Original Article

# Developing a comprehensive tool to assess professional attitude among physicians and medical students

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## Abstract

It appears that up until now, no comprehensive tool has been developed to assess medical students' attitudes toward the different dimensions of professionalism. The present study aimed to develop a comprehensive quantitative tool to evaluate medical students' attitudes toward professionalism.
This study consisted of two phases: The first phase was item generation and questionnaire design based on literature review and a qualitative survey. The qualitative data were extracted from 49 semi-structured individual interviews and one focus group discussion. In the second phase, the questionnaire was developed and its face, content, and structure validity and reliability were evaluated. To measure the construct validity of the questionnaire, a cross-sectional study was conducted on 354 medical students at different academic levels at Isfahan University of Medical Sciences.
The final questionnaire was loaded on five factors. The factors accounted for 43.5% of the total variance. Moreover, Cronbach's alpha was 0.84 for the total scale, and the interclass correlation coefficient was 0.77 for the test-retest reliability. The 17-item questionnaire measuring medical students' professional attitude had acceptable validity and reliability and can be adopted in other studies on physicians' and medical students' professional attitudes.

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## Introduction

Medical students' professional behaviors have a great impact on promoting public trust in healthcare providers and thereby accelerating the achievement of desired treatment outcomes. Therefore, teaching medical students to behave professionally and monitoring and evaluating their performance is of paramount significance in any society.

On the other hand, individuals' behaviors in different situations are rooted in their values and attitudes. That is, medical students' professional behaviors are outward manifestations of the values and attitudes governing their minds. Accordingly, observing and promoting the professional attitudes of medical students as a source of professional behaviors may play a critical role in nurturing the public trust in healthcare providers.

Furthermore, positive and deeply-rooted attitudes toward professionalism would lead to the emergence of professional behaviors such as tolerance, sensitivity to patients' physical and emotional needs, and avoiding discrimination and favoritism (1).

In general, it is easier to evaluate students' professional behaviors rather than their professional attitudes due to the former's objectivity and measurability. Moreover, the objectivity and measurability of behaviors facilitate the provision of an accurate explanation for errors, and it thus seems more feasible to propose a suitable solution to modify professional behaviors. Another advantage of assessing students' professional behaviors (rather than their values and attitudes) is that evaluating behaviors and pointing out behavioral errors are less likely to undermine their personality (1).

Despite the aforementioned advantages of evaluating professional behaviors compared to professional attitudes, the assessment of professional behaviors as an external manifestation of professionalism in medical students may cause us to commit some errors. First, attributing accountability or non-accountability to students based on their professional or non-professional behaviors indicates ignorance of the fact that each non-professional behavior represents a conflict between two or more moral values at the same level. The factors affecting a student's response to such a value conflict are as significant as the behavior itself. The response depends on several factors, including the student's perception of conflicting values and environmental conditions effective in resolving the conflict. As a logical consequence of the dependence of students' professional behaviors on different factors such as the ones mentioned above, professional behavior cannot be considered as an appropriate benchmark to assess their professionalism. Relevant studies on medical students and residents have revealed a periodically significant rising and falling in their abilities to interact with patients (1).

Medical students' professional attitude can be considered as their feeling or mental attitude toward the professional principles in medicine. The professional attitude is also defined as "a feeling, talent, or mindset that

supports the ideals of a profession and is the basis for professional behavior" (2).

Accordingly, evaluation of medical students' professionalism by measuring their professional values and attitudes has an advantage over evaluation of their professional behaviors. This is because of two main reasons: A) Stability of professional attitude and its independence from environmental factors, and B) The fact that professional attitude is the origin of professional behavior, and that its evaluation, reinforcement, or modification can spontaneously provide the grounds for acceptable professional behaviors. It should, however, be noted that an appropriate attitude does not necessarily lead to appropriate moral behaviors, and individuals may exhibit unacceptable performance despite their appropriate moral beliefs.

According to an in-depth review of the literature, the tools adopted in previous studies to evaluate medical students' professional attitudes have only addressed the students' stance on one of the issues raised in professionalism. Due to the absence of a comprehensive instrument to assess professional attitude, the present study was conducted to develop a tool for systematic evaluation of physicians' and medical students' attitudes toward the various dimensions of professionalism.

