Research Article

Assessment of Clinical Skills Competency Among Final-Year Medical Students in Pakistan: A Cross-Sectional Study

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Abstract: Clinical skills competency among medical graduates represents a fundamental determinant of future healthcare quality, yet global concern persists regarding variability in skill acquisition during undergraduate training. This study evaluates competency in core clinical skills among final-year medical students in Pakistan and identifies areas requiring curricular reinforcement. A descriptive cross-sectional study was conducted among 312 final-year MBBS students from three tertiary medical institutions. Competency was assessed using an Objective Structured Clinical Examination–based checklist evaluating history-taking, physical examination, communication skills, procedural techniques, and clinical decision-making. Scores were stratified into competent, borderline, or not competent categories. Findings demonstrated that 68.9% of students were competent in history-taking, 61.5% in physical examination, 54.8% in communication skills, 49.3% in procedural skills, and 57.4% in clinical decision-making. A significant association was observed between prior clinical rotation exposure and OSCE performance ($p < 0.001$). Procedural skills, including intravenous cannulation, urinary catheterization, and emergency response algorithms, showed the lowest competency levels. The study highlights critical gaps in hands-on training and emphasizes the need for structured simulation-based learning and standardized assessment frameworks. Keywords: clinical competency, medical education, OSCE.

Introduction: Clinical competence represents a core attribute expected from graduating medical students, forming the

basis for safe, effective, and evidence-based patient care. Medical training across the world increasingly emphasizes the integration of theoretical knowledge with practical clinical skills, recognizing that insufficient competency at the point of graduation may translate into diagnostic errors, procedural mishaps, and suboptimal patient outcomes. Medical schools in developing countries face additional challenges such as limited clinical exposure, overcrowded hospitals, inconsistent supervision, and reduced opportunities for hands-on procedural training. In Pakistan, the rapid expansion of medical institutions has not been uniformly accompanied by proportional improvements in teaching infrastructure or standardized competency evaluations, raising concerns regarding the readiness of graduates entering house-job training. This study explores the status of clinical competency among final-year medical students in Pakistan, aiming to generate evidence to support educational reforms.[1-4]

Clinical competency comprises several dimensions that extend beyond basic knowledge acquisition, including history-taking proficiency, systematic physical examination, communication ability, diagnostic reasoning, and performance of essential medical procedures. Global shifts toward competence-based medical education underscore the need to evaluate each of these domains objectively rather than relying solely on theoretical examinations. The Objective Structured Clinical Examination (OSCE) has emerged as the international gold standard for clinical assessments, providing structured, reproducible, and unbiased evaluation across multiple stations. Despite its advantages, the extent to which OSCE-based assessment has been integrated effectively within Pakistani medical colleges remains variable. Many institutions continue to rely predominantly on long case and short case assessments, which carry significant examiner variability and limited standardization. Consequently, competency at graduation may differ significantly among institutions and even among individuals within the same institution[5-8]

Over recent years, regional studies have highlighted deficiencies in communication skills, emergency response preparedness, and procedural competence among medical trainees. These deficiencies have been attributed to increased reliance on theoretical instruction, reduced bedside teaching due to workload pressures, and insufficient simulation resources. Furthermore, disruptions in clinical rotations due to

external factors have exacerbated the gap between expected and achieved competence. As healthcare systems increasingly acknowledge the impact of inexperienced house officers on patient safety indicators, there is growing urgency to assess the preparedness of final-year medical graduates before they transition to clinical responsibilities. This study aims to fill this gap by systematically evaluating clinical competency in a representative sample of final-year medical students across multiple institutions in Pakistan.[9-12]

The evaluation of clinical skills is essential not only for assessing student readiness but also for identifying institutional strengths and weaknesses in curriculum delivery. Competency assessment offers valuable feedback that can be used to enhance clinical rotations, improve teaching methodologies, guide investment in simulation-based facilities, and inform faculty development programs. The goal is to ensure that graduates possess the minimum competencies required for safe patient care, including proficiency in handling emergencies, performing basic clinical procedures, and communicating effectively with patients and their families. By focusing on the final year of medical school, this study captures a stage at which students should ideally demonstrate readiness for clinical practice.

This research contributes to the national discourse on medical education by providing an evidence-based evaluation of the clinical skills of final-year medical students. The findings are expected to guide policy makers, medical educators, and accreditation bodies in refining training programs and assessment strategies. Ultimately, strengthening clinical competency among future medical graduates will enhance patient care quality, improve healthcare system efficiency, and foster public trust in medical professionals. This study represents a crucial step toward achieving standardized, competency-driven medical education in Pakistan.

Methodology: A descriptive cross-sectional study was conducted among final-year MBBS students enrolled at Ophthalmology Department, Al-Shifa Eye Trust Hospital, Rawalpindi in Pakistan between March and August 2024. The target population consisted of students who had completed all mandatory clinical clerkships. Sample size was calculated using Epi Info software, assuming a 50% expected competency prevalence, 95% confidence level, and 5% margin of error. The minimum required sample size was 285, and 312 students were ultimately recruited through consecutive sampling.

Participation was voluntary, and verbal informed consent was obtained after providing details of study aims, confidentiality measures, and assessment procedures. Students with medical or psychological conditions that impaired participation or those who had not completed clinical rotations were excluded.

Clinical competency was assessed using a structured OSCE comprising 12 stations covering history-taking, general physical and systemic examination, communication skills, procedural tasks, and clinical decision-making. Each station was evaluated using a standardized checklist scored on a scale of competent, borderline, or not competent. Procedural stations included intravenous cannulation, urinary catheterization on simulation models, BLS algorithm execution, and interpretation of basic laboratory and radiologic findings. Examiners were senior faculty trained in standardized OSCE marking. Scores from all stations were compiled to derive domain-specific competency outcomes.

