

The Watched Structure Clinical Examination (WASCE) as a tool of assessment

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ABSTRACT

Objective: Assessment of medical students' clinical competencies is still evolving. The aim of this study was to find out the effectiveness of a new tool of assessment to assess medical students at the end of clinical rotations.

Methods: A new tool has been developed in the College of Medicine and Medical Sciences, Arabian Gulf University, Manama, Bahrain, called the Watched Structure Clinical Examination (WASCE). It was used at the end of the Family Medicine clinical rotation during the academic year 2000-2001 involving 62 final year students.

Results: The study found a significant statistical correlation between the students' results in the WASCE and

their results in Doctor of Medicine final examination, which included the written examination, the patient encountered clinical examination and the Objective Structured Clinical Examination (OSCE).

Conclusion: Watched Structured Clinical Examination can be a useful method of assessment for examining certain clinical skills, with an advantage over the OSCE in that it is less time consuming, more cost effective, requires less supervising staff to conduct the examination and, more importantly, it is less stressful to the students.

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Medical schools over the last 2 decades have increasingly recognized the importance of the skills involved in communicating with patients.¹⁻³ Moreover, medical students during their training period are expected to acquire many skills that are related to communication, attitude and behavior that cannot be tested in a written format, but rather in a clinical examination. Efficient improvements in the evaluation systems of such knowledge and competency could only be accomplished if proper care is given to these procedures.⁴⁻⁶ The adoption of problem based learning (PBL) curriculum with a new program in communication skills in the College of Medicine and Medical Sciences (CMMS) of the Arabian Gulf University (AGU), Manama, Bahrain, has created a challenging environment encouraging the development of new assessment methods that incorporate theoretical knowledge with clinical skills. Such ideas have also

been developed at the Liverpool University, College of Medicine.⁷ The cognitive elements that are taught at AGU include recognition, appreciation of specific skills and thinking of alternative skills for application in certain patient-clinician interactions. Arabian Gulf University is based in Bahrain and the students enrolled in the CMMS came from the GCC countries.⁸ The CMMS's curriculum extends over 6 years with 3 main phases: Phase I - the premedical year, Phase II - the preclinical unit phase (3 years) and Phase III - the clerkship phase (2 years).⁹ One of the clerkship rotations in Phase III, where students spend 6 weeks in their own countries attached to a Primary Health Care Center, is the family medicine rotation. At the end of this rotation the students are assessed in their own countries by their training supervisor using a structured assessment form and then in Bahrain by a clinical examination (patient-encounters).¹⁰ Since the number

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of students was high and the time was limited before the end of the year, a new method of examination called the Watch Structure Clinical Examination (WASCE) was thought of which would serve some of the purposes of a structured clinical examination but within a limited time with fewer faculty involved, aiming to test the students' acquired competencies in clinical skills, communication skills and knowledge. The WASCE is almost similar to the OSCE but with the advantages that it is less time consuming, requires less manpower, is more cost effective and was thought to be less stressful to the students. The aim of this study is to evaluate a new method of assessment called the WASCE, which should be efficient and simple to administer to a large group of students in a short examination time and able to test specific areas related to cognitive aspects of clinical training, clinical skills and knowledge. The study also aimed at determining if there was any relationship between the WASCE and the different parts of the Doctor of Medicine (MD) final examination such as the OSCE, the written and the clinical examinations.

Methods. All of the year 6 students who finished their rotation in family medicine were assessed by 3 different methods. First, the end of rotation supervisor's assessment (ERA) and second, the end of rotation clinical examination (CA). In addition, later they were asked to sit the WASCE. For the WASCE, the students were seated in 2 halls, which were equipped with video projections. Five stations were presented in the session, which extended for 60 minutes. Complete instructions on how to interpret each station and how to answer the questions related to each station were clearly written in the WASCE booklet. The MD final medical qualifying examination was conducted in 8 weeks after the family medicine rotation. Only 56 students, who completed all the rotations successfully, were eligible to appear in this examination. This examination consisted of 3 components, the written (MD-WR), which accounts for 40% of the total mark, the objectives structured clinical examination (MD-OSCE) for 15% and the patient encountered clinical examination (MD-PECE) for 20%. Another 25% are given for the students' continuous assessment during the clerkship. Test for correlation was carried out between the WASCE and other parts of the MD examination. The correlation was considered significant at the 0.05 level (2 tailed).

