



## Summative Assessment in Competency Based Medical Education - A Critical Analysis

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### ABSTRACT

The Competency Based Medical Education (CBME) was introduced in India from MBBS admission batch 2019, to update the medical education standards of the country. Summative assessment is a key parameter to assess students' learning. Since the universities enjoy an autonomy to create their own, theory question papers, it is inevitable that the pattern of questions will vary from one college to another. Comparison and analysis of summative question papers of competency based assessment (CBA) versus old scheme of various medical schools will give an insight to the changing trends in medical education and evaluation. The study was carried out in Department of Anatomy FMHS SGTU from Feb - 21 to April - 21. One set of Anatomy theory papers of CBME scheme and old scheme each, were collected and analyzed. Each set consisted of two papers (Paper I and II) such that four papers were taken from each medical school. Each university was given a unique serial number to anonymize and randomize it. Considerable non - uniformity in the allocation of marks to various subdivisions of Anatomy, was observed. However, use of Bloom's action verbs and structured LAQs with appropriate allocation of marks for each subpart, increased markedly in CBA scheme. Theory papers need to be adapted to the needs of CBME. Adequate allocation of marks to each subdivision, use of appropriate Bloom's verbs to test hierarchical levels of cognitive domain, inclusion of all types of questions from MCQs to structured LAQs and finally assessing the AETCOM skills and ECE impact are some of the key fundamentals essential to attain high quality and valid theory question papers.

**KEY WORDS:** Summative Assessment, Competency Based Medical Education, Competency based assessment, Theory Papers, Anatomy

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### INTRODUCTION

The Competency Based Medical Education (CBME) was introduced in India from MBBS admission batch 2019 to update the medical education standards of the country.<sup>[1]</sup> Many developed countries of the world like the United States of America have successfully adopted and tested the efficacy of the outcome - based CBME pattern.<sup>[2]</sup> The long overdue medical reforms in medical curriculum are taken up with a view to usher the medical schools of the country into the 21<sup>st</sup> century and ensure quality healthcare services to the population of India. The goal is to create an Indian Medical Graduate (IMG) who is competent, ethical and possess the skills needed to provide relevant holistic care to all sects of society compassionately. <sup>[3]</sup> After adhering to the traditional curriculum for nearly two decades (the previous Graduate Medical Education Regulations GMER was released in 1997)<sup>[4]</sup> the Board of Governors (BOG) in super - session of Medical Council of India (MCI) released the GMER, 2019. Modules were released from time to time to guide and facilitate the implementation of the new curriculum. This was done to standardize the curriculum, teaching - learning methods (TLM) and assessment patterns of medical undergraduates across the country. Specific salient features and underlying principles were laid down in detail, in GMER - 2019. These regulations mainly served as a minimum criterion to be followed by various medical schools, as even National Medical Commission (NMC) understands that various medical schools across the country face regional variations and are different with respect to infrastructure and trained manpower resources. One of the key aspects of undergraduate medical education is assessment. NMC released Assessment Module (Module 3) for Undergraduate Medical Education 2019 compiling all the aspects related to Competency Based Assessment (CBA) such as its relevance, components, tools etc. <sup>[5]</sup> It recognized that summative assessment is a domain

of concerned university. But, in order to maintain uniformity it has provided certain guidelines which are to form the basis of planning, developing and implementing the summative assessment at the end of each professional year, by each university. Since the universities enjoy an autonomy to create their own summative assessment, theory question papers, it is inevitable that the pattern of questions will vary from one college to another. In this study a critical analysis of the question papers from different universities was done. Also the difference in pattern of question papers in CBA versus old scheme were highlighted.

### **AIMS AND OBJECTIVES**

1. To analyse the summative CBA theory question paper of various universities.
2. To delineate the changes made in papers of CBA scheme (2019 onwards) with respect to the old scheme (1997 - 2018) so that the modifications can be understood more clearly.

