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Preparedness of house officers for independent clinical practice: are we there yet?

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ABSTRACT

Background and Objective: The essential goal of any medical school is to train medical graduates to work as independent clinicians. Inadequately prepared doctors put the well-being of patients at a great risk. The objective of the study was to evaluate the preparedness for independent clinical practice of house officers who graduated from medical schools with the traditional discipline-based curriculum, from both public and private sectors, and with high and low merit.

Methods: A quantitative correlational study was conducted by using an already validated questionnaire. A total of 241 house officers who graduated from public and private sector medical schools from Lahore, Pakistan, with high and relatively low merit, were selected. The data from the filled responses were analyzed by using Statistical Package for the Social Sciences version, 25.

Results: Out of the 241 respondents, 152 (55.3%) were females and 89 (32.4%) were males. The mean age of the respondents was 24.19 ± 0.91 years. The difference in mean score between the public and private sectors was significant in the subscales of clinical skills, procedural skills, and patient management.

Analysis of free-text responses showed a deficiency in procedural skills, communication skills, time management, and management of acutely ill patients in the emergency department in both classes of medical schools. Many graduates suggested early clinical exposure with hands-on training and the addition of modules of ethics and medical laws in the curriculum.

Conclusion: The medical graduates lack pertinent training in professionalism, ethics, medical laws, and communication skills which may hamper their appropriate preparedness before dealing directly with the high turnover of patients during house jobs.

Keywords: House staff, doctors, internship, clinical competence, readiness, professionalism, discipline-based curriculum, medical schools.

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Introduction

One of the primary aims of any medical school is to equip students with necessary clinical skills so that they can perform as competent independent clinicians and decision maker as human lives are at stake in their hands.^{1,2} There has been a rapid increase in the number of private medical schools in Pakistan for the last two decades; however, there is a perception regarding less trained graduates of private medical schools.³ Many of the public and private sector medical schools in Pakistan follow discipline-based curriculum with 2 years of basic and 3 years of clinical sciences training.¹ This is a common practice in medical colleges around the world to provide clinical training to their graduated students during and after graduation as vocational

clinical training or house jobs under supervised conditions in teaching hospitals.² Previous studies indicate that newly qualified doctors feel that they are unprepared in many areas of clinical practice, such as history, clinical examination and diagnosis, paperwork, independent responsible working, and treatment of patients.^{2,3} Graduates from the traditional medical curriculum were interviewed in the UK and they reported that they are not very well prepared for the role of young doctors, i.e., the practical skills, research skills and communication skills needed for the job.^{4,5}

Furthermore, there are multiple reports of clinical malpractice in press.^{3,6} The perception of medical students who had been enrolled in public and private sector medical

schools with high (95.71%-90.29%) and relatively low merit (88.44%-86.23%) regarding readiness to clinical practice independently has not been studied yet. The undergraduate medical curriculum and its implementation can be modified in light of the information received through feedback of newly graduated doctors from the medical schools.³

In Pakistan, “merit of medical college” is a layman’s term that is actually based on the percentage aggregate acquired in the FSc premedical schools at the time of admission to the first-year MBBS and can range from 95.71% to 90.29%. The aspiring medical students with higher aggregate marks usually prefer joining that medical college (belonging to either public or private sector) where higher aggregate students usually take admission. However, this is not a strict rule and many high merit students also take admission in medical colleges where lower aggregate students are enrolled based on other circumstances as well. Generally, the highest aggregate percentage of students enrolled in that particular year is usually depicted as the merit of that institute. The same aggregate is usually reflected as the highest marks of the enrolled students. Low merit medical colleges are those having a percentage range from 88.44% to 86.23%. The performance of any medical school in terms of educational strategies and learning environment and competence of its graduates can be contributing factors that may guide any student toward deciding the preferences for the medical college that they may opt for.^{7,8}

The objective of the study is to evaluate the self-perception of house officers graduated from the high and relatively low merit medical schools from both public and private sectors regarding their preparedness to clinical practice. Understanding of this information will help to reform the curricula adopted in both public and private sectors of medical education.