## Methods

The following procedure was adopted to design and validate the questionnaire:

*A: Developing the questionnaire items*

This phase of the study aimed to detect and gather appropriate attitudinal concepts to prepare the questionnaire items for the assessment of the medical students' professional attitudes. This phase was performed in two stages including a literature review and a qualitative study in the form of interviews with medical students, followed by a focus group discussion (FGD) session with medical ethics experts. In FGD a small group of participants come together to discuss a specific topic and provide relevant information. A distinctive feature of focus group discussion is the interaction between the moderator and the participants, and among the participants. This technique enables the researcher to understand the participants' views on a specific topic (3).

In the library phase, available texts and instruments related to the components of medical professionalism were reviewed. The statistical population of this phase encompassed all English-language articles introducing the components of medical professionalism. No time frame was set for searching the included articles.

The search strategy for library study is demonstrated in Table 1 below. The keywords "medical professionalism" and "professional attitude" were searched in the Title/Abstract section of PubMed and Web of Science databases to select the articles. Then, the search continued in the advanced search section of the two databases using combinations of the mentioned keywords with other words and phrases, including

"assessment", "evaluation", "measurement", "medical students", "medical trainees" and "physicians". Finally, a set of professional attitudinal components were extracted (Table 1).

***Table 1- Search strategy for library study***

| | | | | |
|---|---|---|---|---|
| *Professional attitude*<br>*OR*<br>*Medical professionalism* | *AND* | *Evaluation*<br>*OR*<br>*Assessment*<br>*OR*<br>*Estimation* | *AND* | *Medical students*<br>*OR*<br>*Medical trainees*<br>*OR*<br>*Physicians* |

At the end of the library study, a set of professional attitudinal components were extracted from studies on professionalism. This review encompassed studying different definitions of professionalism and extracting the attitudinal dimensions of each proposed component. In this regard, studies specifically examining one of the various professionalism dimensions were also investigated, and their attitudinal components were extracted. The collected professional attitudinal components were then used in compiling the items of a comprehensive questionnaire measuring professional attitude.

The next phase of the study encompassed a semi-structured interview followed by content analysis. First, there were some individual and semi-structured interviews with a number of medical students in Isfahan University of Medical Sciences, who were studying at the basic sciences, stagery, and internship levels. The participants were asked to express their opinions about the characteristics of a professional physician and appropriate indicators in assessing physicians' professional attitudes. The interviewees were selected purposefully, considering maximum diversity in terms of gender and educational level (namely basic sciences, stagery, and internship) from Isfahan University of Medical Sciences. Data saturation was considered to determine the number of students interviewed in each grade. There was no time limit for the interviews, and each interview lasted as long as the interviewee was willing to talk (about 15 - 20 minutes on average).

The interviews were digitally recorded and then transcribed verbatim and handwritten. The conventional content analysis method was used to analyze qualitative data. Accordingly, the informative units (words, phrases, or concepts) were detected in response to each question. Then the units were classified and coded into different categories in a clear, understandable, and orderly manner in terms of their content and theoretical significance. When studying the manuscripts containing the same units of analysis, the researcher tried to achieve their general sense to spare efforts. The meaning units were then extracted as sentences or paragraphs from the interview statements and transcriptions, and the units were coded. The extracted codes were managed using MAXQDA software version 10. Repeated reviews of extracted codes contributed to

detecting their similarities and differences and classifying and organizing them. Finally, as the process of analysis progressed, the relationships between specific categories and themes hidden in the interview transcriptions were noticed. Finally, the extracted codes were repeatedly compared with those obtained from the first phase of the study, and each unit was thus placed in its respective category based on similarities and differences.

In the next stage, the questionnaire items were developed using the attitudinal concepts extracted from the text reviews and qualitative interviews with medical students. The extracted codes were converted into items, and a pool of professional attitude assessment items was formed.

Finally, the designed items were evaluated by 8 experts in the field of medical ethics in a focus group discussion session, which continued until data saturation. As a result, some items were modified and some overlapping items were removed. The output of this phase was a 20-item questionnaire that could enter the stage of psychometric evaluations.

*B: Questionnaire validation*

In the second section of the study, the validity and reliability of the primary questionnaire were examined.

***1) Content validity***

Experts' opinions were used to assess the content validity of the questionnaire (CVR and CVI). Twenty experts including 5 in the field of medical ethics and 15 instructors of medical professionalism were asked to rate the necessity of each item on a 3-point scale (necessary, useful but unnecessary, and unnecessary). They were also asked to score the relevance rate of each item using a 4-point scale (completely relevant, relevant, partially relevant, and irrelevant). In addition, the experts were asked to write down their comments for each item in the section designed for this purpose if further modifications of the item seemed necessary.

