Competency based medical education in dermatology: Undergraduate curriculum – a cauldron of commendations, contradictions and controversies

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Introduction

A growing hiatus has been noted between increasing healthcare needs and the competence acquired by medical students. This has prompted the Medical Council of India to take reformatory measures such as competency based medical education which has been introduced in 2019.[1] This is endorsed by the National Medical Commission which has replaced the Medical Council of India. As with any new change, it is a dermatologist's dream to see the department receive more importance, as it is one of the rapidly developing specialities and the most sought-after subject by postgraduate aspirants.

An overview of Curriculum-Based Medical Education

Medical education in India has largely remained unidirectional through didactic teaching in its pervasive time-based paradigm. Competency-based medical education glides a graduate from the position of knowledge acquisition to the position of application of the acquired knowledge.

Competency in medical terminology means an effective performance of a normal function which can be observed and encompasses various components such as knowledge, skills, values and attitude. The learning and assessment would involve Miller's pyramid, where the learner starts as a novice and attains a desired competency. Thus, a road map may provide an effective path to the learner to achieve the milestones at his/her own pace.

Intended for curriculum planners, the National Medical Commission document encompasses a wide range of contents from teaching, learning, assessment and integration. The teaching-learning methods recommended in dermatology, venereology and leprosy have 18 topics with 73 competencies which include lectures, small group teaching, bedside clinics and 'demonstration, observation and assistance'. This document is the source of all the analysis in this article.[1]

Difference between the Previous Curriculum- and Competency-Based Medical Education in Dermatology

The previous curriculum has been in vogue for many years and covers a wide range of common dermatological conditions, which a clinician will encounter in his/her day-to-day practice. The old curriculum was restricted to lectures which was partly assimilative and forestalls the learner from progressing smoothly to an eclectic taste of knowledge.

Table 1: The existing model of curriculum

	Existing curriculum	CBME
Lectures	30 h	20 h
Bedside clinics	6 weeks	6 weeks
Assessment methods for lecture	Written exam /viva voce	Written exam /viva voce/
Assessment methods for bed side clinics	Viva voce	Skill assessment/viva voce
Mark distribution in final year	Short note - 1	Short note – 1
Integrated teaching	Nil	5 h
Self-directed learning	Nil	5 h
Procedural dermatology	Observation/viva voce	Observation

CBME: Competency-based medical education

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Table 2: CBME module of dermatology - competencies covered and desired

Topic	Lecture	Bedside clinics	
	Competencies covered in the existing document of National Medical Commission	**Competencies covered in the existing document of National Medical Commission**	**Competencies desired to be included further**
Acne vulgaris	Cause, risk factors, treatment and prevention	Identify and grade types of acne	-
Vitiligo	Treatment	Identify and differentiate vitiligo from other hypopigmented lesions	Causes and clinical features, Other pigmentary disorders
Papulosquamous disorders	Treatment	Identify and distinguish psoriasis from other conditions	Types and complications
		Demonstrate grattage test	
Lichen planus	Treatment	Identify and distinguish lichen planus	Types and differentials
Pediculosis	Etiopathogenesis and diagnosis	Identify and distinguish pediculosis in adults and children	-
Scabies	Etiopathogenesis, risk factors, presentation, complications and treatment	-	-
Fungal infections	Etiopathogenesis, risk factors, presentation, complications and treatment, antifungal therapy	-	Pityriasis versicolor, clinical features of candidiasis, tinea incognito and steroid abuse
Viral infections	Etiopathogenesis and diagnosis in adults and children and its treatment	-	Herpes genitalis and condyloma acuminata
Leprosy	Various types, etiopathogenesis Types of reaction and its treatment Pharmacotherapy and adverse events, WHO guidelines and stigma associated	Identify clinical features with neurologic examination	-
		Enumerate indications and observe slit skin smear procedure	
STD	Indications for treatment of syphilis and adverse effects of therapy, prevention of congenital syphilis, Etiopathogenesis, clinical features and treatment of genital ulcers, syndromic approach to genital ulcer, gonococcal and non-gonococcal urethritis, vaginal discharge	Identify and classify syphilis based on clinical features	
		Identify and distinguish other genital ulcer disease	
HIV	Etiopathogenesis, clinical features, complications and treatment	Identify and distinguish dermatologic manifestation of HIV, complications, opportunistic infections & adverse effects	-
Eczema	Etiopathogenesis, classification and grades, treatment and adverse effects	Identify eczema and differentiate from lichenification and changes of aging	Seborrheic dermatitis, atopic dermatitis
Erythroderma	-	Causes of erythroderma and management	
		Identify and distinguish exfoliative dermatitis from other skin lesions	
Drug reactions	-	Identify and distinguish FDE and SJS	Classification and clinical types
Vesiculobullous disorders	-	Identify bulla from vesicle	Pemphigus vulgaris, bullous pemphigoid
		Demonstrate Tzanck test, Nikolsky and bulla spread signs	
		Calculate BSA for vesiculobullous lesions	
Urticaria	Etiopathogenesis and classification, treatment	Identify and distinguish urticaria from other skin lesions	
		Demonstrate dermographism	
		Identify and distinguish angioedema	
Pyoderma	Indications and treatment	Identify and distinguish folliculitis, impetigo and carbuncle from other lesions	Classification of pyoderma
		Identify staphylococcus on gram stain	
Collagen vascular diseases	-	Identify and distinguish lesions of SLE,	Scleroderma
		Identify and distinguish Raynaud's phenomenon	
Nutritional disorders	Vitamin A, B, C, zinc Cutaneous manifestations in T2DM, hypo/hyperthyroidism	Identify cutaneous lesions of vitamin A deficiency	

