Comparison of performance between the Traditional Oral Examination (TOE) and OSCE among Undergraduate Medical Students

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ABSTRACT

An Objective Structured Clinical Examination (OSCE) is a tool of assessing the clinical school often used in the education system of the healthcare system. Traditional Oral Examination (TOE) is also a clinical examination where students are being tested by an examiner panel (1 or 2 members) on their clinical activities and knowledge. It is designed to objectively test competence in skills such as history taking, clinical examination, communication and clinical procedures. The Faculty of Medicine and Health Sciences of Universiti Malaysia Sabah (UMS) also use OSCE for assessing clinical students. The aim of this study was to compare the performance between the traditional oral examination (TOE) and OSCE among undergraduate medical students. Study populations were the 3rd year MBBS students of the Faculty of Medicine and Health Sciences of Universiti Malaysia Sabah (UMS). Number of students was 87. All students underwent traditional oral examination after finishing a 2 months module. The same students participated in the OSCE on the same day evening. Scores of each student were collected. Mean of the scores were calculated. P value was measured by Student's t test to evaluate the significant difference between both the variables (traditional examination mean and OSCE mean) at 5% confidence interval (CI). P-value was 0.00015 in 5% confidence level in two tailed hypotheses. As the value was less than 0.05 so null hypothesis was rejected and alternate hypothesis was accepted. There was significant difference

between the means of both the examinations. So it could be concluded that students' performance was significantly better in the OSCE over the traditional oral examination.

Key words: OSCE, Traditional Oral Examination (TOE), under graduate medical student

INTRODUCTION

One of the main aims in Medicine is to assess the clinical skill competency of the medical students at different levels of their academic years. Differences of experience, methods of instruction and ambiguous forms of assessments are the main obstacles in this form of assessment. Due to the dissatisfaction to the conventional method of assessment, in 1975 Harden and colleagues introduced a new system called Objective Structured Clinical Examination (OSCE)[1].

An Objective Structured Clinical Examination which is popularly known as OSCE is one of the new examination tools now a day frequently used in the education system of medical science. The different modules of OSCE are clinical examination, history taking, clinical procedures and communication[2].

The time allotted for each OSCE station is usually 5 – 10 minutes. In the station the student is examined by one or two impartial examiner or by any real or dummy patients (simulator patient). Candidates start rotation by clockwise or anti-clockwise manner[3]. Thus each student is examined in each station. Student's procedural skill is tested on manikin. At the end of the examination all the students are tested in all the stations. Students realize that all examinees are examined by the same tool. Different and risky procedural skills are tested without harming any real patient[3].

The name the OSCE suggests that the examination tool has designed to be very much objective. This examination tool is prepared to assess the clinical skills of the students. Due the objectiveness of the tool all students are assessed in the same stations and by the same questions. Marking scheme is same for all students. In the marking checklist mark is assigned for each correct step. All the students are examined by the same question tool, so it is very objective rather than subjective[3].

In every station of the OSCE specific task is given. The simulated patient is briefed in detail regarding the station scenario. The instruction to the SP (simulated patient) includes theoretical knowledge as well as emotional aspect. It is important that the SP delivers the same information to every student in order to make the station structured. By this structured way a huge range of skill could be assessed.

The scoring the OSCE examination is being performed by the examiner or SP. The total assigned score is divided into different component with specific instruction to the assessor. The same answer key is used for all students. The questions are set from the course content provided to the students. By using detailed scoring breakdown and using standard questions the examination process is made objective[4].

The Faculty of Medicine and Health Sciences of Universiti Malaysia Sabah (UMS) has also introduced OSCE for the clinical students successfully. The aim of this study was to compare the performance between the traditional oral examination and OSCE in undergraduate medical students. The objective was to evaluate if there is any significant difference between the performance of traditional oral examination and OSCE in undergraduate medical students. The hypotheses of the study were-

Null hypothesis (H0): There is no significant difference between traditional oral examination and OSCE in undergraduate medical students.

Alternate hypothesis (H1): There is significant difference between traditional oral examination and OSCE in undergraduate medical students.

P value was calculated by Student's 't' test at 5% confidence interval (CI).

MATERIALS AND METHODS

The study proposal was approved by Faculty of Medicine and Health Sciences of Universiti Malaysia Sabah (UMS) {JKEtika 3/15 (13)}. No examination score of any individual student was exposed. All identities of students were anonymized in the study. Safety and confidentiality of the study were ensured by following the ICH-GCP guideline.

Study populations were the 3rd year MD students of the Faculty of Medicine and Health Sciences of Universiti Malaysia Sabah (UMS). Number of students was 87. All students underwent traditional oral examination after finishing of a 2 months module. The same students have participated OSCE in the same day evening on the same module syllabus. Examiners / assessors were same in both examinations. Score sheets of the traditional oral examination and OSCE examinations were used as study materials. The scores of each student were collected. Mean of the scores were calculated. P value was measured by Student's t test to evaluate the significant difference between both the variables (traditional examination mean and OSCE mean) at 5% confidence interval.

