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Educational Forum

Understanding and analyzing competency based undergraduate curriculum in otorhinolaryngology for its effective implementation

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ABSTRACT

Competency based curriculum (CBC) in medical education is introduced in a phase-wise manner from year 2019. It is important for the medical universities and institutions to understand, adopt and implement phase-wise new curriculum. The faculty development program has provided expertise to develop teaching schedules accordingly. Here we present our understanding and analysis of CBC in otorhinolaryngology (ORL). The documents used for this analysis were Graduate Medical Education Regulations, 1997 and 2019, UG curriculum volume-III, Logbook guidelines module, alignment & integration module and assessment module. These are readily available at national medical commission (NMC) website. The teaching hours in ORL were distributed among the competencies and they were aligned with suitable teaching learning methods. The 76 competencies in ORL are to be completed in 202 hours (25 hours lectures, 5 hours self-directed learning, 40 hours small group teaching and 132 hours clinical postings). There will be 4 weeks clinical posting in ORL during phase-II and another 4 weeks during phase-III, part-1. The new curriculum emphasizes on day to day assessment during and after the instructions and that can be achieved by careful planning and involving all faculty members. Achieving 50% internal assessment marks along with logbook submission are the eligibility criteria for appearing in university examination. The two-year training in ORL shall be imparted by lectures, small group discussions, and DOAP sessions. The emphasis on skills acquisition is the hallmark of CBC in ORL. Proper implementation of this curriculum requires collective efforts of all faculty members of the department and inter-departmental coordination.

Keywords: Assessment, Competency, Competency based curriculum, Competency based medical education, Otorhinolaryngology

INTRODUCTION

Introduction of competency based medical education (CBME) can be considered as a major transformation of medical education in India after independence. The erstwhile medical council of India (MCI) had introduced a new competency-based curriculum (CBC) which is learner centric, outcome based and lays stress on continuous assessment with feedback. The CBC includes various newer concepts which were hitherto not present in the traditional curriculum. The first undergraduate batch under the new curriculum (admission batch 2019) will start its third professional part-1 (final-1) training likely from 1st February, 2022. The Universities and Institutes shall have to plan teaching schedules and assessment programs incorporating teaching hours and curricular contents (topics, competencies and students' learning objectives [SLOs]) as described in the MCI documents (graduate medical education regulations, 2019 [GMER-2019] and UG curriculum volume III).[1-4]

It is imperative to understand and analyze the new CBME curriculum in otorhinolaryngology (ORL) in terms of curricular change, temporal progression, and assessments, in order to facilitate its implementation. We analyzed the CBME curriculum in ORL with respect to its differences with traditional curriculum, break-up of the teaching hours, pattern of internal and university assessments, and alignment of teaching-learning methods (TLMs) with the objectives.

METHODS

The present analysis of CBC in ORL was done at Gujarat Adani Institute of Medical Sciences, Bhuj. All authors have completed revised Basic Course Workshop (rBCW) training in Medical Educational Technology (MET) from the designated Nodal Centre. The documents analyzed were GMER 1997 & 2019, UG Curriculum Volume-III, logbook guidelines, alignment & integration module and assessment module. All these documents are readily available at NMC website. These documents were studied thoroughly and differences between the traditional curriculum and CBC in ORL were tabulated. The total teaching hours in ORL were distributed among the competencies. These were then aligned with suitable TLMs. We have also suggested division of IA marks including day to day assessment.

RESULTS

The comparison of CBC and traditional curriculum in otorhinolaryngology (ORL) is shown in Table 1. The salient features of CBC are:

1) It clearly defines subject specific outcomes in ORL 2) greater emphasis on skill acquisition 3) derivation of SLOs and TLMs are based on competencies and have built-in formative evaluation 4) introduction of Self-Directed Learning (SDL). It caters to Indian medical graduate (IMG) goal of a lifelong learner 5) evaluation by multiple assessments using multiple tools 6) scope for remedial measures for internal assessment 7) greater emphasis on aligned teaching to avoid redundancy 8) use of integration (horizontal and vertical) to an extent of ≤25% to emphasize recall and applicative use of basics 9) introduction of attitude, ethics and communication (AETCOM) training and assessment in all phases 10) option of electives posting in ORL

Table 1: Comparison between GMER-1997 and GMER-2019 in ORL.

