

To Assess Evaluation System in Public Medical Institutions at Under-Graduate Level – The Students’ Perspective

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ABSTRACT

Background: Medical education in Pakistan has not kept pace with international standards and modified strategies. This study presents the students’ viewpoint about different methods of evaluation prevalent in a public-sector medical institute.

Aim: To assess the evaluation system in K.E.Medical University keeping in view students’ perspective.

Study design: Cross sectional study design.

Duration & place: 3 months, King Edward Medical University, Lahore.

Methods: A total of 120 subjects were enrolled in the study who were selected according to predetermined criteria after taking due consent. Pretested questionnaires were filled by the students of fourth year and final year. Data was collected, compiled and analyzed through SPSS version 16.

Results: Among the students who filled in the research questionnaires (n=120), there were females (79) and males (41); with educational fourth year MBBS (84) and final year MBBS (36). According to our study, the written examination was based on cramming of bookish knowledge (90.8%) and should instead be conceptual (90%) and scenario based (68.3%). The study showed that students were largely dissatisfied with the outcome of viva examination (78.3%) and proposed to replace it with Structured Oral Questions from each topic (65%). OSPE / OSCE were found to be a satisfactory tool of evaluation and were regarded better than Traditional Practical Examination (84.2%).

Conclusion: The research study showed that students were dissatisfied with certain aspects of the evaluation system of King Edward Medical University and that steps were required to minimize the lacunas existing presently.

Keywords: evaluation, medical university, students’ perspective.

INTRODUCTION

Evaluation is a systematic determination of an individual’s competence and merit, using set standards¹. The aim of evaluation is governed by its intended use and utility.² Utilization-focused evaluations follow a logical sequence.³ First, the stakeholders are identified. Then the evaluator and users agree upon the purpose of the evaluation. Lastly, appraisal is done about the effectiveness of the assessment tools in reaching the eventual goals.

Internationally, medical education has rapidly evolved in the past few decades. However, the medical examination system in Pakistan especially in public-sector institutes has stayed stagnant for the past many years. This study assesses the evaluation system in a public medical institute through a three pronged agenda: to address written examination, viva examination and objectively structured or related examination techniques involving both internal and annual evaluation. It will also be comparing older methods with new methods of assessment, hence

providing insight into the efficacy of the current system and whether there is a need to improve it. By referring to the students’ perspective, the study connotes the view of students regarding the adequacy of evaluation system.

Designing an evaluation strategy for a curriculum and continuously revisiting its efficacy are the basic necessities of any credible evaluation system. In 1994, standards were established regarding the medical school curriculum that ensured that students had acquired the core clinical skills and behaviors needed in subsequent medical training⁴.

The main aim of medical education is to produce better skilled physicians with adequate knowledge, compassion, desire to learn throughout life and interest in clinical research. In such a system, reliability is the consistency and precision of the testing methods while establishing validity and practicality of the assessment procedures are also very essential⁵.

At the end of each test as indicated in a study⁶, students’ feedback has an important role in providing learners and teachers an insight into their performance and consequently measures can be adapted to improve the assessment tools. Other

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approaches can also be adopted for evaluation of teaching programs through internal and external surveyors. Institutional/Internal quality assessment begins with setting goals and then self-evaluation at regular intervals to ensure the execution of those goals. If need be, this can be followed by reforms and alterations as per the results of the evaluation. External appraisal is done by a governmental office (universities) and has the following constituents: accreditation/affiliation, control and upgradation⁷.

The medical examination system in Pakistan largely promotes rote memorization of the subject matter; lack of integration between disciplines and has limited application in real life clinical scenarios.⁸ Therefore students are devoid of a critical thinking process and become inept doctors. Hence, it is high time that the current evaluation system in the public medical institutes of Pakistan is also scrutinized.

Usually students adapt their learning style according to the evaluation methods. Newble and Jaeger⁹ described the effects of a change in evaluation on the learning patterns of medical students. When ward ratings replaced viva and clinical examinations, students started spending more time in the library and less time in wards. The next year, clinical examinations were adopted so this shifted the balance back. Thereby it was concluded that didactic knowledge based teaching should be reduced and students should be encouraged to spend more time on wards to prepare them for their eventual role as interns.

Internationally, a schematic paradigm shift in medical education has occurred in terms of competency-based assessment through objective criteria. It was shown by Thurman and Sanders that competency-based instructional method for a learning block produced higher post-test assessment scores as compared to the traditional method of teaching¹⁰.