Methods

This quantitative correlational study was conducted in four medical colleges of Lahore city from August 2019 to November 2019. Two colleges were from the public sector

and two from the private sector. The ones with high merit had students enrolled having an aggregate score of 95.71%-90.29% and the low merit medical colleges were those with a 88.44%-86.23% score in premedical as eligibility criteria for enrolment. All colleges taught discipline-based curriculum and were grouped into four, as shown in Table 1.

The target population comprised freshly graduated doctors working as house officers in the affiliated teaching hospitals of these medical colleges. The house officers who were graduated in 2018 and 2019 were included, while those who had graduated before 2018 were excluded from the study. The sample size was calculated with a 97% confidence interval using the software “OpenEpi” and was estimated to be 264. Stratified random sampling was carried out. Strata of populations were made according to the number of passed out graduates in 2019 from each medical school under study. Participants were informed verbally about the study by the investigator. The house officers were informed in detail regarding the advantages, anticipated effect of the investigation, and potential risks. Then, consent was obtained. Ethical approval for the study was granted by the Ethical Review Board of the University of Lahore Medical College, Lahore, Pakistan.

A validated questionnaire developed by Miles et al.⁵ with a Cronbach’s alpha value of 0.77-0.91 was used in this study after sorting permission from the authors. Demographic details, such as age and gender, were also collected using this instrument. The questionnaire is based on item responses regarding readiness to clinical practice in six areas of clinical practice: clinical skills, patient management, practical procedures and skills, communication and team working, clinical guidelines and protocols, and personal development and well-being. There are a range (1-53) of statements under each area of clinical practice, which were measured on a Likert scale from 1 to 6 with “1” rated as “very badly prepared” to “6” rated as “very well prepared”. The questionnaire also contained items to rate the perception of confidence level about necessary skills and knowledge needed for the house job. Another item in this instrument asked to rate

Table 1. Groups of medical schools according to the merit and funding status.

Groups	Name of institution
Public sector	Government medical school with high merit
	Government medical school with low merit
Private sector	Private medical school with high merit
	Private medical school with low merit
High merit	Government sector medical school with high merit
	Private sector medical school with high merit
Low merit	Government sector medical school with low merit
	Private sector medical school with low merit

the agreement level was “Overall, my experience at medical school prepared me well for the tasks I have undertaken so far as house officer”.

Four open-ended questions were asked to comment on how prepared they felt in any of the 53 areas, list any skills and knowledge that they needed during their house job, list down any difficulties they had encountered in daily work due to being unprepared, and to provide details of how medical training could be conducted differently to prepare them better.

House officers were provided with hard copies of the questionnaire. The survey form was also shared using the emailed link of the Qualtrics software. All responses were kept anonymous.

Statistical analysis

The acquired data were entered in Statistical Package for the Social Sciences-25 and were analyzed using applicable statistical tests. Preparedness to clinical practice was measured by comparing frequencies, using mean and standard deviation. Public and private sector medical schools and medical schools with high and low merit scores of preparedness were correlated using Pearson's correlation. Kruskal-Wallis test was used to compare the mean scores of preparedness of graduates, with a 0.05 level of significance. Analysis of the comments was carried out by identifying themes and subthemes.

Results

The response rate was 91.28% as 241 out of 264 participants filled the questionnaire. Out of 241 respondents, 152 (55.3%) were female and 89 (32.4%) were male. The age of respondents ranged from 22 to 26 years, with the mean age of 24.19 ± 0.911 years.

A Shapiro-Wilk's test ($p > 0.05$) showed that the scores of preparedness in clinical skills, procedural skills, patient management, communication skills and team working,

clinical guidelines and protocols, and personal development and well-being were not normally distributed for different groups of house officers.

