

Assessing the Professionalism Levels of Undergraduate Medical Students at a Medical College.

Syed Bilal Yousuf Ghaznavi^{1*}, Syed Imran Mehmood²

ABSTRACT:

Objectives:

To evaluate the professionalism of medical students at Bahria University Medical and Dental College (BUMDC), at the same it will let us know the range of differences among students in different classes (1-5 years).

Methodology: It was a cross-sectional study conducted on 583 students of BUMDC, ranging from 1st year to 5th year (academic session 2021-2022). A validated tool was utilized to collect data. The tool assessed 6 aspects of professionalism: excellence, respect for others, altruism, duty, accountability, honor, and integrity, using a 5-point Likert scale.

Results: The results indicated a notable variance in the overall professionalism score ($p=0.000$), altruism ($p=0.000$), duty ($p=0.000$), accountability ($p=0.000$), excellence ($p=0.000$), honor and integrity ($p=0.000$), and respect for others (0.001) based on the clinical status of students.

Conclusion: It is evident from the study that the level of professionalism among the graduating 5th year class is significantly below the ideal standard. Additionally, it is concerning to observe a notable decline in professionalism from 1st year to 5th year medical students. It is crucial to educate medical students on all essential skills required to deliver top-notch healthcare services efficiently during their practice.

Key Words: Professionalism, medical students, undergraduate, attitude, behavior.

Introduction:

The term "professionalism" originates from the Latin profession, meaning "public proclamation".¹ Medical professionalism, defined by the American Board of Medical Studies, entails a set of values on effectively managing and delivering medical services. It calls for members of a community to collectively declare what patients can expect in terms of proficiency and moral standards and to establish reliable mechanisms to ensure that all healthcare professionals uphold their commitments.² Professionalism, as outlined by the American Board of Internal Medicine, encompasses six elements: respect, integrity, excellence, duty, accountability, and altruism.³

Other organizations emphasized crucial professional values like patient-centered care and social equality, demonstrated through professional responsibilities like honesty, empathy, selflessness, ongoing improvement, excellence, and collaboration.⁴

Medical errors are recognized for causing significant harm and fatalities, often attributed to a lack of professionalism. Recently, the medical field has faced criticism for the decline in ethical and moral standards.^{5,6} Professional values, concepts, and behaviors are instilled in students from the moment they begin medical school.⁷ Students' respect for others, sense of responsibility, and analytical skills all contribute to their professional conduct.⁸ A significant amount of research has been conducted on the importance of edu-

cation in shaping appropriate behaviors related to professionalism in future physicians, as education has been shown to be crucial in fostering and upholding proper professionalism; without it, attitudes may deteriorate.^{9,10} Developing positive attitudes towards professionalism is partly influenced by a student's formal education, with optimal outcomes achieved when education occurs early in the curriculum.¹¹ Studies have highlighted the need for professionalism courses in recent years, emphasizing the importance of instilling higher ethical and compassionate values rather than solely relying on monitoring and evaluating behaviors.¹²

Nowadays, there is a growing emphasis on the process of professional identity development and the need to fully understand the learners' direct and indirect knowledge of medical professionalism.¹³ Identity development involves transforming one's professional ideas based on a combination of information, skills, perspectives, values, and experiences.¹⁴ According to Holden et al., identity development in the medical field is described as the intricate and gradual process of a layperson's transition into a physician as they start to form their own fundamental beliefs, ethics, values, and awareness.^{15,16} Professional identity development has been shown to be highly transformative in medical education from undergraduate to postgraduate training.¹⁷ Additionally, professional development programs that educate on the rich heritage and complexity of clinical excellence have proven to be effective in promoting professionalism.^{18,19} The fundamental aspects of medical professionalism include personal, physician-patient, and societal levels.²⁰ There is limited published literature on professionalism among undergraduate medical students in Pakistan.²¹ It has been noted in the literature that the behaviors of medical students related to professionalism may evolve during the five years of medical education.²² Therefore, this study aims to examine the student characteristics that may impact professionalism during their educational journey. The objective of our study is to evaluate professionalism in undergraduate medical students, track its evolution over time, and explore whether gender and urban or rural back-

1. Dept of anatomy, Bahria University Medical and Dental College, Karachi
2. Faculty of Medicine, Northern Border University, Saudi Arabia & Dow Institute of Health Professions Education, Dow University of Health Sciences, Karachi. Pakistan

*=corresponding author :

Email: youghaznavi@gmail.com

ground have any influence on it. The results of this research will assist our institution in implementing measures to formalize professionalism in medical school curricula.

Significance of the problem

Undergraduates exhibit a positive attitude towards professionalism and societal values during their time in medical school. Their ethical beliefs are influenced by interactions with family members, teachers, peers, and other social connections.²³ Lack of professionalism among medical students can lead to an increase in medical errors, resulting in higher morbidity and mortality rates for patients.

Undergraduates who uphold strong professional values are better equipped to prevent medical mistakes, modify their behaviour, or devise strategies to prevent the recurrence of errors, even in the midst of their busy schedules or after making a mistake.

A thorough review of the literature indicates conflicting evidence regarding the evolution of professionalism among different stages of medical students. As a result, we will assess the professionalism levels of medical undergraduates to assist our organization in developing and implementing a curriculum aimed at enhancing professionalism among medical students.