Moreover, the subjective marking in viva examinations is not an effective tool in judging the competency of an individual. Words are subjective and numbers are objective. Calling an assessment tool objective implies use of a number or percentage or score above or below a mean thus giving it a higher status in the scientific community. Whereas subjective assessment is according to the teachers' observation which may be biased and thus not an accurate way of gauging the ability of a student⁶.

An interesting study¹¹ corroborated this fact by subjecting a large cohort of residents to competency-based evaluation by their supervisors. Subjective evaluation revealed most of the residents to be competent but less than 2% residents were declared competent with more objective criteria.

Competence is what the student should be able to do at a particular level of training. Thus, competence is the presence of all attributes necessary to do the task for which one is being trained. And clinical competence is the mastery of the relevant knowledge and skills required in a patient encounter¹².

In 1985, the OSCE and OSPE techniques were introduced as a teaching and evaluation tool and its advantages were compared with disadvantages.¹³ A striking improvement in the mean score in Physiology courses was seen after regular practice of OSPE at King Faisal University of Saudi Arabia¹⁴.

In an Indian study, a combination of CPE (Classical Practical Examination) and OSPE was preferred over pure OSPE and a majority of students considered it as an effective, useful, interesting and challenging examination and it has been considered as a reliable tool to categorize students according to their potential¹⁵.

This study is aimed at determining whether the current examination system truly gauges the true potential, skill and knowledge of medical students and whether they are satisfied with it or not. It also aims to identify alternate or modified ways of evaluation so as to minimize the deficits existing presently. The student perspective in this regard has been an area very often neglected. Thus, this study will help to minimize the discrepancies in the existing evaluation system taking into account the students' perspective.

MATERIALS AND METHODS

A cross-sectional study was carried out at King Edward Medical University, Lahore to assess the evaluation system in King Edward Medical University keeping in view the students' perspective. Study population of 120 individuals consisted of students from fourth year and final year who fulfilled the inclusion criteria laid down for the study which was: the students who have taken the professional examination. Simple random sampling technique was used to recruit the subjects for the study. Prior consent was obtained from subjects to get the questionnaires filled.

Evaluation is a systematic determination of an individual's competence and merit, using set standards.¹ Ranking system is the system when students are adjudged grade wise according to their performances in exam. Pass/Fail System connotes declaring the students either pass or fail and hence are freed from concerns about class rank. Exam-based learning refers to an approach aimed at gaining marks by targeting exam specific topics. Knowledge-Based Learning focuses on giving due attention to each aspect of syllabi to understand all

the basic concepts. Exam anxiety is the undue worrying, depression and nervousness preceding an assessment or test.¹⁶ An OSCE is a modern¹² type of examination often used in health sciences. It is designed to test skills such as communication, clinical examination, medical procedures, radiographic image evaluation and interpretation of results. General organization of exam comprises LEQs, SEQs, PBQs and MCQs.

Various abbreviations used include:

MCQs: Multiple Choice Questions

LEQs: Long Essay Questions

SEQs: Short Essay Questions

OSCE: Objectively Structured Clinical Examination

OSPE: Objectively Structured Practical Examination

PBQs: Problem Based Questions

RESULTS

Among the students who filled in the research questionnaires (n=120), there were females (79) and males (41); age below 21 years (50) and age above 21 years (70); education fourth year MBBS (84) and final year MBBS (36). According to our study written examination is based on memory base learning (86.7%) and cramming of bookish knowledge (90.8%). A vast majority of the students proposed that written examination should be conceptual (90%) and scenario based (68.3%). LEQs should be replaced with SEQs (76.7%). The study showed that

students were largely dissatisfied with the outcome of viva examination (78.3%). Moreover, they proposed to replace it with Structured Oral Questions from each topic (65%). OSPE / OSCE were found to be a satisfactory tool of evaluation and regarded it better than Traditional Practical Examinations (84.2%). The demographic characteristics and results were described using pie charts and frequency tables. Fig. 1

