The performance profile of medical students in the mock objective structured clinical examination

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ABSTRACT

Objective: Acquisition of clinical skills, after completing a course in the basic sciences, is an essential aspect of undergraduate training in any medical school. These skills are usually divided into 3 broad categories: namely, history taking, physical examination and selection of the appropriate laboratory investigations. At the end of the clerkship, the students' clinical skills have to be assessed. The main objective was to describe the performance profile of a group of medical students while examing a distended abdomen in the United Arab Emirates.

Methods: This paper describes the performance profile of 24 randomly selected medical students in a mock objective structured clinical examination of a patient with distended abdomen in the hospital environment. Marks were allotted according to the checklist of the performance expectations. For the assessment used in this paper, ability to perform a step of the clinical examination was rated positive and documented.

Results: The performance profile of the students was very good to excellent, corresponding to 9 out of 10 marks. All students identified or excluded the common signs of clinical ascites. The signs uncommonly seen in this area, such as Dupytren's contractures, were excluded by 20 of 24 (83%) students.

Conclusion: The excellent performance is attributed to a greater exposure to patients with mainly gastrointestinal disorders during the clerkship. The main advantage of an objective structured clinical abdominal examination, which is set up in a hospital environment, is that it reflects the real life situation of a practising physician, as opposed to using simulated patients. Although, a structured clinical examination is labor-intensive and costly, the advantages outweigh the work and cost of setting it up.

Keywords: Objective structured clinical examination, ascites.

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During the first 2 to 3 years in the Faculty of Medicine, the students in most medical schools are equipped with a lot of theoretical knowledge of the basic sciences, after which they are taught to apply it to patient care. This process involves sessions in the clinical methods of patient management in the in and outpatient setting over a period of time. This is usually defined by the particular medical school according to the needs and expectations of the society, whose economic resources have been used to build the medical school. The level of competence and knowledge, at which the medical students enter the clinical years, further defines the time needed for acquisition of clinical skills. During the clerkship, the student is taught how to approach patients for physical examination (PE), especially the method of dealing with the feelings of anxiety and vulnerability, which some patients exhibit from being exposed to a young doctor or a physician of the opposite sex. During PE, the student learns how to examine the body systematically, and how to apply the general principles of PE in terms of inspection, palpation, percussion and auscultation in an appropriate manner to different parts of the body, in order to detect abnormalities. At the end of the clerkship, these

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skills have to be examined. The choice of the method for the examination of the undergraduate medical students has varied from using an unstructured, a semi-structured to a highly structured method of assessing the clinical skills of the students. It also depends on available facilities and the officially preferred method of assessment in the faculty. In the unstructured method, there is room for the introduction of subjective interference in the assessment of the students, whilst the highly structured assessment technique, if held objective and reproducible, leaves no room for the introduction of subjective variables. One such attempt to remove subjective bias and variables from the examiners assessment materialized in the work of Harden et al (1975),[1] which formed the basis of the popularly used objective structured clinical examination (OSCE) today. Objective structured clinical examination has been used extensively,[2-11] either to evaluate the clinical skills of individual students[4-6,10] or it has been modified to make more objective, the contents of teaching sessions.[5,9] Its use has been established as a reliable and valid clinical examination in nearly every discipline.[2-11] The basic question that a clinical examination wants to answer is whether disease or a particular syndrome is present or not. This paper sets out to describe the performance profile of a group of medical students, who were assessed while examining a distended abdomen during a mock (formative) examination. A mock examination environment has been chosen for the study because the students are usually relaxed during a formative examination, thereby making it possible for their performance during the mock examination to reflect closely their "true" performance. The examiner on the other hand can afford to be as strict as possible during a mock examination.

Subjects. Twenty-four students male and female (M/F = 6/18), mean age 23.5 years, were examined during the mock examination, at the OSCE station for clinical ascites. Neither the students nor the examiners were aware that the mock examination results were going to be published. The students have the same point of entry into the Junior Medical Clerkship. They are students who have learnt some basic skills in history taking and physical examination of the major systems of the body during their 4 years of basic sciences module courses (2 years each of Medical Sciences and Organ System Course), which preceded the clerkship. At the beginning of the clerkship, each student had received a clerkship booklet, which contained the main goals of the clerkship (Table 1), and the predetermined curricular objectives.

