Assessing medical professionalism among students at Hue University of Medicine and Pharmacy in 2023: A multi-method evaluation approach

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Abstract

Objective: This study aimed to assess the knowledge, attitudes, and behaviours related to medical professionalism among fifth-year medical students by using three assessment tools aligned with different competency levels in Miller's Pyramid and to analyse correlations among these assessment approaches. **Methods:** A descriptive cross-sectional study was conducted among 401 fifth-year medical students at Hue University of Medicine and Pharmacy. Three tools were used: (1) the Penn State College of Medicine Professionalism Questionnaire (PSCOM), (2) Barry's scenario-based questionnaire, and (3) an Objective Structured Clinical Examination (OSCE) evaluating communication and professionalism using standardised patients. Data were analysed using t-tests and Pearson correlation coefficients. **Results:** The average scores (converted to a 100-point scale) were: PSCOM 81.3, Barry's scenario-based questionnaire 45.5, and OSCE 79.0 ($p < 0.001$). There were significant positive correlations between PSCOM and Barry's scenario-based questionnaire ($r = 0.12$; $p < 0.05$) and between PSCOM and the OSCE score ($r = 0.16$; $p < 0.01$). **Conclusion**: Assessment of medical professionalism should adopt a multidimensional, multi-method approach to comprehensively and objectively reflect learners' competencies. It should also support a progressive evaluation process aligned with the advancing stages of professionalism training in medical education.

Keywords: medical professionalism; assessment methods, self-reflection, scenario-based evaluation, OSCE; medical education.

1. INTRODUCTION

Medical professionalism is widely acknowledged as a foundational pillar in medical education, encompassing the ethical principles, attitudes, and behaviours expected of a physician. It reflects a commitment to prioritising patient welfare above personal or commercial interests and upholding values such as integrity, accountability, respect, and compassion in clinical practice [1]. Professionalism not only shapes the patient-physician relationship but also determines public trust in the medical profession. As such, fostering and evaluating professionalism has become an essential goal in training future healthcare providers [2]. In recent years, medical professionalism has been increasingly integrated into competency-based curricula worldwide, including in Vietnam. However, due to its inherently multidimensional nature, professionalism remains difficult to teach and evaluate, especially in clinical settings where context and hidden curricula may strongly influence student development.

Two key insights illustrate these challenges, including "what cannot be measured cannot be improved" and "learners tend to focus on passing exams rather than fulfilling professional expectations from faculty"[3]. This underscores the risk of neglecting professionalism in educational settings where assessment focuses narrowly on biomedical knowledge. As highlighted in existing literature, no single tool can adequately capture the breadth of professionalism [4]. As a result, frameworks like Miller's Pyramid are often employed to align assessment strategies with different competency levels: cognitive knowledge ("knows"), applied knowledge ("knows how"), and observed behaviour in clinical practice ("shows how") [5].

Diverse tools have been employed to operationalise these levels, including self-assessment surveys, case-based multiple-choice tests, workplace-based assessments, and Objective Structured Clinical Examinations (OSCEs). The combined use of these tools allows educators to

triangulate student performance across cognitive, affective, and behavioural domains, thereby providing a more holistic and valid appraisal of professionalism. However, integrating such multidimensional evaluations into the routine curriculum remains limited in many settings, particularly in resource-constrained medical schools.

At Hue University of Medicine and Pharmacy, professionalism has been formally incorporated into the medical curriculum since 2019 through Module Practice of Medicine. Nonetheless, there has yet to be a comprehensive evaluation of medical students' professionalism that spans all levels of Miller's Pyramid. This study, therefore, aims to assess fifth-year medical students' professionalism using three complementary tools aligned with different competency levels and to examine the interrelationships between these assessment approaches. The findings are intended to inform improvements in both the content and implementation of professionalism training and assessment in undergraduate medical education.