CBME: Competency-based medical education, BSA: Body surface area, T2DM: Type 2 diabetes medications

For the ease of comparison, difference between the suggested and the existing model of curriculum is tabulated in Table 1.

More Focus on the Components of the New Dermatology, Venereology, Leprosy Curriculum

In a competency-based curriculum, the various competencies pertaining to the topics are mentioned in the competency manual of the National Medical Commission. The summary of the competencies which are not covered is enumerated in Table 2.

It is rather intriguing to note the obvious omission of topics such as pityriasis versicolor, herpes genitalis, condyloma acuminata, seborrheic dermatitis, immunobullous disorders, cutaneous tuberculosis and disorders of hair and appendages. These are topics of importance considering the magnitude of outpatient census. Another topic of relevance in today's scenario is topical steroid abuse and awareness about it among the medical students must be given due consideration.

Further, the time allotted for lectures has been maintained but should be increased to accommodate the ever-expanding field of dermatology.[2]

With elaborate planning, relevant distribution of the most important dermatoses and the basic knowledge to diagnose them are given prime importance in bedside clinics.

Skill Module: 'Old wine in a new bottle'

The skills required for an undergraduate for finesse has been listed out by the National Medical Commission [Table 3]:

This module includes seven different procedures of which most of them require integrated services from the department of microbiology. This can be useful in other clinical departments whereas in dermatology, venereology and leprosy, diagnosis is predominantly spot/clinical. And again, in this context, to make 150–250 students independently perform a Gram stain in a side lab may be an arduous task. Moreover, tissue smear and dark ground microscopy have their own problems in demonstration in a large group of undergraduates. Further, considering the present trend of sexually transmitted diseases and most importantly the lack of regular inflow of cases of primary syphilis. Skill module can be redefined so as to meet the present needs.

Electives in Competency-Based Medical Education: A New Venture

It is a welcome move towards diverse self-directed learning with lateral thinking and simulative experiential learning. It is mandatory for students to take up two elective topics, each of 4-week duration after completion of 3rd MBBS part 1 and before commencement of part 2. Dermatology falls into block two, where the learner attains an explorative experience with guided patient care, in a speciality of his/her own choice apart from routine clinical postings. The role of electives paves a way for nurturing younger minds in their interests and perhaps in selecting a career of their delight. It also provides a chance for the students to directly work under a faculty.

