Evaluation of Clinical Medicine in the Final Postgraduate Examinations in Family Medicine

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Abstract

Background: The Family Medicine Department, University of the Free State (UFS) recently supervised the MFGP assessments of the College of Medicine in South Africa (first sitting), as well as the final assessment of the M Med Fam programme of the UFS (second sitting). The examinations, which took place in October and November 2006, were subjected to an internal quality assurance evaluation with the view to improve the standard and reliability of the examinations.

Methods: All the candidates, as well as the examiners who participated in the MFGP and M Fam Med examinations, were included in the evaluation. Opinions were obtained from the students and examiners for each assessment on a structured data form directly after the examinations. A Smits blueprint was established for the written paper.

Results: The majority of the students assessed the OSCE as being fair, understood the questions and agreed with the time allocated per question. A broad variety of competencies were assessed in a structured manner, which enhances the reliability of the examinations. The examiners evaluated the OSCE as being well structured and fair, as well as testing for the competencies of a family physician. Good agreement was achieved between the two different sets of candidates and examiners, and similar marks were achieved despite the separate settings, thus enhancing the validity of the examinations. The structured oral was evaluated as being fair regarding the variety and relevance of the questions by all the candidates and examiners. The written paper was on a relatively high cognitive level and tested a broad spectrum of knowledge. Although it did not cover the entire module, skills and approaches necessary for problem solving were tested. If a student could master these problems, he/she should be able to manage other areas not covered in the paper.

Conclusion: The authors are of the opinion that the quality evaluation of clinical medicine in the final postgraduate examinations in Family Medicine held at UFS in 2006 showed it to be authentic, fair, reliable and objective, and that it assessed competencies for real-life situations, as well as the theoretical knowledge, attitudes and values required for a family practitioner.

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Introduction

It remains a challenge for postgraduate assessments to be credible. According to the South African Qualifications Authority (SAQA), assessment is credible when the principles of fairness, validity, reliability and practicability are met.[1] The recent assessment opportunities for postgraduate candidates supervised by the Department of Family Medicine, University of the Free State (UFS) were subjected to quality assurance in an attempt to evaluate internally the standard and reliability of the assessments used in our setting to be able to comment on the credibility of these examinations.

Aims of this quality assurance audit

- To do an internal quality assurance audit as a baseline evaluation of the OSCE in the final-year assessment for the postgraduate examinations in Family Medicine.
- To evaluate whether the final postgraduate examination in Family Medicine is credible.
- To identify areas that could be improved in future postgraduate assessments.

Background

The Family Medicine Department, UFS supervised the Member of the Fellowship of General Practitioners (MFGP) examinations of the College of Medicine in South Africa (first sitting), as well as the final examinations of the M Med Fam programme of UFS (second sitting), during October and November 2006. As part of an internal audit exercise, the opinions of students and examiners were sought initially during the first sitting, in order to implement improvements at the second sitting. It was later decided to repeat the same exercise at the second sitting to compare the views of the different sets of students and examiners. The quality assurance exercise was performed with the view to improving the standard and credibility of the assessments. Both examinations consisted of written papers, clinical orals and objective structured clinical examination (OSCE) components. This provided a unique opportunity to compare and reflect on the structure used to assess during these examination settings.

The structure of the assessments differed slightly for the different bodies (see Table I).

Table I: Comparison of the College (MFGP) and the University (M Fam Med) examinations

Governing body: College of Medicine, South Africa	Governing body: University of the Free State, Bloemfontein
Written examination* (250 marks)	Written examination (250 marks)
OSCE (10 stations of 6 min each)	OSCE (15 stations of 6 min each)
Structured oral (2 x 20 min)	Structured oral (2 x 20 min)
Short case	
Long case	

* Only students who passed the written examination may proceed with the rest of the examination

a. The College of Medicine examinations took place in Bloemfontein in October 2006. As part of clinical medicine for the College examinations, the students had to examine patients (a long case and then a short case), complete an OSCE and be subjected to a clinical oral, after having passed a prior written paper.
b. The University examinations took place in November 2006. The M Fam Med examination consisted of a written paper, an OSCE and a structured clinical oral.

