

Perception of Clinical Dental and Medical Students towards the Objective Structured Clinical Examination (OSCE)

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ABSTRACT

Objective: To evaluate the perception of clinical dental and medical students towards Objective Structured Clinical Examination (OSCE).

Methods: This was a cross-sectional study of clinical medical and dental students. A self-administered questionnaire comprising of two sections; socio-demographic characteristics and perception of the respondents towards OSCE was used to garner data for the study. Data obtained was analysed using IBM SPSS version 21.0. The analysis was done using frequency distribution and cross tabulations. Chi square was used to test for level of significance. $P < 0.05$ was considered statistically significant.

Results: The study respondents were made up of clinical medical (79.8%) and dental (20.2%) students. Majority (98.4%) were aware that OSCE was a method of assessment. However only 28.1% correctly described OSCE. Majority (92.1%) were of the opinion that OSCEs are designed fairly while 88.9% felt OSCEs are properly organized. Less than half (43.9%) of the respondents opined that OSCEs are stress free. With regards to bias, 88.9% felt that OSCEs reduce bias related to type of clinical case while 85.4% claimed it reduces bias related to examiner. There was statistically significant association between school of respondent and perception that OSCE is stress free. There was statistically significant association between class of respondent and perception that OSCE reduces bias related to type of clinical case as well as bias related to examiner.

Conclusion: OSCE seems to be a valid and reliable assessment method among clinical medical and dental students. However, there is need to educate medical and dental students on what OSCE entails periodically before each examination.

Keywords: Dental student, medical student, OSCE, perception

INTRODUCTION

The assessment of clinical competence is of great importance in assessment of clinical medical and dental students. According to Miller's (1990) pyramid of clinical competency; the candidates are not only required to demonstrate that they know the facts in clinical practice but also know how to apply these facts. Most importantly they also need

to show that they can perform the clinical tasks and skills.

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Van der Vleuten (1996) described five criteria that any assessment instrument must have, although excelling in all criteria would be ideal, but it is usually difficult to get any assessment instrument that meets all these criteria. These criteria include; Validity, Reliability, Impact on the learner/educational program, acceptability and practicality (including the cost efficiency).

The Objective Structured Clinical Examination (OSCE) was originally developed in Dundee in the mid-seventies by Harden and Gleeson (2000). The idea was to create a test to assess clinical competences (communication, clinical examination, medical procedure, prescription, interpretation of results) of healthcare disciplines such as medicine, pharmacy, nursing, physiotherapy and radiography by making them individually rotate through a number of "stations" where they are assessed individually using precise sets of criteria.

It is designed into circuits of short (5-10min) stations in which each candidate is assigned a specific clinical task to perform. In these stations they may encounter a real or simulated patient, manikin, part-task manikin (i.e. a simulated patient in combination with a manikin), a computer based simulation (e.g. clinical video of a real patient with signs of Parkinson's disease), clinical pictures, instruments or clinical information (e.g. a fluid balance chart, blood results and an intravenous fluid prescription chart). Each station has a marking scheme or checklist with an assessor in each station who observes the candidate and scores their performance according to the marking scheme. After a set time period, a bell will signal for candidates to move on to the next station. The circuit of stations is followed in sequence by all candidates.

OSCEs are widely considered to be a reliable form of assessment Pell et al, 2010). It has become one of the most widely used methods of assessing clinical competency in healthcare education (Newble, 2004). The philosophy of OSCEs is that all candidates are presented with the same clinical tasks, to be completed in the same time frame and are scored using structured marking schemes (Harden et al, 2000). Compared to the long case, OSCEs reduce bias relating to the type of clinical case selected and who performs the assessment (Van der Vleuten 1996; Ponnampereuma et al., 2009).