Development of the WASCE stations. Five stations were developed within 10 days period; 3 were related to clinical situations and another 2 to test different skills, such as skills of writing a prescription, diagnosing a laboratory report and the skills of plotting and reading a growth chart. The scenarios for various stations were developed by 2 qualified family physicians. Since it is reported in various literatures that scripts are vital tools to facilitate the interpersonal memory for interaction, it was important to construct

appropriate scripts for the different stations.^{1,2} Scripts would help in understanding 1) what is happening in the situation, 2) the range of options open to participants and 3) the consequences of these options.¹ It has been documented that actor patients are of value in teaching and assessing communication skills;¹¹⁻¹⁴ therefore, all of our video clips were simulated scenarios. The films were shot in the University Studio by a group of senior Audio-Visual technicians and were recorded on VHS videocassettes.

Type of stations. Station 1. The scenario that was scripted and filmed for this station consisted of a patient-clinician interaction. The message from this interaction was to provide an example of a consultation failure caused by an angry patient and misunderstanding doctor. The station was aimed to test the student's ability in identifying signs of non-verbal communication and verbal communication such as open-ended questions, close-ended questions, a patient-centered approach, and alternatives for a successful consultation.

Station 2. In this station, a patient with an acute follicular tonsillitis was presented. The aim was to test the student's skills of incorporating the given information to reach a diagnosis to this problem and the skill of writing out a prescription.

Station 3. A laboratory report with a short history was presented at this station. The students were asked to interpret the report (glucose intolerance test) and to manage the patient.

Station 4. A mother with a child, presenting her child's medical problem. The students were asked to plot the growth chart using the provided information. The station aimed at testing the student's skills in plotting the growth chart, their ability to diagnose the condition (failure to thrive) using the growth chart and to state the reasons for such a condition.

Station 5. Scenarios comprised of a medical history of a large family with multiple genetic problems that are common in the area (hereditary blood diseases) were presented. The students were asked to draw a genogram and discuss the mode of inheritance of such illnesses by the offspring.

Testing the stations. The prepared scripts were checked by 2 independent family physicians for their content and for their scientific proof. Using a checklist, the films were rehearsed and observed several times both in the studio and in the examination halls to ensure that there were no technical problems, especially for picture clarity and sound. The questions at each station were double checked for accuracy and authenticity.

The WASCE booklet. A WASCE booklet, which contained all relevant information and instructions, related to each station, was produced. The booklet also contained specific questions for each station with appropriate blank spaces for recording answers.

The scoring sheet. Scoring sheets were designed to highlight the specific areas related to each station.

Different scores were given for different areas and for different stations depending on the weightage of that area/station. Four faculties were trained to mark the answer booklet. Literature has indicated the importance of utilizing qualified professional to do the scoring.^{15,16} Each booklet takes 10 minutes for checking.

Administration of the WASCE. Students were distributed in 2 large halls supervised by 2 family physicians. The examination was conducted concurrently in the 2 halls, with the video clips shown simultaneously. Ten minutes were allowed for orientation and introduction by the supervisor. The time allotted for each station was 10 minutes, which included watching the film (approximately 2-4 minutes) and time for answering the questions (approximately 6-8 minutes). After each station, a bell was rung indicating the end of that station and that students should proceed to the next station. The examination concluded in 60 minutes.

Results. All of the sixth year medical students registered in the academic year 2000-2001 were involved in the study. A total of 62 students were included. The students were from 6 GCC countries as follows: 16 (26%) from Bahrain, 6 (10%) from Saudi Arabia, 12 (19%) from Qatar, 8 (13%) from Oman, 9 (14%) from United Arab Emirates and 11 (18%) from Kuwait. The male to female ratio was 20 (32%) to 42 (68%). The students' performances in different stations of the WASCE are presented in **Table 1**. Moreover, **Table 2** shows the students' results. The results of the WASCE were compared to the results of the supervisor's end of rotation assessment (ERA), the end of rotation clinical assessment (CA) and the 3 components of the MD examination. Pearson test of significant correlation was used to correlate between the WASCE and all the examinations (**Table 3**).

A significant correlation was found between the WASCE and MD-OSCE (0.459 $p < 0.000$), MD-written (0.385 $p < 0.003$) and the total MD-final (0.41 $p < 0.002$). However, there was no correlation with the MD-PECE neither there was with the ERA and the CA. The ERA was significantly correlated to MD-WR (0.306 $p < 0.022$), MD-OSCE (0.322 $p < 0.015$) and MD-PECE (0.462 $p < 0.000$). There was no relationship between the CA and any other parts of the MD-Examination.

Discussion. Communication skills training given to medical students has a clear effect on their interaction skills and range of communication technique.¹⁷ Hence, a proper clinical examination should be conducted to test such skills. A trial in this study was made to find out the suitability of the WASCE, which was recently developed and implemented for the first time at the CMMS, as a tool of assessing the students' competencies. This was implemented at the end of the family medicine

Table 1 - Student's performance in different watched structural clinical examination stations (N=62).

