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Introducing OSCE as an Assessment Tool for First Year Post Graduate Students in Formative Evaluation in the Department of Surgery, JNMC, DMIMS (DU), Sawangi (M),Wardha, Maharashtra

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Abstract: ***Medical education aims at the production of competent doctors with sound clinical skills. Competency encompasses six inter-related domains as developed by Accreditation Council for Graduate Medical Education (ACGME): knowledge, patient care, professionalism, communication and interpersonal skills, practice based learning and improvement, and systems based practice. Assessment of medical graduates is a vital part of medical curricula as the community needs to be protected from incompetent physicians. Objective structured clinical examination (OSCE) introduced by Harden in 1975 is a suitable form of assessing student's clinical competence. The aim of this project was to introduce OSCE as an assessment tool for first year post graduate students in formative evaluation and to assess the psychomotor skill in them. This prospective study was conducted in 6 months from January 2015 to June 2015 in the department of surgery, Jawaharlal Nehru Medical College, Sawangi (Meghe) Wardha in which twelve first year post graduate students from the department of surgery had participated. It was concluded that OSCE is a very reliable and valid method for evaluating psychomotor skills and progression of clinical and surgical skills of residents of surgical fraternity. Hence, OSCE should become a standard part of resident evaluation.***

Keywords: OSCE (Objective structured clinical examination) , ACGME (Accreditation Council for Graduate Medical Education), Psychomotor

1. Introduction

Medical education aims at the production of competent doctors with sound clinical skills. Competency encompasses six inter-related domains as developed by Accreditation Council for Graduate Medical Education (ACGME): knowledge, patient care, professionalism, communication and interpersonal skills, practice based learning and improvement, and systems based practice[(1)]. Epstein and Hundert have defined competence of a physician as "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values and reflection in daily practice for the benefit of the individuals and the community being served"(2). The community needs to be protected from incompetent physicians; and thus there is a need for summative component in the assessment of medical graduates.

Assessment is a vital part of medical curricula as it drives the learning process so it must adequately test the goals or objectives set by medical teachers[3-5]. The selection of suitable assessment or evaluation depends on its validity (a measure of the extent to which the test actually measure what is intended to measure), reliability (a measure of whether the assessment or test is consistent and accurate; examines the extent to which factors such as examiners, questions, occasions affect the marks or scores awarded) and practicability (can the requirements for staff and accommodation be met? can it cope with sufficient numbers of students?)[6-8]. Objective structured clinical examination (OSCE) which was introduced by Harden since 1975 and received an increasing interest is a suitable form of testing student's clinical competence as it fulfills most of the previous criteria[9-13].

What is an **OSCE** ?Objective • Structured• Clinical• Examination. It,

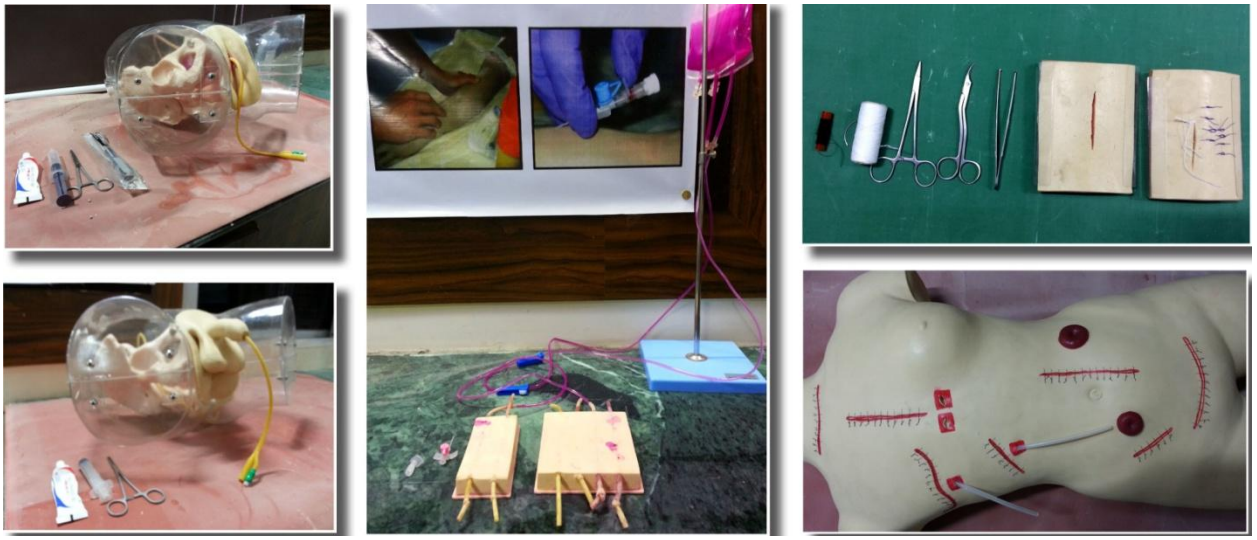
1. Ensures evaluation of set of predetermined clinical competencies.
2. Each clinical competency is broken down into smaller components; e.g., taking history, performing examination, interpreting investigations, communicating with the patient etc.
3. Each component is assessed in turn and marks are allotted according to predetermined checklists.

