



Article

Assessment of Knowledge, Behavior and Certain Medical Skills among Newly Graduated Physician

SalwaSh Abdul-Wahid^{*1}, Raya Khudhair Mohsin²

1. Community Medicine, Professor Al-Farabi University College, Iraq

2. FABHS-Family Medicine, Al-Farabi University College, Iraq

* Correspondence: Salwa.shelch@alfarabiuc.edu.iq

Abstract: Proficiency for Medical profession comprises a set of skills, knowledge, and attitudes necessary to competency and efficiently accomplishes the practice of medicine, to face health needs of the community, also being capable of continuing medical education. Objective: The objective of this study was to assess the knowledge, behavior and certain medical skills of newly graduated medical doctors. Subjects and Methods: Across-sectional study was conducted in two hospitals of Baquba and Al-batul teaching hospitals at Baquba City. Junior's doctors with work experience of six months to one year were eligible to participate in this study. Medical educational method in their Colleges and certain medical skills at Diyala Teaching Hospitals and to assess senior's opinions about knowledge, skills and behavior of the studied juniors. Results: The study highlights a gender imbalance among junior doctors (69.56% female), with most aged 25–26 and predominantly graduates of Diyala University (78.26%), reflecting strong local influence. Traditional teaching methods dominate (89.13%), with limited adoption of modern techniques, potentially hindering critical thinking development. Opinions on the training system are split, with gender differences in perception. While juniors excel in basic skills like IV fluid management, gaps exist in advanced procedures like intubation (15.21%) and defibrillation (47.82%). Senior doctors generally view juniors positively but emphasize the need for mentorship and improvement in practical and theoretical competencies. Conclusions: The study concluded that there is some disagreement of current traditional curriculum versus other integrated system and recommend enhancement to interactive sessions and other interactive strategy in medical education them.

Citation: Abdul-Wahid S., Mohsin R. K. Assessment of Knowledge, Behavior and Certain Medical Skills among Newly Graduated Physician. Central Asian Journal of Medical and Natural Science 2025, 6(2), 692-697.

Received: 21st Feb 2025

Revised: 27th Feb 2025

Accepted: 7th Mar 2025

Published: 14th Mar 2025



Copyright: © 2025 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Newly Graduated Physician, Medical Education Systems, Knowledge assessment, Medical Skills

1. Introduction

The transition from medical student to junior doctor in postgraduate training is a crucial phase in career development. Clinician-educators should familiarize themselves with educational research methods to critically evaluate medical education studies and apply evidence-based teaching strategies effectively [1].

The primary goal of medical school training is to establish a strong foundation for a medical career while equipping junior doctors with the necessary knowledge and skills for the initial stage of their professional journey. Medical competence encompasses a combination of skills, knowledge, and attitudes essential for effective medical practice. Undergraduate medical education aims to produce competent doctors who can fulfill the requirements of their general medical training. However, many clinical competencies are acquired after graduation through hands-on experience in patient management [2].

High-quality medical education is fundamental to ensuring high standards of healthcare. Medical education and training vary significantly worldwide, with various teaching approaches being utilized in this dynamic field of educational research [3]. Assessing clinical competence is a key component of medical curricula, ensuring that graduates meet national standards, uphold professionalism, and are adequately prepared for independent clinical practice. Competence assessment also plays a vital role in certification and physician licensure [4].

In the UK, the General Medical Council (GMC) established guidelines in Tomorrow's Doctors, outlining the essential knowledge, skills, and behaviors medical graduates should achieve by the end of their training. Medical schools are expected to use these guidelines to review their curricula and align them with national learning objectives. A standardized core curriculum based on these objectives ensures that the required competencies are taught, learned, and assessed effectively [5].