Review of Literature:

Professionalism, technological skills, and interpersonal abilities are key qualities that define a "great physician" in global research on professionalism in medicine.^{24,25} Medical educators are now placing greater emphasis on the importance of effectively teaching professionalism to medical students.^{20,26} Various studies have also provided examples of how different medical institutions have incorporated professionalism into their curriculum.²⁷⁻²⁹ Second-year undergraduates at an Irish medical school showed significant professional growth after receiving integrated professionalism education.³⁰ Research indicates that the moral behavior of undergraduates influences their future behavior as physicians.³¹ Additionally, a learner's level of compassion can be predicted by their character, as genetics play a role in this aspect.^{32,33} Attitudes are shaped through social interactions and impact individuals' behavior.³⁴ There is a general consensus on the strong connection between attitudes and behavior.³⁵ Evaluating students' current perceptions of professionalism is deemed essential for designing courses aimed at enhancing professional behavior.³⁶ It is widely believed that formal training, professionalism, and ethics should all be integrated into the medical curriculum.³⁷ Wilson et al. reported that 35% of iatrogenic injuries result from a lack of professionalism, while only 1% are due to knowledge gaps.³⁸ Arabian educators and students have highlighted the insufficient inclusion of professionalism in the official curriculum.³⁹ Many conferences organized by medical educators focus on the topic of professionalism to promote the concept of medical professionalism.⁴⁰ In the view of Saudi medical students, a few professors were considered good role models. Factors such as instructors setting a poor example through role-playing, deficiencies in the curriculum, and a lack of feedback could all contribute to a lack of professionalism.⁴¹ Research conducted in China has linked medical negligence, procedural errors, intergroup conflicts in the medical field, and financial issues to a lack of professionalism in medicine.⁴² A survey in Iran involving 149 interns, residents, and physicians revealed that 44.23% were unfamiliar with the concept of medical professionalism, indicating a lack of emphasis on this topic in Iranian medical education.⁴³ Limited studies have focused on professionalism in medicine.⁴⁴ Recent findings indicate that

the medical community in Pakistan is working to address professional deficiencies through discussions, training, education, and evaluation.⁴⁵ Teaching biomedical ethics as part of a comprehensive medical curriculum has been shown to be beneficial in instilling professional values in students.⁴⁶ However, there is still a need for clear instruction on professionalism in medical schools and universities in Pakistan, highlighting the necessity of incorporating a formal professionalism course in both undergraduate and postgraduate medical programs.⁴⁷

Another study suggests that the level of professionalism among students does not significantly change as they progress from the first year to the fifth year.⁴⁸ Literature recommends using the same questionnaire we are utilizing to assess the professionalism of medical students across various medical colleges.⁴⁹

Methodology:

This cross-sectional study was conducted at a private medical college in Karachi in 2021. MBBS undergraduate students from first year to final year were selected using a non-probability convenience sampling technique. A pretested and validated questionnaire was utilized for this study. Initially, a pilot study was conducted with a questionnaire on 15 randomly selected students. The questionnaire was based on a validated tool developed by Marie. A. Chisholm et.al.⁵⁰ It assessed 6 aspects of professionalism (altruism, accountability, excellence, duty, integrity, and respect for others), with three questions dedicated to each aspect. Each question followed a Like rt scale format ranging from 1 (strongly disagree) to 5 (strongly agree). Consequently, each aspect had a minimum score of 3 and a maximum score of 15. Participants were tasked with ranking the items from least to most accurate. Data collection was done both physically and online. Physical questionnaires were distributed to students by the principal investigator after exams, lectures, and during clinical rotations. Online questionnaires were administered to students via Google Forms.

A mean outcome was generated for each item to provide a generalized result. Standard deviation was also calculated. We contacted the students after lectures, exams, and during clinical rotations to explain the study purpose and obtain written consent. The questionnaires were then distributed for anonymous completion by students present on the respective days. In total, data was collected from 583 students ranging from 1st to 5th year, with the highest number of participants from the 1st and 5th years.

Statistical Analysis

Descriptive statistics were computed using SPSS version 25. Normality was assessed through the Shapiro-Wilk test, Mann-Whitney U test, and Kruskal-Wallis test.

Results:

Total 583 students of either gender meeting inclusion criteria of study were evaluated to assess the level of professionalism in medical students, which would help the organization to design and implement a curriculum to augment level of professionalism in medical students.

Students' responses to statements regarding tenets of professionalism were noted on 5-scale Likert scale. Detailed frequency distribution of Students' responses to statements regarding professionalism tenets are presented in Table-1.

The results showed significant difference for overall professionalism score ($p=0.000$), altruism ($p=0.000$), duty ($p=0.000$), accountability ($p=0.000$), excellence ($p=0.000$), honor and integrity ($p=0.000$) and respect for others (0.001) according to clinical status of students. The results