This educational short term project was aimed to introduce OSCE as an assessment tool for first year post graduate students in formative evaluation in the department of Surgery, JNMC, DMIMS (DU) and to assess the psychomotor skill in first year post graduate students.

2. Materials and Methods

This prospective study was conducted in 6 monthsfrom January 2015 to June 2015in the department of surgery, Jawaharlal Nehru Medical College, Sawangi (Meghe) Wardha in which twelve first year post graduate students from the department of surgery had participated. The mannequins in the surgical skill lab were utilized for this educational research.The five stations identified for the implementation of OSCE were:-

- Male catheterisation
- Female catheterization
- Intravenous canulation
- Suturing techniques
- Abdominal incisions



The checklist was prepared for every station.Orientation of faculties and student to the OSCE was done.The students were assessed by pretest (Theory) and then on mannequins (psychomotor skill).Then the students were taught regarding these five stations of OSCE along with the modules.The students were reassessed by post test (Theory) and psychomotor skills. Feedback was taken for this procedure. Evaluation was done by senior trained faculty in OSCE. 10 marks were allotted for each station and for pre and post test.

3. Observation and Results

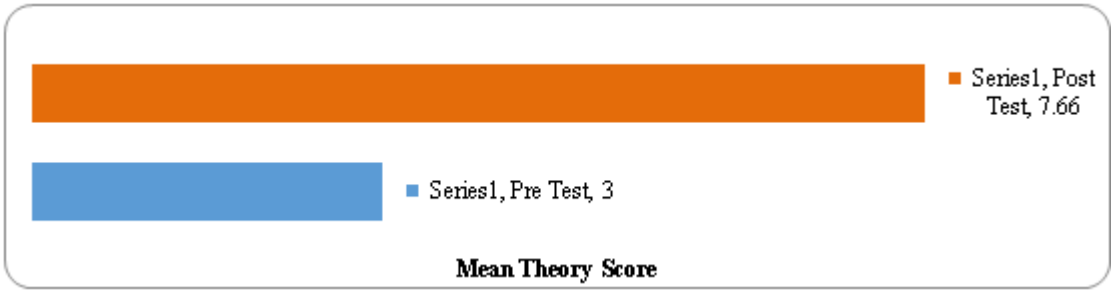
Table 1: Comparison of theory marks pre and post test

Descriptive Statistics

Marks	Mean	N	Std. Deviation	Std. Error Mean
Pre Test	3.00	12	1.60	0.46
Post Test	7.66	12	0.68	0.19

Student's paired t test

Paired Differences						t	df	p-value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre Test-Post Test	4.66	1.80	0.51	3.52	5.81	8.97	11	0.000 S,p<0.05