RESULTS

This is a cross sectional study to compare performance between the traditional oral examination and OSCE among undergraduate medical students. Sample size was 87. Scores of each student of both the examinations were collected and documented on the spreadsheet. Mean of both examinations were calculated. t-values and P-values were measured to assess the statistical relationship between both means.

In all three components (Median, mode and mean) of the OSCE scores were more than the traditional oral examination (TOE) scores. Median of TOE was 70, but it was 77 for OSCE. Mode of examinations were 65 and 77 respectively. Mean scores of OSCE (75.71) was greater than that of TOE by approximately 4 (Table 1).

Table 1: Median, mode and mean of both examinations scores (N=87)

Examinations	Median	Mode	Mean
Traditional Oral Examination	70	65	71.54
OSCE	77	77	75.71

The variance and standard deviation (SD) of OSCE were less than the TOE (Table 2).

Table 2: Variance and standard deviation (SD) of both examinations scores (N=87)

Examinations	Variance	Standard deviation
Traditional Oral Examination	64.11	8.00
OSCE	36.60	6.05

In the score group 65 to 74, TOE showed a clear dominance. Most scores of TOE also lied in this frequency group. Next group was 75 to 84 score group, where OSCE scores were more than double of that of TOE scores. Most of the OSCE scores were from this group. The number of scores in 85 to 94 group were equal (07) for both the examinations. The score of only 2 students of TOE were in 95 or more range. None of OSCE students could obtain any score of 95 or above (Figure 1).
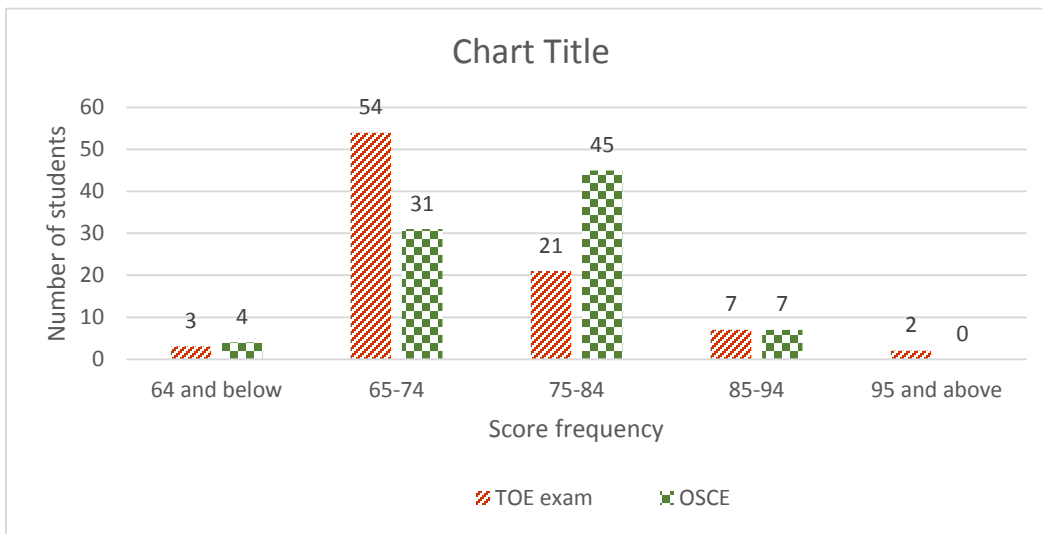
Figure 1: Distribution of scores of both examinations according to score frequencies.

Mean of OSCE was higher than that of TOE. t-value was measured by t- test and it was 3.877. P-value was 0.00015 in 5% confidence level in two tailed hypotheses. As the value was less than 0.05 so null hypothesis was rejected and alternate hypothesis was accepted. It was established that there was significant difference between the mean scores of both the examinations. On the other hand it could be concluded that students scored significantly better in OSCE over the traditional oral examination (Table 3).

Table 3: Mean, t-value and P-value of both the examination type

Examination type	Mean	t- value	P - value
Traditional Oral Examination	71.54	3.877	0.00015
OSCE	75.71		

DISCUSSION

Traditional Oral Examination (TOE) is also a clinical examination where students are being tested by an examiner panel (1 or 2 members) on their clinical activities and knowledge. In the TOE each student is interviewed for 10 minutes by the examiners in face to face manner. This cross sectional study revealed that the performances of students performed better in OSCE over traditional oral examination (TOE). Few international studies were reviewed and comparisons were performed with the result of this study.

Marliyya Zayyan (2011)[5] performed a study on the assessment choice of OSCE. National Board of Medical Examination of USA has collected data from ten thousand medical students. It was revealed that the correlation of independent assessment by two different assessors was less than 0.25. It was concluded that the selection of examiner and selection of patient contributed significant role in the outcome in the psychiatry examination by using the oral traditional examination[5].

