REFLECTION OF SAQ IN UNDERGRADUATE ANATOMY MBBS COURSE ACCORDING TO NEW CURRICULUM OF BMDC

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Abstract

Introduction: Graduation course in medical science is a five years course in Bangladesh. It is completed in three phases. Students' achievement is assessed using a series of formative assessment throughout the course and a summative assessment (Professional Examination) at the end of each phase. Anatomy is taught in first phase and is finally assessed in the first professional examination. All the three methods (written, oral and practical) are used to assess anatomy learning. Total marks for written examination is 200 and has 10% contribution from formative assessment. Rest 180 marks are covered in a written summative examination containing multiple choice question (MCQ) of 40 marks and short answer question (SAQ) of 140 marks. The curriculum has indicated to keep the recall (60%), understanding (30%) and application (10%) levels of question in SAQ.

Objective: The present study was designed to observe the reflection of curriculum given by BMDC in formulating SAQ of anatomy in first professional written examination.

Place of study: The study was conducted at the Department of Anatomy, Armed Forces Medical College, Dhaka Cantonment.

Method: For this study, anatomy SAQ papers of first professional examinations of Bangladesh University of Professionals (BUP) and Dhaka University (DU) were selected. Question papers of seven professional examinations from January 2009 to July 2012 of both universities (14 questions from each university) were collected and were classified as parts (numbered components) and segments (each items).

In each professional examination there were two papers (I & II) and each paper had two groups (A & B). In each group there were seven questions. Each segment of questions were categorized as recall, understanding and application type and calculated as number of questions as well as total weightage. The data were saved and analyzed using SPSS 15.

Result: Total 14 question papers (**paper-I and paper-II**) of 7 first professional examinations were received from each university. There were 196 questions, 300 parts and 591 segments in the questions of BUP and 196 questions, 300 parts and 554 segments in the questions of DU. Of these segments of BUP 502 recall type, 89 understanding type and no application type of questions were observed and of the DU tests' there were 461 recall type, 93 understanding type and no application type question. The percentage of weightage of recall type questions of BUP and DU ranged respectively from 80.61% to 89.79% (mean 85.64%±3.35%) and from 83.16% to 85.71% (mean 84.33%±1.01%). The percentage of weightage of understanding type questions of BUP and DU ranged respectively from 11.23% to 19.39% (mean 14.36%±3.35%) and from 14.29% to 16.84% (mean 14.25%±3.63%). No significant difference was observed between two universities; but significant deviation (p<0.000) was observed from curriculum.

Conclusion: Assessment conducted on ground shall reflect the curriculum.

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Necessary review shall be made if the curriculum implementation is not feasible.

Key-words: SAQ, anatomy, MBBS course, Curriculum

Introduction

Medical science is advancing with the advancement of educational science and technology. Global changes are happening in medical education in accordance and conformity to these advancements and changes. Assessment is one of the four components of educational spiral. Assessment and proper feedback not only assist learning, it is also essential component of curriculum development. Assessment is a very important component of medical education. It is a method of measurement. Medicine itself is a profession in which accurate and responsible measurement of performance before certification is a cardinal requirement[1-3]. To standardize assessment of students the procedure must be as per curriculum. Curriculum planning and designing is also not a static process, rather a continuous process done regularly through a system. If implementation of a part is found not feasible, curriculum can be reviewed subsequently.

In prevailing curriculum for Undergraduate Medical Education of Bangladesh first 18 months is assigned as phase I and first professional examination is carried out at the end of that course[4]. Anatomy is one of the three subjects included in phase I. Total 500 marks are allotted for anatomy. At the end of the course, learning of the subject is assessed in three ways which are written, viva and practical. The written component includes contribution from formative tests, multiple choice questions (MCQ) and short answer question (SAQ) in the proportion of 10%, 20% and 70% respectively. So, out of 200 marks 140 (70 in each paper) are allotted for SAQ type of questions. Each paper of SAQ test contains two groups (Group A = 35 marks and Group B = 35 marks) and each group contains 7 questions. Each question carries 7 marks (in fractions) and the students are required to answer 5 questions from each group. Curriculum has advised to cover lower three domains of Bloom's taxonomy[5] of knowledge with the proportion of 6:3:1 (recall type : understanding type : application type).