Outcome-based education focuses on what a doctor is able to do, their professional approach, and how these factors shape curriculum content, teaching strategies, and assessment methods. Since assessment directs learning and ensures the quality of graduates, it should comprehensively evaluate various learning objectives and reflect the expected competency levels of students. However, no single assessment tool can measure all aspects of knowledge, skills, behaviors, and attitudes. Therefore, it is crucial to align assessment methods with the specific competencies being taught [6].

This study aims to evaluate the knowledge, behaviors, and medical skills of newly graduated doctors concerning the medical education methods used in their respective colleges [7].

2. Materials and Methods

A cross-sectional study was conducted at Baquba and Al-Batul Teaching Hospitals, both located in Baquba City, the capital of Diyala Province. The study sample consisted of 46 junior medical doctors selected exclusively from these two teaching hospitals. Eligible participants were those with six months to one year of work experience.

The minimum requirement of six months of experience was set to ensure that junior doctors had sufficient exposure to various clinical settings, allowing them to provide informed evaluations of their medical practice. Doctors with more than one year of experience were excluded, as their ability to accurately reflect on their initial medical education might be influenced by additional on-the-job learning.

To collect socio-demographic data, a specialized questionnaire was designed by the researchers. Additionally, two checklists were developed: the first assessed the clinical skills of junior doctors, while the second gathered the opinions of senior doctors regarding juniors' medical knowledge, skills, and behavior. A total of 24 senior doctors from major specialties across both teaching hospitals provided their assessments of the junior doctors' competencies.

3. Results

To solve the problem, it was necessary to develop a composition that, combining minimal concentrations of active substances, would provide results superior to known analogues, including by enhancing the adaptive capabilities of the body, accelerating recovery processes and reducing the degree of fatigue after intense physical activity.

Socio-Demographic Characteristics of Junior Doctors

The study highlights a significant gender imbalance, with 69.56% of junior doctors being female and only 30.43% male (Table 1). This points to a growing representation of women in the medical profession, a global trend seen across various regions. The majority of these doctors were in the 25-26 age group (58.69%), followed by those aged 27 and above (19.56%). These figures suggest that most of the newly graduated doctors are relatively young, likely at the start of their medical careers [8].

A large proportion (78.26%) graduated from Diyala University, indicating a strong local educational influence in the region, while 21.73% came from other universities. This suggests that the majority of graduates are trained within the region, which may help in standardizing medical practices and training in Diyala [9].

When it comes to residency, most graduates (73.91%) were from Diyala, while 26.08% came from outside the province. This indicates that the healthcare workforce in Diyala is largely composed of local residents, with fewer doctors coming from other areas [10].

Table 1. Socio-demographic characteristics of the study' juniors at Baquba and Albatul teaching hospitals.

Total Number of Newly Graduated Doctors=46			
Sociodemographic characteristics	Male No.14(30.43%)	FemaleNo.32 (69.56%)	TotalNo.%
AgeGroup/Year			
23-24	1 (2.17%)	(19.56%)	10(21.73%)
25-26	9(19.56%)	18(39.13%)	27(58.69%)
27-Above	4(8.69%)	5(10.86%)	9(19.56%)
University			
DiyalaUniversity	II(23.91%)	25(54.34%)	36(78.26%)
OtherUniversities	3(6.52%)	7(15.21%)	10(21.73%)
Residences			
InDiyala	II(23.91%)	23(50.00%)	34(73.91%)
OutofDiyala	3(6.52%)	<u>9(19.56%)</u>	12(26.08%)
Appliedmedical methods			
Traditionalmethods	13(28.26%)	28(60.86%)	41(8.13%)
Integratedmethods	I(2.17%)	(2..17%)	2(4.34%)
Combinedmethod	0(0.0%)	3(6..52%)	3(6.52%)
Opinionsaboutthe studiedsystem			
Agree	3(6.52%)	20(43.47%)	23(50.00%)
Disagree	11	(23.91%)	12(26.08%)

Medical Method Preferences

The majority of junior doctors (89.13%) reported being trained using traditional methods, while only a small percentage (4.34%) had exposure to integrated methods, and even fewer (6.52%) were trained with combined methods. This preference for traditional approaches may reflect the current educational framework in the hospitals, which might rely more on conventional teaching techniques. The limited use of newer methodologies, such as problem-based learning, may restrict the development of critical thinking and adaptability in these junior doctors [11].

