



ORIGINAL RESEARCH PAPER

Anatomy

ASSESSMENT OF COURSE CONTENTS OF MCQS: PAPER-1 UNDERGRADUATE ANATOMY EXAMINATIONS IN BANGLADESH

**KEY WORDS:** Course contents, MCQs, Undergraduate, Anatomy

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ABSTRACT

**Context and rationale:** Multiple choice questions (MCQs) are one of the popular accepted means of evaluation as they can cover wider section of lessons. The contents of paper-I MCQ examination is mentioned in the curriculum but the different weightage of the subdivisions are not mentioned.

**Aim:** To observe distribution of course contents of Paper-I MCQs in 1<sup>st</sup> professional undergraduate Anatomy examinations of Bangladesh.

**Methods:** Study was conducted at the department of Anatomy, Enam medical College, Savar, Dhaka. twelve (12) Anatomy MCQs paper-I question from undergraduate 1<sup>st</sup> professional examination from May 2016 to November 2018 of Dhaka University and Chittagong University were collected and were classified according to the course contents.

**Results and conclusions:** Different subdivisions of Anatomy are not giving proper weightage. These include Human Genetics, Systemic Histology Anatomy of Radiology and Imaging, Clinical Anatomy, etc. Attention should be given on the proper weightage of the curriculum contents in MCQ exams.

Introduction

A study on student perceptions of medical anatomy education by Whelan et al. (2016, p. 41) observed that students invested most time studying anatomy at the beginning of medical school and had a high regard for the clinical value of anatomical knowledge. Assessment is one of the four components of educational spiral (Manara, 2012). It is entering every phase of professional development and used during medical school entrance, at the start of postgraduate training and also in the maintenance of certification (Epstein, 2007).

In Bangladesh assessments in Anatomy consists of all the three methods: written, oral and practical examination. According to new curriculum 2012 there were two (2) exams per year in May and November. The summative written assessment consists of paper-I and paper-II, and per paper comprised of SAQ (70 marks) and MCQ (20 marks). Each complete set of questions presented before the examination of any given paper was considered as question paper (Sultana, 2009).

The multiple-choice question (MCQ) is the most common type of written test item used in undergraduate, graduate, and postgraduate medical education (Farley, 1989). Its acceptance is based on its objectivity, feasibility, high internal consistency and accuracy (Chandra 2009). Creating good MCQs are time consuming, challenging and difficult to construct but can scored consistently and effortlessly (Cronbach, 2004). The educational objectives and the MCQs that accompany them should target all levels of learning appropriate for the given content (Collin, 2006). Content validity is considered as important in the assessment because here the assessor can judge the educational objectives according to the good covering of the lesson (Khanam, 1998).

However, there are no organised written guidelines in the new BMDC curriculum regarding the contents weightage of the MCQ papers. These gave pressure over the paper-setters and the question moderators regarding the choosing of the contents of the MCQ papers. The aim of the study was to assess the distribution of the contents of different subdivisions of Anatomy in paper-I MCQ examinations.

Methods and Analyses

The present research was a set of observational study and conducted at the department of Anatomy of Enam Medical College. Total twelve (12) Anatomy paper-I MCQ question papers of the six (6) first professional examinations of Dhaka University (DU) and Chittagong University (CU) were collected. The question papers were form May 2016 to November 2018. Each MCQ paper was fully checked. There were 2 examinations per year, so the

question paper of twelve (12) exams were analysed. There were twenty (20) questions per paper. So, 240 questions were analysed.

The data were analysed using SPSS-20 and were expressed as percentage (%) frequency. Appropriate statistical test was performed to evaluate the statistical difference between groups as applicable. P< 0.05 was taken as level of significance.

Results

The Table-I illustrates examples of the MCQs from the question papers of the First Professional MBBS Examinations of Dhaka University (May 2016 and November 2018).

**Table I- Examples of MCQs from the question papers of the First Professional MBBS Examinations of Dhaka University (May 2016 to November 2018)**

Example*	University	Examination	Contents According to curriculum of Paper-1 Anatomy
Mitotic cell division occur in a) Primordial germ cell b) secondary spermatocyte c) spermatid d) zygote e) blastomere	Dhaka	May 2016	Cell Biology
Derivatives of 3rd pharyngeal pouch include a) auditory tube b) inferior parathyroid gland c) palatine tonsil d) superior parathyroid artery e) thymus	Dhaka	November 2018	Systemic Embryology

The language of the questions has been kept as it was in the question papers.