Assessment of students is usually seen as a drive for learning and most students in reality feel overloaded by academic work and as such read or study areas to be assessed, which usually does not promote good learning. Consequently, to promote

learning, assessment should be educational and receive feedbacks (Wass et al, 2001). Given the perceived unfairness of the long case, OSCEs have become widely accepted and popular in undergraduate medical education (Wass et al., 2001; Ponnampereuma et al., 2009). Hence, there is need for OSCEs to be acceptable by all stakeholders (Van der Vleuten, 1996). Therefore, it is important to seek feedback from candidates involved in the OSCE.

Several studies assessing perception of nursing (Small et al., 2013) and medical students (Siddiqui, 2013; Sadia et al., 2009; Khurshed & Usman, 2007; Abdulla, 2012; Idiris et al., 2014) towards OSCE have been reported however only a few Nigerian studies on medical students (Nasir et al., 2014; Sholadoye et al., 2019) and another on dental residents (Omo & Enabulele, 2016) was found by the authors. Furthermore, understanding how OSCEs relate to other performance measures in medical and dental schools is believed to be able to help educators effectively design curricula and enhance student instructions and assessment (Zaric & Belfield, 2015). Hence this study objective was to evaluate the perception of clinical dental and medical students towards OSCE.

MATERIALS AND METHODS

This was a cross-sectional study conducted among clinical medical and dental students of the College of Medical Sciences, University of Benin. A convenient sampling technique was used to recruit participants for the study. A self-administered questionnaire comprising of two sections; socio-demographic characteristics and perception of the respondents towards OSCE.

Ethical approval for the research work was obtained from the University of Benin Research and Ethics committee. Informed consent was obtained from all the participants after the aim of the study was explained to each student and given the opportunity to decide to be part of the study. Also, they were assured that the information would remain confidential and used for the research purpose only.

Data obtained was analysed using IBM SPSS version 21.0. The analysis was done using frequency distribution and cross tabulations. Chi square was used to test for level of significance. $P < 0.05$ was considered statistically significant.

RESULTS

A total of 260 questionnaires were administered however, 253 were returned giving a 97.3% response rate. The study respondents were made up of clinical medical (79.8%) and dental students

(20.2%). Final year students made up 35.2% of the respondents while 24.5% were in fourth year and 40.3% were in their penultimate year. Majority

(67.2%) belonged to the 21-25 years age group. There was a male preponderance with males accounting for 64.8% (Table 1)

Table 1: Demographic characteristics of the respondents

Characteristics	Frequency (n)	Percent (%)
Class		
400 level	62	24.5
500 level	102	40.3
600 level	89	35.2
School		
Medical	202	79.8
Dental	51	20.2
Gender		
Male	164	64.8
Female	89	35.2
Age group (years)		
<20	5	2.0
21-25	170	67.1
26-30	70	27.7
>30	8	3.2
Total	253	100.0

Majority (98.4%) were aware that OSCE was a method of assessment. However only 28.1% correctly described OSCE as circuits of short (5-10min) stations in which each candidate is assigned a specific clinical task to perform, while 46.2% had an idea of what OSCE entails.

The number of OSCEs the respondents have been exposed to range from 1 to 9 with a mean of 2.45 ± 1.5 . There was statistically significant difference in the mean number of OSCEs by school ($p=0.001$) with dental students having a higher

mean number of OSCEs (2.73 ± 1.8) compared to their medical colleagues (2.38 ± 1.4). There was statistically significant association between class and mean number of OSCEs the respondents were exposed to ($P<0.0001$). There was significant difference in mean number of OSCEs between 400 and 500 level with the mean number of OSCEs in 400level significantly lower than among those in 500 Level. OSCE was acceptable for assessment of practical/clinical skills by 85.4% of the participants (Figure 1).