Parameter	GMER-1997	GMER-2019
A. Curricular components		
Curriculum based on	Learning domains	Outcomes or competencies
Duration of training in ORL	12 months (teaching + examinations)	13 months (12 months teaching + 1 month for examination)
Attendance*	75% attendance is compulsory for appearing in the University Assessment (UA) (inclusive of attendance in non-lecture teaching)	Attendance requirements are 75% in theory and 80% in clinicals for eligibility to appear for the UA
Distribution of Teaching hours	• Total: 70 hours • As lectures, demonstrations and seminars (Distribution not specified)	• Total: 70 hours • Lectures: 25 hours • Tutorials/ Seminars/ Integrated Teaching (IT)/ Small Group Discussions (SGDs): 40 hours • SDL: 5 hours
Duration of clinical posting	• 144 hours • (6 days a week, 3 hours/day, for 8 weeks)	• 132 hours • (5 days a week, 3 hours/day, for 4 weeks in Phase-II) • (6 days a week, 3 hours/day, for 4 weeks in Phase-III, Part 1)
B. Suggested alignment and integration		
Extent (Alignment)	Undefined	To the extent possible
Extent (Integration)	Undefined	Should be ≤ 25 %
Subjects in different phases for integration (Vertical and horizontal)	Neuroscience, Ophthalmology and General Surgery	Anatomy, Physiology, Dentistry, General Surgery, Paediatrics, General Medicine, Community Medicine

Continued.

Parameter	GMER-1997	GMER-2019
C. Methods of assessment		
Internal Assessment (IA)*		
Number of IA examinations	The question of number of examinations left to the institution.	No less than two examinations in a professional year.
IA a. Marks b. Weightage	a. 10 for theory and 10 for practical/clinical b. 20% of total marks	a. 100 for theory and 100 for practical/ clinical b. Not required
Contribution of IA in scoring in University examination	Contributes to total university marks	Internal assessment marks are not to be added to marks of the University examinations and should be shown separately in the grade card.
Eligibility criteria to appear in UA	Student must secure at least 35% marks of the total marks fixed for internal assessment in order to be eligible to appear in final university examination of that subject	50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations
Emphasis on logbook*	Not defined	Up to 20% IA marks (Theory and Practical) should be from Log book assessment. (Logbook submission is eligibility criteria for UA)
Provision of remedial measures	Not specified	To be formulated by the Institute/ University
End of posting (EOP) clinical assessment	Depends on University/institute	An end of posting clinical assessment shall be conducted for each clinical posting in each professional year.
D. University assessment (UA)		
UA	One main and supplementary examination to be held not later than 6 months after publication of results	One main and supplementary examination to be held not later than 90 days after declaration of results
University Marks	• One theory paper of 40 marks • Oral viva: 10 marks • Clinical: 30 marks, and • IA: 20 marks • Total: 100 marks	• One theory paper of 100 marks • Clinical + Oral/viva: 100 marks • Total: 200 marks
Viva marks	10 marks, included in theory	Number not specified. To be included in practical marks.
Pass criteria	A candidate must obtain 50% in aggregate with a minimum of 50% in theory (including viva) and minimum of 50% in Clinicals	Mandatory 50% marks separately in theory and Clinicals (including viva)
Grace Marks	Up to a maximum of five marks may be awarded at the discretion of the University to a student who has failed only in one subject but has passed in all other subjects.	Maximum of five marks may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption.
Question Paper (Structure)	Short Answer Questions (SAQs) and Objective type with marks given to each question	Well defined Multiple Choice Questions (MCQs) (≤ 20%), Long Answer Questions (LAQs), SAQs, and at least one question on AETCOM

Continued.

Parameter	GMER-1997	GMER-2019
Clinicals	• Clinical cases should preferably include common diseases than esoteric syndromes or rare disorders. • Emphasis should be on candidate's capability in eliciting physical signs and their interpretation.	• Clinical cases must be common conditions that the learner may encounter as a physician of first contact in the community. • Emphasis should be on candidate's capability to elicit history, demonstrate physical signs, write a case record, analyse the case and develop a management plan. • Skill competency in AETCOM also to be tested
Number of examiners	At least 4 for 100 students (not less than 50% externals). One additional examiner for every additional 50 students	At least 4 for 100 students (not less than 50% externals). Two additional examiners (one external & one internal) for every additional 50 students

* Eligibility criteria to appear in UA.