The distribution of frequency of coverage of different aspects of Anatomy in the twelve (12) Paper-I, MCQ question paper of 1<sup>st</sup> professional MBBS examinations was shown in table-II. The distribution of the frequencies showed some interesting characteristics that include negligible coverage of Human Genetics, Systemic Histology, Clinical Anatomy and Anatomy of Radiology and Images (Shown in Table-II). The coverage of Systemic Developmental Anatomy was around the one third of the coverage of Neuroanatomy in DU and one sixth in CU. There was no MCQ question from Systemic Histology in both DU and CU.

**Table II Frequencies of coverage of course contents on different subdivision of Anatomy in 12 (twelve) Anatomy (paper-I) MCQ question paper of the 1<sup>st</sup> professional examinations of the DU and CU (2016-2018)\*.**

Course Contents According to curriculum of Paper-1 Anatomy		Total number of MCQ and the % frequency of coverage of course contents (n=120)†	
		DU	CU
1.	General Anatomy	20 (16.60%)	24 (20.00%)
2.	Neuroanatomy	25(20.83%)	23 (19.60%)
3.	Head and Neck including eye ball	26 (21.6%)	18(15.00%)
4.	General Embryology	17(14.60%)	24 (20.00%)
5.	Systemic Embryology	8 (6.60%)	0 (0.00%)
6.	Human Genetics	0 (0.00%)	0 (0.00%)
7.	Cell Biology and General Histology	24 (20.00%)	26 (21.60%)
8.	Systemic Histology	0 (0.00%)	5 (4.16%)
9.	Clinical Anatomy	0 (0.00%)	0 (0.00%)
10.	Anatomy of Radiology and Images	0 (0.00%)	0 (0.00%)
DU vs CU : p> 0.005			

However the Cell Biology and General Histology had one third of the content coverage on the both University papers. On the other hand Head and Neck and Neuroanatomy had 50% of the content coverage in both of the university question papers. Though there were no significant differences observed between two Universities (p>0.05).

**Discussion:**

Measurement of a learner's knowledge is an important step in the educational process and same attention should be given to the development and implementation of curricula and the results of measurements of learning are used in establishing future learning goals, which completes the continuous cycle of learning (Collins, 2006). From the students' perspective Epstein (2007) stated, assessment is the process of defining selecting, designing, collecting, analysing, interpreting and using information to increase students learning and development and the students tend to study that which they expect to be tested on summative assessment may influence learning even in the absence of feedback.

MCQs are one of the popular accepted means of evaluation as they can cover wider section of lessons and scrutinized large numbers of students in lesser time and this is employed in both formative and summative assessments. Result from the analyses of the MCQ question papers depicts that different subdivision of Anatomy are usually not given proper importance during question preparation. There are some divisions where very minimum attention is given, than the requirements. These include Human Genetics, Clinical Anatomy, Anatomy of Radiology and Images etc (Table-2). In the new BMDC curriculum by 2012, the course contents for the paper-1 and paper-2 is clearly mentioned. But there is no given official demarcation regarding the weightage to the

**\*DU: Dhaka University- May 2016 to September 2018 (6 examinations held)**

**CU:** Chittagong University- same

**†n:** Represents the total number of question of all the Paper-I MCQs of the universities analysed.

different subdivisions of Anatomy. So teachers can construct or moderate any questions from any of the subdivisions according to their perceptions.

'Validity is the first priority in developing any form of assessment' (Wojtczak 2002, p. 23). So that the assessment could be based on the examinee's competence and performance rather than on the perception of the fairness and appropriateness of the examination or the methods of assessment. Palmer and Devitt (2007) also admit that apart from the ability to assess the appropriate cognitive skills, assessment instruments should be able to withstand the

scrutiny of content and construct validity and analysis. He has shown that MCQ paper is able to cover a broader area of the course contents. To achieve the validity, contents should always be carried out regardless of the type of assessment tool (Begum, 2001). MacAller (2001) stated that to testing the achievements one must ensure the content validity and it is based on the expert judgment and the assessors should compare what is taught with what is going to be measured in the examinations (Sultana, 2009). Study regarding the contents coverage in the SAQ question papers of the 1<sup>st</sup> professional Anatomy examination in Bangladesh has found that some subdivisions of the Anatomy was also less covered. Content validity pertains to the degree to which the instrument fully assesses or measures the construct of interest and the development of a content valid instrument is typically achieved by a rational analysis of the instrument by experts familiar with the construct of interest (Bolarinwa, 2015).

A limitation of this study is small sample size, wide extensive study can be done. From the above discussion it is evident that to increase the effectiveness of the assessment through MCQ examinations more attention should be given by the paper setters and question moderators regarding the course contents of concern paper and reviewing of the BMDC curriculum is suggested.

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