The MRCGP examination and its methods. I: Introduction

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THE first examination for membership of the Royal College of General Practitioners was held in November 1965, when five candidates (four of whom were successful) presented for an experimental 'test of knowledge of the details of clinical medicine and of the ancilliary services'. Until that time, admission to membership had been through the processes of the Board of Censors, and although the role an examination might play had been the subject of protracted and at times heated debate it was not until the mid-1960s that dissatisfaction with these processes led to the experiments with a more structured and formal method of assessment.[1] As a result of these experiments, Council determined that from 1968 membership should be achieved only by candidates who had completed a period of vocational training and had passed the membership examination.

The first compulsory examination held in November 1968 attracted 32 candidates, the second in May of the following year 46, and by 1971 the annual total had exceeded 163. Within four years this had risen to 400, and within a further four years to something over 1,200. Since 1968, therefore, nearly 9,000 candidates have been examined and almost 6,000 new Members admitted. Successful candidates now constitute approximately 66 per cent of the total membership.

It seemed appropriate at this point, 15 years after its introduction, to review the methods of the examination and outline ways in which these are likely to develop.

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Theoretical background

The purpose of any professional examination is to assess the extent to which the specific educational objectives appropriate to the completion of a defined task have been achieved. The more sophisticated the task, the more numerous the objectives and the more complex their assessment.

If it is to be effective, an examination must be valid and reliable. Validity is the extent to which the examination measures objectives appropriate to the task, reliability is the consistency with which they are measured. Validity has been subdivided into:

1. content validity;
2. predictive validity;
3. construct validity;

Content validity describes the extent to which the examination samples the attributes of the candidate over the whole range of the topics to be tested. It is important in medicine and particularly important in a subject as broad as general practice.

Predictive validity is concerned with the extent to which the examination predicts the subsequent performance of candidates in their task.

Construct validity relates to the attributes tested by each component of an examination and is a measure of the extent to which each educational objective is assessed by an appropriate technique.

Reliability describes the consistency with which similar results are produced when candidates are repeatedly assessed using the same technique or when rated by a variety of observers for the same characteristic. An effective examination, therefore, makes reliable assessments of valid educational objectives derived from an adequate description of a task.

Educational objectives

Educational objectives are normally categorized as those concerned with:

1. Knowledge—the 'cognitive domain'
2. Skills—the 'psychomotor domain'
3. Attitudes—the 'affective domain'

Bloom's *Taxonomy of educational objectives*[2,3] has been modified for the purposes of medical examinations by Charvat and colleagues.[4] These objectives consist of:

1. In the cognitive domain:

a) Knowledge of fundamental vocabulary, facts, concepts, principles, laws, methods, and procedures.

b) Understanding of these facts, concepts, etc.

c) Ability to understand and interpret data.

d) Ability to solve relevant problems.

e) Judgement in evaluating a total situation.

f) Ability to create a new synthesis.

2. In the psychomotor domain, the candidate's ability to perform the technical tasks essential for the completion of his overall role. In medicine these may include laboratory work, clinical examination, operative surgery or demonstration of other appropriate manual skills.

3. In the affective domain:

a) Acceptance of responsibility for patient welfare.

b) Concern and consideration for the patient and the patient's family.

c) Recognition of medical capabilities and limitations.

d) Ability to establish effective relationships with colleagues and other members of the family.

e) Regular observation of appropriate safeguards.

f) An inquiring mind.

g) Willingness to use medical capabilities to contribute to the community as well as to individual patient welfare.

Although categorization is conceptually helpful, in both education and assessment the factors are interdependent. In general practice, the 'ability to solve relevant problems' requires all the attributes described under cognitive domain, some of those in the psychomotor domain and most of those in the affective domain.

Techniques

The ideal examination technique would be completely valid and entirely reliable. Reliability, however, is a product of objectivity, and while some educational objectives, particularly those concerned with the possession of factual knowledge, are capable of assessment using techniques such as multiple choice questions, the majority can only be assessed using methods such as essays, clinical examinations and orals which in varying degrees rely upon the subjective opinion of the examiners. All techniques are open to potential criticism; objective methods on the grounds of validity and subjective methods on the grounds of reliability.