In the next step, CVR and CVI were calculated for each item. The minimum acceptable CVR value was set according to Lawshe (2014) and with regard to the number of expert panels (4).

The CVI score or the percentage of experts reaching an agreement on the relevance of the items was also calculated for each item by dividing the number of experts who chose option 4 (completely relevant) or 3 (relevant) by the total number of experts. Based on Hyrkas et al.'s recommendation, scores $\geq 0.79$ were set as the criterion to accept the items (5).

***2) Face validity***

The face validity of the questionnaire was evaluated by conducting interviews with 10 medical students. To this end, they were asked to express their views about any ambiguity or need for transparency in the items, as well as the items' significance and relevance.

***3) Reliability assessment***

Internal consistency and stability tests were used to confirm the reliability of the

questionnaire. The stability assessment was performed using test-retest. According to statistical standards, the number of participants in the test-retest stages should range from 30 to 50 (6). In this study, 31 students were willing to cooperate, and they were each assigned a code to ensure anonymity and free and honest collaboration in answering the questions. The same code was used for each student in both the test and retest stages, completed with a two-week interval in between. The responses were scored using a five-point Likert scale (namely, strongly agree, agree, no opinion, disagree, and strongly disagree). Cronbach's alpha and ICC were first calculated for all items, and Cronbach's alpha was re-calculated after deleting each item.

***4) Construct validity***

Exploratory factor analysis was used in the present study to determine the construct validity of the developed questionnaire. The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity, principal component analysis, scree plot, eigenvalue, and Equamax rotation were then carried out. The turning point of 0.3 was set as the minimum factor load required to maintain each item under the factors extracted from factor analysis. After extracting the factors and the related items, the compatibility of the factors with the concept and the main dimensions of the professional attitude were examined.

*Research setting:* The construct validity was assessed at Isfahan University of Medical Sciences or its affiliated teaching hospitals. The convenient sequential sampling method was adopted in this study. To this end, after coordination with the Department of Medical Ethics at Isfahan University of Medical Sciences, the researcher participated in medical ethics classes or conferences where the research sample gathered and distributed anonymous self-report questionnaires. Regarding the internship students who were mostly present in teaching hospitals, the questionnaires were submitted in coordination with the Department of Medical Ethics at the end of scientific conferences such as Morning Reports. Before distributing the questionnaires, the students were informed of the objectives and the procedures of the study, and the anonymity of the questionnaires was emphasized. Inclusion criteria were studying medicine at Isfahan University of Medical Sciences at the basic sciences, stagery, or internship levels, and willingness to fill out the questionnaires. The exclusion criterion was the failure to complete at least 80% of the questionnaire items. The sample size in the quantitative part of the study was 100 for each of the three educational levels (namely basic sciences, stagery, and internship). To assess construct validity, medical students at Isfahan University of Medical Sciences were asked to complete the questionnaire. The collected data were then analyzed using SPSS software version 19.

## *Ethical considerations*

To observe ethical considerations, the necessary ethical approval was achieved from the Ethics Committee of Tehran University of Medical Sciences (No.

13951917). In order to conduct the study at Isfahan University of Medical Sciences, the necessary coordination was made with the Vice Chancellor for Research and the Department of Medical Ethics of this university. Afterward, the research objectives were explained to the participants, and their informed consent was obtained. They were then ensured of the confidentiality of their information throughout the publication process. The participants agreed on the time and place of the interviews and were also informed of audio-recording and the purpose of doing so. They were also advised that they could request some parts of their interviews not to be audio-recorded if they wished. The interviewees were also reassured that they could terminate their cooperation in the study at any time.