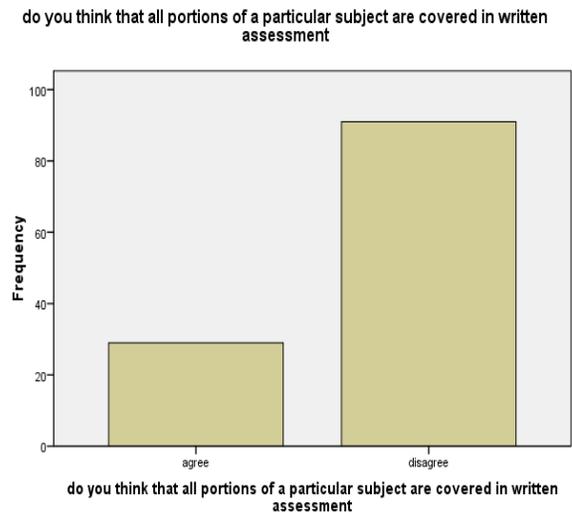


Table 1: Table showing variables in the study and the corresponding frequency and percentage

Variables	Frequency	Percentage
Sufficiency of time to fulfill tasks in written exam	Agree 69 Disagree 51	Agree 57.2 Disagree 42.5
Role of past papers in the preparation of written examination	Agree 101 Disagree 19	Agree 84.2 Disagree 15.8
Criteria for marks allocation appropriate for the content required for it	Agree 32 Disagree 88	Agree 26.7 Disagree 73.3
Paper distribution and invigilation during written exam and the interference with concentration in exam	Agree 62 Disagree 58	Agree 51.7 Disagree 48.3
Adequacy of time in viva to think before answering questions	Agree 65 Disagree 55	Agree 54.2 Disagree 45.8
Time for the entire viva for proper evaluation	<10 minutes 25 10-20 minutes 80 >20 minutes 15	<10 minutes 20.8 10-20 minutes 66.7 >20 minutes 12.5
Extent to which internal assessment affects the viva examination	Does not affect 23 May effect 91 Effects very much 6	Does not affect 19.2 May effect 75.8 Effects very much 5.0

DISCUSSION

Utilization-focused evaluation is an integral aspect of any educational course because it determines the efficacy of the assessment tools in meeting the objectives of the curriculum. As medical education aims to produce skilled physicians therefore there is an even greater need to scrutinize the evaluation methods prevalent in medical institutes. The ideal examination techniques should be able to test all the

mainstays¹⁷ of medical education i.e. knowledge, skills and attitude. This study analyzes the viewpoint of students regarding the evaluation system in a public-sector medical institute of Pakistan. The students believe that the traditional exam practices focus on memory-based knowledge and cramming of bookish material (90.8%); whereas conceptual knowledge is tested very rarely. International research also shows that traditional exams measure only one aspect of competence i.e. knowledge.⁵

According to our study, students rated the level of anxiety as severe in written examination (48.3%) and viva examination (58.3%) but only mild (70%) in OSCE. Exams are generally a time of stress for most medical students¹⁸ But research findings suggest that student-centered, problem based teaching helps students in curbing the stress levels.¹⁹ One school addressed this issue by not only providing student support but also introduced curricular changes which ultimately led to reduced levels of stress, anxiety and depression.²⁰ Another multi-school study suggests that changing examination system is an effective solution for combating stress among medical students.²¹ Thus, administrators must design the curriculum accordingly without compromising educational quality.

The major demerit of written examinations was that they promoted cramming of bookish knowledge (99%), which is of little use in practical life. Moreover assessment is affected by paper presentation (86.7%) and excessive use of sheets thus making written examination an unreliable measure to evaluate the knowledge of a student. Our research showed that students were dissatisfied with the current structure of the written examination. Majority of the students wanted the SEQs to replace LEQs (76.7%) and believed that inadequate information was given in PbQs. LEQs fail to achieve the aim of applying theory to practice. This purpose is fulfilled by PbQs but they must be worded correctly. Also, they proposed MCQs to be conceptual based (90%) and not lines taken from the book. MCQs have been widely used for comprehensive assessment in educational courses because of convenient standardization and broad sampling of knowledge.²² If poorly written, a major drawback of MCQs is that they test memory recall of facts and figures instead of application of knowledge. Nevertheless, well-constructed MCQs can test higher order diagnostic thinking and application of knowledge and evaluate the examinee's ability to integrate and review the given information.²³ In comparison with SEQs and LEQs, marking of MCQs is independent of who the examiner is thus making them a superior practice.