2. METHODS

2.1. Study design and setting: This descriptive cross-sectional study was conducted in 2023 at Hue University of Medicine and Pharmacy.

2.2. Study participants: A total of 401 fifth-year medical students enrolled in the Family Medicine module during the 2022–2023 academic year were included.

2.3. Measurements

Three instruments were employed to assess professionalism, representing the three levels of Miller's Pyramid:

- PSCOM (Penn State College of Medicine Professionalism Questionnaire) - "Knows" level: A 36-item Likert-scale self-assessment measuring student perceptions across six domains: responsibility, altruism, duty, excellence, integrity, and respect [6].

- Barry's Clinical Scenario-Based Questionnaire - "Knows how" level: This tool comprises six professionalism-related clinical scenarios, each followed by two multiple-choice questions. The maximum score is 12, reflecting applied knowledge and judgment in ethical decision-making [7].

- OSCE (Objective Structured Clinical Examination) - "Shows how" level: Conducted at the end of the Family Medicine module, this OSCE evaluates professionalism-related behaviours such as communication skills, empathy, and ethical conduct through standardised patient encounters (maximum score: 50).

By combining these tools, the study offers a comprehensive, competency-aligned evaluation of professionalism, encompassing self-perception, situational judgment, and observed clinical behaviour.

2.4. Statistical Analysis: Data were entered using Epidata 3.1 and analysed with SPSS version 18.0. Independent samples t-tests were used to compare mean scores between male and female students, with statistical significance set at $p<0.05$. Pearson correlation coefficients (r) were then calculated to evaluate the relationships among the three assessment tools.

2.5. Ethical Considerations: Data were entered using Epidata 3.1 and analysed with SPSS version 18.0. Independent samples t-tests were used to compare mean scores between male and female students, with statistical significance set at $p<0.05$. Pearson correlation coefficients (r) were calculated to assess the relationships between scores obtained from the three assessment tools.

3. RESULTS

Table 1 presents the mean PSCOM self-assessment scores for six professionalism attributes stratified by gender. Overall, students reported high levels of professionalism, with the highest average scores observed for *Responsibility* (Mean=4.34) and *Respect* (Mean=4.24). Female students consistently scored higher than male students across all domains, with the most considerable differences noted in *Responsibility* and *Altruism*. The overall professionalism score was also higher among females (Mean=4.14, SD=0.37) than males (M=4.01, SD=0.41).

Table 1. Mean PSCOM self-assessment scores across professionalism attributes

Professionalism attribute (Mean (SD))	Responsibility	Altruism	Duty	Excellence	Integrity	Respect	Overall
Female	4.43 (0.56)	4.10 (0.43)	3.90 (0.44)	4.06 (0.46)	4.09 (0.47)	4.29 (0.44)	4.14 (0.37)
Male	4.23 (0.52)	3.91 (0.53)	3.79 (0.49)	3.96 (0.47)	4.02 (0.46)	4.16 (0.49)	4.01 (0.41)
Total sample	4.34 (0.54)	4.02 (0.49)	3.85 (0.46)	4.02 (0.47)	4.06 (0.48)	4.24 (0.47)	4.09 (0.39)

A significant gender difference was observed in the proportion of correct responses to professionalism scenarios (Table 2). Female students consistently outperformed male students, particularly in *respect* (85.3% vs. 71.6%, p = 0.0008) and *Honesty* (70.2% vs. 52.3%, p = 0.0002). The *Respect* scenario yielded the highest correct response rate (79.3%), while *Conflict of Interest* had the lowest (53.9%).