### **MATERIAL AND METHODS**

The present cross - sectional study was carried out in the Department of Anatomy in SGT Medical College Faculty of Medicine and Health Sciences SGT University from Feb - 21 to April - 21. Summative assessment (labelled as University examination in medical schools) Anatomy theory question papers from several universities / colleges were collected using several multimedia platforms. Since the information (question papers) were readily available on multimedia platforms in the public domain, approval for 'waiver of consent' (vide ICMR guidelines on Biomedical Research 2017) was sought from the registered Screening Ethical Committee of the institution (SEC / FMHS / F / 19 / 4 / 21 - 36). Convenience sampling was used. Each university was given a unique serial number to anonymize and randomize it. For each university two sets University Examination (summative assessment) Anatomy theory question papers were collected. Set A comprised of 20 question papers of CBME curriculum (implemented from MBBS admission Batch 2019), 10 paper I and 10 paper II). Set B also comprised of 20 question papers of old curriculum (MBBS Batch 1997 to 2018) 10 paper I and 10 paper II). Thus, from each university four question papers were taken. So, the total sample comprised of 40 question papers from 10 different universities. Once the question papers were arranged, the data was tabulated and analyzed. A points scale was created to gauge the quality of question papers. In paper I for both new and old scheme each region (general, upper limb, head & neck, brain, embryology, histology) was assigned 1 mark, while due to relative importance ECE, AETCOM and MCQs/VSAT questions' inclusion was assigned 3 marks each making a total of 15 marks. In paper II for both new and old scheme each region (genetics, lower limb, abdomen & pelvis, thorax, embryology, histology) was assigned 1 mark, while due to relative importance ECE, AETCOM and MCQs/VSAT questions' inclusion was assigned 3 marks each making a total of 15 marks. Exclusion criteria: Universities for which both old and new curriculum question papers were not readily available in public domain were excluded.

### **STATISTICAL ANALYSIS**

Qualitative analysis was done. Comparison was done regarding the region wise distribution of marks in question papers depicting the coverage of syllabus, type of questions, inclusion of AETCOM and ECE questions as directed by governing body in CBME curriculum and usage of verbs given in Bloom's taxonomy. Comparison was done not only between the old and new scheme, but also within the scheme. The results were expressed as percentages wherever necessary. Since, it's a qualitative analysis results were validated by the authors and does not imply the use of any scale.

### **RESULTS**

Summative assessment theory question papers of ten North Indian medical universities were collected, data tabulated and analyzed. There was nominal variation in distribution of topics between paper I and II between different universities. However, there was no variation in topics between CBME and old scheme within the same university papers. Table 1 (a, b) depicts the distribution of marks into gross (G), applied anatomy (AA) and early clinical exposure (ECE), region - wise in CBA scheme, for Paper I & II respectively. Table 2 (a, b) depicts the distribution of marks into gross (G), applied anatomy (AA) and early clinical exposure (ECE), region - wise, for Paper I & II respectively in old scheme. The total marks (maximum marks) for paper I and II of CBME scheme was 100 each while in old scheme it was 50 marks each. The question paper was divided into three sections in new pattern, one section being that of MCQs / VSATs. In the old scheme the paper was generally divided into two sections.

Tables 1 and 2 also depicts the regional distribution of marks for new & old scheme of Paper I and Paper II respectively. A marked variation in regional distribution of marks was seen. General anatomy was not covered by 5 universities, while genetics was not assessed by 3 universities. The distribution of marks was more uniform in Paper II of new scheme. AETCOM questions were included by 2 universities in both papers, while 4 universities ensured AETCOM appearance in at least one paper. 40 % (4 universities) did not include AETCOM at all. ECE questions were included by 4 universities in both papers, while 4 universities ensured ECE based questions in at least one paper. 20 % (2 universities) did not include ECE at all.

Maximum questions of ECE were from upper limb in Paper I and abdomen & pelvis in Paper II. The maximum marks range of ECE was observed at 23 %.