The OSCE is an *assessment tool in which the components of clinical competence, such as taking a history, a physical examination, simple procedures, interpretation of laboratory results, patient management problems, and communication, attitude are tested using agreed checklists and rotating the students around a number of stations.*[2] The number of stations may vary between 10 and 20, with the time allocated per station being between four and six minutes.[3,4] Feedback on the OSCE should form part of the learning experience of the students.[3,5] Advantages of an OSCE include that it tests a broad range of clinical skills and competencies. Integrated assessment can take place and the scoring is objective, as a blueprint is used to assess the candidates. However, observer fatigue of the examiner, the role play by the students and technical planning of the OSCE are potential biases in an OSCE.[3,5]

During the first sitting, the College OSCE, 10 stations were used and the students were allocated six minutes per station, which included rotation time. At two of the stations, students had to take part in simulated consultations, one dealing with contraceptive use and the other with breaking bad news to a patient. An assessor observed the consultation. The time allocated for these two stations was 12 minutes each. As part of the assessment, all stations had assessment rubrics that were used for each individual candidate.

During the second sitting, the M Fam Med OSCE, 15 stations of six minutes each were set. A slightly broader spectrum of clinical skills was evaluated than in the College examinations, as this examination did not include long or short clinical cases. The students initially wrote a clinical paper of 250 marks, with part A containing six questions of 50 marks each, of which they had to answer four, and part B, which was compulsory, consisting of 50 marks. The structured oral consisted of two 20-minute sessions in which five broad questions (prepared with assessment rubrics) where posed to the candidates. General approaches and attitude, rather than theoretical knowledge, were assessed in the orals.

Methods used for quality assurance

This evaluation was aimed at quality improvement and is therefore descriptive. All final-year students who participated in the MFGP (first sitting) and M Fam Med (second sitting) examinations were included in the evaluation. A set of 11 different students took part in either of the examination sittings. Opinions were obtained from the students and examiners for each component of the assessment, directly after the OSCE, the oral examinations and the M Fam Med written papers. A feedback form was provided for this purpose, enabling general comments as well as specific feedback about time allocated, fairness of the question and the intelligibility of the task at each station. The examiners manning each station were also asked to comment on the time allocated, the appropriateness and clarity of the question, and the assessment rubric provided.

The written paper of the University examination was subjected to a Smit's blueprint.[6] Unfortunately a Smit's blueprint was not possible for the written paper of the College examination.

Results

a. Results of College OSCE evaluation

Table II summarises the comments of the examiners and the students on the OSCE, as well as the marks scored per station.

b. Results of M Fam Med OSCE evaluation

Eleven students took part in the M Fam Med OSCE. Table III

Table II: Comments of the examiners and the students on the OSCE of the College examinations

No.	Topic and/or system evaluated	Examiners' comments	Students' comments			Average marks scored at the station (%)
			Understood the question	Time allocated enough	Perceived question as fair	
1	Asthma – peak flow and MDI use	Well structured	Yes = 11 No = 0	Yes = 10 No = 1	Yes = 11 No = 0	71.6
2	Orthopaedic – knee examination	Students were role playing	Yes = 11 No = 0	Yes = 11 No = 0	Yes = 11 No = 0	53.2
3	Diabetes – eye and feet examination	Adjust weighting of marks	Yes = 11 No = 0	Yes = 6 No = 5	Yes = 11 No = 0	55.8
4	Family Medicine – McWhinney principles	Difficult to evaluate	Yes = 9 No = 2	Yes = 7 No = 4	Yes = 8 No = 3	50.9
5	Chest pain – interpretation of CXR and ECG	Well structured	Yes = 11 No = 0	Yes = 8 No = 3	Yes = 11 No = 0	63.4
6	Paediatrics – RTHC and immunisations	Well structured	Yes = 10 No = 1	Yes = 10 No = 1	Yes = 11 No = 0	58.5
7	Palliative care – prescription for pain management	Blueprint needed adaptation	Yes = 10 No = 1	Yes = 10 No = 1	Yes = 11 No = 0	60.7
8	Counselling of a mother for HIV test	Time too short	Yes = 10 No = 1	Yes = 7 No = 4	Yes = 8 No = 3	58.4
9	Emergency care – anaphylaxis and CPR	Well structured	Yes = 11 No = 0	Yes = 11 No = 0	Yes = 11 No = 0	72.4
10	Breaking bad news	Well structured	Yes = 11 No = 0	Yes = 11 No = 0	Yes = 11 No = 0	57.8