## Result

*A: Item generation*

*Library studies:* In this phase, a set of attitudinal components were extracted which were used in the next phases to compile the items of the questionnaire. Among these attitudinal components, the following can be mentioned: a sense of commitment to scientific advancement; striving for self-learning; the significance of proper communication; the appropriate use of all available resources for scientific advancement; exploiting personal experiences as a resource for scientific advancement; enhancing holistic attitudes and consideration of human dimensions in making decisions; the significance of learning clinical reasoning principles; the significance of simultaneous improvement of scientific and practical skills; facing conditions of doubt and uncertainty; the skill of using abstract knowledge commensurate with the environment; feeling accountable for the patient and the society; promoting the spirit of care instead of mere treatment (7); considering patients' human dignity; commitment to quality improvement and access to health services; role of physicians in establishing distributive justice (8); considering the significance of physical and mental health; the importance of independence in learning; problem-solving and decision-making; the key role of teamwork; considering the role of critical and creative thinking in treatment decisions (9); commitment to environmental factors affecting treatment; honesty and efforts to reach excellence; fairness; self-enrichment (10); reasoning preparation for dealing with unforeseen situations correctly; strengthening the skills of identifying the root and source of unforeseen events to make the best decisions (11); accepting scientific and skill shortcomings and trying to eliminate them; ability to maintain proper performance in complex and uncertain situations (12); self-awareness and reflection (13); reflection on criticisms and commitment to medical error disclosure (14).

*Qualitative study:* After interviewing medical students at different educational levels of basic sciences, stagery, and internship and reaching data saturation in each phase, new attitudinal components

were extracted and coded to develop the questionnaire items. Using content analysis approach, they were then categorized into three categories (scientific skills, practical skills, and personality traits) and seven subcategories (efforts for scientific promotion, communication with patients and their companions, teaching students, having a research spirit, communication with other members of the medical team, attitudes toward oneself and others, and attitudes toward the medical profession) (Table 2).

***Table 2- Content analysis based on interviews with medical students***

| *Codes* | *Subcategories* | *Categories* |
|---|---|---|
| *Constant attention to improving one's scientific level, updating scientific information, promptness in emergency decision-making, ability to use scientific knowledge in decision-making, skills in obtaining a comprehensive and purposeful history of the patient, skills in differential diagnosis* | *Efforts for scientific promotion* | *scientific skills* |
| *Spending time with the patient, prioritizing the patient's interests over personal interests, listening to the patient, paying attention to the patient's fears and concerns, respecting the patient's rights, telling the truth, respecting the patient's companions, paying attention to the patient's wishes, - Skills of gaining patients' trust, skills of transferring experiences and knowledge to students, following the patient's condition until the full result is achieved, communicating properly with nurses, providing the patient with sufficient information, refraining from administering unnecessary treatments, directing the course of treatment while respecting the patient's autonomy* | *Communication with patients and their companions*<br>*Teaching students*<br>*Having a research spirit*<br>*Communication with other members of the medical team* | *practical skills* |
| *Not feeling superior to others, paying attention to social norms and red lines of the society, having clear and predetermined moral frameworks to display the right behavior, referring the patient to a more capable doctor if needed, being conscientious, caring about the patient's fate, being honest with the patient and avoiding deception, accepting one's errors, having a good temper, having a comprehensive view of the patient (physical, mental and psychological), maintaining the dignity of the medical profession while respecting the patient, paying attention to the reputation of colleagues and the medical profession, avoiding discrimination, conscientiousness and a sense of commitment to patients, courage to admit insufficient scientific knowledge or practical skills when necessary, not abusing social status to achieve public advantages, not being indifferent to the sufferings of the patient and his/her companions, avoiding making decisions for the patient based on emotions, paying attention to proper resource allocation, having mental strength when the patient suffers or shows irrational reactions, having self-confidence in medicine.* | *Attitudes toward oneself and others*<br>*Attitudes toward the medical profession* | *personality traits* |

In the FGD session, which was held in the presence of medical ethics professors at

Tehran University of Medical Sciences, the participants commented on the significance, relevance, and classification of the items proposed for developing the questionnaire. They suggested some professionalism dimensions in addition to those derived from previous studies.

Finally, the research team members selected the most appropriate items and combined the overlapping concepts. Thus, 53 items were developed to assess students' professional attitudes and were then tabulated using a five-point Likert scale.

The selected items reflected the physicians' and medical students' attitudes toward different aspects of professionalism.

*B : Questionnaire validation*

**A) Face validity**

The results of the interviews with medical students were gathered and summarized in a table, according to which 13 vague or non-significant items detected by the interviewees were excluded and some items were modified. The pool of the questionnaire items encompassed 40 items.

***B) Content validity***

In the next step, CVI and CVR were estimated for each of the 40 items, according to which 20 items had acceptable CVI and CVR scores and were approved as the selected items of the Professional Attitude Assessment Questionnaire. Further modifications were made based on the professors' comments to clarify some items in the questionnaire.