Comparison of subscales of clinical practice between graduates of medical schools from public and private sectors

Graduates from public sector medical schools rated themselves significantly higher than the private medical schools on the subscale of clinical skills (<0.01) which include history taking, examination and diagnostic skills, decision and interpretation about laboratory test, suggestion of appropriate drugs, understanding of drug interactions, dealing with critically ill patients, and doing paperwork in ward environment. Responses of the house officers who graduated from public sector medical schools revealed better confidence in themselves when compared to the ones from the private medical schools in patient management (<0.01), i.e., development of management plan, respectful attitude toward patient management, discussion about medication, and understanding patient's social and cultural environments. Procedural skills, i.e., performing venipuncture, IV cannulation, urethral catheterization, and arterial tap were also rated significantly better (<0.01) by the graduates of medical schools from the public sector when compared to the private sector. Difference in mean scores between the two groups was found to be statistically insignificant for the following subscales: communication and team working (0.80), clinical guidelines and protocols (0.078), and personal development and well-being (0.198), as shown in Table 2.

Comparison of different subscales of clinical practice between high and low merit medical schools

Graduates from medical schools with a high merit feel that they are significantly better in inpatient management (<0.01), i.e., development of management plan, respectful

Table 2. Comparison of mean scores in different subscales of clinical practice from the graduates of public and private sector medical schools.

Areas of clinical practice	Medical schools from public sector	Medical schools from private sector	Level of significance* (p-value)
Clinical skills	4.01 ± 0.403	3.72 ± 0.50	0.01
Patient management	4.31 ± 0.417	3.86 ± 0.701	0.01
Clinical guidelines and protocols	3.55 ± 0.904	3.74 ± 1.043	0.078
Communication skills and team working	4.19 ± 0.76	4.1165 ± 0.925	0.80
Procedural skills	4.19 ± 0.58	3.57 ± 0.58	0.01
Personal development and wellbeing	3.72 ± 0.703	3.78 ± 0.8	0.198

* Shapiro-Wilk's test.

attitude toward patient management, discussion about medication, and understanding patient's social and cultural environment. Graduates from relatively low merit medical schools rated themselves significantly better on the subscales of clinical guidelines and protocols (<0.01), which includes understanding about patient safety, legal framework of medical practice, medical and ethical principles, and infection control. They also rated themselves significantly better (<0.01) in communication skills and team working (communication with patients and their families, colleagues and working in teams) and personal development and well-being (<0.01), i.e., awareness about their own limitation, prioritization of tasks, coping with uncertainty and responsibility, and working independently. The difference in mean scores between high and relatively low merit medical school is statistically insignificant as far as clinical skills (0.35) and procedural skills are concerned (0.102), as shown in Table 3.

The majority of house officers (54, 35.8%) from the public sector and 27 (30.7%) from the private sector medical schools were moderately confident about the necessary skills needed for the house job. Similarly, 53 (31.0%) house officers from the medical schools with high merit and 28 (41.2%) from those with low merit were moderately confident about the necessary skills needed for house jobs (Table 4).

Majority (71, 47.01%) of the graduates from the public sector and 30 (34.09%) from the private sector medical

schools were moderately confident about the necessary knowledge needed for the house jobs. Similarly, 73 (42.7%) graduates from the medical schools with high merit and 28 (41.2%) from those with low merit were moderately confident about the necessary knowledge needed for the job as a house officer (Table 5).

In response to the statement "Overall experience at medical school prepared me well for the tasks I have undertaken so far as house officer", majority (62, 40.5%) of the house officers from the public sector medical schools remained neutral and 25 (28.4%) from the private sector medical schools agreed to the statement. About 70 (40.5%) graduates from medical school with high merit remained neutral (44.1%) and 30 (44.1%) graduates from comparatively low merit medical schools agreed that the medical schools prepared them well for the clinical practice.

Analysis of comments was carried out by identifying the themes and subthemes of the text responses. Four major themes were knowledge, skills, personal issues, and unfamiliarity with the ward environment. In response to the question about the skills and knowledge needed for house job which were not adequately covered in the medical training, the majority of students reported a deficiency in communication and procedural skills. These procedures included pleural tap, ascitic tap, major stitches, lumbar puncture, gastric lavage, passing endotracheal tube, and cardiopulmonary resuscitation. They mentioned that their

Table 3. Comparison of mean scores in different subscales of clinical practice from the graduates of medical schools with high and low merit.

