The Impact of the Covid-19 Pandemic on Medical Students' Attitudes of Professionalism: A Cross-Sectional Study

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Abstract: In this study, it is aimed to investigate the effect of the pandemic on the professionalism attitudes of medical students. This cross-sectional study was conducted with 329 medical students. The data was collected with sociodemographic information form and Pennsylvania State University Faculty of Medicine Professionalism Attitude Scale. Data were collected via an online survey. SPSS 20 package program was used for statistical analysis. The statistical significance level was $p < 0.05$. The mean age of the students was 21.32 ± 2.21, and 50.5 % (n=166) were female. Professionalism attitude scores were 30.36 ± 4.26 for accountability, 25.84 ± 3.53 for enrichment, 18.23 ± 2.39 for honor and integrity 36.39 ± 4.21, for altruism 13.04 ± 1.94, for assignment 22.23 ± 2.87 and for respect dimension 8.95 ± 1.34. Compared to the pre-pandemic period, there was a significant increase in enrichment scores ($p < 0.001$). There was no change in the other dimension scores ($p > 0.05$). Gender, program, and presence of a doctor in the family had no significant effect on attitude scores ($p > 0.05$). Students who stated that they preferred medical school because they had an ideal/dream and to help people had significantly higher attitude scores than students who preferred it for other reasons ($p < 0.001$). The attitudes of the third-year medical students towards medical professionalism are positive and the attitude scores are satisfactory. Enrichment scores increased significantly during the Covid-19 pandemic period compared to the pre-pandemic period. © 2022 NTMS.

Keywords: Medical Education; Medical Student; Medical Professionalism; Atitude; COVID-19.

1. Introduction

Medical professionalism is the whole of the attitudes and behaviors that form the basis of the public's trust in doctors (1, 2). It is a very broad and inclusive concept and is a collection of good qualities (3, 4).

Leading organizations engaged in medical education have listed the key elements of professionalism. These are sacrifice, respect, compassion, honesty, accountability, duty, honor, commitment, and respect for others. The well-being of the patient, autonomy, and social justice are the basic principles of professionalism (5-7). Professionalism requires that the interests of the patient be held above the physician's own interests (5). Medical professionalism is one of the graduate qualifications and accreditation criteria of medical

faculties (8). In our country, it has been determined as an accreditation standard by the National Medical Education Accreditation Board (UTEAK). Professionalism is also one of the physician competencies (9).

In the COVID-19 Pandemic, education has been one of the most affected areas along with health. Since the date of the first COVID-19 case in Turkey (11.03.2020), education at Atatürk University Faculty of Medicine has been completely suspended as it is throughout the country. Then rapidly transitioned to online education (10, 11). In the pre-clinical phase, theoretical courses, laboratory applications, clinical and communication skills training, and exams were carried out entirely on online platforms (12). At the time of the study, students had been studying online for three semesters.

The pandemic has brought several dilemmas with it in health practices. All over the world, practices such as mask and distance applications, restrictions, and quarantines were made to prevent the spread of the disease. In the fight against this new and unknown disease, physicians from every branch were assigned to COVID-19 services. Especially in the early stages of the pandemic, some of the health care providers had to live apart from their homes and families. The health workers' permits were revoked, and their resignations were not accepted.

The COVID-19 pandemic has been one of the periods when altruism and altruistic behaviors are best felt. Doctors cared for patients at risk of transmission of the infection (13). It was the doctors who felt ill and lost their lives. Especially in the early stages of the outbreak, outpatient clinic services other than emergencies were canceled. To cope with the number of patients, all hospitals were converted into pandemic hospitals, elective surgeries were postponed. Later, some of the hospitals were converted into pandemic hospitals, while others accepted routine patients. This situation has caused an inexorable intensity in hospitals that do not have pandemic hospitals, as well as in pandemic hospitals.

While these negative conditions are hand-in-hand, it has been seen that there are very important developments in ethical behavior, empathy and professional approach to patients, solidarity between colleagues, and selfless professional tasks. In the process, it was necessary to refocus on the importance of professional values and professional behaviors and to rebuild the importance of values such as autonomy, non-harm, and social justice (14).