***C) Construct validity***

The prepared questionnaire was evaluated for construct validity. For this aim, 130 students of basic sciences, 110 students of stagery, and 128 students of the internship were invited to complete the questionnaire, of whom 127, 107, and 120 students answered the questionnaire items, respectively. Given that 354 out of 368 students completed the questionnaire, the total response rate was 96%.

The responses to all the items but one had normal distribution, so that item was removed from the questionnaire in this phase. KMO was reported to be 0.778. The values of KMO and Bartlett's test of sphericity indicated the sufficiency of the sample size. Eigenvalue > 1 was accepted, and cumulative prediction revealed the acceptable value of 43.5%. At this stage, Varimax rotation was performed, which showed the items were loaded on seven factors, but the results of the Component Transformation Matrix Table indicated the relevance of the items, suggesting the employment of non-orthogonal rotations. The items were loaded again on seven factors after running the Oblimin rotation, but more acceptable results were obtained numerically. Regarding the number of items in each factor and the factor load of each item, the best results were finally obtained by selecting five factors. Each factor had at least two items with a factor loading > 0.3. In this phase, two other items were also removed since they were not powerful enough (Table 3).

***Table 3- Factors extracted in factor analysis using Oblimin rotation and the factor loads of items***

| Items | Factors | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| *Considering patients' concerns or fears makes them demanding.* | *0.711* | | | | |
| *The physician is not required to ask a hospitalized patient for permission to perform an abdominal examination.* | *0.633* | | | | |
| *To preserve the dignity of the medical profession, a physician should not answer the patient's questions about a colleague's errors.* | *0.583* | | | *0.318* | |
| *A physician making the right diagnosis for a patient is a good one, even if he/she does not treat the patient empathetically.* | *0.558* | | | | |
| *The physician knows best how to improve the patient's health status; hence, he/she can make some treatment decisions without informing the patient.* | *0.516* | | | | |
| *Hospitalization in a teaching hospital implies that the patient should agree to any measure contributing to teaching students.* | *0.503* | *0.321* | | | |
| *In order not to arouse the patient's anger, one can hide the errors harming the patient.* | *0.408* | | | | |
| *Respectful treatment of a patient who behaves disrespectfully goes beyond the professional duty of a physician.* | *0.371* | | | | |
| *Prioritizing the patient's health over personal interests represents the physician's altruism.* | | *-0.788* | | | |
| *If a physician feels that receiving expensive gifts from different companies has no effect on his/her prescriptions, he /she can accept them.* | | *-0.520* | *0.327* | | |
| *The physician should report his/her colleague's drug abuse even if it causes no harm to patients* | | | *-0.731* | | |
| *In cases of rare organ transplant, criminals and non-criminals have equal rights to receive an organ.* | | | *0.638* | | |
| *In case of a disaster, it is the physician's duty to provide overtime services if needed.* | | | | *0.673* | |
| *To promote patients' satisfaction, the physician may accept some of their requests for unscientific measures (e.g., unnecessary imaging).* | | | | *-0.580* | |
| *Accountability is inherent and cannot be promoted.* | | | | *0.427* | |
| *The physician is responsible to provide feedback on his/her own, or a colleague's minor misconduct, even if it has not seriously harmed the patient.* | | | | | *0.797* |
| *Reporting colleagues' fraud represents professionalism.* | | | | | *0.629* |

With regard to the content covered by the items, the factors were labeled as follows: "patient-centered care", "prioritization of patients' interests", "honesty", "accountability", and "dealing with misconducts". After extracting the factors and the related items, the compatibility of the factors with the concept and the main dimensions of professional attitude were re-examined, reducing the number of items to 17 (Table 4,).