Areas of clinical practice	Medical schools with high merit	Medical schools with low merit	Level of significance* (p-value)
Clinical skills	3.88 ± 0.468	3.99 ± 0.447	0.35
Patient management	4.22 ± 0.60	3.98 ± 0.481	0.01
Clinical guidelines and protocols	3.34 ± 0.89	4.33 ± 0.720	0.01
Communication skills and team working	3.98 ± 0.75	4.82 ± 0.65	0.01
Procedural skills	3.92 ± 0.76	4.11 ± 0.72	0.102
Personal development and wellbeing	3.61 ± 0.744	4.12 ± 0.648	0.01

*Shapiro-Wilk's test.

Table 4. Perception of the confidence level about the necessary "skills" needed for the job as house officers.

Groups of medical schools	Necessary skills needed for the job as house officers				
	Not at all confident	Slightly confident	Moderately confident	Very confident	Totally confident
Public sector	29(19.2%)	40 (26.5%)	54 (35.8%)	28 (18.5%)	0 (0.0%)
Private sector	14 (15.9%)	23 (26.1%)	27 (30.7%)	20 (22.7%)	4 (4.5%)
High merit	37 (21.6%)	48 (28.1%)	53 (31.0%)	30 (17.5%)	3 (1.8%)
Low merit	6 (8.8%)	15 (22.1%)	28 (41.2%)	18 (26.5%)	1 (1.5%)

Table 5. Perception of the confidence level about the necessary “knowledge” needed for house jobs.

Groups of medical schools	Not at all confident	Slightly confident	Moderately confident	Very confident	Totally confident
Public sector	12 (7.94%)	43(28.47)	71 (47.01%)	23 (15.23%)	2 (1.32)
Private sector	11 (12.5%)	23 (26.13%)	30 (34.09%)	21 (23.86%)	3 (3.40%)
High merit	20 (11.7%)	53 (31.0%)	73 (42.7%)	22 (12.9%)	3 (1.8%)
Low merit	3 (4.4%)	13 (19.1%)	28 (41.2%)	22 (32.4%)	2 (2.9%)

knowledge about hospital protocols, brand names of drugs, their dosage, and frequencies was inadequate. There were issues with the management of acutely ill patients in the emergency department and with counseling of patients and their relatives. They also perceived themselves as unprepared for the management of time, stress, anxiety, and workload.

In response to the question on how medical training can be conducted differently, the majority of graduates from both medical schools with high and low merits from public and private sectors suggested early clinical exposure with hands-on training. They proposed the use of new learning techniques with more patient-centered learning than the theoretical knowledge and with addition of ethics, professionalism, medical laws, information technology (IT) skills, and career counseling in the core subjects. There should be an introduction of an integrated modular system for a better understanding of the disease. The learning environment should be improved. Learning objectives, tasks, and expectations from the house officers should be laid down clearly.

In response to the questions about difficulties encountered in daily work as house officers, the majority of the graduates reported difficulty in dealing with the emergencies, especially unconscious patient, trauma cases, and medico-legal cases. They also perceived themselves unprepared for procedural skills, communication skills, counseling of patients, prioritization of tasks and time management, and stress management. They also listed issues in dealing with and asking help from senior doctors, seniors, nursing staff, and relatives of patients. They reported that they feel stressed and burned out due to long duty hours and lack of supervision. There were issues in teamwork and handing over of tasks.

Discussion

This study was conducted in four medical schools with the traditional discipline-based curriculum and focused on the preparedness of recent medical graduates for clinical practice.

The statistical difference of the mean score between public and private sector medical schools was significant in the subscales of clinical skills, patient management, and

procedural skills and insignificant for communication skills and team working, clinical guidelines and protocols, and personal development and well-being.