Table 1: Frequency distribution of students' response to statements regarding tenets of Professionalism. (n=583)

| Item | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|-------------------|-----------|------------|------------|----------------|
| 1. I do not expect anything in return when I help someone. | 18 (3.1) | 30 (5.1) | 111 (19) | 217 (37.2) | 207 (35.5) |
| 2. I attend class/clerkship/work daily. | 13 (2.2) | 25 (4.3) | 58 (9.9) | 210 (36) | 277 (47.5) |
| 3. If I realize that I will be late, I contact the appropriate individual at the earliest possible time to inform them. | 18 (3.1) | 52 (8.9) | 114 (19.6) | 229 (39.3) | 170 (29.2) |
| 4. If I do not follow through with my responsibilities, I readily accept the consequences. | 14 (2.4) | 21 (3.6) | 64 (11) | 288 (49.4) | 196 (33.6) |
| 5. I want to exceed the expectation of others. | 29 (5) | 79 (13.6) | 172 (29.5) | 183 (31.4) | 120 (20.6) |
| 6. It is important to produce quality work. | 7 (1.2) | 2 (3) | 21 (3.6) | 200 (34.3) | 353 (60.5) |
| 7. I complete my assignments independently and without supervision. | 15 (2.6) | 53 (9.1) | 148 (25.4) | 202 (34.6) | 165 (28.3) |
| 8. I follow through with my responsibilities. | 6 (1) | 12 (2.1) | 74 (12.7) | 274 (47) | 217 (37.2) |
| 9. I am committed to helping others. | 5 (0.9) | 4 (0.7) | 74 (12.7) | 246 (42.2) | 254 (43.6) |
| 10. I would take a job where I felt I was needed and could make a difference even if it paid less than other positions. | 19 (3.3) | 49 (8.4) | 153 (26.2) | 203 (34.8) | 159 (27.3) |
| 11. It is wrong to cheat to achieve higher rewards (i.e. grades, money). | 14 (2.4) | 19 (3.3) | 37 (6.3) | 115 (19.7) | 398 (68.3) |
| 12. I would report a medication error even if no one else was aware of the mistake. | 9 (1.5) | 13 (2.2) | 81 (13.9) | 243 (41.7) | 237 (40.7) |
| 13. I am able to accept constructive criticism. | 10 (1.7) | 19 (3.3) | 124 (21.3) | 279 (47.9) | 151 (25.9) |
| 14. I treat all patients with the same respect, regardless of perceived social standing or ability to pay. | 7 (1.2) | 7 (1.2) | 22 (3.8) | 141 (24.2) | 406 (69.6) |
| 15. I address others using appropriate names and titles. | 8 (1.4) | 21 (3.6) | 54 (9.3) | 207 (35.5) | 293 (50.3) |
| 16. I am diplomatic when expressing ideas and opinions. | 35 (6) | 79 (13.6) | 196 (33.6) | 165 (28.3) | 108 (18.5) |
| 17. I accept decisions of those in authority. | 10 (1.7) | 25 (4.3) | 107 (18.4) | 285 (48.9) | 156 (26.8) |
| 18. I am respectful to individuals who have different backgrounds than mine. | 6 (1) | 7 (1.2) | 33 (5.7) | 172 (29.5) | 365 (62.6) |

also showed significant difference for overall professionalism score (p=0.000), altruism (p=0.000), duty (p=0.000), accountability (p=0.000), excellence (p=0.000), honor and integrity (p=0.000) and respect for others (0.000) according to MBBS year. There was also significant difference for duty (p=0.017), honor and integrity (p=0.007) according to

gender. Detailed results of comparison are presented from Table-2 to Table-4 respectively.

Table 2. Mean comparison of overall and 6 tenants of professionalism according to gender. (n=583)

| | Mean ±SD Median (IQR) | | P-Value |
|----------------------------|----------------------------|---------------------------|---------|
| | Male | Female | |
| Overall | 72.94±8.95 73.00(11.00) | 73.73±8.01 75.00(9.00) | 0.202** |
| Altruism | 12.73±2.01 13.00(2.00) | 12.90±1.66 13.00(2.00) | 0.753** |
| Duty | 11.89±2.21 12.00(2.00) | 12.34±2.05 13.00(3.00) | 0.017* |
| Accountability | 11.86±2.00 12.00(2.00) | 11.81±1.91 12.00(2.00) | 0.727** |
| Excellence | 11.83±1.98 12.00(2.00) | 11.71±1.96 12.00(2.00) | 0.591** |
| Honor and Integrity | 12.36±2.04 13.00(3.00) | 12.76±1.82 13.00(2.00) | 0.007* |
| Respect for others | 12.23±1.97 12.00(3.00) | 12.19±1.82 12.00(2.00) | 0.773** |

*Mann-Whitney U test was applied. P-value ≤0.05 considered as Significant. *Significant at 0.05 levels. **Not Significant at 0.05 levels.*

Table 3. Mean comparison of overall and 6 tenants of professionalism according to area. (n=583)

| | Mean ±SD Median (IQR) | | P-Value |
|----------------------------|----------------------------|----------------------------|---------|
| | Urban | Rural | |
| Overall | 73.51±8.36 74.00(10.00) | 72.99±8.62 74.00(10.50) | 0.527** |
| Altruism | 12.81±1.80 13.00(2.00) | 12.92±1.86 13.00(2.50) | 0.385** |
| Duty | 12.17±2.08 12.00(3.00) | 12.13±2.31 13.00(3.00) | 0.736** |
| Accountability | 11.83±1.98 12.00(2.00) | 11.84±1.79 12.00(2.00) | 0.923** |
| Excellence | 11.78±2.00 12.00(2.00) | 11.64±1.82 12.00(2.50) | 0.300** |
| Honor and Integrity | 12.67±1.88 13.00(2.00) | 12.33±2.05 13.00(3.00) | 0.114** |
| Respect for others | 12.23±1.85 12.00(3.00) | 12.10±2.00 12.00(3.00) | 0.529** |

