculated in order to reach all students, and all third-year students were included in the study (n = 404). Inclusion criteria were determined as being in the third year, attending the professional course, having two simulated patient interviews, and participating voluntarily. Students who did not attend the course, did not conduct a simulated patient interview, did not study in the third year and did not volunteer were excluded from the study (Figure 1).

Data were collected at three separate times: just before the medical professional course, one week after the course, and one week after the two simulated patient interviews were completed (Figure 2). Data were collected through an online questionnaire prepared via Google forms. The survey link was sent to the students through the students' class WhatsApp group. Information about the purpose and scope of the study was also included at the beginning of the survey. Before starting the survey, students were asked to give consent for participation. Those who did not give consent could not answer the questions. Since this study was a three-stage study, students were given one week each time to answer the questionnaire, and after this time, the questionnaire was closed. Each student was given the right to answer the questionnaire once. No personal questions were asked and the data was collected anonymously.
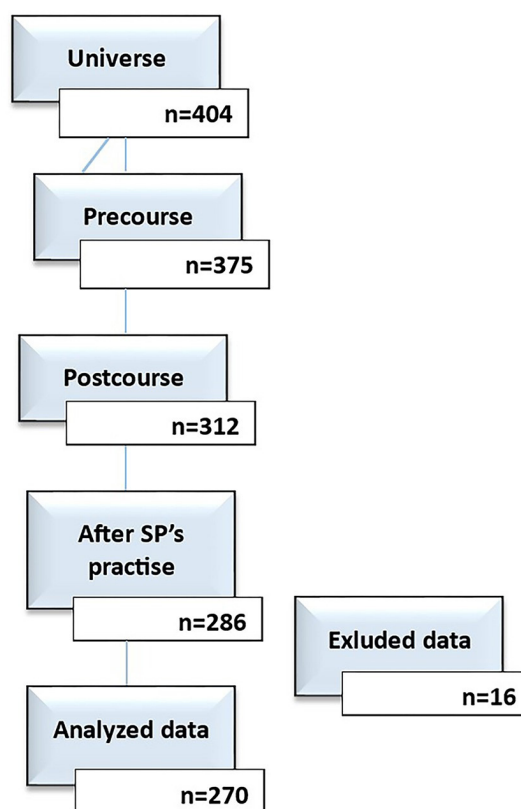

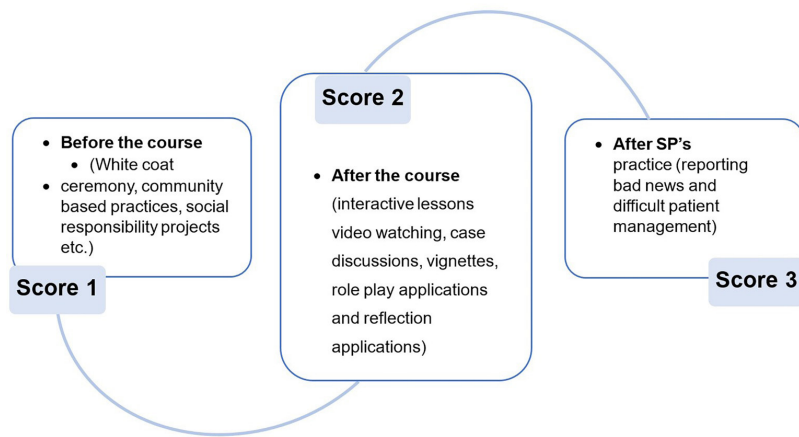
Figure 1. Flowchart of the study

Figure 2. Application times of the PSCOM-SF scale

However, in order to match the questionnaires, the students were asked to write the last five digits of their phone numbers. Answering the questionnaire took about 10 minutes.

In the study, 375 out of 404 students participated in the first survey, 312 students answered the second survey, and 286 students participated in the third survey. Participation rates were 92%, 77%, and 70% for the first, second and third surveys, respectively. Sixteen answers were excluded due to missing data. Data from 270 students (66%) who answered all three questionnaires were analyzed (Figure 1).

Data collection tools
A short sociodemographic information form and the Penn State College of Medicine (PSCOM) professionalism scale-student form (PSCOM-SF) were used as data collection tools. In order to determine personal characteristics, three questions were asked: age, gender and reasons for choosing medical school.