Recall type question falls under knowledge level which is expressed as the ability to recall or remember previously learned materials without much understanding of the meaning. These questions may be done by using action verbs like define, list, name, repeat, order etc. Understanding type question falls under comprehension level which is expressed as to exemplify by the ability to understand the meaning of an idea or a concept. These questions may be prepared by using action verbs like describe, indicate, restate, explain, review etc. In the application level, the learner should show the ability to use or apply the learned concepts and ideas in the practical field. These questions may be done by using action verbs like apply, illustrate, prepare, solve, use, operate etc[5].

SAQ has several advantages that make them attractive for both the examiners and the students. SAQ can be used to cover broader content areas by asking several discrete and important questions about the topic and thereby improving content validity. The scoring can also be easier and better as the answers are specific and short. The reliability is improved with standard predetermined answers for each question set by the examiners[1,2,6].

The aim of this study was to observe the reflection of curriculum guideline on on-ground written tests of anatomy (SAQ part) of MBBS (Bachelor of Medicine and Bachelor of Surgery) course.

Materials and Method

The study was conducted at the Department of Anatomy of Armed Forces Medical College. Anatomy question papers of seven first professional examinations of Dhaka University (DU) and Bangladesh University of Professionals (BUP) were collected. The question papers were from January 2009 to January 2012. Each question paper (test) was fully scrutinized. The numbered components (1a, 1b, 2a, 2b, etc) were identified as part and each item present in that were identified as segment. There were 196 questions, 300 parts and 591 segments in the tests of BUP and 196 questions, 300 parts and 554 segments in the tests of DU.

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Each professional examination had two papers and each paper had 7 questions each with 7 marks. So total marks for each professional examination was 196 (7x7 + 7x7). Each part of questions was separated as recall, understanding and application types on the basis of their nature. The total number and weightage of each type of question was calculated and saved as data.

The data were analyzed using computer based statistical programme SPSS 15. Data were expressed as mean ± SD and categorical data in percentage (%) and frequency as appropriate. Appropriate statistical test was performed to evaluate statistical difference between groups as applicable. A $p<0.05$ was taken as level of significance.

Result
The distribution of recall type of questions included in first professional examination of various years is shown in table-I, separately showing the number of segments and weightage of questions. In the tests of BUP and DU respectively 85.64%±3.35% and 84.33%±1.05% of questions as per weightage concern were recall type. Though there were no significant differences observed between two universities ($p>0.05$), the percentage was significantly higher than the percentage proposed in curriculum ($p<0.000$).

Table-I: Distribution of recall type questions

| Examination	BUP		DU	
	Number (%)	Weightage (%)	Number (%)	Weightage (%)
January 2009	71(86.58)	174(88.77)	66(84.61)	168(85.71)
July 2009	66(83.54)	165(84.18)	62(81.57)	166(84.69)
January 2010	73(90.12)	176(89.79)	63(81.81)	164(83.67)
July 2010	67(81.70)	164(83.67)	65(83.33)	164(83.67)
January 2011	73(87.95)	173(88.26)	68(82.92)	163(83.16)
July 2011	78(81.25)	158(80.61)	73(83.90)	164(83.67)
January 2012	74(84.09)	165(84.18)	64(84.21)	168(85.71)
Mean ± SD	71.21±4.15	(85.03±3.3)	167.86±6.57	(85.64±3.35)
	65.86±3.72	(83.19±1.17)	165.29±2.06	(84.33±1.05)
BUP vs DU	: p>0.05			
Curriculum vs BUP : p<0.000				
Curriculum vs DU : p<0.000				

The distribution of understanding type of questions included in first professional examination of various years is shown in table-II, separately showing the number of segments and weightage of questions In the tests of BUP and DU respectively 14.36%±3.35% and 15.67%±1.05% of questions as per weightage concern were understanding type. Though there were no significant differences observed between two universities ($p>0.05$), the percentage was significantly higher than the percentage proposed in curriculum ($p<0.000$).