Curricular contents

There are 4 topics divisible into 76 competencies (outcomes) in new curriculum. We need to derive learning objectives, teaching learning methods incorporating integrations as and where needed, and types of assessment for each competency. In addition, time schedules for all these activities have to be incorporated in an academic calendar. The students' academic progression for proper documentation is to be done in log book which is an important component of formative assessment and documentation. Table 2 shows the break-up of the teaching hours in all domains and suggested TLMs. It is important to appreciate that half of clinical postings duration (4 out of 8 weeks) is assigned during phase-II and remaining during phase-III, part-1. The curricular contents should be divided accordingly to impart adequate skill training.

Table 2: Suggested distribution of teaching hours according to breakup of curricular components and TLMs.

Topic	Competency Number (EN)	Number of sessions of classroom teaching (1 hour per session)				Number of sessions of clinical posting (3 hours per session)		
		Integrated Teaching	Small Group Teaching (Tutorials/ Seminars)	Lecture	SDL	DOAP*	Bedside	Demonstration
Anatomy and Physiology of ear, nose, throat, head and neck	1.1	3 (Anatomy, Physiology)		4				
	1.2	3 (Pathology)		4				
Clinical Skills	2.1							1
	2.2					1		
	2.3					1		
	2.4					1		
	2.5					1		
	2.6					1		
	2.7					1		
	2.8					1		
	2.9	3 (Radiology,						

Continued.

Topic	Competency Number (EN)	Number of sessions of classroom teaching (1 hour per session)			Number of sessions of clinical posting (3 hours per session)		
		Microbiology)					
	2.10				2		
	2.11						1
	2.12				1		
	2.13				2		
	2.14				1		
	2.15		1 (Integration with PSM)	3			
Diagnostic and Therapeutic procedures in ENT	3.1						1
	3.2						1
	3.3						1
	3.4						1
	3.5/3.6		3				3
Management of diseases of ENT	4.1	1					
	4.2	2					
	4.3					1	
	4.4				1		
	4.5	1					
	4.6	1					
	4.7	1					
	4.8	1					
	4.9				1		
	4.10				1		
	4.11				1		
	4.12	2 (Pediatrics)			1		
	4.13		1				
	4.14	1					
	4.15	1					
	4.16 & 4.17				1		
	4.17						
	4.18	1					
	4.19	1					
	4.2	1					
	4.21	1					
	4.22	1					
	4.23	1					
	4.24				1		
	4.25	1					
	4.26	1					
	4.27	1					
	4.28	1					
	4.29		1			1	
	4.3		1		1		
	4.31		1				
	4.32		1				
	4.33	1	1			1	
	4.34		1				
	4.35		1				
	4.36		1				
	4.37	1					
	4.38						1

Continued.

Topic	Competency Number (EN)	Number of sessions of classroom teaching (1 hour per session)				Number of sessions of clinical posting (3 hours per session)		
	4.39		1			1	1	
	4.4					2		
	4.41			1				
	4.42					1		
	4.43			1				
	4.44			1				
	4.45		1					
	4.46			1				
	4.47		1					
	4.48		1		1			1
	4.49	1 (Pediatrics)						2
	4.5		1			1		
	4.51					1		
	4.52		1		1			
	4.53	1 (General Medicine)						
Total hours		40		25	5	44×3 = 132		

* DOAP = Demonstrate (by trainer), Observe, Assist, Perform.

Formative assessment

As mentioned earlier, CBME has in-built framework for FA that provides rich feedback to both, learner and teacher. Many tools can be used for FA during/at the end of instructions such as Clickers, One Minute Preceptor (OMP) model, prompts etc. Assessments are done multiple times in different contexts and despite being subjective these retain reliability and have educational impact.[5] The relationship between FA, IA, UA and feedback is depicted in Figure 1.

Essentially, multiple assessments by multiple teachers in different contexts (bedside, OSCE, communication etc.) is hallmark of CBC in ORL.

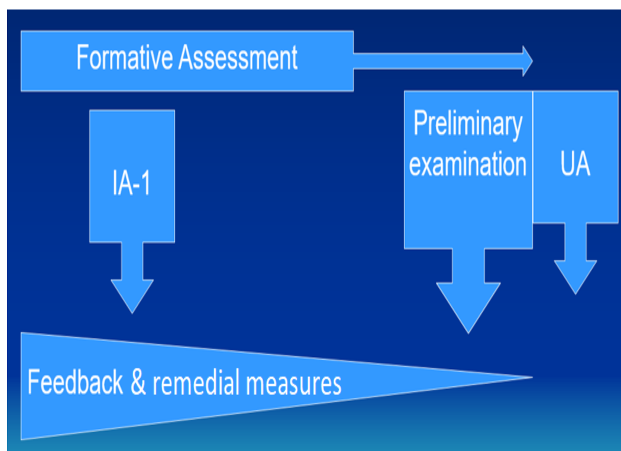

Figure 1: Relationship between FA, IA, UA and feedback.