PSCOM Professionalism Scale-Student Form (PSCOM-SF)
The PSCOM professionalism scale is a tool developed by Pennsylvania State University Medical School that evaluates medical students' attitudes towards professionalism. The internal consistency of the scale was reported as 0.51-0.78.[23] The adaptation of the scale to Turkish was made by Demirören et al and the internal reliability was found to be 0.46-0.76.[17] There are 36 items in seven dimensions on the scale. Dimensions are defined as: (a) accountability (7 items), (b) enrichment (6 items), (c) equity (4 items), (d) honor and integrity (8 items), (e) altruism (3 items), (f) duty (5 items) and (g) respect (2 items). According to the 5-point Likert system, the scale is answered and scored between 1 and 5, as never (1), rarely (2), sometimes (3), often (4) and mostly (5). There are no reverse coded items on the scale. The total score that can be obtained from the scale is between 36-180. The PSCOM professionalism questionnaire contains recommendations to assess various elements of professionalism. As examples of these items: "Takes care to implement cost-effective patient care", "Supports the well-being and development of team members who are less senior than themselves", "Adopts equal and fair standards in patient care", "Observes scientific standards and bases its decisions on scientific evidence and experience", "Shows empathy", "Explains conflicts of interest that arise during their professional duties and activities", "Avoid offensive statements that lead to unkind comments and unfair criticism to others" can be given. The internal consistency of the respect dimension of the scale was found to be low (Cronbach alpha = 0.51), which was attributed to the low number of items in this dimension.[23] The low internal consistency in the Turkish version of the scale was attributed to a lack of understanding of an item about respect.[16]

In our study, the Cronbach alpha value for the overall scale was 0.81. The internal consistency of scale dimensions was 0.81 for accountability, 0.86 for enrichment, 0.85 for equity, 0.86 for honor and integrity, 0.78 for altruism, 0.78 for duty, and 0.68 for respect.

Statistical analysis
Data was analyzed by using the SPSS 20.0 software (IBM, NY, US). Data were presented as mean, standard deviation, minimum, maximum, percentage and number. Mann–Whitney U test was used to compare two different groups that did not show normal distribution. Friedman test was used as the analysis of variance in dependent groups in the analysis of repeated dependent measures. If there was a statistically significant difference in the comparison of three repetitive measurements, the Friedman pairwise comparison test was performed for post-hoc analysis. Test reliability was estimated using Cronbach α. A P value of < 0.05 was considered statistically significant.

Results
Sociodemographic features of participants
The mean age of the students was 21.40 ± 2.07, and 54.8% (n = 148) were female. The reason why 71.1% of the students chose medical faculty was ideal and the desire to help people. The sociodemographic characteristics of the students are presented in Table 1.

Comparison of the change in the scores after the training

The PSCOM scores of the students were 154.11 ± 10.91, 158.59 ± 10.48 and 164.64 ± 10.81 respectively score 1, score 2 and score 3. The increase in the scale total scores after the course and SP's practices is statistically significant ($P < 0.001$). The scale dimension's scores all increased after the course and SP's practice. The difference between Score 1, 2 and 3 is statistically significant (Table 2).

The scale increased significantly for all dimension scores after training and SP' practices, and the differences between score 1, 2 and 3 were found to be statistically significant ($P < 0.001$ for all). The comparison of the scale scores is presented in Figure 3.

Comparison of the change in the scale scores according to various variables

There was no significant relationship between the ages of the students and their scale scores ($P > 0.05$).

Comparison of attitude scores according to the gender

The female students total scores of 1, 2, and 3 were significantly higher than the male students ($P < 0.001$ for score 1 and 2, $P = 0.005$ for score 3). All three scores in the dimensions of Enrichment, Altruism, Duty were significantly higher in women than in men ($P < 0.05$). Female students scored significantly higher than men in score 1 and score 2 in Accountability, Equity, Honor and Integrity and score 1 in respect dimension. Comparison of scores by gender is presented in Table 3.

Comparison of attitude scores according to the reason for preferring medical faculty

The Enrichment, Duty, Respect 1, 2 and 3 scores, and the total scores of the students who preferred the medical school because it was ideal were significantly higher than the students who chose it for other reasons. The variation of the scale scores according to the reasons for preference is presented in Table 4.

The change in student scores after the course and after the simulated patient practices are given in Table 5. In all dimensions except Honor and Integrity and the Respect dimension, the score increases after simulated patient interviews was significantly higher than the post-course score increases.

Discussion

This study investigates the effects of education and simulated patient practices on the professionalism attitudes of medical students with the PSCOM-SF professionalism scale. Our study results showed that there was a significant increase in scale scores both after training and after simulated patient practices.