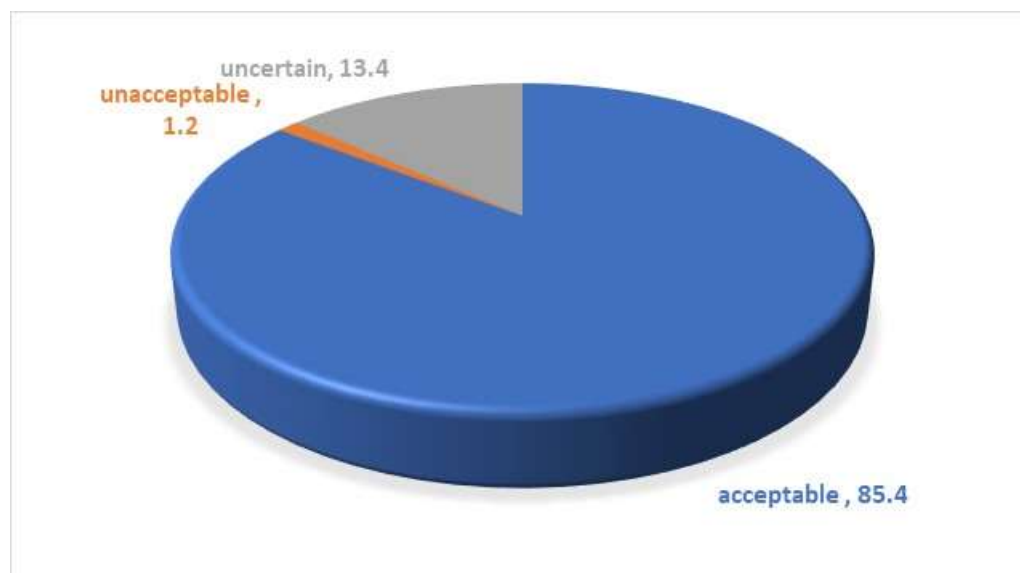


Figure 1: Acceptability of OSCE as an assessment method for practical/clinical skills by the respondents

Table 2: Perception of the respondents about OSCE

OSCE is	Yes n (%)	No n (%)	Uncertain n (%)
A practical examination	240 (74.9)	4 (1.6)	9 (3.6)
Designed fairly	233 (92.1)	16 (6.3)	4 (1.6)
Organized properly	225 (88.9)	24 (9.5)	4 (1.6)
Stress free	111 (43.9)	139 (54.9)	3 (1.2)
Reduces bias related to type of clinical case	225 (88.9)	22 (8.7)	6 (2.4)
Reduces bias related to examiner	216 (85.4)	31 (12.3)	6 (2.4)
An educative examination	210 (83.0)	33 (13.0)	10 (4.0)

Table 3: Perception that OSCE reduces bias related to type of clinical cases by class and school

Characteristics	OSCE reduces bias related to type of clinical cases			Total n (%)	P-value
	Yes n (%)	No n (%)	Uncertain n (%)		
School					0.6
Medical	179 (88.6)	19 (9.4)	4 (2.0)	202 (100.0)	
Dental	46 (90.2)	3 (5.9)	2 (3.9)	51 (100.0)	
Class					0.01
400 level	53 (85.5)	8 (12.9)	1 (1.6)	62 (100.0)	
500 level	85 (83.3)	12 (11.8)	5 (4.9)	102 (100.0)	
600 level	87 (97.8)	2 (2.2)	0 (0.0)	89 (100.0)	
Total	225 (88.9)	22 (8.7)	6 (2.4)	253 (100.0)	

Table 4 Perception that OSCE reduces bias related to examiner by class and school

Characteristics	OSCE reduces bias related to examiner			Total n (%)	P-value
	Yes n (%)	No n (%)	Uncertain n (%)		
School					0.3
Medical	169 (83.7)	28 (13.9)	5 (2.5)	202 (100.0)	
Dental	47 (92.2)	3 (5.9)	1 (2.0)	51 (100.0)	
Class					< 0.0001
400 level	45 (72.6)	15 (24.2)	2 (3.2)	62 (100.0)	
500 level	83 (81.4)	15 (14.7)	4 (3.9)	102 (100.0)	
600 level	88 (98.9)	1 (1.1)	0 (0.0)	89 (100.0)	
Total	216 (85.4)	31 (12.3)	6 (2.4)	253 (100.0)	

With regards to the respondents' perception of OSCE, Table 2 shows that 94.9% of the respondents perceived OSCE to be a practical examination. Majority (92.1%) were of the opinion that OSCEs are designed fairly while 88.9% felt OSCEs are properly organized. Less than half (43.9%) of the respondents opined that OSCEs are stress free. With regards to bias, 88.9% felt that OSCEs reduce bias related to type of clinical case while 85.4% claimed it reduces bias related to examiner.