In the current study, difference in the mean score in high merit and relatively low merit medical schools was statistically significant on the subscales of patient management, communication skills and team working, clinical guidelines and protocols, and personal development and well-being. The results of an investigation carried out by Prince et al.⁹ in Netherland in 2004 showed adequate preparation of recent graduates in the knowledge domain but deficient inpatient management which are in accordance with the findings of the current study. Another study conducted by Tallentire et al.¹⁰ stated that the recent medical graduates at the University of Edinburgh, UK, were not well prepared in the emergency care of the patients and drug prescription as compared to communication skills and consultation.

In the present study, analysis of the response items showed that graduates are deficient in communication and procedural skills. Graduates from both high and low merit medical schools feel that they are unprepared for the prescription of drugs. The knowledge about the brand names of drugs, dosage, and frequency was not perceived as adequate for clinical practice. Similar to our findings, a the studies conducted by Laven¹¹ and Prince et al.¹² reported that the medical graduates were adequately prepared regarding theoretical knowledge but were inadequately prepared for patient management especially in prescribing medicines.

In the present investigation, graduates suggested to inculcate reforms in educational strategies by introducing early clinical exposure during medical studies, more hands-on training than theoretical teaching, and use of new learning techniques, career counseling, the inclusion of IT and the addition of professionalism and ethics module. They also proposed that integrated modular system should be introduced. Although not directly related, these suggestions by the students have been proposed by the supervisors of students in a study conducted by Miles et al.⁵ who proposed that medical students should have more practical interaction with patients with active involvement of students, decision-making, and perform practical procedures. There are many studies showing that problem-based learning and skill-based

and community-based curricula prepare medical graduates better than discipline-based curriculum.^{7,13}

In response to difficulties encountered in daily work as house officers, the majority of house officers listed inadequate procedural and communication skills and felt unprepared for managing stress, anxiety, and handing over of tasks. Some of the graduates were reluctant in asking help from senior colleagues. A study conducted by Tallentire et al.¹⁰ reported a high level of self-perception in medical knowledge, interpersonal skills, and communication skills but were inadequately prepared to deal with acutely ill patients and procedural skills.

The transition from medical student to a practicing doctor is challenging. This is huge responsibility on the shoulders of the medical educators as well as the policy makers of both public and private sector medical schools to equip their students well for the upcoming responsibilities as an independent doctor.

Conclusion

Graduates from the public sector medical schools felt that they are well prepared in clinical skills, patient management, and procedural skills, while house officers who graduated from the low merit medical schools perceived themselves as better in clinical guidelines and protocols, communication skills, team working, and personal development and well-being.

Most of the graduates felt that they were deficient in early clinical exposure with a meaningful contribution of the students toward patient management. In addition, professionalism, ethics, communication skills, medical laws, and personal development should be emphasized in the curricula of undergraduate medical education in Pakistan.

Limitations of the study

The findings of this study were based upon responses collected from graduates of only four medical colleges of the country. Therefore, the results cannot be generalized to all medical colleges in the country. Self-perceptions of the graduates were recorded at one point in time, which may change further experiences. As graduates, they can over or underestimate his/her preparedness for clinical practice at any given time. Feedback of teachers, supervisors, administrative personnel, patients, and paramedical staff was not recorded to overcome bias. Workplace-based assessment of preparation for clinical practice was not carried out.

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List of Abbreviations

IT Information technology

Conflict of interest

None to declare.

Grant support and financial disclosure

None to disclose.

Ethical approval

Ethical approval for the study was obtained from the Institutional Review Board of the University of Lahore Medical College, Lahore, Pakistan, on 11-10-2019 vide Letter No. ERC # 10/19/06.

Authors' contribution

HG: Conception and design of the study, acquisition, analysis, interpretation of data, and drafting of the manuscript.

SHRZ and RAK: Drafting of the manuscript and revising it critically for important intellectual content.

ALL AUTHORS: Approved for the final version of the manuscript to be published.

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