Data were analyzed using SPSS version 26. Means and standard deviations were calculated for continuous variables, while categorical variables were expressed as frequencies and percentages. Chi-square test was used to assess associations between competency and clinical exposure variables such as number of rotations, duration of clerkships, and participation in simulation sessions. A p-value < 0.05 was considered statistically significant. Confidentiality was maintained throughout, and no identifying information was collected

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Results: Table 1: Demographic Characteristics of Participants (n = 312)

Variable	Category	Frequency (%)
Gender	Male	128 (41.0)
	Female	184 (59.0)
Age (years)	Mean ± SD	23.8 ± 1.2
Clinical rotations completed	≤ 4	102 (32.7)
	> 4	210 (67.3)
Simulation training attended	Yes	94 (30.1)

Variable	Category	Frequency (%)
	No	218 (69.9)

Short explanation: This table outlines basic participant characteristics, showing a predominantly female cohort and indicating variability in clinical exposure and simulation attendance.

Table 2: Competency Outcomes Across Clinical Skill Domains

Clinical Domain	Competent n (%)	Borderline n (%)	Not Competent n (%)	Mean Score ± SD
History-taking	215 (68.9)	72 (23.1)	25 (8.0)	7.8 ± 1.4
Physical Examination	192 (61.5)	89 (28.5)	31 (10.0)	7.2 ± 1.6
Communication Skills	171 (54.8)	98 (31.4)	43 (13.8)	6.9 ± 1.8
Procedural Skills	154 (49.3)	96 (30.8)	62 (19.9)	6.3 ± 1.7
Clinical Decision-Making	179 (57.4)	87 (27.9)	46 (14.7)	7.1 ± 1.5

Short explanation: This table demonstrates that procedural skills have the lowest competency levels, while history-taking remains the strongest area among students.

Table 3: Association Between Clinical Exposure and OSCE Competency

Variable	Competent (%)	Not Competent (%)	p-value
Rotations > 4 completed	156 (74.3)	54 (25.7)	< 0.001
Simulation attended	72 (76.6)	22 (23.4)	0.002
No simulation training	119 (54.6)	99 (45.4)	< 0.001

Short explanation: Greater clinical rotation exposure and simulation participation are significantly associated with higher competency scores.

Discussion: The results of this study highlight measurable gaps in clinical competency among final-year medical students in Pakistan, reflecting challenges in

clinical training structures and variable exposure to practical learning environments. The observed competency distribution demonstrates that while foundational skills such as history-taking and physical examination are relatively well developed, procedural proficiency and communication mastery remain markedly inadequate. This pattern aligns with international findings indicating that practical skills requiring supervised repetition are often underdeveloped in undergraduate curricula dominated by theoretical instruction.[13-14]

The comparatively low competency in procedural skills raises concerns regarding preparedness for house-job responsibilities. Essential procedures such as intravenous cannulation, catheterization, and basic life support represent fundamental components of safe hospital care. Limited student access to simulation labs, reduced bedside procedural teaching opportunities, and overcrowded clinical settings contribute to insufficient hands-on learning. The association between simulation attendance and higher competency emphasizes the need for structured simulation-based training as an integral curricular component rather than an optional learning experience.[15-17]

Communication skills competency was also suboptimal, reflecting broader systemic challenges in teaching and evaluating communication. Effective communication is a core element of patient safety and clinical efficiency, influencing patient compliance, satisfaction, and trust. Despite its importance, communication training often receives limited emphasis within traditional medical curricula. Structured communication frameworks and supervised patient interactions are essential to ensure students develop patient-centered communication styles appropriate for diverse cultural contexts.[18-20]

The strong association between completion of four or more clinical rotations and higher competency underscores the critical role of clinical exposure. Variability in rotation quality, duration, supervision, and patient volume may influence the depth of learning. Students with limited rotation experience or inadequate supervision may graduate with significant skill gaps. Strengthening the quality and consistency of rotations is essential to standardize competence across institutions.

These findings emphasize the need for curricular restructuring toward competence-based medical education frameworks that incorporate OSCEs as routine assessment tools. Regular formative OSCEs allow early identification of deficits and enable targeted

remediation. Continuous faculty development is also essential to ensure standardized assessment and effective clinical teaching strategies across departments.

The growing global movement toward patient safety and quality care further highlights the implications of inadequate clinical competence. Variability in skills among new graduates may contribute to medical errors and inefficiencies within healthcare systems. Aligning undergraduate medical curricula with international competency standards is essential to ensure graduates are prepared for modern clinical practice environments. This study provides evidence to support policy decisions aimed at improving clinical training infrastructure, investing in simulation labs, and implementing standardized assessment tools nationwide.

Overall, the findings reflect both strengths and deficiencies within current undergraduate medical training in Pakistan. Targeted interventions focused on procedural and communication skills, expanded simulation integration, faculty development, and standardized OSCE-based assessments can substantially strengthen clinical competence. Enhanced readiness among graduates will ultimately improve patient outcomes, strengthen healthcare quality, and prepare new clinicians for the demands of contemporary practice.

Conclusion: This study identifies significant gaps in clinical skills competency among final-year medical students, particularly in procedural and communication domains. Greater clinical exposure and simulation participation significantly improve performance. Strengthening competency-based training and standardizing assessments are essential to prepare graduates for safe and effective clinical practice.

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