University	General			Upper Limb			Head & Neck			Brain			Embryology			Histology			§AETCOM	Total
	*G	†AA	‡E	G	AA	E	G	AA	E	G	AA	E	G	AA	E	G	AA	E		
1	4	2	-	8	5	4	26	-	9	3	4	-	8	5	-	17	-	-	5	100
2	11	-	-	13	5	1	8	5	1	19	-	-	19	-	-	8	-	-	10	100
3	4	-	-	14	9	6	26	4	11	5	6	3	3	-	-	9	-	-	-	100
4	1	-	-	14	1	-	28	2	-	20	3	-	15	-	-	16	-	-	-	100
5	2	-	-	24	11	-	36	3	1	13	1	-	2	-	-	7	-	-	-	100
6	4	-	-	13	16	-	35	5	-	10	5	-	5	2	-	5	-	-	-	100
7	5	5	-	10	5	-	30	11	-	5	5	-	9	-	-	10	-	-	5	100
8	5	2	-	14	7	-	22	6	-	15	4	-	9	3	-	13	-	-	-	100
9	3	-	-	13	5	5	26	10	-	10	5	-	8	-	-	10	-	-	5	100
10	-	-	-	13	-	7	24	5	-	11	5	-	13	6	-	16	-	-	-	100

**Table 1(a). New Scheme (CBME) Paper I Master Chart**

\*G = Gross; †AA = Applied Anatomy; ‡E = Early clinical exposure

§ AETCOM = Attitude, ethics & communication

University	Lower Limb			Thorax			Abdomen & Pelvis			Embryology			Histology			Genetics	AETCOM	Total
	G	AA	E	G	AA	E	G	AA	E	G	AA	E	G	AA	E			
1	3	5	4	13	2	2	11	7	17	5	12	-	12	-	-	2	5	100
2	14	1	-	20	8	-	27	19	6	5	-	-	-	-	-	-	-	100
3	13	6	1	14	6	-	8	14	3	12	3	-	12	-	-	3	5	100
4	28	4	-	15	-	-	30	5	-	6	10	-	2	-	-	-	-	100
5	22	6	-	13	-	-	24	3	-	13	-	-	14	-	-	5	-	100
6	19	3	-	18	3	-	33	5	10	-	-	-	4	-	5	-	-	100
7	15	5	-	5	-	-	34	13	-	11	5	-	7	-	-	-	5	100
8	20	6	3	13	3	-	28	5	1	6	-	-	11	-	-	4	-	100
9	11	5	-	18	5	5	24	14	-	3	-	-	10	-	-	5	-	100
10	20	5	-	18	2	-	9	5	15	-	8	-	8	-	-	5	5	100

**Table 1(b). New Scheme Paper II Master Chart**

University	General		Upper Limb		Head & Neck		Brain		Embryology		Histology		Total
	G	AA	G	AA	G	AA	G	AA	G	AA	G	AA	
1	5	-	6	2	18	5	4	-	2	2	6	-	50
2	-	-	7	3	14	3	3	-	10	3	7	-	50
3	2	-	6	-	17	6	8	1	2	-	8	-	50
4	2	-	25	-	8	4	2	-	6	-	3	-	50
5	2	-	11	2	10	-	10	-	7	-	8	-	50
6	-	-	12	-	14	-	16	-	4	-	4	-	50
7	-	-	10	-	18	7	5	-	8	2	-	-	50
8	3	-	7	3	20	1	5	-	4	2	5	-	50
9	-	-	9	3	26	3	4	3	2	-	-	-	50
10	-	-	10	2	16	2	8	-	8	-	4	-	50

**Table 2(a). Old Scheme Paper I Master Chart**

University	Lower Limb		Thorax		Abdomen & Pelvis		Embryology		Histology		Genetics	Total
	G	AA	G	AA	G	AA	G	AA	G	AA		
1	8	2	7	-	13	4	2	7	4	-	3	50
2	10	3	9	3	13	-	3	-	9	-	-	50
3	11	-	9	-	16	1	7	-	3	-	3	50
4	16	3	8	-	20	-	-	-	3	-	-	50
5	6	-	12	2	10	1	6	-	8	-	5	50
6	12	-	8	-	4	10	8	-	8	-	-	50
7	5	5	5	-	17	3	10	-	-	-	5	50
8	6	6	8	-	16	-	8	-	3	-	3	50
9	8	-	5	-	18	5	5	3	4	-	2	50
10	3	1	8	2	20	2	4	-	4	-	6	50

**Table 2(b). Old Scheme Paper II Master Chart**

Table 3 and 4 depicts the type and number of questions for CBA and old scheme respectively. The mainstay of CBA multiple choice questions and structured long questions. One university however gave 'fill in the blanks' and 'very short answer questions' in objective pattern. One university did not give SAQs at all. 20 % marks as MCQs and 80 % as Structured LAQs. So, a considerable variation in the type of questions and marks distribution was observed. No university however, exceeded the recommended 20 % marks for objective pattern.