Methods. This is related to the goals and specific objectives of the clerkship, and the performance expectations of the students during the OSCE session. In the station for clinical ascites, the student is presented with a patient with an obvious abdominal swelling and his ability to demonstrate the relevant clinical signs of ascites and formulate a working diagnosis, with other possible diagnoses, is assessed. The station for clinical ascites is part of a mean of 7 manned stations, which have been used during all mock OSCE. The stations comprise patients with diseases affecting the main anatomical systems (the cardiovascular, endocrine, hematological and the respiratory systems, gastrointestinal tract (GIT), the peripheral and the central nervous systems), in addition to stations for data interpretation.

Performance expectations in any station. Design of an OSCE station, with the complete checklist of the components of the particular clinical skill expected for each station, is based on the objectives of the medical clerkship and what the undergraduate medical student should have achieved at the end of it. Marks are awarded for the itemised components of the skill, to a total of 10 (Table 2). For the assessment used in this paper, ability to perform a step of the clinical examination was rated positive and documented. The students and examiners were blinded to the possibility of publishing the results.

The Task. The main task was for the students to examine the patients abdomen plus other relevant parts of the body, and show that the abdominal distension was due to chronic liver disease.

Results. Twenty-two students (92%) introduced themselves to the patient and all explained to the patient what their intention was. Twenty of 24 students (83%) stood at the foot of the bed, so as to do a general inspection of the abdomen and comment on its external features. The other 4 students corrected themselves before proceeding with the clinical examination. All students looked for gynecomastia and spider nevi. At the beginning of the clinical examination, all stood on the right side of the patient and examined the hands for palmar

Table 1 - Brief formulation of the goals of the clerkship.

	The clerkship will help the student to:
1	Perform clinical examination and take history
2	Develop basic medical problem-solving and patient management abilities
3	Demonstrate other clinical skills
4	Expand his/her knowledge of common disease processes
5	Develop the ability of independant clinical judgement and self-evaluation

Table 2 - Shows the expected performance of a student in the station with a patient for clinical ascites.

Skills to be tested: Examination of the abdomen and other relevant areas of the body **Diagnosis: Inactive liver cirrhosis** **Task:Could you examine this man's abdomen? You have 7 minutes for the task.** **Responses: The student should be able to** **Performance Expectatons: The student should**	
1. Introduce himself to the patient	1 point
2. Explain to the patient what he wants to do	1 point
3. Stand at the foot of the bed and inspect the abdomen and other relevant parts of the body	1 point
4. Examine the hands (clubbing), eyes (jaundice) ± mouth	1 point
5. Palpate the abdomen excluding the inguinal regions	2 points
6. Percuss over the hepatic and splenic areas	2 points
7. Examine the left upper quadrant carefully	2 points
Total: 10 points (maximum)	
Duration: 6 minutes	
Transfer: 1 minute	
Instruction to the examiner: Please tick the checklist for each student	

erythema and finger clubbing. Twenty students (83%) excluded the presence of Dupytren's contracture of the hand, this being one of the physical signs a practising physician is unlikely to find in an average Emirati with chronic liver disease (Table 3). All examined the eyes for the presence or absence of jaundice and only 5 of the 24 students (21%) considered excluding the presence of parotid gland swelling. The two-way shifting dullness was well demonstrated by 15 students (62%), whilst the rest needed to be reminded by the examiner. The fluid thrill was well elicited by all. All formulated a working diagnosis, which was based on the findings obtained during the clinical examination.

Table 3 - Shows the clinical signs which may not be found in an average Emirati with chronic liver disease.