The pandemic has been seen to increase cooperation and solidarity between doctors and health workers. Thus, the conditions created by the pandemic are seen as an opportunity to rebuild professional values. Doctors and scientists from all over the world have struggled to develop vaccines and medicines against COVID-19 while fighting the disease. The

development of many COVID-19 vaccines at the same time is an example of this cooperation process (15).

During the pandemic, doctors faced both positive and negative discrimination. While they applauded doctors and other health workers to show their respect and gratitude, on the other hand, they also exhibited stigmatizing and discriminatory behaviors such as trying to stay away from health workers in public areas such as markets and elevators for the fear that they could carry and transmit diseases (16, 17).

There has been some controversy regarding health service delivery. The large number of patients and the limited number of intensive care beds and respiratory support devices led to speculations that priority patient applications (such as giving priority to young and vaccinated patients) will be made in intensive care units (18). Inequalities in access to medicines and vaccines in various parts of the world were highlighted (19). Especially in the early stages of the pandemic, there has been extensive debate on issues such as personal protective equipment indications and triage, due to the lack of an effective vaccine and drug and the unknowns about the disease (14).

Medical education was also seriously affected by this process. The move of education to the online platform has been criticized for causing inequalities of opportunity in terms of technological devices or internet access in terms of connecting to online courses (20).

It is likely that all of this has affected the attitudes of professionalism of medical students, who are the doctors of the future. In recent years, it is seen that interest in research on professionalism has increased. However, these are more concerned with students' perceptions and opinions towards professionalism (21-23). Some researchs are aimed to develop and adapt scales to assess professionalism (24, 25).

During the pandemic period, we could not reach a study investigating the professionalism attitudes of medical students. In this study, it is aimed to investigate the effect of the COVID-19 pandemic on the professionalism attitudes of medical students.

2. Material and Methods

2.1. Ethical Consent

Ethical permission for the study has been obtained from Atatürk University Faculty of Medicine Clinical Research Ethics Committee (Date:28.04.2021 Number:187). The research was conducted in accordance with the principles of the Helsinki Declaration. The informed consent of the participants was obtained.

2.2. Study Design, Universe and Sample

This study is a cross-sectional study, conducted with Atatürk University Faculty of Medicine third- year students.

2.3. Training Program
Professionalism is one of the graduate qualifications of Atatürk University Faculty of Medicine. During the clinical period, there are practices for professionalism such as the white coat ceremony, good medical practices, community-based medical practices and social sensitivity projects, access to information, evidence-based medicine, self-life and lifelong learning, continuous professional development, hospital orientations, medical history and ethics courses, communication skills, simulated patient practices.

2.4. Participants
In the 2020-2021 academic year, 365 students studying in the third-grade were included in the study. Students were informed about the purpose and scope of the study and invited to participate in the survey. Since it was aimed to reach all of the students, the sample was not calculated, and all of the students who were studying and volunteering in the third-grade were included in the study. Thirty-six of the students did not return the call to participate. The data of 329 students who voluntarily participated in the survey and filled out the form completely were evaluated. Thus, 90 % of the universe has been reached. In order to assess the effects of the COVID-19 pandemic on students' attitudes, the results were compared with the results of another study conducted with third-year students of Atatürk University Faculty of Medicine in the pre- COVID period (26).
The data were collected between 01.06.2021-15.06.2021 through an online questionnaire. Due to pandemic conditions, there were no face-to-face meetings with the students, and no printed materials were used. A questionnaire form was created by the researchers by using the literature through Google forms. Through the Class Whatsapp group, students were informed about the purpose and scope of the study and invited to participate. Then the link of questionnaire was shared with the students. The first question of the survey was written as "I voluntarily agree to participate in the study". Those who did not consent to this statement could not answer the other questions. Thus, the online consent of the participants was obtained. In the questionnaire, the students were not asked any questions that indicates their identity. The data was collected anonymously. Each student was given the right to take the survey only once. Students were given two weeks to respond to the questionnaire, during the time in which they were sent three reminders. The questionnaire took about 10-15 minutes to answer. Students who did not volunteer and did not study in the third year were excluded from the study.

2.5. Data Collection Tools
The questionnaire was created in two parts. In the first part, sociodemographic questions such as age, gender, nationality, medical program they studied, the reason for preferring medical school, whether there was a loss of years in medical school were included. The second part was the Pennsylvania State University School of Medicine Professionalism Scale-Student Form (PSCOM-SF).