*Mann-Whitney U test was applied. P-value ≤0.05 considered as Significant. *Significant at 0.05 levels. **Not Significant at 0.05 levels.*

Discussion:

The study evaluated and compared the six tenets of professionalism from 1st year MBBS to 5th year MBBS in a private medical college in Karachi based on pre-clinical, clinical, gender, and regional (urban, rural) aspects. It has been thought that professional characteristics evolve gradually and are instilled at all stages of medical education. Recent research, on the other hand, appears to show a reverse relationship between professionalism and the stage

of medical school training. In our research, we have found out that overall level of professionalism declined from 1st year to the final year. There is a statistically significant decrease in all 6 tenets (altruism, duty, accountability, excellence, honor and integrity, and respect for others) from 1st year to the final year. The level of professionalism was found to be highest in 1st year and lowest in 5th year students. There is a gradual decrease in professionalism levels from pre-clinical to clinical years. Another study comparing professionalism levels among two government medical colleges in Karachi discovered that students studying basic sciences had a greater level of altruism, honor and integrity than the students studying clinical courses, nonetheless, the pupils from 3rd year to 5th year (clinical) were judged to be more obedient, accountable, skilled and respectful towards others.⁴⁹

Statistics from a prominent medical institute in Pakistan indicated that the overall levels of professionalism among undergraduate students were unsatisfactory. However, their study findings revealed a decline in professional attributes from the initial years to the 3rd year, followed by a subsequent increase in professional scores to the same level as the pre-clinical (basic sciences) group. This improvement in professionalism levels in the 5th year was attributed to the university's implementation of compulsory ethics courses for clinical students to enhance their professional behavior and communication skills.⁴⁴ A study on pharmacy students showed an increase in professionalism scores from the early years to the final year, which was attributed to the gradual inclusion of courses and activities focused on teaching professionalism.⁵¹ Conversely, a study conducted at a medical college in Pakistan found no significant changes in professionalism levels from the 1st year to the final year.⁴⁵ Research also indicated a noticeable decrease in the empathetic understanding of medical college students throughout their years of study, particularly from the 1st year to the 3rd year of MBBS.⁵²

The high level of professionalism exhibited by first-year medical students may be attributed to their eagerness to excel as doctors and their upbringing. These students are often idealistic, envisioning themselves as exceptional healthcare providers, but as they progress through their studies, the demands of the learning environment, the competitiveness of medical training, and the demanding schedules may erode their idealism. Additionally, many medical institutes in Pakistan lack specific activities or courses aimed at cultivating professionalism among undergraduate students, instead relying on students to implicitly learn professionalism during their education and training in medical school and hospitals. In a recent critical analysis of 11 studies on medical graduates, 10 of the studies showed a significant decrease in empathy during the medical college training period, while one study reported a stable level. The demanding schedules during clinical internships and rotations were identified as the main reasons for the decline, along with the stress caused by formal and informal courses. Our research findings revealed that overall professionalism among female students was slightly higher than male students, although this difference was not statistically significant. Female students exhibited more traits such as altruism, duty, honor, and integrity compared to male students, while male students showed higher levels of accountability, excellence, and respect for others, although these differences were not statistically significant. However, duty, honor, and integrity were significantly higher in female students. Since our study is the first to com-

pare professionalism scores between male and female medical students in Pakistan, there were no existing comparative values. Studies in Europe suggest that empathy, which is closely related to altruism, is more prevalent in female medical students, particularly in fields that are more patient-oriented.³² A study by Klemenc-Ketis et al. also highlighted the significant impact of gender on professionalism.⁵³

It is evident from literature that females are more empathetic, duty conscious, and responsible as compared to male due to the fact that they are geared up to bring up children under their supervision. Overall professionalism in students belonging to urban areas came out more than students belonging to rural areas, but the difference is not statistically significant. However, altruism and accountability were found out to be higher in students from rural areas as compared to students from urban areas, and this was also not statistically significant. No comparable data is available in literature pertaining to professionalism in medical students and their origin from urban or rural areas. If the results (that students from rural areas are less professional than students from urban areas) were statistically significant, then the reason could be that children in rural areas don't get the environment conducive to making them more professional compared to children in urban areas. We would suggest that ethics should be taught in an organized and integrated manner throughout medical studies. Furthermore, including sciences related to morals and behavior as a topic at the MBBS level might help undergraduate learners to better grasp the ethical values and issues in medical practice.

Pakistan Medical and Dental Council, has also proposed that undergraduate students should get ethical instructions in their studying period in medical college.⁵⁴ The tool employed in this study has sufficient validity and reliability for measuring six tenets of professionalism. The principles represent the ideas and level of competence in future physicians, and they encompass many areas of medical students' ethical conduct.

Limitations:

Results are based on data collected from only one medical university.

Strength of Study:

The primary advantage of this study is its relatively quick and cost-effective nature. By comparing the professionalism levels across various medical school tiers with a sizable sample, any discrepancies in outcomes could warrant further investigation.

Conclusion:

Results indicate that the level of professionalism among the graduating class of 5th-year students is significantly below the ideal standard. Additionally, it is concerning to observe a notable decline in professionalism from 1st-year to 5th-year medical students. Teaching doctors the necessary skills is crucial for them to effectively provide high-quality health services.

Recommendations:

Based on the findings of the current study, it is advisable for all medical universities in Pakistan to incorporate professionalism, ethics, and humanities training and courses into the current curriculum.