***Table 4- Factors, items and factor loads***

| *Factors* | *Items* | *Factor Loads* |
|---|---|---|
| *Patient-Centered Care* | *- The physician is not required to ask a hospitalized patient for permission to perform an abdominal examination.* | *0.633* |
| | *- Considering patients' concerns or fears makes them demanding.* | *0.711* |
| | *- To preserve the dignity of the medical profession, a physician should not answer the patient's questions about a colleague's errors.* | *0.583* |
| | *- Respectful treatment of a patient who behaves disrespectfully goes beyond the professional duty of a physician.* | *0.371* |
| | *- In order not to arouse the patient's anger, one can hide the errors harming the patient.* | |
| | *- A physician making the right diagnosis for a patient is a good one, even if he/she does not treat the patient empathetically.* | *0.408* |
| | *- The physician knows best how to improve the patient's health status; hence, he/she can make some treatment decisions without informing the patient.* | *0.558* *0.516* |
| *Prioritization of Patients' Interests* | *- Hospitalization in a teaching hospital implies that the patient should agree to any measure contributing to teaching students.* | *-0.312* |
| | *- Prioritizing the patient's health over personal interests represents the physician's altruism.* | *-0.788* |
| | *- If a physician feels that receiving expensive gifts from different companies has no effect on his/her prescriptions, he/she can accept them.* | *-0.520* |
| *Honesty* | *- In cases of rare organ transplant, criminals and non-criminals have equal rights to receive an organ.* | *0.638* |
| | *- The physician should report his/her colleague's drug abuse even if it causes no harm to patients* | *-0.731* |
| *Accountability* | *- Accountability is inherent and cannot be promoted.* | *-0.427* |
| | *- In case of a disaster, it is the physician's duty to provide overtime services if needed.* | *0.673* |
| | *- To promote patients' satisfaction, the physician may accept some of their requests for unscientific measures (e.g., unnecessary imaging).* | *-0.580* |
| *Dealing with Misconducts* | *- Reporting colleagues' fraud represents professionalism.* | *0.629* |
| | *-The physician is responsible to provide feedback on his/her own, or a colleague's minor misconduct, even if it has not seriously harmed the patient.* | *0.797* |

The final questionnaire encompassed 17 items (Table 5).

***Table 5- The final questionnaire for the assessment of medical trainees' professional attitude***

| | *Questionnaire Items* |
|---|---|
| 1 | *The physician is not required to ask a hospitalized patient for permission to perform an abdominal examination.* |
| 2 | *Considering patients' concerns or fears makes them demanding.* |
| 3 | *To preserve the dignity of the medical profession, a physician should not answer the patient's questions about a colleague's errors.* |
| 4 | *Respectful treatment of a patient who behaves disrespectfully goes beyond the professional duty of a physician.* |
| 5 | *In order not to arouse the patient's anger, one can hide the errors harming the patient.* |
| 6 | *A physician making the right diagnosis for a patient is a good one, even if he/she does not treat the patient empathetically.* |
| 7 | *The physician knows best how to improve the patient's health status; hence, he/she can make some treatment decisions without informing the patient.* |
| 8 | *Hospitalization in a teaching hospital implies that the patient should agree to any measure contributing to teaching students.* |
| 9 | *Prioritizing the patient's health over personal interests represents the physician's altruism.* |
| 10 | *If a physician feels that receiving expensive gifts from different companies has no effect on his/her prescriptions, he /she can accept them.* |
| 11 | *In cases of rare organ transplant, criminals and non-criminals have equal rights to receive an organ.* |
| 12 | *The physician should report his/her colleague's drug abuse even if it causes no harm to patients.* |
| 13 | *Accountability is inherent and cannot be promoted.* |
| 14 | *In case of a disaster, it is the physician's duty to provide overtime services if needed.* |
| 15 | *To promote patients' satisfaction, the physician may accept some of their requests for unscientific measures (e.g., unnecessary imaging).* |
| 16 | *Reporting colleagues' fraud represents professionalism.* |
| 17 | *The physician is responsible to provide feedback on his/her own, or a colleague's minor misconduct, even if it has not seriously harmed the patient.* |

***D) Reliability***

The total Cronbach's alpha coefficient and the total ICC were reported to be 0.84 and 0.77 respectively for the developed questionnaire. The values were calculated to assess the reliability of each item as well. Accordingly, not only the questionnaire but also each item had acceptable reliability.

## *Discussion*

In this study, a 17-item scale was developed to assess physicians' and medical students' professional attitudes toward five professionalism domains whose face validity, content validity, construct validity, internal consistency, and stability were confirmed.