In a clinical examination, there are three variables – the students, the examiners and the patients. The latter two variables greatly influence^{17,24} the validity and reliability of the traditional viva examination. As in long cases, some patients are uncooperative and poor at giving history, - while some examiners tend to ask tricky or unusual questions in oral viva. This observation is corroborated by our research which illustrated that viva examination is highly subjective as there is great variability in the outcome due to different examiners (92.5%); pronounced inconsistency in the level of

difficulty of questions; viva results vary according to the mood of examiners (90%) and terms with the examiners. Thus the subjectivity makes this examination system invalid.⁶

Likewise, students were largely dissatisfied with the outcome of vivas (78.3%). They felt that conventional viva examination was unable to judge the cognitive, problem solving, interpretive and decision making skills (40%) but 36.7% of the sample size had no opinion about this matter. An overwhelming majority proposed that viva should not determine the passing/ failing of the student (83.3%). An alternative of structured oral exams was proposed. It's believed that unstructured²⁵ observations are problematic because no criteria and checklists are used. Whereas structured observations with operationalized behaviors and unambiguous criteria are a superior form of evaluation.

Another form of assessment is OSCE/OSPE which was introduced²⁶ by University of Health sciences in its affiliated medical institutes of Punjab in 2008. However, it is still not practiced in all subjects. It has replaced the table viva in the oral and clinical examinations. The objectives of this tool are not only to test factual knowledge but also to assess clinical competence, analytical thinking and communication skills. In this way, almost all facets of the curriculum are covered.

The verdict of our sample population was also in favor of this objective examination (79.2%). The allotted time at each station; clarity of instructions and relevance of the questions was found to be adequate. It is an organized and structured exposure to a wide variety of clinical skills in a relatively shorter span of time. The candidates encounter a greater number of examiners and topics thus reducing the biased scoring given by any one examiner. Asking the same questions from all students on a given day leads to standardization. Lastly, as a pre-planned marking checklist is used so consistency and reliability of testing is greatly improved.

It was found in the study that students were satisfied with the existing method of internal evaluation. The three basic determinants of internal assessment were: attendance records, practical copies/log books and monthly tests. However a significant majority of the students proposed that class evaluation tests were not conducted and marked genuinely (60.8%).

The strengths of this study are that a good sample size from a single center was taken so chances of a bias are less likely. In addition, multiple aspects of written examination, viva examination and OSCE/OSPE were probed thus providing an all-encompassing view of the current status in a public-sector medical institute. Last of all, only students of

4th year and final year were included in the sample population because they have had sufficient experience of clinical training and are in a better position to provide informed opinion.

The limitations of this study are that only students' and not teachers' perspective was investigated. As both examiners and examinees are integral stakeholders in an evaluation system so the opinion of both is very important. Also, this research was conducted in a single center which is a public-sector university with an independent examination system so these findings would not be consistent with all the other medical colleges in Punjab under the umbrella of University of Health Sciences. Lastly, an interventional study to assess the outcome of changes in curricula and evaluation system would be the best approach to analyze the success and failures of different tools of examination.

CONCLUSION

The research study showed that students were dissatisfied with certain aspects of the evaluation system of King Edward Medical University and steps are required to minimize the deficits existing presently. The students had problem with stress management and handling pre-examination anxiety. It was found that viva examination was the most dissatisfactory aspect of evaluation; the cause of which being variability due to different examiners; lack of uniformity in difficulty level and lack of adequate mock viva exams. The students were of the view that written examination should be designed on conceptual basis; the subjective part be formulated on clearly defined clinical vignettes; the LEQs be curtailed and new techniques such as Structured Oral Exams and OSPE / OSCE be promoted.

