Scholastic Dental Sciences

Review Aricle

Volume 2 Issue 1 January 2026

Challenges in Implementation of Competency Based Education in Indian Dental Education

Dr. T. Maheswaran[1], Dr. V. Ilayaraja[2], Dr. M. Saranya[3*], Dr. S. Jeelani[4], Dr. B. Adhithya[5], Dr. Manisha Kumar[6]

[1]Professor, Department of Oral Pathology and Microbiology, Adhiparasakthi Dental College and Hospital, Tamil Nadu, India

[2]Professor, Department of Oral Pathology and Microbiology, Vivekanandha Dental College for Women, Tamil Nadu, India.

[3]Associate Professor, Department of Oral Pathology and Microbiology, Vivekanandha Dental College for Women, Tamil Nadu, India.

[4]Professor and Head, Department of Oral Medicine & Radiology, Dhanalakshmi Srinivasan Dental College, Perambalur, Tamil Nadu, India.

[5]Assistant Professor, Department of Oral Pathology and Microbiology, Adhiparasakthi Dental College and Hospital, Tamil Nadu, India.

[6]Assistant Professor, Department of Oral Pathology and Microbiology, Adhiparasakthi Dental College and Hospital, Tamil Nadu, India.

Corresponding Author: Dr. M. Saranya, Associate Professor, Department of Oral Pathology and Microbiology, Vivekanandha Dental College for Women, Tamil Nadu, India.

Received: December 24, 2025; **Published:** December 30, 2025

Abstract

Competency-Based Education represents a transformative approach in Indian dental education, shifting the focus from traditional time-based learning to outcomes-oriented training. Despite its widespread adoption in medical curricula, dental institutions face numerous challenges in its implementation. These include inadequate faculty preparation, resource constraints, assessment complexity, and resistance to pedagogical change. Understanding these barriers is essential for successful curriculum transformation in medical education. This review synthesizes evidence on implementation challenges and proposes strategies to enhance the effectiveness of competency-based frameworks in the Indian dental education system.

Keywords: Competency-Based Education; Dental Education; Outcome-oriented learning

Introduction

The implementation of Competency-Based Education (CBE) in Indian dental institutions represents a significant pedagogical transformation aimed at producing practice-ready graduates capable of addressing evolving oral health needs [1]. Traditional discipline-centered approaches are transitioning toward learner-centered, competency-focused curricula that emphasize demonstrable clinical skills and professional attributes [2]. While CBE holds promise for aligning educational outcomes with healthcare system priorities, substantial obstacles impede its effective implementation in Indian dental schools [3]. Understanding these challenges is critical for developing evidence-based solutions that ensure successful curriculum transformation and improved educational outcomes. This review provides a concise summary of the challenges in implementing CBE in Indian Dental Education.

Faculty Development and Training Challenges

A significant barrier to CBE implementation is inadequate faculty preparation for competency-based teaching methodologies [4]. Many dental educators lack formal training in educational principles, assessment design, and feedback mechanisms that are essential for competency-based frameworks [5]. Studies have indicated that faculty members express concerns about the increased workload associated with CBE, including extensive documentation requirements and multiple formative assessments [6]. The shortage of trained faculty relative to student numbers further compounds this challenge, with many institutions struggling to provide individualized learning pathways that are characteristic of effective competency-based systems [4]. Faculty development programs are inconsistently implemented, with junior faculty often lacking exposure to modern educational technologies and competency-based teaching strategies [6].

Assessment and Evaluation Complexities

Assessment methodologies in CBE present considerable challenges for dental education. [2]. Traditional examination-driven systems must transition to workplace-based assessments that evaluate competence in authentic clinical contexts [7]. The implementation of direct observation tools, portfolio assessments, and formative feedback mechanisms requires substantial faculty training and institutional resources [8]. Studies have revealed that dental students perceive gaps between their perceived competency levels and the teaching emphasis on various skills, particularly in the communication, scholarship, and continuing professional development domains [9]. Establishing valid and reliable assessment frameworks that accurately measure competency attainment while maintaining educational rigor remains an ongoing challenge across institutions [3].