Table-II: Distribution of understanding type questions

Examination	BUP		DU	
	Number (%)	Weightage (%)	Number (%)	Weightage (%)
January 2009	11(13.42)	22(11.23)	12(15.39)	28(14.29)
July 2009	13(16.46)	31(15.82)	14(18.43)	30(15.31)
January 2010	08(09.88)	20(10.21)	14(18.19)	32(16.33)
July 2010	15(18.30)	32(16.43)	13(16.67)	32(16.33)
January 2011	10(12.05)	23(11.34)	14(17.08)	33(16.84)
July 2011	18(18.75)	38(19.39)	14(16.10)	32(16.33)
January 2012	14(15.91)	31(15.82)	12(15.79)	28(14.29)
Mean ± SD	12.71±3.35	(14.97±3.3)	28.14±6.57	(14.36±3.35)
	13.29±0.95	(16.81±1.17)	30.71±2.06	(15.67±1.05)
BUP vs DU	: p>0.05			
Curriculum vs BUP : p<0.000				
Curriculum vs DU : p<0.000				

Question to assess application level of cognitive domain was not found in any of the test collected as sample. The comparative situation of percentages of recall, understanding and application type questions appeared in the tests of BUP, DU and that proposed in curriculum is shown in figure 1.
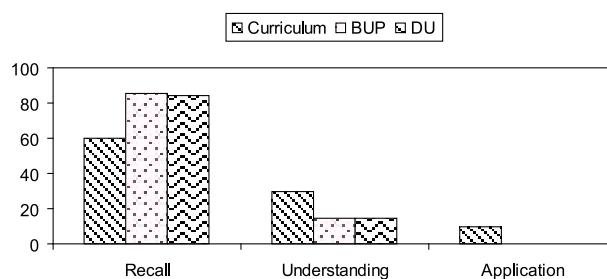
Fig-1: Bar diagram showing percentage of weightage of questions covering different domains.

Discussion

Assessment is a relative term. From the perspective of students' assessment, it is the process by which teachers judge whether the learning objective of the course is met[6]. More specifically, assessment is the process of defining, selecting, designing, collecting, analyzing, interpreting, and using information to increase students learning and development[1,7]. The range of student assessment instruments now regularly include multiple choice questions (MCQ), modified (MEQ) & short essay questions (SEQ), oral examination, objective structured clinical examination (OSCE) and standardized patients[2]. The student portfolio is being pioneered test rather than written tests as an authentic way of documenting students' attitude and personal attributes that are translated into practice[7,8].

Educationists are at variance in their opinion of what constitutes a SAQ. Hence, though difficult to define, it may best be explained by defining its role[2].

The undergraduate medical curriculum followed in the medical colleges of Bangladesh was developed in 1988 through UNDP (United Nations Development Programme) and WHO (World Health organization) support by the CME (Centre for Medical Education) with an aim to produce community oriented doctors who will be able to provide essential primary health care to the community[4]. The recent changes in anatomy curriculum (e.g. reduced time allocations) and anatomy teaching (e.g. dispensing with dissection) have been a matter of debate for many years. Many medical schools, however, have adopted innovative ways of teaching anatomy amidst these challenges[9,10]. Medical practitioners and students of London preferred the assessment of their ability in anatomy with practical tests (e.g. practical spot tests rather than written tests with extended matching items) or oral tests[11]. In medical colleges of Bangladesh anatomy is learned during first 18 months along with Physiology and Biochemistry. Learning is assessed using three approaches, written, oral and practical.