Graph 1: Comparison of theory marks pre and post test

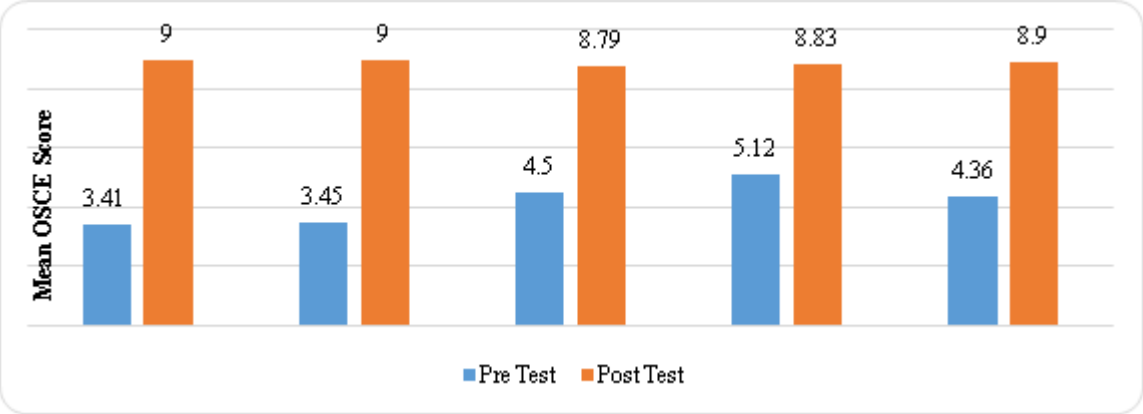
The comparison was done in the pre and post test theory marks of 12 first year post graduate students. The mean value of pre test was 3 and the post test was 7.66. The p value was <0.05 considering it to be very significant.

Table 2: Comparison of OSCE score pre and post test Descriptive Statistics

	Marks	Mean	N	Std. Deviation	Std. Error Mean
OSCE 1	Pre Test	3.41	12	1.10	0.31
	Post Test	9.00	12	0.79	0.23
OSCE 2	Pre Test	3.45	12	1.07	0.31
	Post Test	9.00	12	0.79	0 .23
OSCE 3	Pre Test	4.50	12	0.92	0.26
	Post Test	8.79	12	0.45	0.13
OSCE 4	Pre Test	5.12	12	0.64	0.18
	Post Test	8.83	12	0.65	0.18
OSCE 5	Pre Test	4.36	12	1.22	0.36
	Post Test	8.90	12	0.62	0.18

Student's paired t test

	Paired Differences					t	df	p-value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
OSCE 1	5.58	0.66	0.19	6.00	5.15	28.93	11	0.000 S,p<0.05
OSCE 2	5.54	0.65	0.18	5.95	5.12	29.27	11	0.000 S,p<0.05
OSCE 3	4.29	0.94	0.27	4.88	3.69	15.80	11	0.000 S,p<0.05
OSCE 4	3.70	0.72	0.20	4.16	3.24	17.80	11	0.000 S,p<0.05
OSCE 5	4.54	0.85	0.25	5.11	3.97	17.73	11	0.000 S,p<0.05