2.5.1. Pennsylvania State University School of Medicine Professionalism Scale-Student Form
It is a scale developed by the Pennsylvania State University School of Medicine (2007) to evaluate the professionalism attitudes of medical students. There are a total of 36 items in 7 dimensions on the scale. The scale dimensions are: 1) Accountability, 2) Enrichment, 3) Equity, 4) Honor and Integrity, 5) Altruism, 6) Duty and 7) Respect. The internal consistency of the scale was found to be 0.51-0.78 (24). The adaptation of the scale to Turkish was made by Demirören et al. (2015) and the internal consistency was found to be 0.46-0.76 (25).
In the current study, the internal consistency of the scale was found to be between 0.69-0.90.
The answering and scoring of the scale is answered according to the 5-point likert system: Never (1), a little (2), sometimes (3), often (4), mostly (5). There is no reverse scored item in the scale. By summing the scores of the items in each dimension, the score for that dimension is obtained. The total attitude score can be obtained by also summing the scores of all dimensions. The higher the score, the more positive the professional attitudes are considered.

2.6. Statistical Analysis
The data were analyzed in SPSS 20.0 (SPSS Inc., Chicago, IL, USA) statistical program. The suitability of the data to the normal distribution was checked by Kolmogorov Smirnov test. Categorical variables were presented as numbers and percentages, numerical variables were presented as mean, standard deviation, median, minimum, maximum. Mann-Whitney U test was used to compare the data that did not fit the normal distribution. Cronbach's alpha value was used for the internal consistency of the scale. The statistical significance level was accepted as $p < 0.05$.

3. Results
3.1. Sociodemographic Characteristics
The average age of the students was 21.32 ± 2.21, and 50.5 % were female. The sociodemographic characteristics of the students are presented in Table 1.

Table 1: Sociodemographic characteristics of students.

Variable		Count (n)	Percent (%)
Sex	Female	166	50.5
	Male	163	49.5
Program	Turkish medicine	248	75.4
	English medicine	81	24.6
Reasons to Preference Medical School	İdeal, the desire to help people	203	61.7
	Family/teacher referral	61	18.5
	Dignity	32	9.7
	The impact of role models	5	1.5
	Ekonomic	28	8.5
The Presence of a Doctor in the Family (First Degree Relatives)	Yes	49	14.9
	No	280	85.1

3.2. Professionalism Attitude Scores
The average scores taken by the students for each scale item was at least four or above four over five. Students' professionalism attitude scores are given in Table 2.

3.3. Comparison of Attitude Scores
A comparison of students' professionalism attitude scores according to various variables is given in Table 3. There was no significant difference in attitude scores according to gender, medical program, and presence of a doctor in the family (p>0.05). According to the reasons for preferring the faculty, there was a significant difference in attitude scores. Students who chose medical school because it was their ideal, and to help people had significantly higher scores than those

who chose the medical school for other reasons (p<0.001 for all dimensions). There was no statistically significant difference between the attitude scores of students with and without year loss in the medical school except for the respect dimension (p>0.05). The respect dimension scores of the students who had lost a year because they failed the class were significantly lower than the students who did not failed. (p<0.05, Table 3).

3.4. Comparison of Attitude Scores with Pre-Covid-19 Period
While there was a significant increase in the enrichment dimension (p<0.001), there was no significant change in the other dimensions scores (p>0.05, Table 4).

Table 2: The professionalism attitude scores of the students.

Scale dimensions	Mean±SD	Median (min-maks)	Cronbach alpha
Accountability	30.36±4.26	31.00 (10-35)	0.90
Enrichment	25.84±3.53	26.00 (13-30)	0.87
Equity	18.23±2.39	19.00 (6-20)	0.89
Honor and integrity	36.39±4.21	38.00 (16-40)	0.89
Altruism	13.04±1.94	13.00 (5-15)	0.83
Duty	22.23±2.87	23.00 (8-25)	0.86
Respect	8.95±1.34	10.00 (4-10)	0.69

Table 3: Comparison of students' professionalism attitude scores according to various variables.