University	Total Marks	Total Number of Questions	MCQs / (VSAT) Very Short Answer Type		Short Answer Questions (SAQs)		Long Answer Questions (LAQs)	
			No of questions	Marks	No of questions	Marks	No of questions	Marks
1	100	26	10	20	15	65	1	15
2	100	27	20	20	2	10	5	70
3	100	38	20	20	16	60	2	20
4	100	26	20	20	-	-	6	80
5	100	32	20	20	8	40	4	40
6	100	29	20	30	7	35	2	35
7	100	33	20	20	11	55	2	25
8	100	38	20	20	16	60	2	20
9	100	20	-	-	18	80	2	20
10	100	20	-	-	18	70	2	30

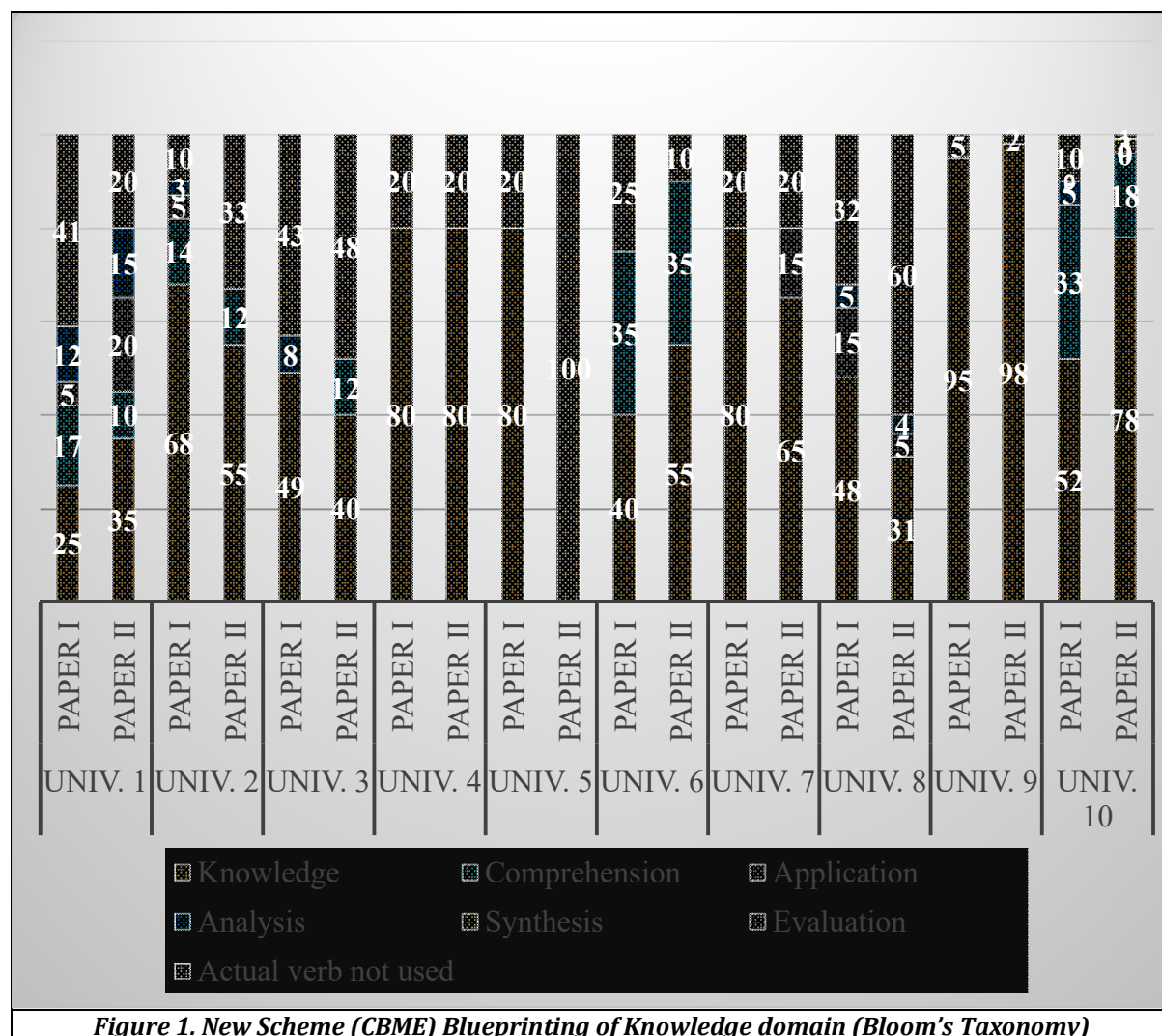
**Table 3. New Scheme (CBME) Paper I & II Types of Questions**

