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Indian Journal of Clinical and Experimental Ophthalmology

Journal homepage: www.ijceo.org

Mini Review

Navigating competency-based medical education in ophthalmology: Addressing challenges and charting future trajectories

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ARTICLE INFO

Article history:
Received 12-02-2024
Accepted 13-03-2024
Available online 30-03-2024

Keywords:
Attitude ethics and communications
Competency based medical education
National medical commission
Specific learning objectives
Teaching learning methods

ABSTRACT

Based Medical Education (CBME) has emerged as a transformative approach to medical training, emphasizing skills acquisition and holistic competence over traditional knowledge retention. Ophthalmology, as a specialized field, presents unique challenges and opportunities within this framework. This article critically examines the implementation of CBME in ophthalmology, highlighting challenges faced and proposing strategies for enhancement. By addressing stakeholder perspectives and strategic interventions, this viewpoint aims to foster a comprehensive understanding of CBME's implications for ophthalmological education.

1. Current Landscape of CBME

CBME embodies an outcome-focused approach, wherein competency, defined as the observable behaviour resulting from the sensible and consistent application of knowledge, skills, attitudes, and communication, serves as the cornerstone.[1–3] It is characterized by its contextual and person-specific nature, acknowledging that learners progress at varying rates and may exhibit similar outcomes for many competencies. CBME necessitates longitudinal, continuous, and consistent assessment to ascertain if individuals require additional or alternative learning opportunities for skill acquisition.[3,4] Departing from the traditional emphasis on the cognitive domain, CBME adopts a holistic approach by integrating cognitive-motor and affective domains, prioritizing skill acquisition and affective competencies over knowledge retention. Recognizing the need for faculty development, the Medical Council of India (MCI) introduced the National Faculty Development initiative (FDP) in 2009 to support the implementation of CBME in medical colleges. This initiative has successfully trained approximately 45,000 faculty members by 2018, facilitating the transition towards a competency-based curriculum.[3,5] The NMC has spearheaded the adoption of CBME in medical curricula, fostering faculty development and revising teaching methodologies to align with competency-based frameworks. However, challenges persist in the implementation of CBME, particularly in ophthalmological education.

2. Challenges in Ophthalmological Education under CBME

2.1. Policy and institutional challenges

While CBME mandates competency acquisition under specialist supervision within a genuine clinical environment and cannot be effectively replicated in simulated conditions,

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https://doi.org/10.18231/j.ijceo.2024.004

institutional frameworks often lack clarity and support for effective implementation. Ambiguities in faculty eligibility and inadequate infrastructure impede skill development in ophthalmology.

2.2. Faculty training

Despite initiatives like the National Faculty Development Program (FDP), significant gaps exist in faculty preparedness for CBME. Limited training opportunities and resistance to pedagogical shifts hinder the effective delivery of ophthalmological education. As per data retrieved from the NMC website, approximately half of the faculty members have not received training through the FDP. The NMC has stipulated that basic courses in medical education technology must be undertaken at NMC-designated institutions. However, despite receiving these directives, several private colleges are not actively endorsing Faculty Development programs or establishing Medical Education Units.[6]

2.3. Undergraduate student perspective

The incorporation of an orientation program at the commencement of the MBBS program and encompassing essential skills such as communication, basic life support, and ethical considerations, reflecting a positive evolution in medical education. While CBME introduces valuable skills and reflective practices, students encounter challenges in navigating curriculum ambiguities, particularly regarding assessment frameworks and exit examinations. Clear communication and support mechanisms are essential to address student concerns.

2.4. Specific learning objectives (SLOs) and Teaching-learning methods (TLMs)

The delineation of SLOs and integration of TLMs pose challenges in ophthalmological education. In the updated CBME-based curriculum, there is an increased emphasis on small group instruction, requiring undergraduate students to be taught in groups of eight to ten. Following these guidelines, a minimum of 10–12 faculty members are required to cater to a batch of 150 students. Also, it seems that numerous teachers lack sufficient or complete training, hindering their ability to develop SLOs. Inadequate faculty coordination and resource constraints impede the effective alignment of learning objectives and instructional methods.[7,8]

2.5. Assessment strategies

The transition from formative to summative assessment in CBME necessitates robust evaluation mechanisms. Faculty training and support are crucial to ensuring fair and comprehensive assessment of ophthalmological competencies. Designing valid and reliable assessments to evaluate ophthalmological competencies presents inherent challenges. Developing assessment tools that accurately measure clinical skills, diagnostic acumen, and procedural proficiency requires expertise and rigorous validation processes. Ensuring the fairness and consistency of assessments across diverse settings is essential for maintaining the integrity of CBME in ophthalmology.