REFERENCES

1. Carraccio C, Susan D, Englander R, Ferentz K, Martin C. Shifting Paradigms: From Flexner to Competencies. *Acad Med* 2002; 77: 5:361-77.
2. Fitzpatrick JL, Sanders JR, Worthen BR. Program evaluation: alternative approaches and practical guidelines. 3rd ed. Boston (MA): Pearson Education Inc.; 2004. p.5.
3. Vassar M, Wheeler D, Davison M, Franklin J. Program Evaluation in Medical Education: An Overview of the Utilization-focused Approach. *Journal of Educational Evaluation for Health Professions*. 2010;7:1.
4. Kassebaum D. LCME accreditation standards for management of the medical school curriculum. *Academic Medicine*. 1994;69(1):37-8.
5. Evaluation of Learning Outcomes [Internet]. *iime.org* 2016 [cited 4 December 2016]. Available from <http://www.iime.org/documents/elo.htm>
6. Fluckiger J, Vigil Y, Pasco R, Danielson K. Formative Feedback: Involving Students as Partners in Assessment to Enhance Learning. *College Teaching*. 2010;58(4):136-140.
6. WHO. Accreditation of hospitals and medical education institutions - challenges and future directions. (Online) 2004 (Cited 2010 Jan 21). Available from URL: http://www.emro.who.int/whd2006/Media/PDF/RC50_Jor_2005.pdf.
7. Jaleel A, Rahman MA, Huda N. Problem-based learning in biochemistry at Ziauddin Medical University. *Biochem Mol Biol Edu* 2001; 29: 80-4.
8. NEWBLE D, JAEGER K. The effect of assessments and examinations on the learning of medical students. *Medical Education*. 1983;17(3):165-171.
9. Thurman GK, Sanders MK. Competency-based education versus traditional education: a comparison of effectiveness. *Radiol Technol*. 1987;59:164-9.
10. Al-Chalabi TS, Al-Na'ama MR, Al-Thamery DM, et al. Critical performance analysis of rotating resident doctors in Iraq. *Med Educ*. 1983; 17:378-84.
11. Harden RM, Gleeson FA. Assessment of clinical competencies using an objective structured clinical examination (OSCE) In: *ASME Medical Education Booklet No. 8*. Dundee: ASME, 1979;64:123-5.
12. Hart IR, Honden RM, Walton HJ. Newer developments in assessing clinical competence. In: Hart IR, Honden RM, Walton HJ, editors. *International Conference Proceedings*. Ottawa: Congress Centre; 1985.
13. Dissanayake AS, Ali BA, Nayar U. The influence of the introduction of the objective structured practical examinations on student performance at King Faisal University Medical School. *Med Teach* 1990;12(3-4):297.
14. Malik SL, Manchanda SK, Deepak KK, Sunderam KR. The attitudes of medical students to the Objective Structured Practical Examination. *Med Educ* 1988;22(1):40-6.
15. Razor LT, Razor RA. Test Anxiety and Study Behavior of Community College Students in Relation to Ethnicity, Gender, and Age. [Internet]. *Eric.ed.gov*. 2016 [cited 4 December 2016]. Available from: <http://eric.ed.gov/?id=ED415942>
16. Bashir A, Tahir S, Khan JS. Objectively structured performance Evaluation—a learning tool. *Biomedica* 2014;30 (2).
17. Supe AN. A study of stress in medical students at Seth GS Medical College. *J Postgrad Med* 1998; 44: 1-6.
18. Moore-West M, Harrington D, Mennin S, Kaufman A, Skipper B. Distress and attitudes toward the learning environment: Effects of a curriculum innovation. *Teaching and Learning in Medicine*. 1989;1(3):151-157.
19. Slavin SJ, Schindler DL, Chibnall JT. Medical student mental health 3.0: improving student wellness through curricular changes. *Acad Med*. 2014;89:573-7.
20. Reed DA, Shanafelt TD, Satele DW, Power DV, Eacker A, Harper W, et al. Relationship of pass/fail grading and curriculum structure with well-being among preclinical medical students: a multi-institutional study. *Acad Med*. 2011;86: 1367-73.
21. Schuwirth LWT, Blackmore DE, Mom E, Van Den Wildenberg F, Stoffers HEJH, et al. How to write short cases for assessing problem-solving skills. *Med Teach* 1999; 21: 144_50.
22. Coderre SP, Harasym P, Mandin H, Fick G. The impact of two multiple-choice question formats on the problem-solving strategies used by novices and experts. *BMC Medical Education*. 2004;4(1).
23. Mondal R, Sarkar S, Nandi M, Hazra A. Comparative Analysis Between Objective Structured Clinical Examination (OSCE) and Conventional Examination (CE) As a Formative Evaluation Tool in Pediatrics in Semester Examination for Final MBBS Students. *Kathmandu University Medical Journal*. 2012;10(1).
24. Falchikov N. *Improving assessment through student involvement*. 1st ed. New York: Routledge Falmer; 2005.
25. University Of Health Sciences Lahore [Internet]. *Uhs.edu.pk*. 2016 [cited 8 December 2016]. Available from: <http://www.uhs.edu.pk/mededudept.php>