University	Total Marks	Total Number of Questions	MCQs / (VSAT) Very Short Answer Type		Short Answer Questions (SAQs)		Long Answer Questions (LAQs)	
			No of questions	Marks	No of questions	Marks	No of questions	Marks
1	50	19	12	24	6	18	1	8
2	50	9	-	-	6	20	3	30
3	50	16	5	10	11	40	-	-
4	50	12	-	-	10	30	2	20
5	50	19	10	10	8	32	1	8
6	50	10	-	-	8	32	2	18
7	50	9	-	-	8	40	1	10
8	50	16	2	4	14	46	-	-
9	50	19	10	20	8	24	1	6
10	50	12	5	10	5	20	2	20

**Table 4. Old Scheme Paper I & II Types of Questions**

Figure 1 and 2 depicts the distribution of marks in each level of knowledge domain as per the verbs given in Bloom's taxonomy in CBA and old scheme respectively. Knowledge domain verb were maximally used and ranged from 25 % - 95 %. Verbs not used in Paper I in the range of 5 % - 43 %, while one university did not use any actual verb at all in Paper II. Only University 10 used verb of synthesis and evaluation level, that too in only in Paper II.

University 1 used three initial levels of Bloom's verbs. It also included question of each region with a fair distribution of ECE and applied anatomy questions in each paper. AETCOM SAQs were also seen in both Paper I and II.