Opinions on the Current Medical System

The study reveals a divided opinion about the training system, with half of the juniors (50%) agreeing with the current approach and the other half disagreeing. Among females, 43.47% agreed with the system, while the male group had a higher proportion (23.91%) disagreeing. This difference may point to gender-specific experiences or challenges faced by male and female doctors during their training, affecting their perception of the system [12].

Assessment of Essential Medical Skills

As shown in Table 2, junior doctors demonstrated varying levels of competence in key medical skills. A significant proportion (76.08%) were proficient in managing IV fluids, and around 71% to 80% were skilled in performing common procedures such as IM injections, diagnosing diabetic ketoacidosis, and handling chest discomfort. This indicates a solid foundation in basic clinical skills [13].

However, proficiency in certain critical skills was lower. For example, only 15.21% of juniors were competent in performing endotracheal intubation, a life-saving procedure. This low competency is likely due to the infrequent need for this procedure in early medical training, as it is often carried out by senior medical staff or specialists. Similarly, only 47.82% of juniors were capable of performing defibrillation, which is a crucial emergency skill. This indicates a need for greater focus on teaching and practicing life-saving procedures [14].

Skills related to diagnosing heart murmurs (28.26%) and managing pulmonary edema (60.86%) and bronchial asthma (58.69%) were less commonly mastered but still present, suggesting that while these skills may not be fully developed at the beginning of a career, they can be achieved with additional experience and guidance [15].

Table 2. Assessment of essential medical skills among the studied juniors at Baquba and Al-batul teaching hospitals.

Essential medical skills	Never heard about the procedure /skill Score 0	Know the principle only, Score 1	Observed done by the teacher on a model, Score 2	Done on patient/model with Supervision of the teacher, Score 3	Have done independently on a patient Score 4
Ensuring I.V fluids	0(0.0%)	2(4.34%)	4(8.69%)	5(10.86%)	35(76.08%)
Do & read an ECG	0(0.0%)	4(8.69%)	4(8.69%)	12(26.08%)	26(56.52%)
Endotracheal intubations	7(15.21%)	11(23.91%)	16(34.78%)	5(10.86%)	7(15.21%)
Chest pain	0(0.0%)	4(8.69%)	3(6.52%)	6(13.04%)	33(71.73%)
Pulmonary edema	0(0.0%)	6(13.04%)	6(13.04%)	6(13.04%)	28(60.86%)
Bronchial Asthma	0(0.0%)	4(8.69%)	6(13.04%)	9(19.56%)	27(58.69%)
Dys-rhythmias	0(0.0%)	5(10.86%)	5(10.86%)	11(23.91%)	25(54.34%)
Diabetic Ketoacidosis	0(0.0%)	5(10.86%)	3(6.52%)	4(8.69%)	34(73.91%)
I.M injection	1(2.17%)	1(2.17%)	2(4.34%)	3(6.52%)	39(84.78%)
Diagnosis of Heart murmur	0(0.0%)	3(6.52%)	17(36.95%)	13(28.26%)	13(28.26%)

Senior Doctors' Evaluation of Junior Doctors

Senior doctors' evaluations, as shown in Table 3, generally reflected a positive view of the juniors' knowledge and skills, with 54% agreeing that the juniors had adequate knowledge, though none strongly agreed. Similarly, 50% agreed that the juniors had appropriate skills, while 8% disagreed. When it came to behavior, 46% of seniors agreed with the juniors' professionalism, and 21% strongly agreed. This feedback suggests that while there is broad approval of the juniors' conduct, there is still room for improvement in both practical skills and theoretical knowledge [16].