Internal assessment

The IA marks have been increased in ORL from earlier 20 (10 theory and 10 clinicals) to 200 (100 theory and 100 clinials).

However, the breakup of these 200 marks is required to be done at institutional/university level to depict overall continuous performance of learner. Table-3 shows the suggested breakup of IA marks in ORL. In practice, the actual number of marks would be more and would be reduced to final marks as shown in Table 3.

Remedials

There is a provision of remedial measures for internal assessment for a student who has completed training but has not become eligible for appearing in university examination due to shortage of marks in IA due to unavoidable reasons. However, it is left to the university/institute to decide the timing and nature of such remedial measures. We had earlier critically appraised that the eligibility as well as passing cut-off percentage marks for IA should be fixed at 50% without any provision of remedial measures.[7]

It will encourage the students to work harder throughout the course to achieve 50% marks, rather than depending on the remedial measures, thus producing a more competent IMG. In general, remedial measures should be built in formative and periodic assessments as these provide opportunity for corrective action based on feedback and reflection.

Table 3: Suggested breakup of IA marks.

Element	Theory (marks)	Clinical/Practical (marks)
Log book phase-II*	-	10
Log book phase-III, Part-1*	20	10
Phase-II EOP clinical assessment (1st posting of 2 weeks)	-	5
Phase-II EOP clinical assessment (2nd posting of 2 weeks)	-	5
Phase-III, Part-1 EOP clinical assessment (1st posting of 2 weeks)	-	5
Phase-III, Part-1 EOP clinical assessment (2nd posting of 2 weeks)	-	5
1st IA (Phase-III, Part-1)	40	30
Preliminary examination	40	30
Total	100	100

Table 4: Day to day FA including log book.

Elements	Theory marks (Phase-III, Part-1)	Clinical/ Practical marks (Phase-II)	Clinical/ Practical marks (Phase-III, Part-1)
Attendance	75% - 80%: 2 marks	80% - 85%: 1 mark	80% - 85%: 1 mark
	80% - 85%: 4 marks	85% - 90%: 2 marks	85% - 90%: 2 marks
	> 85%: 6 marks	> 90%: 3 marks	> 90%: 3 marks
Seminars	8 (2 marks/seminar)	4 (2 marks/seminar)	4 (2 marks/seminar)
Reflective writing	4 (2 marks/reflection)	2 (2 marks/reflection)	2 (2 marks/reflection)
Timely submission of completed log book*	2	1	1
Total IA marks	20	10	10

* Includes subjective assessment of attitude and behaviour. Logbook format has been released by MCI, and can be modified by institutions[6]

DISCUSSION

The phase-III is divisible into part-1 (13 months), electives (2 months) and part-2 (13 months). The UA of Phase-III, part-1 shall be in 4 subjects (ORL, ophthalmology, community medicine, forensic medicine and toxicology). Although teaching hours in ORL for knowledge domain remain same (70 hours), the clinical teaching has been reduced by 12 hours, despite increase in total duration of phase-III, part-1 from 12 to 13 months. The 76 competencies in ORL are to be completed in 202 hours (25 hours lectures, 5 hours SDL, 40 hours small group teaching and 132 hours clinical postings).

The department has to develop well delineated plan and teaching schedules to complete the curriculum. The suggested format is given in table 2 incorporating alignment and integration. The clinical skill teaching will require organization of DOAP sessions apart from bedside teaching and demonstrations.

The DOAP technique is an innovative approach used in CBME curriculum and is designed to develop competency in psychomotor skills acquisition. It is defined as a “practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently”.[8]

It necessitates timely faculty training for smooth implementation of CBC in ORL. Each DOAP session can be of 1-3 hours and requires 2-3 teachers for small group training.

CONCLUSION

The CBC in ORL is meticulously designed to address the requirements of an Indian medical graduate (IMG) and emphasizes on skill acquisition by multiple assessments. However, the successful implementation requires well concerted and committed efforts of all faculty members apart from prior training in curriculum implementation support program (CISP).

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