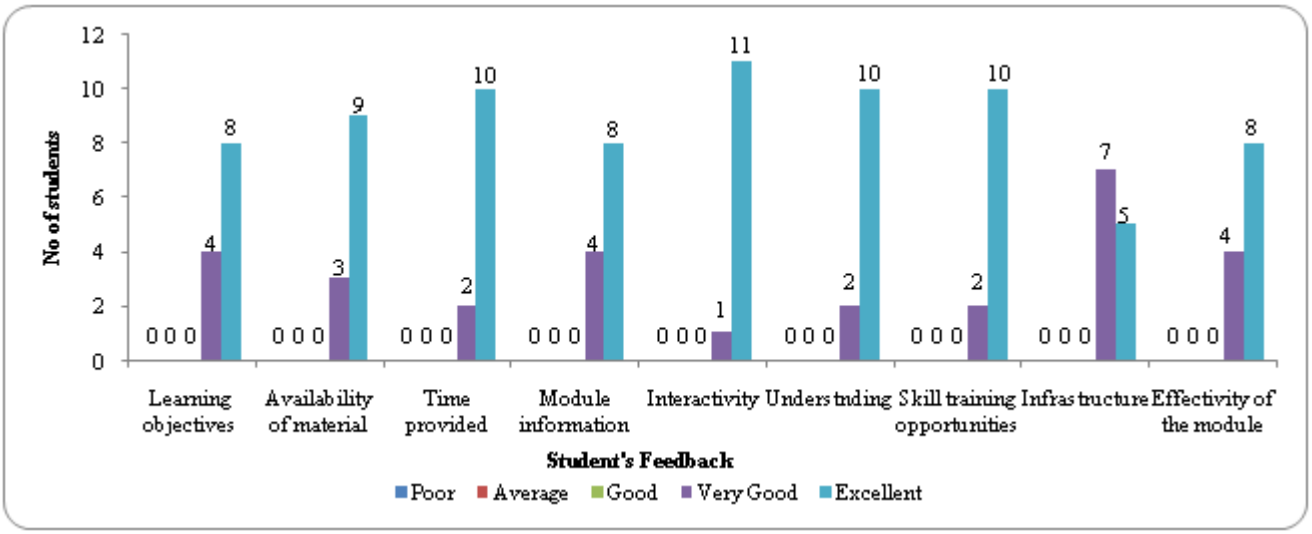
Graph 2: Comparison of OSCE score pre and post test

OSCE stations

The comparison was done of OSCE score for pre and post test for every station and every student and p value was < 0.05 for each station proving it to be significant.

Table 3: Analysis of Student's Feedback

	Poor	Average	Good	Very Good	Excellent
Learning objectives	0	0	0	4	8
Availability of material	0	0	0	3	9
Time provided	0	0	0	2	10
Module information	0	0	0	4	8
Interactivity	0	0	0	1	11
Understanding	0	0	0	2	10
Skill training opportunities	0	0	0	2	10
Infrastructure	0	0	0	7	5
Affectivity of the module	0	0	0	4	8



Graph 3: Analysis of Student's Feedback

After the student feedback analysis, it has been observed that 88% students felt that the sensitization sessions of OSCE were very interactive and excellent. 84% students felt that there was excellent understanding and skill training

opportunities with the OSCE. It has been observed that the infrastructure needs improvement.

4. Discussion

The primary goal of training programs is to produce competent practitioners. In most training programs, the performance of residents is judged by practical examination i.e. case presentation and viva voice and theory examination. Assess only a single dimension of clinical competence, that is, knowledge base. Other important aspects of clinical expertise, such as physical examination skills, interpersonal skills, technical skills, problem-solving abilities, decision-making abilities, and patient treatment skills are not assessed objectively. Recently, clinicians have focused on the Objective Structured Clinical Examination (OSCE), a multidimensional practical examination of clinical skills, as a tool for assessing clinical competence.[22-26]

Physicians recognize that clinical competence is determined by more than knowledge. Although a sound knowledge base is vital, clinical competence encompasses numerous other domains, including interviewing and interpersonal skills, physical diagnosis skills, problem solving abilities and technical skills. Unfortunately, many of the skills crucial to the competent performance ofa physician or surgeon are poorly evaluated by faculty members.[3,24]Stillman et al. noted that in many cases, internal medicine residents taking a history or performing a physical examination were never observed by faculty members.[24] Researchers have established that the reliability and validity of actually rating forms are generally poor and that these ratings do not correlate well with more objective measures of clinical competence.[20]Other studies have noted that faculty members typically inflate resident performance and are generally reluctant to underscore deficits in clinical performance.[20,21]

OSCE, now into 35th year of its existence, has had its share of bouquets and brickbats. Despite controversies, it has stood the test of the time and has come to be recognized as a standard tool of assessment of medical competencies. OSCE has been used for both formative and summative examination at graduate and postgraduate level, across the globe.The problem is more acute in the developing countries and resource poor settings, where a medical teacher has to assume the role of a consultant, service provider, researcher and administrator. This way, there is not much time the educator can spend on planning, preparing and executing an OSCE. It would be appropriate to use OSCE to assess specific clinical skills (psychomotor domain) and combine it with other methods to judge the overall competency. Verma and Singh[31] concluded that OSCE needs to be combined with clinical case presentation for a comprehensive assessment.