Sex	Female		Male			
	Mean±SD	Median (Min-Max)	Mean±SD	Median (Min-Max)	Z	p
Accountability	30.67±3.68	31 (14-35)	30.04±4.78	31 (10-13)	-.757	.449
Enrichment	25.86±3.40	26 (15-30)	25.82±3.66	26 (13-30)	-.088	.930
Equity	18.3 ±2.31	20 (10-20)	18.14±2.47	19 (6-20)	-.929	.353
Honor and Integrity	36.41 ±4.20	38 (22-40)	36.37±4.24	37 (16-40)	-.352	.725
Altruism	12.98 ±1.81	13 (8-15)	13.10±2.06	14 (5-15)	-1,224	.221
Duty	22.37±2.70	23 (15-25)	22.09±3.03	23 (8-25)	-.740	.459
Respect	9.05 ±1.23	10 (5-10)	8.85±1.45	9 (4-10)	-1.042	.297
Program	Turkish Medicine		English Medicine			
	Mean±SD	Median (Min-Max)	Mean±SD	Median (Min-Max)	Z	p
Accountability	30.47±3.95	31 (10-35)	30.04±5.11	31 (12-35)	-.072	.943
Enrichment	25.88±3.47	26 (13-30)	25.70±3.70	26 (17-30)	-.297	.766
Equity	18.25±2.35	19 (6-20)	18.17±2.52	20 (10-20)	-.102	.919
Honor and Integrity	36.46±4.03	38 (16-40)	36.17±4.76	38 (22-40)	-.367	.714
Altruism	13.02±1.92	13 (5-15)	13.09±1.99	13 (7-15)	-.510	.610
Duty	22.22±2.88	23 (8-25)	22.26±2.86	23 (15-25)	-.195	.845
Respect	8.98±1.33	10 (4-10)	8.85±1.40	9 (5-10)	-.680	.497
Reason for preference	Ideal/Request for Help to People		Other			
	Mean±SD	Median (Min-Max)	Mean±SD	Median (Min-Max)	Z	p
Accountability	31.06±3.95	32 (12-35)	29.23±4.50	29 (10-35)	-4.057	**.000**
Enrichment	26,48±3.30	27 (15-30)	24.79±3.64	25 (13-30)	-4.070	**.000**
Equity	18.68±1.98	20 (10-20)	17.50±2.79	18 (6-20)	-4.414	**.000**
Honor and Integrity	37.06±3.55	38 (22-40)	35.30±4.93	36 (16-40)	-3.507	**.000**
Altruism	13.42±1.73	14 (9-15)	12.43±2.09	12 (5-15)	-4.408	**.000**
Duty	22.79±2.57	24 (12-25)	21.33±3.10	22 (8-25)	-4.647	**.000**
Respect	9.28±1.05	10 (5-10)	8.42±1.58	9 (4-10)	-5.296	**.000**
Doctor in the Family	Yes		No			
	Mean±SD	Median (Min-Max)	Mean±SD	Median (Min-Max)	Z	p
Accountability	29.65±5.08	30 (12-35)	30.49±4.10	31 (10-35)	-.810	.418
Enrichment	25.76±3.38	26(17-30)	25.85±3.56	26 (13-30)	-.267	.790
Equity	18.06±2.60	19 (10-20)	18.26±2.36	19 (6-20)	-.270	.787
Honor and Integrity	36.55±4.47	38 (22-40)	36.36±4.17	37 (16-40)	-.798	.425
Altruism	13.18±2.01	14 (8-15)	13.01±1.93	13 (5-15)	-.819	.413
Duty	22.24±3.09	23 (14-25)	22.23±2.83	23 (8-25)	-.422	.673
Respect	9.06±1.30	10 (5-10)	8.93±1.35	9 (4-10)	-.686	.493
Fail in Class	Yes		No			
	Mean±SD	Median (Min-Max)	Mean±SD	Median (Min-Max)	Z	p
Accountability	28.82±5.40	29 (12-35)	30.57±4.05	31 (10-35)	-1.805	.071
Enrichment	25.46±4.28	26 (17-30)	25.89±3.42	26 (13-30)	-.309	.757
Equity	17.92±2.82	19 (10-20)	18.27±2.33	19 (6-20)	-.282	.778
Honor and Integrity	35.72±5.17	37 (24-40)	36.48±4.07	38 (16-40)	-.244	.807
Altruism	12.87±2.19	13 (8-15)	13.06±1.90	13 (5-15)	-.290	.772
Duty	22.08±3.26	23 (15-25)	22.25±2.82	23 (8-25)	-.116	.908
Respect	8.51±1.55	9 (5-10)	9.01±1.30	9 (4-10)	-1.982	**.047**

Table 4: Comparison of students' professionalism attitude scores before COVID-19 and during the COVID-19 pandemic period.