**Table 2.** Proportion of correct responses to Barry's scenario-based professionalism test

Professionalism Scenario	Male (n=176)		Female (n=225)		Total (n=401)		p-value
	n	%	n	%	n	%	
Altruism - Responsibility	91	51.7	137	60.9	228	56.9	0.07
Conflict of Interest	84	47.7	132	58.7	216	53.9	0.03
Confidentiality	122	69.3	140	62.2	262	65.3	0.14
Duty and Accountability	94	53.7	126	56.0	220	54.9	0.65
Respect	126	71.6	192	85.3	318	79.3	0.0008
Honesty	92	52.3	158	70.2	250	62.3	0.0002

Table 3 reveals a statistically significant gender difference in the average scenario-based test scores (female: 5.76; male: 5.02; p = 0.001). However, OSCE scores showed no significant difference between male and female students (p>0.05).

Table 3. Comparison of students' scores on Barry's questionnaire and the OSCE

Assessment tool	Range	Male (n=176)		Female (n=225)		Total (n=401)		p-value
		Mean	SD	Mean	SD	Mean	SD	
Barry's scenario-based test	0-12	5.02	1.93	5.76	1.99	5.44	1.99	0.001
OSCE: Communication and professionalism	0-50	38.88	0.66	40.01	0.71	39.53	5.69	0.57

After conversion to a 100-point scale, students achieved the lowest mean score on Barry's scenario-based questionnaire (45.5) and the highest on the PSCOM self-assessment tool (81.3). Paired *t*-tests revealed statistically significant differences in mean scores across all three assessment methods (*p*<0.001).
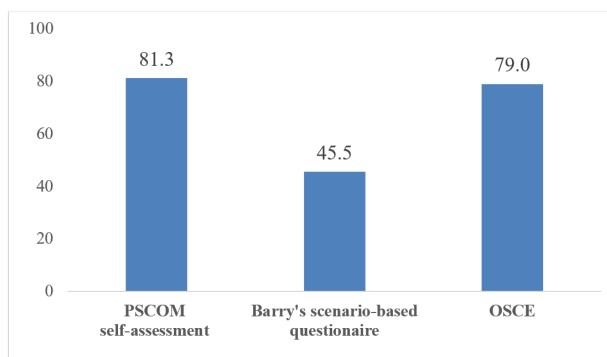
Figure 1. Mean scores (standardised to a 100-point scale) across three professionalism assessment tools)

There were significant but weak positive correlations between the self-assessment scores (PSCOM) and both the scenario-based questionnaire (r=0.12, p=0.02) and OSCE scores (r=0.16, p=0.003). No significant correlation was found between the scenario-based test and OSCE performance (r=-0.02, p=0.74).

Table 4. Correlations between student scores across three assessment tools for medical professionalism

Assessment tools	Sample size (n)	Pearson's r	p-value
Barry's scenario-based test vs. OSCE	370	-0.02	0.74
Barry's scenario-based test vs. PSCOM self-assessment	400	0.12	0.02
OSCE vs. PSCOM self-assessment	371	0.16	0.003

4. DISCUSSION

Medical professionalism is widely acknowledged as a core competency in medical education. It integrates ethical values, behavioural attitudes, and communication skills - fundamental elements that underpin the patient-physician relationship and foster public trust in healthcare professionals [1]. In Vietnam, professionalism has been formally incorporated into the "Core Competencies for General Practitioners" framework issued by the Ministry of Health in 2015. Nevertheless, assessing professionalism remains challenging, particularly in ensuring objectivity and methodological rigour [7].

A multidimensional assessment of medical professionalism

This study adopted a multidimensional assessment strategy aligned with Miller's Pyramid, a framework for evaluating clinical competence through progressive levels: "knows," "knows how," and "shows how." By applying three different assessment tools, we aimed to evaluate students' professionalism across cognitive, attitudinal, and behavioural domains.

The PSCOM self-assessment questionnaire measured students' self-perceived professionalism across six domains [6]. The overall mean score of 4.09/5 indicated a relatively high level of awareness, with female students scoring higher than males, a trend consistent with previous findings suggesting that women exhibit greater empathy and a stronger sense of responsibility in healthcare roles [8, 9]. However, self-assessment is inherently subjective and can be influenced by aspirational bias, often failing to capture actual behavioural competence [10].