Infrastructure and Resource Limitations

Infrastructure deficiencies pose significant implementation barriers to Indian dental education [10]. The tremendous growth of dental colleges, particularly in the private sector, has outpaced resource development, resulting in inadequate clinical training facilities and patient exposure opportunities [5]. Students frequently graduate with insufficient competency in specialized patient populations, including geriatric, pediatric, and medically compromised individuals [11]. Technology integration challenges further complicate CBE implementation, as many institutions lack the modern educational tools essential for competency-based learning [10]. The financial burden on institutions to upgrade their infrastructure and recruit qualified faculty creates substantial barriers, particularly in resource-constrained settings [4].

Systemic and Cultural Barriers

Resistance to curricular change represents a fundamental challenge in CBE implementation [1], and senior stakeholders often maintain a preference for traditional curriculum structures, viewing reforms as unnecessarily complex or disruptive [6]. The transition from teacher-centered to learner-centered pedagogy requires substantial cultural shifts in educational philosophy and practice [2]. Coordination challenges among faculty members and departments impede the integrated learning approaches essential for competency development [12]. Additionally, the absence of standardized implementation guidelines across institutions results in heterogeneous adoption patterns and quality variations in CBE delivery [8].

Conclusion

Successful CBE implementation in Indian dental education requires comprehensive strategies that address faculty development, resource enhancement, assessment framework refinement, and cultural change. Institutional commitment, adequate funding, standardized guidelines, and continuous evaluation mechanisms are essential for overcoming implementation barriers and realizing the transformative potential of competency-based frameworks.

References

1. Deshpande, Anshula N et al. “Identifying Needs and Preparing for Curriculum Changes in Indian Dental Education.” *International journal of clinical pediatric dentistry* vol. 17,7 (2024): 842-850.
2. Khanna, Richa, and Divya Mehrotra. “The roadmap for quality improvement from traditional through competency based (CBE) towards outcome based education (OBE) in dentistry.” *Journal of oral biology and craniofacial research* vol. 9,2 (2019): 139-142.
3. Gruppen, Larry D et al (2012). “The promise of competency-based education in the health professions for improving global health.” *Human resources for health* vol. 10 43.
4. Gopalakrishnan, Shivkumar et al (2022). “Challenges and opportunities in the implementation of competency-based medical education - A cross-sectional survey among medical faculty in India.” *Journal of education and health promotion* vol. 11 206.
5. Virdi, Mandeep S (2012). “Quality considerations in dental education in India.” *Journal of dental education* vol. 76,3: 372-6.
6. Kurien, Mary, and Kurien Thomas (2024). “Competency Based Medical Education (CBME) in India: Clinicians' Multifaceted Challenges.” *Indian journal of otolaryngology and head and neck surgery : official publication of the Association of Otolaryngologists of India* vol. 76,4: 3730-3734.
7. Uma, Eswara (2020). “Workplace-Based Assessment: A Valuable Tool in Undergraduate Dental Education.” *International journal of applied & basic medical research* vol. 10,4: 223-225.
8. Sud, Rouli, and Sumeet Khanduja (2022). “Implementing competency-based medical education in post-graduate ophthalmology training: Understanding key concepts and methodologies and overcoming challenges.” *Indian journal of ophthalmology* vol. 70,10: 3701-3706.
9. Mohammed, Ciraj A et al (2021). “Attitude towards shared learning activities and Interprofessional education among dental students in South India.” *European journal of dental education: official journal of the Association for Dental Education in Europe* vol. 25,1: 159-167.
10. Annamma, Lovely M et al (2024). “Current challenges in dental education- a scoping review.” *BMC medical education* vol. 24,1 1523.
11. Thomas, Susan (2013). “The need for geriatric dental education in India: the geriatric health challenges of the millennium.” *International dental journal* vol. 63,3: 130-6.
12. Nimavat, Nirav et al. “Online Medical Education in India - Different Challenges and Probable Solutions in the Age of COVID-19.” *Advances in medical education and practice* vol. 12 237-243.