Table 3 depicts statistically significant association between class of respondent and perception that OSCE reduces bias related to type of clinical case.

The proportion of respondents who had this opinion increased with increase in level of study ($p=0.01$), but no association between this and whether the respondent was a medical or dental student ($p=0.60$).

Table 4 shows statistically significant association between class of respondent and perception that OSCE reduces bias related to examiner. The proportion of respondents who expressed this view increased with increase in level of study ($p<0.0001$), but then again, no association was observed by school i.e whether the respondent was a medical or dental student ($p=0.30$).

Table 5: Perception that OSCE is stress free by class and school

Characteristics	OSCE is stress free			Total n (%)	P-value
	Yes n (%)	No n (%)	Uncertain n (%)		
School					0.02
Medical	80 (39.6)	119 (58.9)	3 (1.5)	202 (100.0)	
Dental	31 (60.8)	20 (39.2)	0 (0.0)	51 (100.0)	
Class					0.6
400 level	24 (38.7)	38 (61.3)	0 (0.0)	62 (100.0)	
500 level	44 (43.1)	56 (54.9)	2 (2.0)	102 (100.0)	
600 level	43 (48.3)	45 (50.6)	1 (1.1)	89 (100.0)	
Total	111 (43.9)	139 (54.9)	3 (1.2)	253 (100.0)	

Table 5 displays statistically significant association between school of respondent and perception that OSCE is stress free ($p=0.02$). A higher proportion of dental students (60.8%) felt that OSCE was stress free compared to medical students (39.6%). No association was observed between this and the level of study of the respondents ($p=0.60$).

DISCUSSION

Assessment provides a crucial role in the educational process. Not only does it check that learning has occurred but it can provide a powerful influence on future learning (Swanson, 1987; Van der Vleuten, 1996). The current emphasis in education is moving away from "assessment of learning" to "assessment for learning" (Van der Vleuten, 1996). OSCEs have the capacity to evaluate skills and knowledge required for competent clinical practice, hence they are often used as an all-inclusive assessment method to ensure minimum capabilities among medical and dental students (Hamann et al., 2002).

A high response rate was recorded in this study showing that students are willing to take part in educational research. The ratio of medical to dental students recorded in this study of about 4:1 is in keeping with the approved admission quota for medical and dental student in University of Benin (150 medical students and 25 dental students) by the Medical and Dental Council of Nigeria (MDCN).

The age group most represented in this study (21-25 years) is similar to reports from other Nigerian studies among medical and dental students (Okoh & Enabulele, 2014; Enabulele & Okoh, 2014; Akhigbe & Enabulele 2015; Enabulele & Omo 2015; Enabulele et al., 2015; Sholadoye et al., 2019). There was a male preponderance observed in this study which is consistent with other Nigerian studies on medical and dental students (Okoh & Enabulele, 2014; Enabulele & Okoh, 2014; Akhigbe & Enabulele 2015; Enabulele & Omo 2015; Enabulele et al., 2015; Sholadoye et al., 2019) as

well as studies in some other climes among dental students (Shahzad et al, 2017) and medical students (Khan et al., 2016). This portrays a gender disparity in undergraduate medical and dental students in our setting with medicine and dentistry still a male dominated profession.

OSCE was acknowledged as a method of assessment in this study. This is because it has become one of the most widely used methods of assessing clinical competency in healthcare education (Newble, 2004) and the respondents in this study have all been exposed to various form of clinical examination including OSCE. That students acknowledge a method of assessment does not mean they really understand what the assessment method entails as observed in this study with only 28.1% correctly describing OSCE and 46.2% having an idea of what OSCE entails. This shows lack of total understanding of OSCE and its requirements and the need for students to receive adequate orientation on what OSCE entails periodically before each examination.