Table 3: The skills required for a MBBS graduate listed out by the National Medical Commission

Title	Skills required
Slit skin smear	Observe on patients/simulation
Skin biopsy	Observe on patients/simulation
Gram stain smear interpretation	Independently performed on patients
KOH examination on scrapings for fungus	Demonstrate under supervision
Dark ground illumination	Observe on patients/simulation
Tissue smear	Observe on patients/simulation
Cautery – chemical and electrical	Observe on patients/simulation

Table 4: Suggestions for improvement of course content, teaching, learning, evaluation, assessment of competency based undergraduate education in dermatology

Course content	• Topics such as Pityriasis versicolor, herpes genitalis, condyloma acuminata, seborrheic dermatitis, immunobullous disorders, cutaneous tuberculosis and disorders of hair and appendages should be included • Consider dermatology for major posting rather than as an elective posting during internship
Teaching	• To include new methods of teaching such as collaborative teaching, flipped classroom, image based teaching and culturally responsive teaching
Learning	• E-learning, context-based learning and peer partner learning
Evaluation and assessment	• Structured Assignments • Dermatologists need to be involved in vetting question paper and evaluation

The Infrastructure and Faculty Requirement Remains a Contradiction

Faculty are needed to create a successful microsystem for proper implementation of a competency based medical education. They should have a core knowledge on concepts and assessment methods and should receive regular feedback to compare their assessment with their peers to avoid bias.[3] Various workshops and training programmes are being conducted all over India regarding curriculum implementation for faculties. A study done by Verma *et al*. in a medical institute, clearly states that there is no uniform knowledge about the implementation of competency based medical education among the faculty and only 39.7% of the faculty had attended curriculum implementation support programme workshops.[4]

Furthermore, a study done by Aagard *et al*. refers to the need for increasing faculty requirement and the complexities associated with individual assessment and training.[5]

Evaluation, the Main Contradiction in Competency-Based Medical Education

'Assessment derives learning' is an important adage in the field of education. In the competency based medical education document, the major mismatch is between the methods of learning and assessment. To explain further, assessment should be continuous, criterion-based, workplace-based, use tools both qualitative and quantitative. This is probably not well explained in the document. Formative assessment where the concerned faculty assesses the competency of the student though insisted on, does not play an important role in the final evaluation process.

Summative assessment is the main certifying exam which still follows the old scheme. The document states that 25% of marks in paper II of general medicine would be devoted to allied specialities, that include psychiatry, dermatology, venereology, leprosy and pulmonary medicine. The distribution of marks among the specialities is not defined. Last but not the least, the document does not mention about the practical summative assessment in dermatology, venereology and leprosy.

Another issue to be pondered on is that after the painstaking effort of completing the series of lectures and other clinical classes, a disappointing observance is the complete avoidance of the faculty in assessment during final exams. The specialists are denied access to even vetting the question paper and how a general medicine faculty or anyone for that matter assess the students for a part, they are not trained for. Considering the magnitude of the dermatological ailments in India, dermatology, venereology and leprosy needs more attention and this curriculum should be planned to give equal relevance like other medical specialties.

Internship

It is rather appalling to notice that dermatology, venereology and leprosy remained an elective posting up until April 2021, in a country where dermatological diseases constitute a major burden of outpatient attendance. Without a regular internship programme, the aim of achieving competency in dermatology would remain a distant dream. The recent recommendations of the National Medical Commission[6] include a mandatory 1-week posting, which would still be insufficient, but as an undergraduate they can familiarise themselves with common outpatient conditions and procedures.

Conclusion

The thought and effort created to update the curriculum are utmost necessary and should be lauded. The attempt to introduce competency based medical education is to be commended but evaluation of core competencies and internship is controversial. However, curriculum is a dynamic process that needs to respond to constant changes and it is the right step towards future. We have included our suggestions for improvement of competency based undergraduate education in dermatology in Table 4. There are a few pitfalls and obvious lacunae that are associated with the curriculum, but they can be addressed with regular revision of the curriculum at frequent intervals, with inputs from all stake holders. In a vast country like India, building competency and uniform training will go a long way in creating a primary care physician of the 21st century.

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Conflicts of interest

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