A comparison of traditional assessment with the objective structured clinical examination (OSCE)

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Summary

As the objective structured clinical examination (OSCE) was being introduced into the medical curriculum, its validity was established and the results obtained were compared with three components of the traditional assessment, i.e. tutors' mark, clinical assessment (long case) and multiple-choice questions (MCQs) in 170 5th-year students. The OSCE appeared to be a reliable and valid test of clinical skills, although this became apparent only with increasing experience. Traditional methods, in particular those which are inherently subjective, were found to upgrade students more often than OSCE scores. There were some correlations between OSCE marks and results of traditional examinations, especially the clinical assessment and the MCQ. Accordingly the OSCE appears to measure aspects of both clinical competence and theoretical knowledge. It has many advantages over traditional methods and should therefore be considered for inclusion in the assessment of medical students.

Purpose of the study

The aim of this study was twofold: (i) to evaluate the OSCE in 5th-year medical students; and (ii) to compare the results obtained in the OSCE with those of traditional assessment in the 5th year.

Traditional assessment

The paediatrics and child health curriculum at the University of Natal Medical School includes 8 weeks in the 5th year of study and 8 weeks in the 6th. Assessment in the 5th year is based on the following: (i) tutors' assessment, end of block; (ii) clinical assessment, one long case, end of block; and (iii) MCQ examination, end of year.

Evaluation at the end of the 5th year is based on all three components with the MCQ marks given major consideration, and is norm-referenced. The 6th-year qualifying examination includes, inter alia, an assessment of the student's performance in the 5th year.

Percentages for the clinical and tutors' assessments were calculated as follows: ≥75% — first-class pass; 70-74% — upper second; 65-69% — second-class pass; 60-64% — lower second; 55-59% — upper third; 50-54% — lower third; <50% — failure.

The OSCE

The OSCE was devised with some modifications along the pattern previously described. The major modification was in the number of stations, which was reduced from 20 to 14. The composition of stations is indicated in Table I.

The time allowed per station was 4 minutes, and with breaks the examination took approximately 70 minutes. The OSCE for each group of students was set by a different set of examiners.

Method

The OSCE and the clinical case assessment (the second of which made up part of the traditional assessment) were conducted on the same morning at the end of the block. The MCQ examination was taken at the end of the academic year. Tutors' assessments were based on the aggregate of four different evaluations by consultants during the students' posting to the paediatric wards, nursery, outpatients department and fever wards.

One hundred and seventy 5th-year students in seven end-of-block groups ranging from 18 to 28 students were each examined by this procedure. The groups were examined over a 2-year period (1983 - 1984), group 1 representing the first group and group 7 the last. Statistical evaluation was performed by the Pearson correlation coefficient by two variable linear regressions.
Results
The percentages obtained in the OSCE, MCQ examination, clinical case assessment and tutors' assessments for the seven groups are set out in Table II. It can be seen that in general the highest achievement was in the tutors' assessment, the next highest in the clinical assessment, the second-lowest in the MCQ examination and the lowest in the OSCE. Group 3, however, had similar results for the MCQ examination and in the OSCE, while groups 4 and 7 scored higher and the other groups lower in the OSCE than in the MCQ examination.

Table III gives the correlations obtained between the four different methods of evaluation in the seven groups of students. Significant correlations were detected in groups 1, 2 and 4 between the OSCE and clinical case assessment, in groups 1 and 2 between the MCQ examination and clinical assessment, in groups 2 and 5 between the OSCE and MCQ examination, in group 1 between the clinical assessment and tutors' assessment, in group 4 between the OSCE and tutors' assessment, and in group 2 between the tutors' assessment and MCQ examination.

Discussion
The point has been made in previous analyses of the OSCE that it tests a different aspect of clinical competence than that covered by traditional forms of assessment such as the clinical assessment (long case), oral or tutors' evaluation. The results obtained in this study draw further attention to this salient fact and emphasize that the OSCE is a separate but not entirely different tool for clinical assessment.

We have shown that there were no consistent correlations between the OSCE and all three components of traditional assessment i.e. clinical case assessment, MCQ examination and tutors' mark. Significant associations between the OSCE and clinical assessment were detected in three groups of students and between the OSCE and MCQ examination in two groups.