Townsend AH et al. (2001)[6] published their study on the use of OSCE do determine the relationship between General Practice (GP) clinic attachment and finals school performance of medical students. Total 28 students took pre and post attachment OSCE assessment on similar format. Mean score of both the OSCE results were compared also performance in final medical examination was determined. Improvement was achieved in the OSCE score of post attachment scores. The scores of physical examination and problem solving score were found unrelated to their clinical experience. Final medical examination score showed a similarity with the post attachment OSCE score. This research has proven that the standard deviation (SD) is less in the OSCE format[6]. This study also established the fact that standard deviation is less in OSCE. This could be because OSCE by definition is more objective and as mentioned in the study of Townsend et al that OSCE questions are not examiner specific.

Gerry Gormley (2011)[7] concluded his study mentioning that OSCE is more reliable than the traditional assessment tools. OSCE is more competence in assessing long cases. OSCE has a high reliability but has limited validity. He suggested that this method could be used in combination with other methods. This study also concluded that mean result in OSCE was higher than that of TOE.

Nkeiruka Ameh et al. (2006)[8] published their study result on student's perception on OSCE. This study was carried out in Nigerian Medical College involving 290 medical students. Students gave their opinion about the differences between OSCE and traditional clinical examination (TCE). Comparing OSCE and TCE, 131 (84%) respondents felt TCE was a more difficult examination and 142 (91%) felt OSCE was easier to pass. One hundred and fifty-two (97.4%) felt that OSCE is a more objective test than TCE. No post examination questionnaire was used in this study to gather student's opinion, but from the standard

deviation and mean score it could be assessed that OSCE was more comfortable and objective in this study too.

R Parks et al. (2006)[9] illustrated their observation on student collusion in OSCE of UK medical students. According to their study scope of collusion is more in OSCE format and the mark of this examination does not reflect the true performance. As OSCE is becoming popular in clinical examination gradually, this result will be more relevant to assess the professional competency.

D A Sloan et al. (1995)[10] determined the usefulness of OSCE along with the reliability, validity by comparing it with the results of ABSITE (American Board of Surgery In-Training Examination). Fifty six surgical resident students had participated in a 38-station OSCE. Surgical students were divided into three groups according to their level of knowledge. The reliability of the examination of three different groups of surgical students was assessed by coefficient alpha. The result confirmed that the reliability of the OSCE was very high (0.91). Level of training has played an important role in the performance of the OSCE. This was a cross sectional study and the examination scores were collected at only one point of the student's 4th year study. Serial examination scores of the same group could highlight us more about the reliability the examination system.

While searching for any confounding factor for the improved result in OSCE it was thought to be the avoiding confronting the examiner could be an important cause. As all the OSCE stations were same for all the students it was definitely more objective, which usually gave the students a sense of comfort.

When compared with other international studies, a fair similarity was found in term of performance and reliability.

CONCLUSION

It could be concluded that students' performance was significantly better in the OSCE over the traditional oral examination. This could be an initiation for the future studies on reliability and validity of OSCE.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

REFERENCES

1. Harden Harden RM, Stevenson M, Downie WW, Wilson GM. (1975). Assessment of clinical competence using objective structured examination. *Br Med J* 22, 1 (5955):447-51.

2. Barman A. (2005). Critiques on the Objective Structured Clinical Examination. *Ann Acad Med Singapore* 34(8):478-82.

3. Ross, M., Carroll, G., Knight, J., Chamberlain, M., Fothergill-Bourbonnais, F., and Linton, J. (1988). Using the OSCE to measure clinical skills performance in nursing. *Journal of Advanced Nursing* 13: 45-56.

4. Leichner P, Sisler GC, Harper D. (1984). A study of the reliability of the clinical oral examination in psychiatry. *Can J Psychiatry* 29(5):394-397.

5. Marliyya Zayyan. (2011). Objective Structured Clinical Examination: The Assessment of Choice. *Oman Med J* 26(4): 219–222.

6. Townsend AH, McLlvenny S, Miller CJ, Dunn EV. (2001). The use of an objective structured clinical examination (OSCE) for formative and summative assessment in a general practice clinical attachment and its relationship to final medical school examination performance. *Med Educ* 35(9):841-6.

7. Gerry Gormley. (2011). Summative OSCEs in undergraduate medical education. *Ulster Med J* 80(3): 127–132.

8. Nkeiruka Ameh, Mohammed A. Abdul, Gbadebo A. Adesiyun, and Solomon Avidime. (2014). Objective structured clinical examination vs traditional clinical examination: An evaluation of students' perception and preference in a Nigerian medical school. *Niger Med J* 55(4): 310–313.

9. R Parks, P M Warren, K M Boyd, H Cameron, A Cumming, and G Lloyd-Jones. (2006). The Objective Structured Clinical Examination and student collusion: marks do not tell the whole truth. *J Med Ethics* 32(12): 734–738.

10. D A Sloan, M B Donnelly, R W Schwartz, and W E Strodel. (1995).The Objective Structured Clinical Examination. The new gold standard for evaluating postgraduate clinical performance. *Ann Surg* 222(6): 735–742.