Table III: Comments of the examiners and students on the M Fam Med OSCE

No.	Topic and/or system evaluated	Examiners' comments	Students' comments			Average marks scored (%)
			Understood the question	Time allocated enough	Fair question	
1	Family Medicine – McWhinney principles	Well structured	Yes = 9 No = 2	Yes = 11 No = 0	Yes = 10 No = 1	62
2	Dermatology photos	History needed	Yes = 10 No = 1	Yes = 10 No = 1	Yes = 11 No = 0	42
3	Internal Medicine lung examination	Well structured	Yes = 11 No = 0	Yes = 10 No = 1	Yes = 11 No = 0	60
4	Surgery Inguinal hernia	Time too short	Yes = 11 No = 0	Yes = 11 No = 0	Yes = 11 No = 0	38
5	Orthopaedics Knee examination	Well structured	Yes = 10 No = 1	Yes = 11 No = 0	Yes = 11 No = 0	61
6	Emergency care Anaphylaxis + CPR	Well structured	Yes = 11 No = 0	Yes = 10 No = 1	Yes = 11 No = 0	68
7	Paediatrics Neurological examination	Time too short	Yes = 11 No = 0	Yes = 10 No = 1	Yes = 11 No = 0	58
8	Chest pain Interpretation of CXR and ECG	Time too short	Yes = 11 No = 0	Yes = 10 No = 1	Yes = 11 No = 0	61
9	Ear, nose and throat pictures	Well structured	Yes = 8 No = 3	Yes = 10 No = 1	Yes = 8 No = 3	67
10	Laboratory results Thyroid functions	Well structured	Yes = 9 No = 2	Yes = 10 No = 1	Yes = 10 No = 1	56
11	Palliative care Prescription for pain management	Well structured	Yes = 10 No = 1	Yes = 11 No = 0	Yes = 11 No = 0	52
12	Breaking bad news	Well structured	Yes = 11 No = 0	Yes = 11 No = 0	Yes = 11 No = 0	59
13	Tuberculosis and ARV treatment	Time too short	Yes = 11 No = 0	Yes = 9 No = 2	Yes = 11 No = 0	39
14	Diabetes Eye and feet examination	Well structured	Yes = 11 No = 0	Yes = 10 No = 1	Yes = 11 No = 0	67
15	Obstetrics Pregnant abdomen	Time too short	Yes = 10 No = 1	Yes = 10 No = 1	Yes = 11 No = 0	70

Table IV: Comparison of the marks scored in the College and M Fam Med examinations

Question	Average marks in College exams (%)	Average marks in M Fam Med exams (%)
Palliative care prescription	61	52
Breaking bad news	58	59
Emergency – anaphylaxis and CPR	72	68
Orthopaedics – knee examination	53	61
Diabetes – eye and feet examination	56	67
Chest pain – interpretation of ECG and CXR	63	61

summarises the comments of the examiners and students on the OSCE, as well as the marks per station.

c. Comparison of the OSCE results

Table IV compares the scores of the College examinations with those of the M Fam Med examinations regarding questions with the same content and blueprints for evaluation.

The similarity in marks achieved at the similar stations during the two different sittings, with two different sets of candidates as well as examiners, is notable and indicates reliability.

Table V: Smit's blueprint to evaluate cognitive level of M Fam Med written paper

Written paper	EMPHASIS IN MODULE	EMPHASIS IN PAPER	MARKS PER QUESTION	EMPHASIS IN COGNITIVE DOMAIN (Bloom's Revised Taxonomy)						
Questions	%	%		Remember	Understand	Apply	Analyse	Evaluate	Create	Average % scored
Part A										
Question 1	12.5%	20	50	10	10	30	0	0	0	54.5 N = 4
Question 2	2%	20	50	10	5	10	15	0	10	68.5 N = 10
Question 3	4%	20	50	5	5	15	15	0	10	73 N = 6
Question 4	5%	20	50	5	5	20	20	0	0	57.8 N = 5
Question 5	5%	20	50	5	5	15	13	5	7	73.1 N = 7
Question 6	15%	20	50	5	5	16	10	10	7	67.5 N = 8
Part B										
Question 7	15%	20	50	2	6	32	10	0	0	53.2 N = 10
Subtotal				42	45	133	88	15	31	
Total		100	350	350 *						64.3

* The marks add up to 350 instead of 250 because of the choice questions in part A

d. Evaluation of the written paper for the M Fam Med examination

The M Fam Med written paper was evaluated according to Smit's blueprint for examination papers.[6] This blueprint analyses each component of a written paper with respect to the cognitive level required for each question. Although the paper did not cover the entire module, skills and approaches necessary for problem solving were tested.

Table V illustrates the cognitive level of the different questions, as well as the average marks scored per question. All ten candidates that wrote the paper evaluated it as being fair regarding clarity of the questions, time allocated for the paper and relevance of the questions. One candidate wrote a special examination and was not included, as the paper written for this examination was slightly different.

e. Evaluation of the oral examinations

The structured oral was evaluated as fair by all the students regarding variety and relevance of the questions. One of the examiners expressed the opinion that the memorandum for evaluation needed more structure, while another felt that less structure was needed. The remaining nine examiners were satisfied with the blueprint.