Our findings are similar to some extent to but also differ from those of many other workers who have published papers on this subject.2,4,5 Whereas some of these authors have recognized that the OSCE and traditional tests measure different functions of competence, they have also detected significant correlations between the two methods.2,4,5 Dissimilar forms of correlations between traditional tests and the OSCE render direct comparisons difficult and may be part of the explanation for some of the divergent findings. Others have combined results of individual tests used in traditional methods and compared the aggregate of these with the OSCE,2,5 while we sought associations between each modality. Results of whole groups have been compared,2,4,5 in contrast to the current study which looked at inter-test correlations for individuals. Specific and limited skills have been found comparable between traditional and objective examinations,2 whereas we investigated the correspondence between a range of skills. Finally, the exact year of the undergraduate paediatric training assessed varies in the different studies, as do the number of stations. The discordant results reported here are to some extent paralleled by the detection of only a 55% concordance between OSCE scores and traditional categories documented by Watson and his co-workers.5 There was a lack of correlation within some modalities of traditional tests in our students, the tutors' mark correlating least. Discordance between oral and practical examinations has also been reported by Cronje.8

Ambiguity in MCQs, lack of time for certain stations, uncooperative patients, lack of comprehensive check-lists and time-consuming preparation have been reported as problems and were encountered to varying degrees by us.

It is interesting that the percentage of marks obtained was roughly related to the degree of subjectivity inherent in a particular category of assessment. In descending order, percentage marks obtained were highest in the case of the tutors' assessment, next in the clinical case assessment, second-lowest in MCQ examinations, and lowest in the OSCE. Traditional assessments have been noted by others to grade students higher than the OSCE.2,5 The variation in the percentage scores between the different groups of students was greatest for the OSCE, the mean value (± SD) ranging from 49 ± 7 in group 1 to 68 ± 8 in group 4. On the other hand there was very little variation between groups of students in mean scores for the other categories of assessment. This either reflects the greater objectivity of the OSCE in identifying the weaker and the brighter groups of students or is due to variation in the standard of the OSCE (which was set by a different set of
examiners for each group). The examiners have been impressed by the objectivity of this method, the ease of feedback, and the wide range of skills available for testing. It was felt that it would be inappropriate to elicit students’ opinions on the OSCE at this stage. As the method of examination determines the type of teaching, it is anticipated that implementation of the OSCE on a regular basis will enhance both the imparting and the acquiring of clinical skills. Accordingly the OSCE will be incorporated into end-of-block 5th-year assessments.

In brief, we have found some correlations between the OSCE and traditional categories of assessment, especially the clinical case assessment and MCQ examination. We recognize that the OSCE measures a different but related function of clinical competence and theoretical knowledge and has very many advantages over but does not replace conventional tests, and it will therefore be integrated into the assessment of 5th-year medical students.

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REFERENCES

Myotonic dystrophy
Part I. A genealogical study in the northern Transvaal
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Summary
Myotonic dystrophy is a disabling multisystem disorder which appears to be more common in South Africa than is generally recognized. Twenty white kindreds with the disease were studied; of these 4 large kindreds had a common ancestry. Genealogical data for 1527 individuals were acquired. The minimum prevalence of myotonic dystrophy in the northern Transvaal was found to be 14.3/100000 of the population. Recognition of the disorder is important since some of its complications are preventable and others potentially treatable.

Myotonic dystrophy is a genetically determined progressive multisystem disorder which usually appears in adult life. The main features are muscular weakness, myotonia and cataracts. Other features include dementia, testicular atrophy, frontal balding and conduction disturbances of the heart. The natural course of myotonic dystrophy is unpredictable because both the type of symptoms and their degree of severity are very variable. Congenital myotonic dystrophy has a distinctive clinical picture of facial diplegia with a triangular fish-mouth appearance, muscular hypotonia, delayed motor development, and talipes. Myotonic dystrophy is transmitted by an autosomal dominant gene and new mutations are rare. By early adulthood the great majority of patients carrying the gene for myotonic dystrophy can be detected clinically. Congenital myotonic dystrophy is almost exclusively maternally transmitted, which suggests a maternal environmental factor.

Anticipation implies the progressively earlier appearance of clinical features of a more serious degree in successive generations. In myotonic dystrophy anticipation may be partly due to biased observation by kindreds and partly to the inclusion of individuals with congenital myotonic dystrophy. Myotonic dystrophy is the commonest muscular dystrophy of adult life. Its prevalence has been reported as 4.9/100000 population in Switzerland and 5.5 and 3.3/100000 population in West Germany and Rochester, Minnesota, respectively. The estimated gene frequency in Switzerland is 13.5/100000 births. The gene frequency is higher than the prevalence rate since only a proportion of gene carriers show clinical disease. Myotonic dystrophy occurs over a wide geographical area and has been reported in Africa, China, India and Japan.

Patients with myotonic dystrophy have a significant increase in morbidity. Severe muscular weakness is detected in approximately one-fifth and about one-third have mental abnormalities. Cataracts occur frequently in adulthood and...