Written examination has formative contribution (10%), MCQ (20%) and SAQ (70%). In Birmingham University, anatomy is taught as part of a series-based module throughout the first two years of a five year medical curriculum. Their written assessment contains 50% SAQ, 20% MCQ, 10% EMQ (extended matching question) and rest 20% adopted from formative assessment. Anatomy SAQs are often integrated with other discipline like Physiology and cover the domain of knowledge and understanding[11].

The Further Education and Training Awards Council (FETAC) was set up as a statutory body on 11 June 2001 by the Minister for Education and Science, Ireland. The body prepared a module for anatomy and physiology for the national vocational certificate framework where in section A there are 12 SAQs each with 2 marks. From that one has to answer any 10 questions[12]. In the curriculum followed in Bangladesh, students have to answer 5 SAQs out of 7 and each carries 7 marks. Here there is option for the question setter that they can set more than one SAQ out of total 7 marks. In Bangladesh curriculum there is mention for proportion of knowledge, understanding and application. But that is not specified in FETAC module.

This study revealed that the mean weightage distribution of recall and understanding types were 85.64% & 14.36% in tests of BUP and 84.33% & 15.67% in tests of DU respectively. There was no application level question in either university. There was no significant difference between the findings of the two universities and proportion was not maintained as proposed in the curriculum. There was more recall type (p<0.000) and less understanding type of questions (p<0.000). McGuire analyzed the content of objective tests and found that 78% of test items were concerned with recall information, 5% required recognition of learning of a fact or concept, 11% involved ability to generalize and only 7% were concerned with analyzing that could be described as higher level learning[13].

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Conclusion

All the events mentioned in a curriculum shall be reflected to achieve the objective of a course. The curriculum is also not a constant document and can be reviewed time to time. In the study noncompliance of curriculum was observed which needs analysis in depth to workout the cause and shall be corrected. Review of part of the BMDC curriculum may be made if implementation of that part is not feasible.

References

1. Epstein RM. Assessment in Medical Education. The New England Journal of Medicine 2007; 356:387-96.

2. Al-Wardy NM. Assessment Methods in Undergraduate Medical Education. Sultan Qadoos University Medical Journal 2010; 10(2):203-9.

3. Miller GE. The assessment of clinical skill/competence/performance.Academic Medicine 1990; 65: S63-7.

4. Director General of Health Services. Curriculum for Undergraduate Medical Education in Bangladesh. Dhaka: Centre for Medical Education (CME); 2002: 15-52.

5. Bloom BS. Taxonomy of Educational Objectives. Handbook I: Cognitive Domain. New York: David Mckay; 1956.

6. Erwin TD. Assessing Student Learning and Development : A Guide to the Principle, goals and methods of Development. San Francisco: Jossey-Bass; 1991 .p.14-9.

7. Mather NJ, Challis MC, Howe AC, Field NJ. Portfolios in continuing Medical Education. Effective and Efforts 1999; 33:521-30.

8. Davis MH, Ponnamperuma GG. Portfolio Assessment. JVME 2005; 32(3):279-84.

9. Mclachlan J. New path for teaching anatomy; Living anatomy and medical images vs. dissection. Anat Rec 2004;281B:4-5

10. Rowland S, Ahmed K, Davies CD, et al. Assessment of anatomical knowledge for clinical practice: perception of clinicians and students. Surg Radiol Anat 2011;33: 262-9.

11. Wilton JC. Assessment of Anatomy at Birmingham. University of Birmingham. Academic year 2009-2010. (www.birmingham.ac.uk)

12. The Further Education and Training Awards Council (FETAC). Anatomy and Physiology (Module Description). Ireland: Ministry for Education and Science; September 2001.

13. McGuire C. A process approach to the construction and analysis of medical examinations. Journal of Medical Education. 1963; 38:556-63

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