Scale Dimensions	Before COVID-19 Mean ±SD	During COVID-19 Mean ±SD	t	p
Accountability	30.29 ± 4.19	30,36±4,26	0.212	0.831
Enrichment	24.88 ± 3.78	25,84±3,53	3.371	**0.000**
Equity	18.26 ± 2.12	18,23±2,39	0.170	0.864
Honor and Integrity	36.37 ± 3.87	36,39±4,21	0.063	0.949
Altruism	13.11 ±1.90	13,04±1,94	0.639	0.070
Duty	21.92 ± 2.80	22,23±2,87	1,404	0.160
Respect	9.05 ± 1.25	8,95±1,34	0.99	0.321

SD Standard Deviation.

4. Discussion

The results of this study, which was conducted to investigate the impact of the COVID -19 pandemic on the professional attitudes of medical students, showed a significant increase in enrichment dimension scores. To the best of our knowledge, this study is the first to investigate medical students' attitudes towards professionalism during the COVID-19 pandemic.

Health and education are among the areas most affected by the COVID -19 pandemic. It has often been brought up that the pandemic causes inequalities in both areas. Inequalities in access to medicines and vaccines among the countries of the world, in the utilization of health care systems, in education are some of them.

During the pandemic period, various factors such as doctors taking care of patients, the risk of getting sick or even death while healing patients, fears of infecting their families, and the need to work collaboratively with colleagues and team members have brought professional values to the forefront more than ever.

There have been many dilemmas, the doctors' own physical and mental health has also been affected by the situation, and those who have fallen ill or even lost their lives. While all this was happening, the medical school students followed the situation as the doctors of the future and were naturally affected. Studies have reported that in the COVID-19 pandemic, medical students question their branch preferences and even their career preferences (27, 28).

The COVID-19 pandemic has been one of the periods when doctors and other health workers have been collaborating the most. Humane values such as social benefit, prioritizing patient benefit, altruism, altruism, compassionate care, compassion, empathy, which are at the core of professionalism, have come to the fore. Especially at the beginning of the pandemic, due to the fact that there is a lot of information about the disease, the responsibility of the necessary care and attention to the patients has been completely undertaken by health professionals instead of family members or relatives. A scientific committee was formed by the Ministry of Health to regularly assess the situation and inform the public. In the fight against the disease, initially all health units were transformed into COVID-19 units, and physicians, regardless of specialty, are assigned to COVID-19 services. Health workers have carried out their duties extremely selflessly and have been appreciated by society all over the world. Medical students have witnessed this whole process mentioned. During the pandemic period, professional trainings could not be held face-to-face. Although we predicted that this situation may have led to a decrease in the attitude scores, our results did not confirm it. Physician roles in the community may also have had a positive impact during the pandemic. On the other hand, it can be considered that online education can be as successful as face-to-face education. All of these situations may have had an impact on our research results. Further research to understand the impact of each factor would be beneficial.

The results of our research have shown that students' attitudes towards professionalism are positive. The average scores for all items of the country are close to the highest possible scores. Apart from the study in which the comparison was made, three studies were conducted in our country in the pre-pandemic period, evaluating the professional attitudes of medical students and using PSCOM-SF (25, 29, 30). One of them is the adaptation of the PSCOM-SF scale into Turkish by Demirören et al. In this study, students' attitude scores were found to be between 5.32-19.64 (25). The second study is the study conducted by Şenol et al. (2016-2017) with medical students at Akdeniz University. In this study, students' attitude scores were found to be between 5.5-19.6 (30). In the third study which is conducted by Demirören and Şenol with the students of two medical faculties (Ankara and Akdeniz), attitude scores were found between 6.35-23.57 (29). The scores obtained in a study conducted by Akhund et al. with medical students in Pakistan are similar to the results of a study conducted in our country (21). The scores obtained in our study were between 8.9-30.3 and were higher than the scores in the mentioned studies. In addition to the fact that there is a complex structure of professionalism, past experiences, personal and environmental factors such as society and culture, the difference in education programs may also have been effective in this difference (24, 31). The fact

that the attitude scores were higher in our research and that the clinical semester students were not included in the study may have also had an effect.