2.6. Training for specialized skills

The certification of ophthalmological competencies requires targeted training in specialized procedures and clinical techniques. Incorporating comprehensive skill sets is essential for enhancing the quality of ophthalmic practice. The following competencies in ophthalmology have been officially certified:[9]

1. Visual acuity testing (I)
2. Digital tonometry (D)
3. Indirect ophthalmoscopy (O)
4. Epilation (O)
5. Eye irrigation (I)
6. Instillation of eye medication (I)
7. Ocular bandaging (I)

(I- Independently performed on patients, O- Observed in patients or on simulations, D- Demonstration on patients or simulations and performance under supervision in patients).

After a meticulous review of list of certified skills, Lid eversion- one hand and two hand technique, fluorescein staining of cornea, corneal sensations testing, examination of pupillary reflexes, confrontation test are not included. These clinical skills are crucial, particularly in cases of ocular foreign bodies, ocular trauma, and ocular chemical injuries. It is imperative for every undergraduate student to acquire proficiency in these skills so that upon becoming Indian medical graduates, they can promptly initiate management protocols without wasting valuable time.

Electives were introduced by the NMC with the aim of enhancing the early learning experiences of undergraduate students. This initiative enables students to explore diverse subject areas, experiment, and gain practical experience. Clinical placements for elective courses commence before the beginning of the third part of the MBBS program. Each student is required to select two elective blocks, namely Block I and Block II, each spanning four weeks.[10–12]

2.7. Clinical exposure

Ensuring sufficient clinical exposure is crucial for competency development in ophthalmology. However, variations in patient volume, case complexity, and clinical settings across institutions can affect the consistency and depth of clinical experiences for trainees. Addressing disparities in clinical exposure requires strategic

partnerships with healthcare institutions and innovative approaches to clinical training.

2.8. Faculty workload and burnout

Faculty members play a pivotal role in delivering ophthalmological education and assessing trainee competencies. However, heavy workload demands, administrative responsibilities, and limited recognition for teaching contributions can contribute to faculty burnout and attrition. Supporting faculty well-being and providing opportunities for professional growth and recognition are essential for sustaining a motivated and engaged teaching workforce.

2.9. Integration of specialty topics

Ophthalmology encompasses a wide range of subspecialties and specialized techniques, presenting challenges in curriculum integration and coverage. Of the total 100 teaching hours, it included 30 lecture hours, 60 practical/tutorial/ Small Group Discussions (SGDs) hours and 10 Self-Directed Learning (SDL). The student must master 73 ophthalmology competencies in CBME. Out of 73 competencies, 63 covered over the course of third year MBBS, and rest 13 are integrated with anatomy, physiology, pathology, pharmacology and medicine in their respective years. Balancing core competencies with specialized knowledge areas while ensuring sufficient depth and breadth of content poses curriculum design challenges. Alignment refers to teaching content related to a specific organ system or disease concept within the same phase and timeframe, while integration involves combining similar, overlapping, or redundant concepts from different topics or organ systems into a single teaching session without subject-based boundaries.[13] This approach allows students to grasp the relevance of fundamental sciences in clinical applications, aiming to streamline the curriculum by eliminating subject repetition and saving time.[14] Effective coordination among faculty members and interdisciplinary collaboration are essential for optimizing the integration of specialty topics within the CBME framework. However, the implementation of CBME has led to changes in faculty coordination. In the absence of clear guidelines, determining which faculty members are responsible for delivering integration topics becomes ambiguous, potentially resulting in a loss of instructional time for students.[15,16]

2.10. Patient safety and ethical considerations

Attitude, Ethics, and Communications (AETCOM) addresses the multifaceted aspects of medical practice beyond clinical skills, emphasizing the importance of professionalism, ethical conduct, and effective communication in patient care, thus underpinning the development of well-rounded healthcare professionals. Incorporating patient safety principles and ethical considerations into ophthalmological education is paramount for fostering responsible and compassionate clinical practice. In ophthalmological education, AETCOM initiatives strive to cultivate empathy, integrity, and cultural sensitivity among trainees, equipping them with the interpersonal and ethical competencies essential for delivering patient-centred care. Through reflective practice, role-playing exercises, and ethical case discussions, AETCOM initiatives empower ophthalmology trainees to navigate complex clinical scenarios with integrity, empathy, and professionalism, thereby promoting trust, respect, and accountability in doctor-patient relationships. Teaching trainees to navigate ethical dilemmas, prioritize patient well-being, and adhere to professional standards requires intentional curriculum design and faculty guidance. Promoting a culture of ethical awareness and accountability among future ophthalmologists is essential for upholding patient safety and trust in healthcare delivery. But the introduction of AETCOM has led to confusion regarding the responsibility for delivering lectures in these areas. There is uncertainty whether instructors from specific disciplines should handle it, or if it falls under the purview of the Medical Education Unit (MEU) department.