The feature that distinguishes this tool from others that assess physicians' and medical students' professional attitudes is its comprehensiveness in evaluating various professionalism aspects. For example, the Jefferson Scale has been used in several studies in Korea, Brazil, Bangladesh, Iraq, Turkey, Greece, and the US to evaluate medical students' attitudes, but only focuses on the students' attitudes toward empathy with patients (15 - 24). Other scales have dealt with topics such as social and emotional communication between physicians and patients in New Zealand (25), cheating in examinations in the United States (26), communication skills in Germany and the Netherlands (27, 28), skills

required for communication with colleagues in the US (29), provision of services to the lower classes of the society in the US (30 - 31), attention to patients' health and safety in the UK (32), and many other topics in other countries. As noted, the developed tool could evaluate medical students' professional attitude toward at least five professional domains, including patient-centered care, prioritization of patients' interests, honesty, accountability, and dealing with misconduct.

Another distinguishing feature of this questionnaire is that the items include no specialized medical term; therefore, medical students at different levels of education and with any level of medical knowledge can respond to it.

Furthermore, the ethical issues considered in the items are ones toward which individuals are expected to have an acceptable attitude when they enter the university. In other words, no specific knowledge is required to complete this questionnaire.

Another feature considered in developing this instrument is that the items include no specific cultural or social considerations or aspects, thereby making it suitable for use in any community or culture.

In general, the developed questionnaire is relatively easy to use for assessing physicians' and medical students' professional attitudes. Also, it can be adopted in various settings such as universities, hospitals and clinics, health centers, and private centers for research purposes. On average, the respondents completed the questionnaire in 10 minutes. The face validity and content validity of the questionnaire confirm the simplicity and clarity of the items. Moreover, the questionnaire can easily be completed by medical students at different education levels in various societies.

The reliability of the developed questionnaire was well confirmed, and it had acceptable content validity, internal consistency, and cumulative prediction.

A significant point in analyzing the results of both library and qualitative studies regarding the characteristics of a committed and professional physician was that the attitudinal components were mainly common in both studies. However, due to their constant involvement with the ethical challenges of working in clinical settings and their accurate and critical views on different issues, the participants in the qualitative study referred to a few points not revealed or regarded in the quantitative part. For example, features such as "physicians' competence in gaining patients' trust", "prioritization of patients' interests" and "consideration of social norms or red lines in clinical activities" were of paramount significance from the perspective of the students and were repeatedly emphasized by the interviewees. Although these points have been considered by thinkers and authors in other countries, the medical students' attention and emphasis on the points indicate their concern about the development of some unprofessional behaviors in medical settings. The focus on the need for physicians' competence in gaining patients' trust might

be due to concerns about patients' gradual loss of trust in physicians in Iran, which has unfortunately been growing rapidly in recent years. On the other hand, the students' emphasis on the ethical consideration that physicians should prioritize patients' interests also reveals concerns about unprofessional performance in this regard. The need to respect social norms and red lines may also be a critique of disregarded norms, even if rare, in the medical community, which undermines the dignity of the medical community as well as the trust between physicians and patients in Iran. On the other hand, the interviewees mentioned some issues regarding the characteristics of a professional physician, which had been addressed less frequently in the studied papers. Some examples are "not abusing social position to gain different benefits" and "not believing in one's superiority over other individuals in the society." The points seem to be highlighted by the interviewed students as the characteristics of professional physicians due to the existence of the following ethical problems in the medical community: unjustified enjoyment of social benefits by some physicians because of their scientific and social position, paternalistic view of patients, and the indoctrination of a sense of superiority due to the long history of paternalism in the doctor-patient relationship in our country. The aforementioned points would help health managers and policymakers to better detect ethical deficiencies in the healthcare system and plan to compensate for such shortcomings.

One limitation of the developed questionnaire is that it is a self-report instrument and thus entails all shortcomings and limitations of self-administered questionnaires.

## Conclusion

The library study method as well as qualitative and quantitative research were adopted in the present study to develop a standard and comprehensive 17-item questionnaire to assess medical students' various professional attitudinal dimensions. The questionnaire validity and reliability were also evaluated and approved.

The distinguishing feature of the tool designed in this study in comparison with other tools for measuring professional attitude is its comprehensiveness. Based on our extensive search, previously designed tools for assessment of the professional attitude of medical students were able to assess just one dimension of professionalism, for instance, empathy, communication skills, etc. The questionnaire designed in the present study can be used to assess the attitude of medical trainees toward various dimensions of professionalism including altruism, honesty and integrity, respect for patients, respect for colleagues, accountability, and justice. It can also be used for evaluation of the impact of educational programs on students' attitudes. The findings would provide a guide for policymakers of educational programs at universities to explore the positive and negative points, eliminate the shortcomings, and enhance the strengths in medical students' professional attitudes.

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