**Figure 1. New Scheme (CBME) Blueprinting of Knowledge domain (Bloom's Taxonomy)**

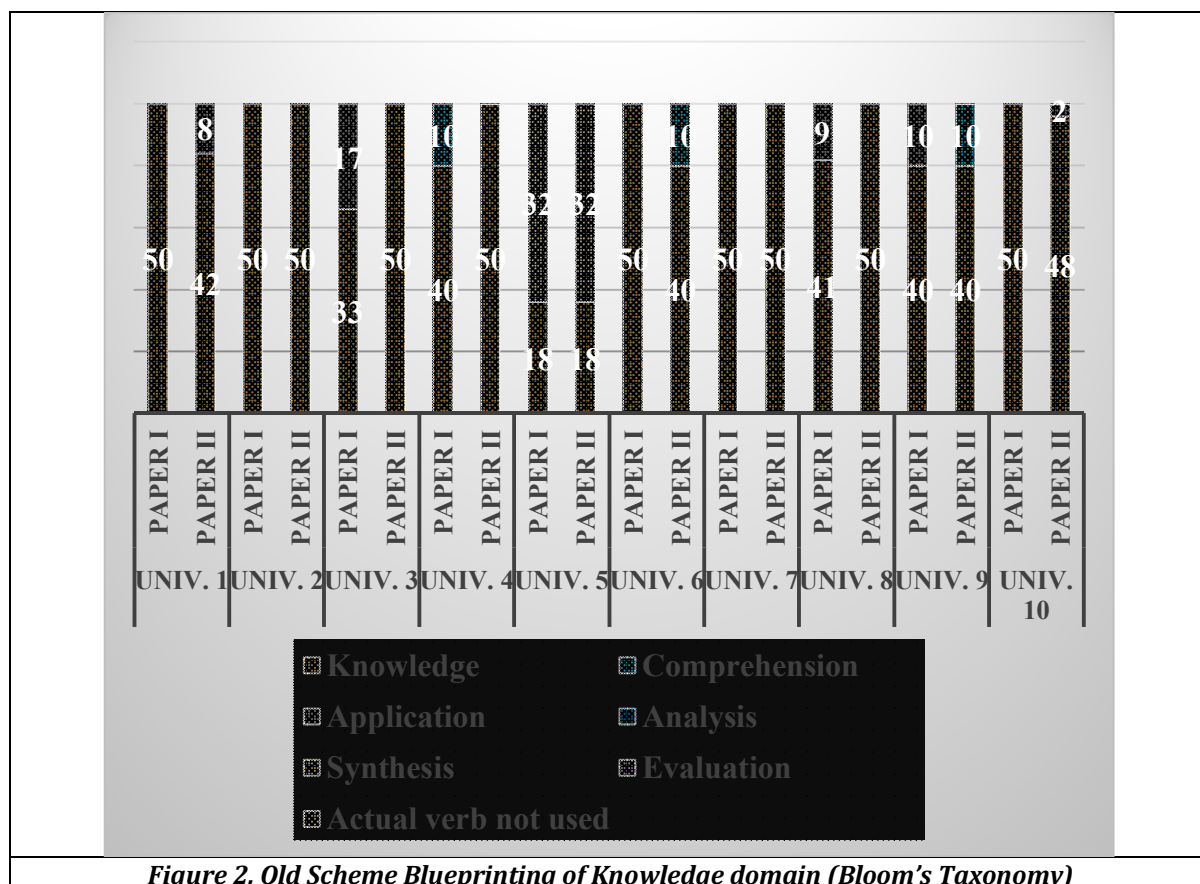


Figure 2. Old Scheme Blueprinting of Knowledge domain (Bloom's Taxonomy)

Table 5 depicts the final score for each university under old and new scheme

University	Old scheme			New scheme			Total (60marks)
	Paper I (15marks)	Paper II (15marks)	Total (30marks)	Paper I (15marks)	Paper II (15marks)	Total (30marks)	
1	9	9	18	15	15	30	48
2	5	5	10	15	10	25	35
3	9	9	18	12	15	27	45
4	6	4	10	9	8	17	27
5	9	9	18	12	9	21	39
6	5	5	10	9	11	20	30
7	4	5	9	12	11	23	32
8	9	9	18	9	12	21	39
9	7	9	16	12	9	21	37
10	8	9	17	5	12	17	34

Table 5. Final score for each university

So, university 1 has the maximum score. Though universities 3,4,8 had similar paper quality in old scheme, they failed to incorporate features recommended by NMC in CBA.

## DISCUSSION

Summative assessment is a formal evaluation done to assess students' learning at the end of instructions of that particular phase / semester based on certain norms, outcomes and standards. [6] This assessment is considered decisive in gauging whether and to what extent students have learned the subject in consideration. Results are documented in the form of scores / grades to categorize the students as pass & fail. [7] Students who clear this exam are promoted to the next phase. With the introduction of competency based medical education, new guidelines for competency based assessment were also formulated. [5] A few key recommendations made by NMC for summative written examination which were different from the traditional system are:

University exam will be conducted in one specified month for each phase throughout the country, for Phase I it is September. Due to COVID - 19 pandemic NMC postponed the month of first CBME batch of medical undergraduates in India to February 2021. In a paradigm shift towards CBME the weightage of formative (internal) assessment as a component of summative assessment was completely done away with. Neither internal marks nor the marks of grand viva / theory viva - voce (conducted during practical university exam) can now be added to the theory marks. In other words, the students need to pass the exams solely on the basis of their knowledge. In the traditional system approximately 14 % marks came from internal assessment and grand viva each. Each subject will comprise of two theory papers of 100 marks each, while in traditional system maximum marks for each paper was 50 marks. The students need 50 % marks to clear a particular subject theory summative (university) examination as in the traditional system. However, a new regulation was included wherein students also need to acquire a minimum of 40 % marks in each paper (paper I and II) of each subject separately. It ensures that the students acquire a minimum of basic knowledge of each core competency. It also implies that the students can now, not leave a particular region or subsection of the subject in choice.