In the absence of a single perfect assessment technique, therefore, most examinations use a mixture of methods and adopt procedures which ensure the highest possible level of validity and reliability. In practice this involves the continuous scrutiny of reliable techniques, such as the multiple choice paper, to ensure their content validity, and the use of methods which ensure the reliability of valid techniques such as essays and oral examinations. In the majority of examinations this is achieved through the use of multiple examiners and the definition of objective criteria against which performance in the individual components of the examination can be assessed.

Practical application

MRCGP examination

The purpose of the MRCGP examination is the admission to membership of the College of candidates whose performance is regarded as satisfactory by the Panel of Examiners.

Content

The content of the early examinations, those held between 1965 and 1972, was influenced by the draft syllabus and guide for future candidates produced by the original Examinations Committee. The publication in 1972 of the *Future general practitioner—learning and teaching*[5] provided a more precise job description from which the aims of training programmes and the educational objectives in five areas of clinical practice were derived. These educational aims were adopted as assessment aims by the Board of Censors and formed the basis of the examination. They are outlined in the explanatory notes for the MRCGP examination shown in Figure 1.

The content of the examination has also been influenced by the publication by the College of the *Reports* of working parties on the training of general practitioners in the specific fields of psychiatry, child care, geriatric medicine[6] and obstetrics.[7] These reports identified specific educational objectives in these fields and implied that they should be assessed within the MRCGP examination. In its response to the Court Report,[8] Council made a statement to the effect that this would be done as far as was practical in respect of child care. The Panel of Examiners were also required to recognize the implications of the endorsement by Council of the statement from Leeuwenhorst by the working party appointed by the second European Conference on the Teaching of General Practice.[9]

These various influences have emphasized the complexity of the content of general practice and the fact

A. *1. Clinical practice—health and disease*

The candidate will be required to demonstrate a knowledge of the diagnosis, management and, where appropriate, the prevention of diseases of importance in general practice.

a) The range of the normal

b) The patterns of illness

c) The natural history of diseases

d) Prevention

e) Early diagnosis

f) Diagnostic methods and techniques

g) Management and treatment

2. Clinical practice—human development

The candidate will be expected to possess a knowledge of human development and be able to demonstrate the value of this knowledge in the diagnosis and management of patients in general practice.

a) Genetics

b) Fetal development

c) Physical development in childhood, maturity and ageing

d) Intellectual development in childhood, maturity and ageing

e) Emotional development in childhood, maturity and ageing

f) The range of the normal

3. Clinical practice—human behaviour

The candidate must demonstrate an understanding of human behaviour particularly as it affects the presentation and management of disease.

a) Behaviour presenting to a general practitioner

b) Behaviour in interpersonal relationships

c) Behaviour of the family

d) Behaviour in the doctor–patient relationship

4. Medicine and Society

The candidate must be familiar with the common sociological and epidemiological concepts and their relevance to medical care and demonstrate a knowledge of the organization of medical and related services in the United Kingdom and abroad.

a) Sociological aspects of health and illness

b) The uses of epidemiology

c) The organization of medical care in the United Kingdom—comparisons with other countries

d) The relationship of medical services to other institutions of society

e) Ethics

f) Historical perspectives of general practice

5. The practice

The candidate must demonstrate a knowledge of practice organization and administration and be able critically to discuss recent developments in the evolution of general practice.

a) Practice management

b) The team

c) Financial matters

d) Premises and equipment

e) Medical records

f) Medicolegal matters

g) Research

B. The examination is designed to assess in a variety of ways the skills of the candidate in:

a) Interpersonal communication

b) History taking and information gathering

c) Selecting examinations using investigations and procedures

d) Recording information

e) Interpreting information

f) Problem definition and hypothesis formation

g) Early diagnosis

h) Defining the range of intervention

i) Selecting therapy

j) Providing continuing care

k) Interventive and preventive medicine in relation to: the patient, the family, and the community

l) The organization of his practice and himself

m) Teamwork, delegation, and in relating to other colleagues

n) Business methods

o) Communications

C. The candidate will be expected to demonstrate appropriate attitudes to his patients, his colleagues and to the role of the general practitioner. He must demonstrate his ability to develop and extend his knowledge and skills through continuing education.