References:

1. Medical professionalism in the New Millennium: A physician charter (2005). Available from: <http://www.abim.org>. In: ABIM

- Foundation, ACP Foundation, European Federation of Internal Medicine Project Professionalism. abimfoundation.org/wp-content/uploads/2015/12/MedicalProfessionalism-in-the-New-Millennium-A-Physician-Charter.pdf. Accessed 27 September, 2017.
2. Ethics & Professionalism Committee [Internet]. ABMS Professionalism Work Group. 2017. Available from: www.abms.org. cited 26 December, 2017.
 3. ABIM Foundation; ACP-ASIM Foundation; European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. *Ann Intern Med*. 2002 Feb 5;136(3):243-6. doi: 10.7326/0003-4819-136-3-200202050-00012. PMID: 11827500.
 4. Kelly, M., O'Flynn, S., McLachlan, J. & Sawdon, M.A. (2012) The clinical conscientiousness index: A valid tool for exploring professionalism in the clinical undergraduate setting. *Academic Medicine*, 87, 1218-1224 [DOI: [10.1097/ACM.0b013e3182628499](https://doi.org/10.1097/ACM.0b013e3182628499)] [PubMed: [22836848](https://pubmed.ncbi.nlm.nih.gov/22836848/)].
 5. Swick HM, Szenas P, Danoff D, Whitcomb ME. Teaching professionalism in undergraduate medical education. *JAMA*. 1999 Sep 1;282(9):830-2. PMID: 10478688. DOI: [10.1001/jama.282.9.830](https://doi.org/10.1001/jama.282.9.830)
 6. Stevens RA. Public roles for the medical profession in the United States: beyond theories of decline and fall. *Milbank Q*. 2001;79(3):327-53, III. doi: 10.1111/1468-0009.00211. PMID: 11565160; PMCID: PMC2751200.
 7. Hur Y. Are there gaps between medical students and professors in the perception of students' professionalism level?--Secondary publication. *Yonsei Med J*. 2009 Dec 31;50(6):751-6. doi: 10.3349/ymj.2009.50.6.751. Epub 2009 Dec 18. PMID: 20046413; PMCID: PMC2796399.
 8. Baingana, R.K., Nakasujja, N., Galukande, M., Omona, K., Mafigiri, D.K. & Sewankambo, N.K. (2010) Learning health professionalism at Makerere University: An exploratory study amongst undergraduate students. *BMC Medical Education*, 10, 76 [DOI: [10.1186/1472-6920-10-76](https://doi.org/10.1186/1472-6920-10-76)] [PubMed: [21050457](https://pubmed.ncbi.nlm.nih.gov/21050457/)].
 9. Johnston JL, Cupples ME, McGlade KJ, Steele K. Medical students' attitudes to professionalism: an opportunity for the GP tutor? *Educ Prim Care*. 2011;22(5):321-327.
 10. Petek Šter M, Selič P. Assessing Empathic Attitudes in Medical Students: The Re-validation of the Jefferson Scale of Empathy-Student Version Report. *Zdr Varst*. 2015 Sep 25;54(4):282-92. doi: 10.1515/sjph-2015-0037. PMID: 27647414; PMCID: PMC4820206.
 11. White CB, Kumagai AK, Ross PT, Fantone JC. A qualitative exploration of how the conflict between the formal and informal curriculum influences student values and behaviors. *Acad Med*. 2009 May;84(5):597-603. doi: 10.1097/ACM.0b013e31819fba36. PMID: 19704192.
 12. Brody H, Doukas D. Professionalism: a framework to guide medical education. *Med Educ*. 2014 Oct;48(10):980-7.[DOI: [10.1111/medu.12520](https://doi.org/10.1111/medu.12520)] [PubMed: [25200018](https://pubmed.ncbi.nlm.nih.gov/25200018/)].
 13. Cruess, R.L., Cruess, S.R., Boudreau, J.D., Snell, L. & Steinert, Y. (2015) A schematic representation of the professional identity formation and socialization of medical students and residents: A guide for medical educators. *Academic Medicine*, 90, 718-725 [DOI: [10.1097/ACM.0000000000000700](https://doi.org/10.1097/ACM.0000000000000700)] [PubMed: [25785682](https://pubmed.ncbi.nlm.nih.gov/25785682/)].
 14. Ibarra H. Provisional selves: experimenting with image and identity in professional adaptation. *ASQ*. 1999;44(4):764-91. Ibarra, H. (1999) Provisional selves: Experimenting with image and identity in professional adaptation. *Administrative Science Quarterly*, 44, 764-791 [DOI: [10.2307/2667055](https://doi.org/10.2307/2667055)].
 15. Holden M, Buck E, Clark M, Szauter K, Trumble J. Professional identity formation in medical education: the convergence of multiple domains. *HEC Forum*. 2012 Dec;24(4):245-55.[DOI: [10.1007/s10730-012-9197-6](https://doi.org/10.1007/s10730-012-9197-6)] [PubMed: [23104548](https://pubmed.ncbi.nlm.nih.gov/23104548/)].
 16. Holden, M.D., Buck, E., Luk, J., Ambriz, F., Boisabuin, E.V., Clark, M.A., Mihalic, A.P., Sadler, J.Z., Sapire, K.J., Spike, J.P., Vince, A. & Dalrymple, J.L. (2015) Professional identity formation: Creating a longitudinal framework through TIME (transformation in medical education). *Academic Medicine*, 90, 761-767 [DOI: [10.1097/ACM.0000000000000719](https://doi.org/10.1097/ACM.0000000000000719)] [PubMed: [25853688](https://pubmed.ncbi.nlm.nih.gov/25853688/)].
 17. Kay, D., Berry, A. & Coles, N.A. (2019) What experiences in medical school trigger professional identity development? *Teaching and Learning in Medicine*, 31, 17-25 [DOI: [10.1080/10401334.2018.1444487](https://doi.org/10.1080/10401334.2018.1444487)] [PubMed: [29608109](https://pubmed.ncbi.nlm.nih.gov/29608109/)].
 18. Mueller PS. Incorporating professionalism into medical education: the Mayo Clinic experience. *Keio J Med*. 2009 Sep;58(3):133-43. [DOI: [10.2302/kjm.58.133](https://doi.org/10.2302/kjm.58.133)] [PubMed: [19826207](https://pubmed.ncbi.nlm.nih.gov/19826207/)].
 19. Didwania A, Farnan JM, Iccayan L, O'Leary KJ, Saathoff M, Bellam S, Humphrey HJ, Wayne DB, Arora VM. Impact of a Video-Based Interactive Workshop on Unprofessional Behaviors Among Internal Medicine Residents. *J Grad Med Educ*. 2017 Apr;9(2):241-244. [DOI: [10.4300/JGME-D-16-00289.1](https://doi.org/10.4300/JGME-D-16-00289.1)] [PubMed: [28439361](https://pubmed.ncbi.nlm.nih.gov/28439361/)].
 20. Cruess RL, Cruess SR. Teaching professionalism: general principles. *Med Teach*. 2006 May;28(3):205-8. [DOI: [10.1080/01421590600643653](https://doi.org/10.1080/01421590600643653)] [PubMed: [16753716](https://pubmed.ncbi.nlm.nih.gov/16753716/)].
 21. Jalil A, Mahmood QK, Fischer F. Young medical doctors' perspectives on professionalism: a qualitative study conducted in public hospitals in Pakistan. *BMC Health Serv Res*. 2020 Sep 10;20(1):847. PMID: 32912271. PMCID: [PMC7488058](https://pubmed.ncbi.nlm.nih.gov/PMC7488058/). DOI: [10.1186/s12913-020-05681-w](https://doi.org/10.1186/s12913-020-05681-w)
 22. Selic P, Cerne A, Klemenc-Ketis Z, Petek D, Svab I. Attitudes toward professionalism in medical students and its associations with personal characteristics and values: a national multicentre study from Slovenia raising the question of the need to rethink professionalism. *Adv Med Educ Pract*. 2019 Jun 19;10:437-446. [DOI: [10.2147/AMEP.S197185](https://doi.org/10.2147/AMEP.S197185)] [PubMed: [31417330](https://pubmed.ncbi.nlm.nih.gov/31417330/)].
 23. Blakey H, Blanshard E, Cole H, Leslie F, Sen R. Are medical students socially exclusive? A comparison with economics students. *Med Educ*. 2008 Nov;42(11):1088-91. Epub 2008 Sep 20. [DOI: [10.1111/j.1365-2923.2008.03126.x](https://doi.org/10.1111/j.1365-2923.2008.03126.x)] [PubMed: [18811614](https://pubmed.ncbi.nlm.nih.gov/18811614/)].
 24. Daley F, Bister D, Markless S, Set P. Professionalism and non-technical skills in Radiology in the UK: a review of the national curriculum. *BMC Res Notes*. 2018 Feb 5;11(1):96. [DOI: [10.1186/s13104-018-3200-5](https://doi.org/10.1186/s13104-018-3200-5)] [PubMed: [29402315](https://pubmed.ncbi.nlm.nih.gov/29402315/)].
 25. Passi V, Doug M, Peile E, Thistlethwaite J, Johnson N. Developing medical professionalism in future doctors: a systematic review. *Int J Med Educ*. 2010 May 14;1:19-29. PMCID: PMC4205509. [DOI: [10.5116/ijme.4bda.ca2a](https://doi.org/10.5116/ijme.4bda.ca2a)].