3. Future Directions and Recommendations

3.1. Interdisciplinary collaboration

Promoting collaboration among departments and stakeholders is essential for addressing institutional and policy challenges. Faculty engagement and interdisciplinary workshops can foster a culture of cooperation and innovation in ophthalmological education.

3.2. Enhanced faculty development

Continuous training and support for faculty members are imperative to navigate the complexities of CBME. Tailored workshops, mentorship programs, and incentives for pedagogical excellence can enhance faculty preparedness and motivation.

3.3. Infrastructure enhancement

Investing in infrastructure and instructional resources is critical to facilitating hands-on training and small group instruction in ophthalmology. Adequate faculty-student ratios and modern teaching facilities are essential for optimizing learning experiences.

3.4. Curriculum review and revision

Regular review and refinement of ophthalmological curricula are necessary to align with evolving competency frameworks and clinical practice standards. Flexibility in

curriculum design and integration of emerging technologies can enhance educational outcomes. Continuous evaluation and adaptation of the ophthalmology curriculum are necessary to align with evolving healthcare needs and technological advancements. Integration of interdisciplinary topics such as medical ethics, communication skills, and digital health literacy can enrich the educational experience and prepare students for contemporary healthcare practice.

3.5. Stakeholder engagement

Engaging students, faculty, policymakers, and regulatory bodies in dialogue and decision-making processes is essential for effective CBME implementation. Transparent communication and participatory approaches can foster a sense of ownership and accountability.

3.6. Research and innovation

Encouraging research and innovation in ophthalmological education can drive evidence-based practices and enhance educational outcomes. Collaborative research initiatives, grants for educational research, and dissemination of best practices can foster a culture of scholarly inquiry and pedagogical innovation.

3.7. Global perspective

Embracing a global perspective in ophthalmological education can enrich learning experiences and promote cultural competence among students. Collaboration with international institutions, exchange programs, and participation in global conferences can expose students to diverse healthcare systems and perspectives, fostering a holistic understanding of ophthalmic practice.

3.8. Quality assurance

Implementing robust quality assurance mechanisms is essential to uphold standards and ensure the effectiveness of ophthalmological education. Regular accreditation assessments, peer reviews, and student feedback mechanisms can provide valuable insights for continuous improvement and quality enhancement. Regular assessment of learning outcomes, faculty performance, and programmatic evaluation can inform evidence-based decision-making and promote accountability in ophthalmological education.

3.9. Lifelong learning

Promoting a culture of lifelong learning is paramount to sustain competence and adaptability in ophthalmic practice. Continuing professional development opportunities, online learning platforms, and mentorship programs can support ongoing skill enhancement and career progression for ophthalmologists.

3.10. Advocacy and policy support

Advocating for supportive policies and regulatory frameworks is essential to facilitate the effective implementation of CBME in ophthalmology. Collaboration with professional associations, advocacy groups, and policymakers can influence policy decisions and garner support for educational initiatives aimed at enhancing ophthalmic training.

3.11. Community engagement

Engaging with local communities and stakeholders can enrich ophthalmological education by providing opportunities for hands-on experience and community-based learning. Outreach programs, health camps, and collaboration with primary care providers can expose students to diverse patient populations and real-world healthcare challenges.

3.12. Technology integration

Leveraging technology can enhance the delivery of ophthalmological education by facilitating interactive learning experiences and simulation-based training. Virtual reality simulations, telemedicine platforms, and digital learning resources can supplement traditional teaching methods and promote active engagement among students.

3.13. Mentorship and peer support

Establishing mentorship programs and peer support networks can foster professional development and resilience among ophthalmology trainees. Experienced practitioners can offer guidance, share clinical insights, and provide emotional support to aspiring ophthalmologists, facilitating their transition into competent healthcare professionals.

4. Conclusion

In conclusion, the integration of CBME principles in ophthalmology holds immense potential to transform medical training and enhance patient care. By addressing challenges, fostering interdisciplinary collaboration, and embracing innovation, stakeholders can optimize educational outcomes and prepare future ophthalmologists to meet the evolving healthcare needs of society. With concerted efforts and a commitment to excellence, CBME in ophthalmology can pave the way for a brighter future in eye care delivery and education.

5. Source of Funding

None.

6. Conflict of Interest

None.

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Cite this article: Singh R, Chaudhary D, Kushwaha BK, Maurya RP. Navigating competency-based medical education in ophthalmology: Addressing challenges and charting future trajectories. *Indian J Clin Exp Ophthalmol* 2024;10(1):21-25.