A statistically significant difference in the mean number of OSCEs by school was observed in this study, with dental students having a higher mean number of OSCEs compared to their medical counterparts. This increase can be attributed to the increased number of examinations dental students write before final year as compared to their medical counterparts at the University of Benin. Increase in study level expose students to more examinations as it is a pre-requisite to move from one study level to another hence there was statistically significant association between study level and mean number of OSCE with the mean number of OSCEs in 400 level significantly lower. This is because it overcomes the limitations of examiner bias and fairness of other forms of examination as each station is same for every student.

The study showed that student perceive OSCE to be a clinical examination mode as it tests clinical and communication skills both across patients and

other stations. This study supported previous reports that OSCEs are designed fairly (Shahzad et al., 2017; Khan et al., 2013; Khan et al., 2016) and are properly organized (Shahzad et al 2017; Khan et al, 2016). The proportion of those who opined that OSCEs are stressful in this study is less than that reported in previous studies (Khan et al., 2013; Khan et al., 2016; Nasir et al., 2014; Garouski et al., 2014).

This study showed that medical and dental students believe that OSCE reduces bias related to type of clinical case as well as bias related to examiner a finding similar to a previous study among medical students (Sholadoye et al., 2019). This may be because the philosophy of OSCEs is that all candidates are presented with the same clinical tasks, to be completed in the same time frame and are scored using structured marking schemes (Harden and Gleeson 2000), thereby reducing bias relating to the type of clinical case selected and who performs the assessment (Van der Vleuten, 1996; Ponnampetuma et al., 2009). Furthermore, this shows that irrespective of school, (Dental or Medical) there was significant reduction in examiner bias, increased reliability and validity of the examination which is in line with the ideal characteristics of any method for assessment of clinical competence of students.

A statistically significant association was noted between class of respondent and perception that OSCE reduces bias related to type of clinical case as well as bias related to examiner. This may be because the higher study levels have been exposed to more OSCEs and hence tend to be more convinced as all students are exposed to same clinical station and circumstances.

A higher proportion of dental students felt that OSCE was stress free compared to medical students. This maybe because the stations the medical and dental students are exposed to are not the same giving the different curriculum they operate.

CONCLUSION

OSCE seems to be a valid and reliable assessment method based on medical and dental students' perception. However, there is need to educate medical and dental students on what OSCE entails periodically before each examination.

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Conflict of interest

The authors declare that they have no conflicts of interest.

REFERENCES

- Abdulla MA (2012). Students perception of Objective Structured Clinical Examination in surgery at Basrah college of medicine. *Basrah J Surg*; 18:1-6
- Akhigbe KO, Enabulele J (2015). Learning environment in a Nigerian dental school: students' perception *Afr J Oral Maxillofac Pathol Med*; 2:23-29.
- Enabulele JE, Anago OJ, Omo JO (2015). Perception of clinical dental students and interns towards prosthodontics and factors influencing its' choice as a future career. *Nig Dent J*; 23:155-160.
- Enabulele JE, Okoh M (2014). Oral health attitudes and behavior among graduating medical students at the University of Benin, Benin City, Nigeria. *Ann Biomed Sci*; 13:36-42.
- Enabulele JE, Omo JO. 2015. Knowledge and attitude of final year medical students to first aid management of traumatic tooth avulsion: a cross-sectional survey. *J Med Biomed Res*; 14:54-63
- Garouski SK, Taher SM, Al-Tawaty AI (2014). Dental students' perception and attitude towards their first exit objective structured clinical examination. *Dent*; 4:243 doi:10.4172/2161-1122.1000243
- Hamann C, Volkan K, Fishman MB, Silvestri RC, Simon SR, Fletcher SW (2002). How well do second year students learn physical diagnosis? Observational study of an objective structured clinical examination (OSCE). *BMC Med Educ*; 2:1. doi.org/10.1186/1472-6920-2-1.
- Harden RM, Gleeson FA. 2000. Assessment of clinical competence using an objective structured clinical examination. *Med Educ*; 13:41-54.
- Idiris SA, Hamza AA, Elhaj MAB, Elsiddig KE; Hafis MM, Adam ME (2014). Students' perception of Surgical Objective Structured Clinical Examination at final year MBBS, University of Khatoum. *Sudan Med J*; 1;17-20.
- Khan A, Ayub M, Shah Z (2016). An audit of the medical students' perceptions regarding objective structured clinical examination. *Educ Res Int: Article ID 4806398*:4. doi:10.1155/2016/4806398.
- Khan KZ, Gaunt K, Ramachandran S, Pushkar P (2013). The objective structured clinical exam (OSCE): AMEE guide no. 81—part II: organisation & administration. *Med Teacher*; 35(9):e1447–e1463.