Discussion

a. Validity of examinations

A broad range of clinical skills and knowledge within real-life situations was assessed during the examinations. The simulated cases further gave the opportunity to assess basic family medicine principles, communication skills, as well as the attitudes and values of the candidates. The candidates had to demonstrate how they would manage patients at a family physician level.

A study done in the Netherlands evaluated the marks scored by trainees and GPs in a clinical OSCE. For the examination of a painful knee they scored an average of 56.8% (56% in our examinations), and for asthma and peak flow measurement they scored 73% (72% in our examinations).[7]

The written paper was on a relative high cognitive level and tested a spectrum of knowledge. Although it did not cover the whole module, it tested skills and approaches necessary for problem solving and, if a student could master these, he/she should be able to manage the other areas not covered in the paper.

The main purpose of the structured clinical orals should be to evaluate general approaches, attitudes and values, rather than theoretical knowledge. The implementation of this during these examination sittings was evaluated to have been successful.

The affirmative evaluation of the assessments by peer review of different sets of examiners strengthens their validity.

b. Reliability of examinations

The similar outcomes when comparing the results of the College (MFGP) and the University (M Fam Med) examinations demonstrates that the assessments were reliable. The strong point of the OSCE is that a broad variety of competencies were assessed during the examination in a well-structured manner. Achieving similar examination marks despite that fact that the examinations were arranged by different bodies and two separate sets of examiners, as well as fact that the candidates differed, enhances the reliability of the examinations.

c. Fairness of examinations

The opinions of the students and the examiners were obtained anonymously regarding the time allocated for each question, the appropriateness of each question for a family physician and the clarity of each question. Examiners also had to evaluate the rubrics used to score each student. This evaluation revealed the absence of any perceived unfair practices during these examination sittings.

d. Practicality of examinations

The practical assessments during the examinations were not found to be limited by resources. Sufficient examination rooms, examination equipment, examiners, patients and assessment tools were available to perform the examinations without difficulty. However, the examinations are very labour intensive for the responsible department.

Recommendations

The lack of feedback to the students after the OSCE is an area needing attention during our examinations (also mentioned in other observations[3-4]). This is a missed learning opportunity. Feedback can be given to students directly after completion of the OSCE by letting them rotate together through the stations, with an examiner providing specific feedback.

After discussion of the OSCE results amongst the examiners, further suggestion were made, namely that the deduction of marks should be considered for gross and critical errors, and that guidelines on the minimum percentage of stations that a candidate should pass in order to pass the OSCE examination should be included.

Attention should be given to instructions and wording in the written papers to make sure that the students know what is expected of them. Arising from the Smit's blueprint, further suggestions include that specific marks per question should be indicated, as well as the number of facts expected per mark.

Conclusions

The authors are of the opinion that the quality evaluation of clinical medicine in the final postgraduate examinations in Family Medicine held at UFS in 2006 found them to be authentic and credible and assessed competencies for real-life situations, as well as the theoretical knowledge, attitudes and values required by a family practitioner.

References

1. Criteria and guidelines for assessment of NQF registered unit standards and qualifications. Policy document. October 2001. p. 16–9. Available: http://www.saqa.org.za/policy [Retrieved 12 April 2007]
2. Harden RM, Stevenson M, Wilson Downie W, Wilson GM. Assessment of clinical competence using objective structured examination. BMJ 1995;1:447–51.
3. Ananthakrishnan N. Objective structured clinical/practical examination (OSCE/OSPE). J Postgrad Med 1993;39:82–4.
4. Carraccio C, Englander R. The objective structured clinical examination. Arch Pediatr Adolesc Med 2000;154:736–41.
5. Brown G. Assessment: a guide for lecturers. UK: Learning and Teaching Support Network (LTSN); 2001. p.4–21. Available http://www.ltsn.ac.uk (Accessed 29/06/2004).
6. Smit R. Assessment in higher education. A selection of PowerPoint slides used by Dr R Smit of the Rand Afrikaans University (RAU) during a staff development workshop on Assessment in Higher Education at the University of the Free State, Bloemfontein; May 2004. p. 1–10.
7. Kramer AWM, Jansen KJJM, Dusman H, Tan LHC, Van der Vleuten CPM, Grol RPTM. Acquisition of clinical skills in postgraduate training for general practice. British Journal of General Practice 2003;53:677–82.