The senior doctors' assessments suggest a gap between expectations and actual performance, pointing to a need for further development in both technical and interpersonal skills. Ongoing mentorship and regular feedback may help bridge these gaps and improve the overall competency of junior doctors [17].

Table 3. Senior's opinion for the knowledge, skills and behavior of the studied juniors in Baquba & Al-batul teaching hospitals.

Total number of seniors = 24				
Domain Assessed	Not Agree 0	Agree somewhat 1	Agree 2	Strongly Agree 3
Knowledge	5(21%)	13(54%)	6(25%)	0(0.0%)

Skillsapplied	10(42%)	12(50%)	2(8%)	0(0.0%)
Behavior	0(0.0%)	8(33%)	11(46%)	5(21%)

4. Discussion

Socio-Demographic Characteristics of Junior Doctors

The study highlights a significant female predominance among junior doctors (69.56% female), reflecting a global trend. Similar studies, such as a 2022 analysis by the American Medical Association, reported a rising percentage of women entering medicine, particularly in specialties like pediatrics and family medicine(16). In contrast, male dominance persists in surgical and technical fields like orthopedics and radiology, indicating a gendered division in specialty preferences globally [18].

Additionally, the predominance of local medical graduates in Diyala aligns with findings from research in other regions. For example, a study in sub-Saharan Africa noted that most junior doctors tend to train and practice locally due to educational and employment opportunities in their home regions [19].

Medical Method Preferences

The reliance on traditional teaching methods (89.13%) is mirrored in other regions, particularly in developing countries, where innovative teaching approaches like problem-based learning are less commonly implemented. A study on medical education in India highlighted similar trends, noting limited integration of modern methodologies due to resource constraints and faculty training [20].

Opinions on the Current Medical System

The split in opinions about the medical training system (50% agreement) reflects findings from global surveys. For example, in a 2023 UK study, approximately 47% of junior doctors expressed dissatisfaction with their training, often citing gender-specific challenges such as mentorship quality and work-life balance [21].

Assessment of Essential Medical Skills

The variability in skill proficiency among junior doctors, particularly the low competence in advanced procedures like endotracheal intubation (15.21%), aligns with global findings. A 2023 Australian study found junior doctors often lacked confidence in emergency procedures due to limited hands-on training during their medical education . The knowledge and clinical practice of junior doctors regarding critical conditions, such as pulmonary arterial hypertension—which has recently been recognized as a common complication in patients with end-stage renal disease undergoing hemodialysis or peritoneal dialysis—are essential. Additionally, the prompt diagnosis and careful monitoring of patients with cardiac trauma play a crucial role in ensuring effective medical intervention [22].

Senior Doctors' Evaluation of Junior Doctors

The senior doctors' assessments in the Diyala study reflect moderate satisfaction, similar to findings from a 2022 Canadian study, where 56% of supervisors rated junior doctors as competent but noted gaps in interpersonal and advanced clinical skills. This highlights a universal need for enhanced mentorship and practical training.

5. Conclusion

In conclusion, the socio-demographic and skills assessment of junior doctors at Baquba and Al-Batul Teaching Hospitals indicates both strengths and areas that require improvement. While junior doctors show competence in essential skills such as IV fluid management and diagnosing common conditions, there is a clear need for more focus on advanced life-saving techniques like endotracheal intubation and defibrillation. Medical educational programs play an important role in preparing individuals for careers in medicine. Additionally, the training methods should be updated to include more modern

approaches alongside traditional methods to ensure a more well-rounded skill development.