Panzarella and Manyon[32] have recently suggested a model for integrated assessment of clinical competence studded with supportive features of OSCE (ISPE: integrated standardized patient examination) to increase the overall validity.

Various factors can make results of OSCE less reliable include fewer stations, poor sampling, trivialization of the tasks, inappropriate checklists, time constraints, lack of standardized patients, trainer inconsistency, and student fatigue due to lengthy OSCEs. Leakage of checklists and lack of integrity of both examiners as well as students can seriously compromise the validity as well reliability. A lot of variation has been reported when different raters have observed a station, and also between the performance from one station to another.

In this study, the comparison was done in the pre and post test theory marks of 12 first year post graduate students. The mean value of pre test was 3 and the post test was 7.66. The p value was <0.05 considering it to be very significant which indicates that there is improvement in the knowledge after proper training. The comparison was done of OSCE score for pre and post test for every station and every student and p value was < 0.05 for each station proving it to be significant which indicates that there is significant difference after hands on training of the P.G. students in the surgical skill lab.

After the student feedback analysis, it has been observed that 88% students felt that the sensitisation sessions of OSCE were very interactive and excellent. 84% students felt that there was excellent understanding and skill training opportunities with the OSCE. It has been observed that the infrastructure needs improvement.

Thus, the overall student's evaluation of OSCE was encouraging as the majority of participated students performance was significantly improved after hands on training. OSCE provides the unique information about the performance of individual residents and the quality of post graduate training programmes. Traditional examination should be kept in addition to OSCE as OSCE is not suited for evaluating the cognitive domain of learning and other behaviors like team work skills. It provides unique information about the performance of individual residents and quality of post graduate training programmes. Surgical skill labs under the trained dedicated faculty play a vital role in making the post graduate students, competent and confident in the augmentation of surgical skills.

5. Conclusion

OSCE is a very reliable and valid method for evaluating psychomotor skills of residents of surgical fraternity. Because the OSCE provides a unique insight into the progression of residents' clinical and surgical competence, we believe that it should become a standard part of resident evaluation.

6. Recommendations

OSCE should be the regular activity of Post Graduate training programme as well as tool for evaluation of psychomotor domain.

The more attention and care should be directed toward organization of stations. Students perception of the OSCE change with increasing use and with introducing more specific testing which need a frequent appraisal and refinement by the department in addition to feedback from

the student.There is need for up gradation of surgical skill lab.