Professionalism is influenced by individuals' previous experiences and cultural environments.[23] It has been shown that students starting medical school have some

prior knowledge and attitudes towards professionalism[24] and these attitudes are generally positive.[20, 22] In the current study, the total score for the overall scale was 1, 2, and 3, 154, 158, 164, respectively. According to these results, it can be said that the professionalism attitudes of the students are positive. The attitude scores towards professionalism obtained in our study are consistent with our previous studies, [20,22] but higher than the studies in Turkey using the same scale.[16,18]

In a study conducted in Pakistan, the scale total score was found to be 140.[14] These differences in students' scale scores may be due to culture, social structure, regional differences and education programs. In our study, the attitudes of the students before the education were also found to be positive. These results may have been influenced by the

Table 1. Sociodemographic characteristics of the students

		Count (n)	Percent
Gender (n = 270)	Male	122	45.2
	Female	148	54.8
Reason for preferring the Faculty of Medicine (n = 270)	Ideal/willingness to help people	192	71.1
	Other	78	28.9

Table 2. Comparison of total scale scores

	Mean ± SD	Min-max (Med)	P*
Accountability 1	29.97 ± 3.74	14-35 (31)	
Accountability 2	30.59 ± 3.86	14-35 (31)	<0.001
Accountability 3	31.84 ± 3.44	10-36 (33)	
Enrichment 1	24.59 ± 3.33	14-30 (24)	
Enrichment 2	24.98 ± 3.26	14-30 (25)	<0.001
Enrichment 3	25.97 ± 3.47	15-30 (27)	
Equity 1	18.37 ± 2.08	11-21 (19)	
Equity 2	19.19 ± 2.00	11-22 (19)	<0.001
Equity 3	20.38 ± 2.35	12-32 (20)	
Honor and integrity 1	36.10 ± 3.29	21-40 (37)	
Honor and integrity 2	36.84 ± 3.21	21-40 (38)	<0.001
Honor and integrity 3	37.55 ± 1.93	13-40 (39)	
Altruism 1	12.82 ± 1.93	7-18 (13)	
Altruism 2	13.50 ± 2.04	7-18 (14)	<0.001
Altruism 3	14.41 ± 2.04	6-18 (15)	
Duty 1	21.24 ± 2.13	13-24 (22)	
Duty 2	21.78 ± 2.15	13-25 (22)	<0.001
Duty 3	22.73 ± 2.42	11-25 (23)	
Respect 1	8.11 ± .69	5-10 (8)	
Respect 2	8.78 ± .75	5-10 (9)	<0.001
Respect 3	9.44 ± 0.84	5-10 (10)	
Total score 1	151.20 ± 12.78	110-170 (153)	
Total score 2	155.66 ± 12.66	113-175 (157)	<0.001
Total score 3	162.33 ± 12.95	129-180 (165)	