26. Hensel WA, Dickey NW. Teaching professionalism: passing the torch. *Acad Med.* 1998 Aug;73(8):865-70. PMID: 9736846. [DOI: [10.1097/00001888-199808000-00011](https://doi.org/10.1097/00001888-199808000-00011)] [PubMed: [9736846](https://pubmed.ncbi.nlm.nih.gov/9736846/)].
27. Mak-van der Vossen, M., Peerdeman, S., Kleinveld, J. & Kusurkar, R. (2013) How we designed and implemented teaching, training, and assessment of professional behaviour at VUmc School of Medical Sciences Amsterdam. *Medical Teacher*, 35, 709-714. [DOI: [10.3109/0142159X.2013.799637](https://doi.org/10.3109/0142159X.2013.799637)]. Epub 19 June 2013 [PubMed: [23782044](https://pubmed.ncbi.nlm.nih.gov/23782044/)].
28. Rabow MW, Wrubel J, Remen RN. Authentic community as an educational strategy for advancing professionalism: a national evaluation of the Healer's Art course. *J Gen Intern Med.* 2007 Oct;22(10):1422-8. [DOI: [10.1007/s11606-007-0274-5](https://doi.org/10.1007/s11606-007-0274-5)]. Epub 10 July 2007 [PubMed: [17619932](https://pubmed.ncbi.nlm.nih.gov/17619932/)] [PubMed Central: [PMC2305848](https://pubmed.ncbi.nlm.nih.gov/PMC2305848/)].
29. Tsai SL, Ho MJ, Hirsh D, Kern DE. Defiance, compliance, or alliance? How we developed a medical professionalism curriculum that deliberately connects to cultural context. *Med Teach.* 2012;34(8):614-7. [DOI: [10.3109/0142159X.2012.684913](https://doi.org/10.3109/0142159X.2012.684913)] [PubMed: [22830319](https://pubmed.ncbi.nlm.nih.gov/22830319/)].
30. McNair A, Moran C, McGrath E, Naqvi S, Connolly C, McKenna V, Kropmans T. How we implemented an integrated professionalism curriculum to 2nd year medical students at the National University of Ireland Galway Medical School, with examples from students' final output. *Med Teach.* 2011;33(9):710-2. [DOI: [10.3109/0142159X.2010.546908](https://doi.org/10.3109/0142159X.2010.546908)]. Epub 28 February 2011 [PubMed: [21355688](https://pubmed.ncbi.nlm.nih.gov/21355688/)].
31. Papadakis MA, Teherani A, Banach MA, Knettlar TR, Rattner SL, Stern DT, Veloski JJ, Hodgson CS. Disciplinary action by medical boards and prior behavior in medical school. *N Engl J Med.* 2005 Dec 22;353(25):2673-82. [DOI: [10.1056/NEJMsa052596](https://doi.org/10.1056/NEJMsa052596)] [PubMed: [16371633](https://pubmed.ncbi.nlm.nih.gov/16371633/)].
32. Magalhães E, Salgueira AP, Costa P, Costa MJ. Empathy in senior year and first year medical students: a cross-sectional study. *BMC Med Educ.* 2011 Jul 29;11:52. [DOI: [10.1186/1472-6920-11-52](https://doi.org/10.1186/1472-6920-11-52)] [PubMed: [21801365](https://pubmed.ncbi.nlm.nih.gov/21801365/)] [PubMed Central: [PMC3163625](https://pubmed.ncbi.nlm.nih.gov/PMC3163625/)].
33. Costa P, Alves R, Neto I, Marvão P, Portela M, Costa MJ. Associations between medical student empathy and personality: a multi-institutional study. *PLoS One.* 2014 Mar 17;9(3):e89254. [PMCID: [PMC3956603](https://pubmed.ncbi.nlm.nih.gov/PMC3956603/)] [DOI: [10.1371/journal.pone.0089254](https://doi.org/10.1371/journal.pone.0089254)] [PMID: [24637613](https://pubmed.ncbi.nlm.nih.gov/24637613/)]
34. Eagly, A.H. & Chaiken, S. *The Psychology of Attitudes*. Florida: Harcourt Brace Jovanovich College Publishers: FL, USA. Publisher: Harcourt Brace Jovanovich College Publishers, Fort Worth, TX, ©1993. [Google Scholar]
35. Rebellon, C. J., M. E. Manasse, K. T. Van Gundy, and E. S. Cohn. 'Rationalizing Delinquency: A Longitudinal Test of the Reciprocal Relationship Between Delinquent Attitudes and Behavior.' *Social Psychology Quarterly.* 2014. 77(4):361-86. DOI: [10.1177/0190272514546066](https://doi.org/10.1177/0190272514546066)
36. Blackall GF, Melnick SA, Shoop GH, George J, Lerner SM, Wilson PK, Pees RC, Kreher M. Professionalism in medical education: the development and validation of a survey instrument to assess attitudes toward professionalism. *Med Teach.* 2007 Mar;29(2-3):e58-62. PMID: [17701611](https://pubmed.ncbi.nlm.nih.gov/17701611/) [DOI: [10.1080/01421590601044984](https://doi.org/10.1080/01421590601044984)]