References

[1] Accreditation Council for Graduate Medical Education (ACGME). Outcome Project. http:// acgme.org/Outcome/. Accessed on 23 July, 2009.
[2] Epstein RM, Hundert EM. Defining and assessing professional competence. JAMA 2002; 287: 226-235.
[3] GMC. Tomorrows' doctors, recommendations on undergraduate medical education. London:GMC, 1993.
[4] Mazin A. Abdulla.OSCE, things to be said. Editorial. Bas.J.Surg. 2010; 16:5-6.
[5] Susan L Fowell, John G Bligh. Recent advances in assessing medical students. Postgraduate Med. J. 1998; 74:18-24.
[6] R.M. Harden, F.A.Gleeson. Assessment of clinical competence using an objective structured clinical examination (OSCE).Medical Education. 1979; 13(1):39-54.
[7] Carraccio C, Englander R. The objective structured clinical examination, a step in the direction of competency- based evaluation. Arch PediatrAdolesc Med.2000; 154:736-741.
[8] Louis Sibert, Jean-Pierre Mairesse, Sylvie Aulanier, Patrick Olombel, FrahcoisBecretThiberville, Jean-Marc Peron, Jean Doucert& Jacques Weber. Introducing the objective structured clinical examination to a general practice residency programme: results of a French pilot study. Medical Teacher.2001; 23(4):383-288.
[9] Belay Shitu, TsinuelGirma. Objective Structured clinical examination (OSCE): examinee's perception at department of pediatrics and child health, Jimma University. Ethiop J Health Sci.2008; 18(2):47-52.
[10] Nicholas J. Zyromski, Edgar D. Stare and Hollis W. Merrik. Surgery residents' perception of the objective structured clinical examination (OSCE). Current Surgery. 2003; 60(5):533-537.
[11] R.M. Harden. What is an OSCE? Medical Teacher.1988; 10(1):19-22.
[12] Joan A.DavisFeickert, Ilene B.Harris, David C. Anderson, Carole J. Bland, Sharon Allen, Gregory A. Poland, Leon Satran& Wesley J. Miller. Senior medical students as simulated patients in an objective structured clinical examination: motivation and benefits. Medical Teacher.1992; 14(2/3):167-177.
[13] R.M.Harden. Twelve tips for organizing an objective structured clinical examination (OSCE).Medical Teacher.1990; 12(3/4):259-2640.
[14] Harden RM, Stevenson W, Downie WW, Wilson GM. Assessment of clinical competence using an objective structured clinical examination. Br Med J 1975; 1: 447-451.
[15] Harden RM, Gleeson FA. Assessment of clinical competence using objective structure clinical examination (OSCE). Med Edu 1979; 13: 41-54.
[16] GraceanneAdamo. Simulated and standardized patients in OSCEs: achievements and challenges 1992-2003. Medical Teacher. 2003; 25(3):262- 270.
[17] J.P.Collins& R.M. Harden. AMEE Medical Education Guide No.13: real patients, simulated patients and simulators in clinical examination. Medical Teacher.1998; 20(6):508-521.
[18] RCSA. Consensus statement of the Researchers in the Clinical Skills Assessment on the use of standardized patients to evaluate clinical skills, Academic Medicine;1993: 6,475-477.
[19] Jennifer A. Cleland,Keiko Abe &Jan-JoostRethans. The use of simulated patients in medical education AMEE Guide No. 42. Medical Teacher. 2009; 31:477-486.
[20] Schwartz R, Donnelly M, Drake D, Sloan D. Faculty sensitivity in detecting medical students' clinical competence. Clin Invest Med 1993; 16(suppl):B87.
[21] Goetzl EJ, Cohen P, Downing E, et al. Quality ofdiagnostic examinations in a university hospital outpatient clinic. JAMA 1983; 249:1035-1037.
[22] Harden RM, Stevenson M, Downie WW, Wilson GM. Assessment of clinical competence using objective structured examination. Br Med J 1975; 1:447-451.
[23] Petrusa ER, Blackwell TA, Carline J, et al. A multi-institutional trial of an objective structured clinical examination. Teach Learn Med 1991; 3:86-94.
[24] Cohen R, Reznick RK, Taylor BR, et al. Reliability and validity of the objective structured clinical examination in assessing surgical residents. Am J Surg 1990; 160:302-305.
[25] Petrusa ER, Blackwell TA, Ainsworth MA. Reliability and validity of an objective structured clinical examination for assessing the clinical performance ofresidents. Arch Intern Med 1990; 150:573- 577.
[26] Sloan DA, Donnelly MB, Johnson SB, et al. Use of an objective structured clinical examination (OSCE) to measure improvement in clinical competence during the surgical internship. Surgery 1993; 114:343-351.
[27] Joorabchi B. Objective structured clinical examination in a pediatric residency program. Am J Dis Child 1991; 145:757-762.
[28] Gupta P, Bisht HJ. A practical approach to running an objective structured clinical examination in neonatology for the formative assessment of undergraduate students. Indian Pediatr 2001; 38: 500-513.
[29] Verma M, Singh T. Attitudes of Medical students towards objective structured clinical examination (OSCE) in pediatrics. Indian Pediatr 1993; 30: 1259-1261.
[30] Mathews L, Menon J, Mani NS. Micro-OSCE for assessment of undergraduates. Indian Pediatr 2004; 41: 159-163.
[31] Verma M, Singh T. Attitudes of Medical students towards objective structured clinical examination (OSCE) in pediatrics. Indian Pediatr 1993; 30: 1259-1261.
[32] Panzarella KJ, Manyon AT. A model for integrated assessment of clinical competence. J Allied Health 2007; 36: 157-164.