Station	Minimum marks	Maximum marks	Mean marks	Standard deviation
1	0.00	100.00	70.36	34.19
2	5.56	94.44	73.29	17.54
3	0.00	100.00	61.02	36.23
4	16.67	100.00	74.17	27.66
5	25.00	100.00	74.59	18.34
Overall marks	37.40	99.00	70.92	15.01

Table 2 - Student's performance in different examinations.

Type of exam	Range	Minimum	Maximum	Mean	SD	n
WASCE	61.6	37.4	99.00	70.92	15.01	62
ERA	37.78	62.22	100	83.97	8.99	62
CA	76.94	21.53	98.47	73.54	14.16	62
MD-WR	41.73	46.50	88.23	67.31	8.89	56
MD-OSCE	57.07	36.61	93.69	70.16	11.07	56
MD-PECE	45	45	90.00	69.97	9.14	56
MD-TOT	38.76	51.33	90.09	70.28	7.73	56

WASCE - watched structured clinical examination, ERA - end of family medicine rotation supervisor's assessment, CA - end of family medicine clinical examination, MD-WR - doctor of medicine written examination, MD-OSCE - doctor of medicine objective structured clinical examination, MD-PECE - doctor of medicine patient encountered clinical examination, MD-TOT - total mark in the doctor of medicine examination

Table 3 - Correlation between the WASCE and different examinations.

Type of exam	WASCE	Level of Significance	n
ERA	0.031	0.813	60
CA	0.069	0.594	62
MD-WR	0.385	0.003	56
MD-OSCE	0.459	0.000	56
MD-PECE	0.168	0.217	56
MD-TOT	0.41	0.002	56

*Correlation is significant at the 0.05 level (2 tailed).
WASCE - watched structured clinical examination, ERA - end of family medicine rotation supervisor's assessment, CA - end of family medicine clinical examination, MD-WR - doctor of medicine written examination, MD-OSCE - doctor of medicine objective structured clinical examination, MD-PECE - doctor of medicine patient encountered clinical examination, MD-TOT - total mark in the doctor of medicine examination

rotation, which is the last rotation in the clerkship phase. A test of correlation was carried out between the student's results in the WASCE with the students' results in other modalities of assessment including the MD final examination. Since the components of the WASCE and the OSCE are more or less similar in testing clinical situations and both are correlated, it is assumed that both serve the same objectives. However, we considered that the WASCE may not replace the OSCE, but areas related to observation in the OSCE could be tested in a WASCE format.⁷ In comparing the time spent and the amount of manpower needed to conduct the WASCE versus an OSCE with a similar number and content of stations, the following was found: 1) Time - in this study, the WASCE was conducted in 60 minutes. However, the OSCE with the same number of stations and students (62) needs approximately 12.4 rounds of 5 students each, with a total of 50 minutes for each round. The overall duration of time to be spent in conducting the OSCE for the whole class would be 620 minutes (10.33 hours). It is without doubt that less time was needed to conduct the WASCE; one hour for WASCE in comparison to 10.33 hours for OSCE. 2) The number of supervisors - 2 faculties were needed to conduct the WASCE in comparison to 10 faculties for the OSCE. Those 10 consisted of 2 shifts of 5 faculty distributed as follows: 3 for the active stations, one for time control and one as a main invigilator and to ensure as well the smoothness of students' flow around the stations. Another important factor that puts the OSCE exam at a disadvantage is the fact that measures have to be taken to ensure the confidentiality and secrecy of the examination and to ensure that there will be no contacts or communication between students who finished the examination and those who are waiting their turns. This means that the majority of the students have to wait in closed halls for a long time (up to 3 hours) before they can start. This in turn puts them under greater stress and feelings of anxiety. This factor was not found during the WASCE, apart from the usual examination stress. On the contrary, students were happy for that new experience as expressed by them in the comment questionnaire on the WASCE. The WASCE in this study had a significant correlation with the MD written examination and the total marks in the MD final examination, indicating that the WASCE could be an appropriate method of students' assessment.

This study has confirmed what others have reported, namely that certain clinical skills that are attained by medical students can be evaluated using video structured clinical examinations⁷ and it emphasizes the importance of the video structured examination.¹ However, we recommend repeating the study with a larger number of WASCE stations.

In conclusion, the WASCE is a useful method of examination that could complement the other methods of assessment in examining certain skills in a less stressful manner, utilizing less time and manpower to arrange, supervise, conduct and score.

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