37. Mahajan R, Aruldas BW, Sharma M, Badyal DK, Singh T. Professionalism and ethics: A proposed curriculum for undergraduates. *Int J Appl Basic Med Res.* 2016 Jul-Sep;6(3):157-63. PMID: [27563578](https://pubmed.ncbi.nlm.nih.gov/27563578/). PMCID: [PMC4979294](https://pubmed.ncbi.nlm.nih.gov/PMC4979294/). DOI: [10.4103/2229-516X.186963](https://doi.org/10.4103/2229-516X.186963)
38. Wilson RM, Harrison BT, Gibberd RW, Hamilton JD. An analysis of the causes of adverse events from the Quality in Australian Health Care Study. *Med J Aust.* 1999 May 3;170(9):411-5. PMID: [10341771](https://pubmed.ncbi.nlm.nih.gov/10341771/). [DOI: [10.5694/j.1326-5377.1999.tb127814.x](https://doi.org/10.5694/j.1326-5377.1999.tb127814.x)]
39. Al-Eraky MM, Chandratilake M, Wajid G, Donkers J, van Merrienboer J. Medical professionalism: development and validation of the Arabian LAMPS. *Med Teach.* 2013;35 Suppl 1:S56-62. PMID: [23581897](https://pubmed.ncbi.nlm.nih.gov/23581897/) DOI: [10.3109/0142159X.2013.765553](https://doi.org/10.3109/0142159X.2013.765553)
40. Butt NH, Khan JS. Medical professionalism - validity of Arabian "lamps" in the context of medical education in Pakistan. *Biomedica.* 2015;31(2):141-146. [Google Scholar]
41. Adkoli BV, Al-Umran KU, Al-Sheikh M, Deepak KK, Al-Rubaish AM. Medical students' perception of professionalism: a qualitative study from Saudi Arabia. *Med Teach.* 2011;33(10):840-5. Epub 2011 Feb 28. PMID: [2135569](https://pubmed.ncbi.nlm.nih.gov/2135569/) [DOI: [10.3109/0142159X.2010.541535](https://doi.org/10.3109/0142159X.2010.541535)]
42. Wang X, Shih J, Kuo FJ, Ho MJ. A scoping review of medical professionalism research published in the Chinese language. *BMC Med Educ.* 2016 Nov 23;16(1):300. PMID: [27881120](https://pubmed.ncbi.nlm.nih.gov/27881120/); PMCID: [PMC5120467](https://pubmed.ncbi.nlm.nih.gov/PMC5120467/). <https://doi.org/10.1186/s12909-016-0818-7>
43. Seif-Farshad M, Bazmi S, Amiri F, Fattahi F, Kiani M. Knowledge of medical professionalism in medical students and physicians at Shahid Beheshti University of Medical Sciences and affiliated hospitals-Iran. *Medicine (Baltimore).* 2016 Nov;95(45):e5380. doi: <https://doi.org/10.1097/md.0000000000005380> PMID: [27828869](https://pubmed.ncbi.nlm.nih.gov/27828869/); PMCID: [PMC5106075](https://pubmed.ncbi.nlm.nih.gov/PMC5106075/).
44. Sobani ZU, Mohyuddin MM, Farooq F, Qaiser KN, Gani F, Bham NS, Raheem A, Mehraj V, Saeed SA, Sharif H, Sheerani M, Zuberi RW, Beg MA. Professionalism in medical students at a private medical college in Karachi, Pakistan. *J Pak Med Assoc.* 2013 Jul;63(7):935-9. PMID: [23901729](https://pubmed.ncbi.nlm.nih.gov/23901729/).
45. Akhund, S., Shaikh, Z.A. & Ali, S.A. Attitudes of Pakistani and Pakistani heritage medical students regarding professionalism at a medical college in Karachi, Pakistan. *BMC Res Notes* 7, 150 (2014). <https://doi.org/10.1186/1756-0500-7-150>
46. Chin JJ, Voo TC, Karim SA, Chan YH, Campbell AV. Evaluating the effects of an integrated medical ethics curriculum on first-year students. *Ann Acad Med Singap.* 2011 Jan;40(1):4-18. PMID: [21369627](https://pubmed.ncbi.nlm.nih.gov/21369627/).
47. Minai FN: Professionalism in residency training. *J Coll Physicians Surg Pak* 2009, 19:675-677.
48. Klemenc-Ketis Z, Vrečko H. The perceptions of professionalism by 1st and 4th grade medical students. *Acta Inform Med.* 2014;22:292-296. [DOI: [10.5455/aim.2014.22.292-296](https://doi.org/10.5455/aim.2014.22.292-296)] [PMCID: [PMC4272835](https://pubmed.ncbi.nlm.nih.gov/PMC4272835/)] [PMID: [25568575](https://pubmed.ncbi.nlm.nih.gov/25568575/)]
49. Bhutto SN, Asif M, Jawaid M. Professionalism among medical students at two public sector universities " a comparative study". *J Postgrad Med Inst [Internet].* 2015 May 12 [cited 2024 Apr. 14];29(1). Available from: <https://jpmi.org.pk/index.php/jpmi/article/view/1656>.
50. Chisholm MA, Cobb H, Duke L, McDuffie C, Kennedy WK. Development of an instrument to measure profes-