To address this limitation, Barry's clinical scenario-based questionnaire was used as a more objective tool. It presented students with specific professionalism-related dilemmas requiring judgment and appropriate decision-making. This tool has been validated and widely used internationally to compare levels of professionalism between medical students and residents [7, 11, 12]. Our findings revealed relatively low average scores (45.5/100), with statistically significant gender differences in scenarios involving conflict of interest, respect, and honesty. These results align with studies from Japan and the United States, indicating that limited clinical experience may contribute to students' uncertainty in navigating real-world ethical challenges [7].

Finally, the Objective Structured Clinical Examination (OSCE) with standardised patients was used to assess professionalism at the behavioural level. This method is reliable for evaluating communication, empathy, and professional interaction within a controlled clinical simulation environment [13]. Students achieved a mean score of 79/100, with no significant gender difference, indicating consistent performance in demonstrating professional behaviours. These findings suggest that the current training environment supports the development of professional competencies, particularly in communication and interpersonal engagement. Research by Van Zanten supports using standardised patient OSCEs as a valid tool to assess attributes such as respect, honesty, and empathy through observable communication behaviours. Direct observation and feedback from standardised patients are critical in evaluating these essential components of professionalism [10].

Correlation among assessment methods

When converted to a 100-point scale, the highest average score was observed with the PSCOM self-assessment tool (81.3), followed by the OSCE with standardised patients (79.0), while the lowest was recorded for the scenario-based questionnaire (45.5). These differences highlight the distinct characteristics of each tool. Self-assessments often yield higher scores due to social desirability bias or students' aspirational self-perception. In contrast, scenario-based instruments require students to make concrete decisions in hypothetical yet realistic professional situations, revealing gaps in applied understanding and limited real-world

experience. Prior research has identified a lack of practical exposure and limited curricular emphasis on professionalism as critical barriers to developing professional behaviours among medical students [7]. Moreover, studies have indicated that students who fail to develop core professional attributes, particularly integrity and responsibility, are more likely to encounter professional misconduct or medical errors in clinical practice [14]. These findings underscore the importance of strengthening hands-on clinical experiences to reinforce professional behaviour throughout the medical training process.

Despite the relatively weak correlations between PSCOM and the two more objective tools (r = 0.12 and r = 0.16), both relationships were statistically significant. This suggests that students who rated themselves highly on professionalism tended to perform better in the scenario-based test and OSCE, supporting previous systematic reviews that advocate for multi-method approaches in professionalism assessment in medical education.

Implications for practice and curriculum development

This study highlights the value of using a triangulated approach to assess medical professionalism, capturing a broader range of competencies and enabling comparison across subjective and objective methods. However, certain limitations remain, including (1) a lack of standardised weighting among tools and (2) the absence of clearly defined contributions of each tool to the overall evaluation framework.

Based on these findings, it is recommended that professionalism training be more fully integrated into medical curricula, not only through theoretical instruction but also through experiential learning, scenario-based simulations, and structured clinical observations with feedback. A practical educational approach should incorporate three key elements: clearly defined expectations, opportunities for experiential learning, and multi-source feedback and assessment [15, 16]. In addition, fostering a positive learning environment in which faculty members model professional behaviour is essential. This supports the development of professionalism through the "hidden curriculum," which has been shown to exert a lasting influence on the formation of students' ethical and professional identity.

5. CONCLUSION

This study demonstrates that combining three assessment tools, including PSCOM self-assessment, scenario-based questionnaire, and the Objective Structured Clinical Examination (OSCE) with standardised patients, offers a multidimensional and complementary approach to evaluating medical students' professionalism. Despite score variations among the tools, the observed correlations suggest that professionalism should be assessed through multiple, mutually reinforcing methods. These findings support the development of an integrated, continuous, and competency-aligned assessment framework that reflects the progression of clinical training.

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