In the current study, it was seen that the enrichment dimension scores increased significantly compared to the pre-pandemic period results. During the pandemic period, health workers all over the world acted together in the fight against the disease, and the interests of society were prioritized. On the other hand, vaccine and drug development studies were continued. We think that enrichment dimension scores may have been increased due to the cooperation between colleagues and interprofessional and working together for the same purpose during the COVID-19 period.

There was no significant change in the scores of the other dimensions. The high professionalism attitude scores of our students may also have been effective in these results. It was also pleasing that there was no decrease in the attitude scores of the students during the process.

In our study, there was no significant difference between the sexes. Some studies have reported that women's attitude scores are higher (25, 26, 30).

Most of the students did not have a doctor in their families. Although we thought that students with a doctor in their family might be more familiar with professional values and have higher professionalism attitude scores, our study results did not confirm this. There was no significant difference between the attitude scores of the students who had a doctor in their family and those who did not.

While not the focus of the research, our results have shown that preference for medical school has an impact on student's attitudes toward professionalism. The professionalism attitude scores of the students who choice because they had dreams and ideals, and with the desire to help people were found to be significantly higher than the students who choice for other reasons such as economic return, respectability, family and teacher orientation. Another study with third-graders before the pandemic shown similar results (26). These findings suggest that conscious medical career preference has a significant predictive effect on medical professionalism. Medical education is a long and challenging process. The profession of medicine requires dedication and lifelong learning. Therefore, intentional and conscious choices are very important. The high number of students who willingly made choices in our research group may have had an impact on the high professionalism attitude scores.

Similar to the respect dimension, some students score low on all dimensions of the scale. Professionalism is a set of values that develop over time. To be scalitized and have positive attitudes, these students with low scores should pay more attention and effort, and the attitudes related to professionalism should be evaluated. Although each student has some attitudes stemming from their previous experiences, it will be useful to start teaching professionalism in medical education at the earliest stage, to monitor and evaluate it regularly.

Our research results show that although face-to-face education could not be carried out during the pandemic period, student's attitudes toward professionalism did not decrease, and even there was a significant increase in the enrichment dimension

In conclusion, these findings suggest the following possibilities: 1). Exemplary doctor role models may have had a positive impact in the fight against COVID-19, 2). Online classes may have been as effective as face-to-face classes in professionalism education, 3). During the pandemic process, the perception of physician identity in the society and the professionalism attitudes of the students may have been strengthened. However, there is insufficient evidence for these assumptions.

5. Conclusion

We think that it would be beneficial to plan professional training to include online programs for possible pandemics. Given that medical professionalism is an area of competence, it can be said that more comprehensive research is needed, including regular follow-up of students and comparing the effects of time and training models.

Limitations of the Study

Our study has some limitations. First, the study is a cross-sectional study conducted with third-year students of a single medical school. Therefore, it is not possible to generalize the results for medical students. Secondly, the measurement tool used is a self-assessment tool and the results are based on the self-reports of the students. Finally, it should be considered that although there is a relationship between attitudes and behaviors, it may not always be consistent. A single assessment of students' attitudes toward their professionalism traits will not confirm that these attitudes will translate into behaviors in the future. The strength of our study is that it is the first study conducted in our country to evaluate the effects of the COVID-19 pandemic on the professionalism attitudes of medical students.

Conflict of Interests

The authors declared no conflict of interest.

Author Contributions

ECT and EG designed the research. ECT participated in data collection. ECT and EG wrote the manuscript, read and approved the final script.

Ethical Approval

Ethical permission for the study has been obtained from Atatürk University Faculty of Medicine Clinical Research Ethics Committee (Date:28.04.2021 Number:187). The research was conducted in accordance with the principles of the Helsinki Declaration.

Data sharing statement

None.

Consent to participate

Informed consent was obtained from all participants.

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