1 before course; 2 after course; 3 after SP's practice; SD, Standard deviation, SP simulated patient.
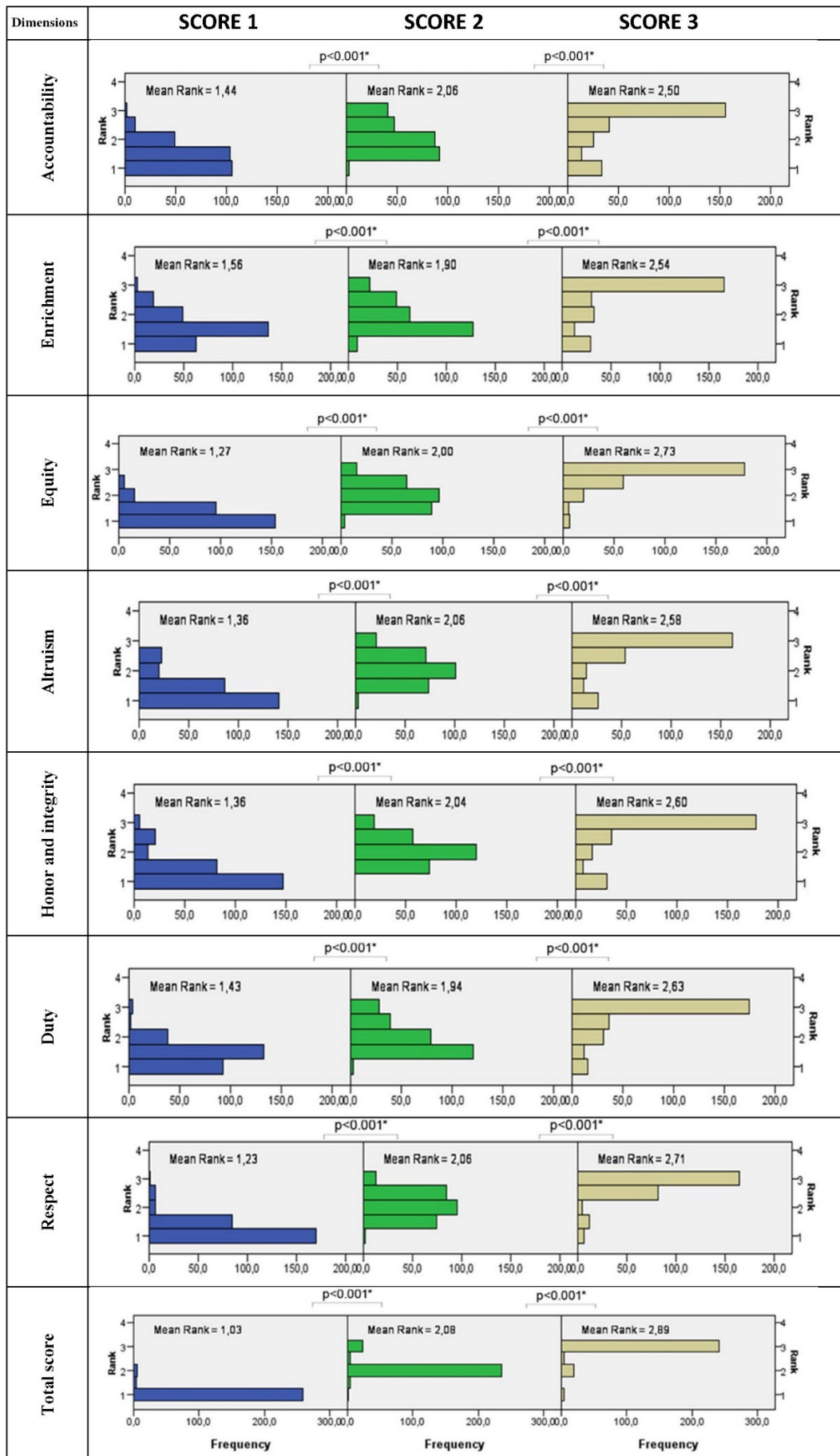* Friedman related samples test

Figure 3. Comparison of students' scores before the course, after the course, and after SP's Practice

Table 3. Comparison of attitude scores according to the gender

Dimensions	Male (n = 122)		Female (n = 148)		P
	Min-max	Mean ± SD	Min-max	Mean ± SD	
Accountability 1	14-35	29.16 ± 3.99	14-35	30.63 ± 3.40	0.001
Accountability 2	14-35	29.78 ± 4.17	14-35	31.25 ± 3.47	0.002
Accountability 3	10-36	31.41 ± 3.71	16-36	32.19 ± 3.15	0.072
Enrichment 1	14-30	23.91 ± 3	15-30	25.15 ± 3.00	0.007
Enrichment 2	14-30	24.28 ± 3.50	15-30	25.56 ± 3.00	0.003
Enrichment 3	15-30	25.13 ± 3.86	16-30	26.67 ± 2.95	0.001
Equity 1	11-21	17.92 ± 2.43	14-21	18.74 ± 1.66	0.016
Equity 2	11-22	18.7 ± 2.452	16-22	19.57 ± 1.44	0.013
Equity 3	12-32	20.22 ± 2.73	15-24	20.51 ± 1.99	0.380
Honor and Integrity 1	27-40	35.60 ± 3.29	21-40	36.52 ± 3.24	0.008
Honor and Integrity 2	28-40	36.39 ± 3.29	21-40	37.22 ± 3.09	0.009
Honor and Integrity 3	13-40	37.05 ± 3.83	28-40	37.97 ± 2.73	0.097
Altruism 1	7-16	12.37 ± 2.01	8-18	13.20 ± 1.79	0.001
Altruism 2	7-17	12.89 ± 2.12	9-18	14.01 ± 2.04	0.000
Altruism 3	6-18	14.06 ± 2.05	10-18	14.71 ± 2.00	0.026
Duty 1	13-24	20.70 ± 2.28	13-24	21.68 ± 1.90	0.000
Duty 2	13-24	21.25 ± 2.32	13-25	22.21 ± 1.91	0.000
Duty 3	11-25	22.28 ± 2.56	13-25	23.11 ± 2.24	0.001
Respect 1	6-10	8.00 ± 0.73	5-10	8.20 ± 0.64	0.015
Respect 2	6-10	8.78 ± 0.77	5-10	8.78 ± 0.74	0.986
Respect 3	6-10	9.39 ± 0.81	5-10	9.48 ± 0.86	0.213
Total score 1	110-168	147.66 ± 13.97	123-170	154.11 ± 10.91	0.000
Total score 2	113-174	152.10 ± 14.13	123-175	158.59 ± 10.48	0.000
Total score 3	92-180	159.53 ± 14.72	129-180	164.64 ± 10.81	0.005