One critical element to keep in mind while designing the question paper is appropriate representation of each topic in terms of marks. Patke et al pointed out that there was non - uniformity in the allocation of marks to various subdivisions. One reason enlisted for such inconsistency was difference of opinions among several subject experts.<sup>[8]</sup> In the present study too, it was found that there was a less uniform distribution of marks region - wise. For example, university 2 did not include embryology and histology in Paper II of CBA scheme and general anatomy and genetics in Paper I and II respectively of old scheme. The scenario remained more or less unchanged even under CBA. In paper I more emphasis was given to upper limb (maximum 35 %) and head & neck (maximum 41 %) regions in new scheme, though there was a marked improvement if the old scheme paper I is compared, in which upper limb (maximum 50 %) and head & neck (maximum 58 %) regions were given too much weightage. In the old scheme 5 universities did not assess general anatomy in contrast to only 1 university in new scheme. 2 universities did not represent histology section in old scheme.

In the old scheme representation of genetics and embryology was absent in 3 and 1 university respectively while in new scheme question papers, such representation was absent in 4 and 1 university respectively. In paper II more emphasis was given to abdomen and pelvis (maximum 52 %) followed by lower limb (maximum 32 %) in new scheme, as well as old scheme where maximum contribution of abdomen and pelvis and lower limb was 46 % and 40 % respectively. However, one university did not include both embryology and genetics in Paper II of CBA scheme.

These variations in marks allocation for different regions influence the students' approach to a topic. It is well established that students learn only what is assessed.<sup>[9]</sup> Learning is largely governed by the impact it has on scores. To modify students' approach towards universal course coverage a more standardized question paper should be prepared. Blueprinting and moderation of theory papers are a way to achieve this goal.<sup>[10]</sup> NMC can enforce uniformity by releasing regulations but that will negatively affect the autonomy of colleges. It is a precarious balance between uniformity and autonomy and needs to be addressed with care.

Question paper pattern should be formulated keeping in mind the context which needs to be evaluated. The questions should encourage the students to apply the knowledge acquired rather than becoming an instrument to merely judge their ability to recall facts.<sup>[11]</sup> For this very purpose certain verbs were delineated by Bloom famously known as Bloom's taxonomy, to be used to judge the hierarchy levels of cognitive domain in theory examination by stimulating cognitive activity.<sup>[12]</sup> NMC also recommends the use of verbs suggested by Bloom. In the old scheme the verbs under comprehension (discuss), application (show) and analysis (classify) level of cognitive domain were used by 2, 4, 1 universities respectively.

With the adoption of CBA scheme, universities tried to incorporate the guidelines furthered by NMC. Under comprehension (discuss, explain), application (show, prepare apply), analysis (classify, compare, differentiate), synthesis (construct) and evaluation (evaluate) level of cognitive domain verbs were used by 5, 4, 5, 1 and 1 universities respectively. These are the actual verbs used. Though the paper setters did try to use the verbs, the overall degree to which NMC recommended the usage was far from achieved. Though the questions can be formulated without using the actual verb, use of specific words was proposed. In both old and new scheme maximum verb used were in the knowledge level, 'describe, draw, enumerate, write, find, label'. The suggested weightage of verb of knowledge level to be used was 20 %, but the actual range in terms of marks among the 10 universities which were analyzed was 31 - 80 %, and that too when the extreme values are excluded. However, in the CBA theory papers one university each, did not use any verb and used verb of knowledge level for 98 % marks.

Experts opine, that transforming the assessment pattern will lead to change in which students approach the subject content.<sup>[13]</sup> Though written exams offer a time - tested parameter to gauge student's learning,

theory papers in CBME, need to be modified as far as types of questions are concerned. NMC has capped the weightage of MCQs to 20 % in CBME scheme as opposed to traditional pattern where there was no such regulation.

In both the schemes, types of questions ranged from very short answer types (1 - 2marks), short answer types (3 - 5marks) to long answer questions ( $\geq 6$ marks). The contrast was observed in the number and type of questions. Total number of questions ranged from 9 - 19. Absence of long questions was observed in two question papers of old scheme. In the CBA scheme VSATs / MCQs, SATs and LAQs were not given by 2, 1 and 0 universities. One university gave various types of items such as MCQs, fill in the blanks etc. Out of 10 theory papers which were analyzed one university gave 80 % marks in form of structured long questions and rest 20 % marks as MCQs. Two universities theory papers had internal choice in both old and new scheme.