Figure 1. *Explanatory notes for the MRCGP examination*

that it is not possible practicably to examine all areas to equal depth. Each examination therefore consists of questions designed to sample the candidate's abilities in as many content areas as possible.

The standard of the examination

The standard of the examination must relate to its aims. These have been defined on several occasions. Originally in 1955 the aim was that 'candidates should have a good knowledge of the theory and techniques of general medical practice and be in touch with contemporary thought'.[10] In 1962 the candidate was required to provide 'evidence of knowledge and experience of work in general practice', and in 1971 he had to possess 'the competences of the ordinary general practitioner in his work'.

In the light of the increasing proportion of trainee candidates, the Panel of Examiners informed the Board of Censors in 1978 that the examination should consist of 'the assessment of the knowledge and competences appropriate to the general practitioner on completion of vocational training'. The statement was consistent with the requirements of the Royal Charter that the new Member has had adequate and satisfactory training for the responsibilities of general practice. The intention of the examination is therefore to assess the competence of candidates to carry out unsupervised responsibility for the care of patients in general practice. For this reason, the predictive validity of the examination must be high.

Criteria

Effective assessment implies the existence of criteria, but no absolute criteria exist for the competences of the ordinary general practitioner. The job description on which the examination was originally based is so comprehensive that many of the educational objectives which derive from it may be achievable only after several years of experience. As an increasing proportion of candidates were sitting the examination on completion of training, the examiners were required to devise working criteria which represented those competences which identified a doctor as capable of accepting responsibility for unsupervised general practice.

The standard of performance expected of the successful candidate has therefore been determined in the light of Council policies, a knowledge of the educational process of vocational training and criteria based upon the experience of members of the Panel of Examiners in active general practice. The standard was consciously raised on one occasion in 1978 on the instructions of Council, but for each examination it has been determined by the Panel using a mixture of peer-referenced and criterion-referenced methods.

Peer-referenced methods are those in which candidates are ranked in order when compared with their peers. Were the MRCGP examination entirely peer referenced, the examiners could list candidates in rank order and invite Council to admit a defined proportion to membership.

Criterion-referenced methods identify those who achieve defined educational objectives. Were the criteria adequately defined it would be possible to determine that only those candidates who achieved a specific series or proportion would be admitted. In practice, because of the impossibility of assessing all educational objectives and because the assessment of an individual candidate must relate to some extent to that of his peers, a combination of methods is used.

Techniques

The examination uses techniques which sample the attributes of the candidate in relation to the content and purpose of general practice. The written papers are primarily concerned with assessment in the cognitive domain. The multiple choice question paper examines factual knowledge over a wide range of content. The traditional essay paper assesses knowledge but is also capable of assessing some attitudinal and, by inference, psychomotor skills. The modified essay paper assesses aspects of interpretation, problem solving, behaviour and attitude in the setting of a clinical problem. The oral examination allows assessment of the candidate's abilities in all three domains.

In a series of short papers which are to appear in future issues of the *Journal,* the individual components of the current examination will be described.

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Coffee and cholesterol

The relation between coffee consumption and levels of serum total cholesterol, high-density-lipoprotein (HDL) cholesterol, and triglycerides in a population of 7,213 women and 7,368 men between the ages of 20 and 54 years was examined. Coffee consumption was positively associated with levels of total cholesterol and triglycerides in both sexes and was inversely associated with levels of HDL cholesterol in women.

Source: Thelle D S *et al.* The Trømso heart study. Does coffee raise serum cholesterol? *N Engl J Med* 1983; **308:** 1454-1457.