Number	Clinical Signs
1	Dupytren's contracture
2	Caput medusae
3	Other signs of chronic alcohol abuse in a patient with liver cirrhosis

Discussion. In clinical practice, the main aim of the clinician at the patient's bedside, has always been the use of the findings obtained during the physical examination to make a working diagnosis, which is later to be supported or refuted by the results of the laboratory investigations. Clinical ascites presenting as mild, moderate or severe abdominal distension may have several causes. These may range from pancreatic, over a cardiac to a hepatic cause, which is by far the most common cause of ascitic abdominal distension. The main task of the student during the objective structured clinical examination on clinical ascites, is to use the findings on physical examination to answer the question: Does this patient have ascites? This aim is achieved by using a checklist of evidence-based clinical examination steps to allot marks to the students' examination skills. The use of a checklist of pre-determined evidence-based performance expectations has many advantages. First, its use ensures objectivity and fairness towards the examinee. Second, any general internist can be asked, in the case of unavoidable absence of an examiner, to examine the students in the station for clinical ascites. Third, it facilitates marking. Fourth, one major advantage is that it has allowed us to identify areas of deficiencies of the students and weaknesses in our teaching methods. The weakness in the teaching method is corrected the following semester, and the students with deficiencies receive extra attention during the clinical sessions before the end of-clerkship assessment. Fifth, the most important of all, it helps to remove any controversies during the feedback sessions with the students. The importance of a feedback session becomes apparent, if it is recognised that the main concern of the students is their performance (grades) during the examination. Finally, the use of a checklist has also been very helpful, in that failure to perform well in this or another case was not disputed and excellent performance was considered justified by the participants. Others,[6-7] who reported a high reliability score of OSCE, and that OSCE as a method of clinical assessment, was well received by most of their candidates has confirmed our experience. However, problems arise during an OSCE session in a station with clinical ascites, which are linked to the type of patients used for the examination, and the hospital environment in which the OSCE is conducted. These problems are anticipated and solutions need to be at hand so as not to disrupt the clinical examination. Unavoidable withdrawal of patients shortly before, and worse still during the OSCE, due to deterioration of the patient's clinical condition, is a major problem. Booking of 1 or 2 extra patients is therefore, mandatory. This should not encourage course directors to opt for using simulated instead of real patients due to the convenience of using the former. It is important to bear in mind that the use of live patients in an OSCE

system of this type reflects per excellence the budding physicians' future professional lives. The OSCE, in particular the mock OSCE, has been well received by the participating non-faculty physicians, as a new method of clinical assessment, and is perceived by our students to be a fair method of assessing their knowledge and clinical skills acquired before the end-of-clerkship OSCE. In general, an OSCE is labour-intensive. The examiners' team has to be informed well in advance, so as to ensure that they are not engaged elsewhere at the time of the clinical examination. Advance planning is also required for the gastrointestinal disease patients who are going to be used for OSCE in a station for clinical ascites, so that they are not taken away for any procedures or a liver ultrasound scan before the OSCE session starts. The performance profile of the students in the clinical ascites station has been very good. The overall performance was thought to be very good in view of the fact that more than 80% of the performance expectations were achieved in basic areas of clinical skills, such as introducing themselves and explaining their intentions to the patient before commencing with the clinical examination. Common place clinical experience shows that patients are often satisfied with physicians who take their time to communicate well with them. Furthermore, this overall assessment was found justified because the examinees still had enough time to improve on their level of performance, before their end-of-session examination. Besides, they would go through a senior medical clerkship before their Bachelor of Medicine degree examination. The reasons for the very good to excellent performance in the examination of the abdomen may be put down to the type of patients they had been exposed to during their medical clerkship. A substantial proportion of the patients admitted into the Department of Internal Medicine of the hospital used for the OSCE, have been patients with predominantly gastrointestinal tract diseases. Another reason for the excellent performance is rehearsal by the students before the examination of the expected performance in each system, as this has been published in the clerkship booklet, in order to aid student learning.

Practise points. 1. An objective structured clinical examination, as applied to the physical examination of the abdomen in order to detect ascites, is a reliable method of assessing the ability of the undergraduate medical student to identify clinical ascites in a patient with abdominal distension. 2. The use of real patients with ascites has the advantage of reflecting the students' future professional lives. 3. The OSCE, in general, is labor-intensive and costly but the advantages outweigh the work and cost of setting it up.

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