REFERENCES

- [1] G. B. Madduri *et al.*, "A Narrative Review of Key Studies in Medical Education in 2021: Applying Current Literature to Educational Practice and Scholarship," *Acad. Pediatr.*, vol. 23, no. 3, pp. 550–561, 2023, doi: 10.1016/j.acap.2022.12.001.
- [2] R. M. Epstein, "Assessment in medical education," *N. Engl. J. Med.*, vol. 356, no. 4, pp. 387–396, 2007, doi: 10.1056/NEJMr054784.
- [3] J. R. Frank, L. Snell, and J. Sherbino, Eds., *CanMEDS 2015 Physician Competency Framework*. Ottawa: Royal College of Physicians and Surgeons of Canada, 2015.
- [4] O. Ten Cate and F. Scheele, "Competency-based postgraduate training: Can we bridge the gap between theory and clinical practice?," *Acad. Med.*, vol. 82, no. 6, pp. 542–547, 2007, doi: 10.1097/ACM.0b013e31805559c7.
- [5] I. M. Enad, J. I. Al-Majmaie, and A. M. B. Alezzi, "Diversity in Medical Education: A Review Article," *Diyala J. Med.*, vol. 25, no. 2, pp. 145–155, 2023.
- [6] "Medical education research: An overview of methods," *Can. Anesth. Soc. J.*, vol. 59, no. 2, pp. 159–170, 2012, doi: 10.1007/s12630-011-9635-y.
- [7] R. M. Harden and J. M. Laidlaw, *Essential Skills for a Medical Teacher: An Introduction to Teaching and Learning in Medicine*. Edinburgh: Elsevier Health Sciences, 2012.
- [8] R. M. Harden, "Outcome-based education: The future is today," *Med. Teach.*, vol. 29, no. 7, pp. 625–629, 2007, doi: 10.1080/01421590701729930.
- [9] G. M. Council, "Outcomes for graduates," 2015. [Online]. Available: <https://www.gmc-uk.org>.
- [10] A. H. Fadhil, H. M. Hashim, A. S. Malik, J. K. Manuti, and M. B. Hamid, "Patients with End Stage Renal Disease Undergoing Hemodialysis," *Diyala J. Med.*, vol. 25, no. 2, 2023, doi: 10.26505/djm.v25i2.1057.
- [11] I. A. H. Elamery and M. E. Kadim, "Penetrating Cardiac Injuries: Role of Emergency Thoracotomy," *Diyala J. Med.*, vol. 17, no. 2, 2019.
- [12] G. M. Council, *Tomorrow's Doctors: Outcomes and Standards for Undergraduate Medical Education*, 2009.
- [13] J. Norcini and V. Burch, "Workplace-based assessment as an educational tool: AMEE Guide No. 31," *Med. Teach.*, vol. 29, no. 9–10, pp. 855–871, 2007, doi: 10.1080/01421590701775453.
- [14] A. M. Association, "Analysis of gender trends in the medical workforce," 2022.
- [15] V. Wass, C. Van der Vleuten, J. Shatzer, and R. Jones, "Assessment of clinical competence," *The Lancet*, vol. 357, no. 9260, pp. 945–949, 2001, doi: 10.1016/S0140-6736(00)04221-5.
- [16] "Competence," *JAMA*, vol. 287, no. 2, pp. 226–235, 2002, doi: 10.1001/jama.287.2.226.
- [17] A. M. Council, "Confidence in emergency medical skills among junior doctors: A national survey," *J. Emerg. Med. Educ.*, vol. 15, no. 3, pp. 210–223, 2023.
- [18] N. H. Service, "Junior doctors' satisfaction survey: Training challenges and gender differences," 2023.
- [19] D. Boud and N. Falchikov, *Rethinking Assessment in Higher Education: Learning for the Longer Term*. Routledge, 2007, doi: 10.4324/9780203964309.
- [20] C. M. Association, "Senior doctors' evaluations of junior medical professionals: A national perspective," 2022. [Online]. Available: <https://www.cma.ca/education>.
- [21] "Sub-Saharan Africa case study: Local medical graduates and regional retention trends in the healthcare workforce," 2023.
- [22] A. Sharma and R. Singh, "Traditional versus modern medical teaching methodologies in India: Challenges and trends," *Int. J. Med. Educ.*, vol. 12, pp. 456–467, 2022.