SD, standard deviation.

attitudes of the students when they started medical school, the white coat ceremony, community-based practices, professional skills and communication skills, as well as the hidden curriculum and role models. It is recommended to implement structured and systematic training programs to ensure that professional skills and attitudes develop and become permanent.[18]

In our study, there was a significant increase between the scores of 1, 2 and 3 in the total scale scores of the students and in the scores of all sub-dimensions after both the training program and the simulated patient practices. Previous studies reported that women's scale scores on communication, empathy, and professionalism attitudes were higher than men, and this was mostly associated with gender characteristics.[16,18]

In our previous studies, the empathy scores of female students were found to be significantly higher than male students both before the training and after the SP's interviews,[25] and also trainings with SP was found to improved students' attitudes towards communication skills training.[26] Similarly, in the current study, female students' scale total scores were significantly higher than male students before the training, after the training, and after the simulated patient practices. When the scores of the sub-dimensions of the scale were compared, Enrichment, Altruism, Duty were significantly higher in women than in men. In addition, female students scored 1 and 2 in the dimensions of accountability, fairness, honor and honor, and score 1 in the respect dimension was significantly higher than that of males.

In the current study, more than two-thirds of students stated that they chose medical school because it was their ideal and to help people. The total score of these students 1, 2 and 3 was found to be higher than the scores of the students who made a choice for other reasons (such as family and teachers' orientation, economic return, prestige). This result suggests that the choice of profession that students make willingly and consciously can be an important predictor of their professionalism attitudes. This result also highlights the importance of students' making conscious choices in training more professional doctors. In our study, no significant relationship was found between the ages of the students and their scale scores. This result may be due to the close age of the sample.

In this study, the effectiveness of a structured education was evaluated in a relatively large sample group. After the training, the scale scores of the students increased significantly for all dimensions, and this increase

Table 4. Comparison of attitude scores according to the reason for preferring medical faculty

Dimensions	Ideal/willingness to help people (n = 192)		Other (n = 78)		P
	Min-max (med)	Mean ± SD	Min-max (med)	Mean ± SD	
Accountability 1	14-35 (31)	30.45 ± 3.30	14-35 (28)	29.00 ± 4.45	0.003
Accountability 2	14-35 (32)	31.07 ± 3.43	14-35 (29)	29.00 ± 4.57	0.003
Accountability 3	10-36 (33)	31.92 ± 3.40	20-36 (31)	32.00 ± 3.56	0.687
Enrichment 1	15-30 (25)	25.05 ± 3.02	14-30 (23)	23.46 ± 3.79	0.002
Enrichment 2	15-30 (25)	25.42 ± 2.89	14-30 (24)	23.91 ± 3.84	0.003
Enrichment 3	15-30 (27)	26.39 ± 3.10	15-30 (25)	24.96 ± 4.10	0.017
Equity 1	12-21 (19)	18.60 ± 1.87	11-21 (18)	17.79 ± 2.45	0.015
Equity 2	12-22 (20)	19.45 ± 1.68	11-22 (19)	18.53 ± 2.53	0.004
Equity 3	15-32 (20)	20.53 ± 2.19	12-24 (20)	20.01 ± 2.69	0.356
Honor and Integrity 1	22-40 (37)	36.53 ± 2.73	21-40 (37)	35.06 ± 4.21	0.065
Honor and Integrity 2	22-40 (38)	37.24 ± 2.63	21-40 (38)	35.86 ± 4.16	0.085
Honor and Integrity 3	30-40 (39)	37.74 ± 3.22	30-40 (39)	37.08 ± 3.46	0.282
Altruism 1	7-16 (13)	12.96 ± 1.78	8-18 (12)	12.49 ± 1.78	0.087
Altruism 2	7-17 (14)	13.69 ± 2.01	8-18 (13)	13.05 ± 2.01	0.044
Altruism 3	6-18 (15)	14.53 ± 1.93	9-18 (14)	14.13 ± 1.93	0.164
Duty 1	14-24 (22)	21.52 ± 1.86	13-23 (21)	20.54 ± 2.58	0.004
Duty 2	14-25 (22)	22.06 ± 1.82	13-24 (22)	21.09 ± 2.70	0.012
Duty 3	11-25 (24)	22.89 ± 2.42	16-25 (23)	22.35 ± 2.38	0.049
Respect 1	6-10 (8)	8.21 ± 0.58	5-9 (8)	7.85 ± 0.85	0.001
Respect 2	7-10 (9)	8.88 ± 0.67	5-10 (9)	8.53 ± 0.89	0.004
Respect 3	8-10 (10)	9.56 ± 0.63	5-10 (9)	9.13 ± 1.15	0.003
Total score 1	124-170 (155)	153.32 ± 11.08	110-169 (149)	145.97 ± 15.06	0.000
Total score 2	125-175 (159)	157.81 ± 10.56	113-174 (153)	150.39 ± 15.61	0.001
Total score 3	92-180 (165)	163.57 ± 12.04	124-180 (169)	159.28 ± 14.59	0.037