- Miller GE (1990). The assessment of clinical skills, competence and performance. *Acad Med*; 65: 563-7.
- Nasir AA, Yusuf A, Abdar Rahman LO, Babalola OM, Adeyeye AA, Popoola AA et al (2014). Medical students' perception of Objective Structured Clinical Examination; A feedback for process improvement. *J Surg Educ*; 71:701-706
- Newble D (2004). Techniques for measuring clinical competence: objective structured clinical examinations. *Med Educ J*; 38(2):199-203.
- Okoh M, Enabulele JE (2014). Influence of clinical experience on oral health attitude and behavior of dental students attending a Nigerian university. *Odonto Trop*; 37:25-31.
- Omo JO, Enabulele JE (2016). Perception of postgraduate dental resident doctors towards the objective structured clinical examination. *J Educ Ethics Dent*; 6:14-19.
- Pell G, Fuller R, Homer M, Roberts T (2010). How to measure the quality of the OSCE: A review of metrics – AMEE guide no.49. *Med Teacher J*; 32:802-811.
- Ponnamperuma GG, Karunathilake IM, McAleer S, Davis MH (2009). The long case and its modifications: a literature review. *Med Educ J*; 43(10):936-941.
- Sadia S, Sultana S, Fereesa Wagar F (2009). Objective Structured Clinical Examination as an assessment tool; perception of undergraduate medical students. *Anaesthesia Pain and Intensive Care*; 13:65-67
- Shahzad A, Bin Saeed MH, Paiker S (2017). Dental students' concerns regarding OSPE and OSCE: a qualitative feedback for process improvement. *Br Dent J*; 3: 17009; doi:10.1038/bdjopen.2017.9;
- Sholadoye TT, Tolani MA, Aminu MB, Maitama HY (2019). Clinical examination among medical students: Assessment and comparison of the strengths and weaknesses of objective structured clinical examination and conventional examination. *Nig J Surg*; 25:208-212.
- Siddiqui FG (2013). Final year MBBS students' perception for observed structured clinical examination. *J Coll Physic Surg Pak*; 23;20-24
- Small LF, Pretorius L, Walters A, Ackerman M, Tohifugula P (2013). Students' perceptions regarding the Objective Structured Clinical Evaluation as an assessment approach. *Health SA Gesondheid*. 18 – Available at H=<http://doi.org/10-4102/hsag.v18i1.629>
- Swanson DB (1987). A measurement framework for performance-based tests. In: Hart I, Harden R, editors. *Further developments in assessing clinical competence*. Montreal: Can-Heal; 13 – 45.
- Van der Vleuten CP (1996). The assessment of professional competence: developments, research and practical implications. *Advan Health Sci Educ.*; 1:41-67.
- Wass V, Van der Vleuten C, Shatzer J, Jones R (2001). Assessment of clinical competence. *Lancet.*; 357:945-949.
- Zaric S, Belfield LA (2015). Objective Structured Clinical examination (OSCE) with immediate feedback in early (preclinical) stage of the dental curriculum. *Creative Educ*; 6:585-593.