Extended Matching Items (EMI)

Syed Razi Muhammad[1*]

Extended matching items (EMI) are an excellent method to assess knowledge component of medical students.

EMI are gaining popularity in undergraduate and postgraduate medical examination. It is believed that EMI is a format in which clinical reasoning is easy to test, particularly because a clinical scenario can be constructed with related questions[1]. Moreover, there are many options (about ten or so); therefore, the candidate is only likely to guess correctly in 10% of cases. Since an examiner in medical school aims to assess application of knowledge rather than simple recall, he likes the format of question that takes the form of a small problem (short case or vignette). A surgical case is described in three to six sentences starting with patient's age, gender, chief complaint and site of problem followed by personal history, family history (if relevant), physical signs , results of lab tests and radiology etc. and then he asks the student to arrive at a diagnosis. This is chosen from a long list (ten or so) rather than five choices. The spirit of testing in this way is that having read and understood the vignette and the information given in it, the student should be in a position to produce the answer i.e. the diagnosis, and choose this from the list.

Hence EMI can be conceptualized as an extension of the more familiar MCQ format[2]. Most rules used in writing a good Single Best Answer (SBA) question also apply in EMI. A typical EMI has four components:

> A theme,
> An option list,
> A lead in statement and
> Two or more item stems

Following are important rules to write these four components.

Theme:

It can be a chief Complaint e.g. abdominal pain, a disposition position e.g. admission/ discharge from emergency dept. etc.

Lead Inns:

Sets without lead ins (or with non specific lead ins such as "match each item with the best options") should not be used.

Lead ins establish the relationship between the items and the options.

It generally begins with the phrase "For each of the following patient".

1. **Muhammad Medical College, Mirpurkhas**

.*=corresponding author :
        Email: syedrazimuhammad@yahoo.com

It may include chief complaint (or some other factor) e.g. "For each of the following patient with abdominal lump".

The second part of the lead in describes the task e.g. "Select the most likely diagnosis".

Options:

Options should be homogenous (not heterogeneous), i.e. all diagnoses, all management options, all anatomical sites etc.

They should be in tabular form in alphabetical order.

There should be no verbs in the options.

They should be single words or very short phrases.

Each option can be used once, more or not at all.

Items / Stems:

A good examinee should be able to answer the stem without reading the options.

Stems should be long. Patients' vignettes provide an excellent structure for stems.

Each patient description should be similar.

It is better not to mix adults and paediatric cases.

Items should be straight forward and not tricky.

EMI shown below exemplifies the usual structure of this type of question.

Model Question:

Theme   Abdominal Pain

Options

> Appendicitis
> Cholecystitis
> Diverticulitis
> Intestinal obstruction
> Irritable Bowel Syndrome
> Mesenteric Adenitis
> Pancreatitis
> Peptic ulcer
> Torsion of testis
> Ureteric stone

Lead in statement

For each of the patient with abdominal pain, select the most likely diagnosis.

Item stems

A. 20 year old man suddenly developed severe colicky peri-umblical pain twelve hours ago. He vomited several times. Vomiting resulted in some relief of pain. He also confessed to being constipated and had neither passed motion non flatus during this time. Examination revealed diffuse mild tenderness all over abdomen. Bowel sounds are increased and more frequent. Full blood count and serum amylase were normal.

(Answer D):

A. 45 Year old obese man developed pain in upper abdomen. Pain was continuous and radiated to back over region of right scapula. Pain increased on eating fatly food but not on movement. Examination showed tenderness in right hypochondrium. Full blood count revealed leucocytosis. Serum amylase was normal.

(Answer B):

Conclusion:

We agree that establishing the habit of deep learning in students is our aim. We also know students learn with examinations in mind. We wish to make our assessment more fair, objective and structured. Extended Matching Items (EMI) provide a great opportunity to achieve all these objectives. The only problem is that we need to educate our teachers/ examiners to develop these items and to provide ample opportunity to students to learn to answer these questions. However, in my opinion, the prize is worth the effort.

References:

1. Case, S.M & Swanson, D.B (1993) Extended matching items; a practical alternative to free response questions. Teaching and learning.

2. Case, S.M & Swanson, D.B (1998) Constructing written test questions for the basic and clinical sciences. Philadelphia, PA: National Board of Medical Examiners.