- sionalism. Am J Pharm Educ. 2006 Aug 15;70(4):85. PMID: PMC1636969. <https://doi.org/10.5688%2Faj700485> PMID: 17136204.
51. Poirier TI, Gupchup GV. Assessment of pharmacy student professionalism across a curriculum. Am J Pharm Educ. 2010 May 12;74(4):62. [DOI:[10.5688/aj740462](https://doi.org/10.5688/aj740462)] PMID: [20585423](https://pubmed.ncbi.nlm.nih.gov/20585423/) PMC2879113.
52. Newton BW, Barber L, Clardy J, Cleveland E, O'Sullivan P. Is there hardening of the heart during medical school? Acad Med. 2008 Mar;83(3):244-9. PMID: 18316868 [DOI: [10.1097/ACM.0b013e3181637837](https://doi.org/10.1097/ACM.0b013e3181637837)]
53. Klemenc-Ketis Z, Vrecko H. Development and validation of a professionalism assessment scale for medical students. Int J Med Educ. 2014 Nov 9;5:205-11. PMID: 25382090. PMID: [PMC4249760](https://pubmed.ncbi.nlm.nih.gov/PMC4249760/). [DOI: [10.5116/ijme.544b.7972](https://doi.org/10.5116/ijme.544b.7972)]
54. Shamim MS, Shamim MS. Medical ethics: a slow but sustained revolution in Pakistan's healthcare. J Pak Med Assoc. 2010 Sep;60(9):706-7. PMID: 21381571.