Substantial differences were observed even in the design of individual items. In the old scheme the long answer questions were not structured and the marks distribution was not detailed (not indicated for each part of long question). Example - Describe the shoulder joint in detail. Add a note on its applied anatomy (10 marks). It was observed that 4 universities out of 8 (omitting the two theory papers where essay type questions were absent) gave a structured long question even in the old scheme but the allocation of marks for each subpart was done in only 2 out of these 4 university question papers. In CBA the long / essay type questions had a more structured stem, example 'Describe the shoulder joint under the following headings: - a) Type of joint (2marks), b) Articular surfaces (2marks) c) Movements and muscles producing them (3 marks) d) Applied anatomy (4 marks) making a total of 10marks or Describe the gross anatomy, relations, nerve / blood supply and clinical anatomy of parotid / thyroid gland (2+3+3+2 = 10marks). Structured long questions are preferred over the traditional essay type questions because they provide students with an opportunity to portray their knowledge at length while at the same time help the assessor to assess higher hierarchical levels of knowledge domains. The answers can be multifaceted, specific in some areas, stimulating students' analysis and reasoning powers and elaborative open ended in other areas allowing students to apply their integrated knowledge.<sup>[14]</sup> Only one university out of 10 did not indicate the marks of each subpart of the question. Within a particular university the pattern of questions, both in terms of number and design was same in Anatomy I and II papers, both in old as well as CBA style.

Assessment of attitude, ethics and communication (AETCOM) and early clinical exposure (ECE) was also included in theory summative assessment. The direct questions like 'add a note on its applied anatomy' were replaced by problem based / task based questions. Examples: A 18year old man was involved in a motorcycle accident. He was brought to the emergency room with upper limb held limply at the side, arm medially rotated and hand pronated. Name the clinical condition. Determine the most likely site of injury and explain the anatomical basis for the same (1+2+2marks - SAQs). Thus, while a direct applied anatomy question pertains to an organ / structure and is non-specific (student can enumerate/describe 'n' number of diseases in which that particular organ is involved), ECE questions are case based and specific for a disease / condition (students are required to make a diagnosis, differential diagnosis, here 'n' number of organs / structures can be involved). Hence, ECE questions represent simulations of real life cases, cases student will face in the clinics, cases he will be required to handle as an IMG. Early clinical exposure (classroom or community setting) thus lays down the foundation of medicine in all its entirety.

A young patient presented with fracture of surgical neck of humerus. Determine the muscle is likely to be paralyzed / weakened (MCQ - 1mark). The questions were given in all forms i.e. MCQs / VSATs / SATs / LAQs. In paper I and paper II of new scheme, ECE questions were not given by five and three universities respectively. Maximum questions of ECE in paper I were from upper limb and in paper II from abdomen and pelvis. AETCOM assessment in theory paper was not done by 4 universities. One university out of 10 did not give any question on ECE and AETCOM

## CONCLUSIONS

A significant variation in quality of question papers was highlighted by the final scores obtained by universities which ranged from 80 % to 45 %. This indicates that though summative assessment pattern guidelines were given by NMC, it failed to ensure uniformity in theory question papers. One can advocate that, with just one year down the line in CBME curriculum implementation this scenario was rather expected, in a country as big and as diverse as India.

NMC implemented the CBME for MBBS undergraduates to update the medical education standards of the country.<sup>[1]</sup> To achieve the purpose of CBME certain guidelines were laid down, so that the assessment could be driven by outcome and ensure that the undergraduates attain the requisite level before being promoted forwards. Written exams are still a critical parameter for assessment of learning. However, theory papers need to be modified and adapted to the needs of CBME. Though universities have done well in adhering to the guidelines laid down in 'Assessment Module' released by NMC, the job is far from over. Blueprinting of



theory question papers to ensure adequate and suitable allocation of marks to each subject, framing the questions with appropriate verbs as suggested by Bloom to test hierarchical levels of cognitive domain, inclusion of all types of questions from MCQs to structured LAQs and finally assessing the AETCOM and ECE are some of the key fundamentals to attain a high quality and valid summative assessment theory question papers.

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