Table 5. Comparison of the increase in scale scores after the course and after simulated patient practices

	Difference between after course and before course		Difference between after simulation and after course		P
	Mean ± SD (min-max)	Median	Mean ± SD (min-max)	Median	
Accountability	0.62 ± 0.731 (-2-4)	4	1.25 ± 3.25 (-16-16)	4	0.002
Enrichment	0.39 ± 0.814 (-3-3)	3	0.99 ± 2.59 (-12-11)	3	0.000
Equity	0.81 ± 0.881 (-1-4)	4	1.20 ± 1.65 (-4-12)	4	0.006
Honor and Integrity	0.74 ± 1.005 (-2-9)	9	0.71 ± 2.50 (-23-10)	9	0.818
Altruism	0.68 ± 0.713 (-2-2)	2	0.91 ± 1.54 (-4-6)	2	0.034
Duty	0.54 ± 0.774 (-1-3)	3	0.96 ± 2.10 (-11-9)	3	0.001
Respect	0.67 ± 0.502 (-1-2)	2	0.66 ± 0.88 (-3-4)	2	0.879

SD, standard deviation.

continued after the simulated patient interviews. To distinguish whether the increase in scale scores after simulated patient practices was due to the cumulative effect of education or to simulated patient interactions, it was found that the score increases after simulated patient practices were significantly higher. However, it is difficult to say that this is not due to a cumulative effect.

Limitations

The study has some limitations. First, the study was a single-center study and therefore the results cannot be generalized. Second, the control group was not included in the study. Third, the effects of time on attitudes were not followed. Finally, the scale used is a self-assessment tool, which may have caused recall bias. However, evaluating the effectiveness of training methods on professional attitudes is an important strength of our study.

Recommendations

Multicenter studies with control groups are recommended for future studies. Our study showed that education has a statistically significant positive effect on the professionalism attitudes of medical students. Professionalism education should be structured to include clinical periods, and we

think that structured, multiple and authentic methods will be beneficial for students to internalize these values and transform them into attitudes.

Conclusion

It was found that education has a positive effect on the professionalism attitudes of medical students. It was also found that with simulated patient interactions, professionalism attitudes were further enhanced. Students' attitude scores towards professionalism increased significantly after both training and simulated patient interactions. Considering that the concept of medical professionalism is one of the graduate competencies of medical faculties, it can be said that there is a need for larger, comprehensive and longitudinal studies investigating the effects of time and education on attitudes.

Authors' Contribution
ECT designed the research, conducted the study, and collected the data; MB performed the analyses; ECT wrote the draft; ECT and MB wrote the manuscript, read and approved the final script.

Competing Interests
There is no conflict of interest to declare.

Ethical Approval
The ethical permission required for the study was obtained from Atatürk University Faculty of Medicine Non-Interventional Research Ethics Committee (Decision Number: 10/16, Date: 17.12.2020). The study was conducted according to the rules of the Helsinki Declaration. Informed consent of all participants received.

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