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ADAPTING MEDICAL EDUCATION TO COMPETENCY-BASED TRAINING: CHALLENGES AND OPPORTUNITIES POPULATIONS

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Abstract

Introduction: CBME is becoming recognized as an innovative approach to medical learning, centering on set goals, personalized studies, and the ability to manage clinical challenges. On the other hand, using CBME is difficult for most organizations, especially where resources are limited.

Objective: To explore the challenges and opportunities of adapting medical education to a competency-based framework at a tertiary care hospital in Pakistan.

Materials and Method: A qualitative study was performed at Hamdard University, Karachi, from February, 2024 to July, 2024. Semi-structured interviews and focus group discussions occurred with 20 individuals such as faculty, trainees and curriculum coordinators. Results were examined through thematic analysis.

Results: It was found that the system lacked preparedness, suffered under heavy assessments, had few facilities, and gave inconsistent comments. Despite their concerns, participants still recognized that CBME could help people become more skilled and improve their learning.

Conclusion: Implementing CBME well demands commitment from the organization, faculty preparation, resources, and changes that fit local needs.

Keywords: CBME, medical education, assessment, implementation, Pakistan, qualitative study, clinical training.

INTRODUCTION

The change in medical education from time-based to competency-based is a significant transformation in how healthcare professionals are prepared. It is happening because medical education must match what happens in practice and the new changes in healthcare systems. In CBME, more value is given to developing required skills during training than just completing a set education period (1). The new competency-based curriculum is a significant development in training, evaluating, and moving medical students into their profession. At the same time, using this model presents both positive chances and significant difficulties that institutions and educators must handle (2). With CBME, the primary focus is on outcomes-based learning, so how someone moves ahead depends on their skills, not their time in training (3). The goal is for graduates to show they are ready for the practice, even if they master the subject at different speeds.

Even though CBME's principles are widely supported, moving from traditional curricula to the CBME model has shown many issues, including resistance from some, a lack of preparation for faculty, and a mismatch between assessment and competencies (4). The lack of resources and support systems often makes these challenges more significant in some areas (5). Frequent and intensive assessment demands in CBME are considered an important concern. With competency-based frameworks, learners face many high-pressure evaluations meant to build up skills and knowledge, which could result in burnout from the assessment (6). To address these struggles, programs utilize technology, create practical check-up tools, and organize courses to help faculty use efficient assessment methods (2). Assessing student learning is especially difficult in postgraduate training because candidates have both clinical work and classwork demands that call for deliberate changes to existing procedures (7). The achievement of CBME relies on changing the curriculum and preparing an environment that enables students to achieve mastery and continuously improve. Those learning need to be driven to do well and receive helpful feedback, not criticism that punishes them (8). As part of systems-based practice, using CBME includes learning about healthcare delivery, delivering safe care, and cooperating with different professionals (9). As a result, healthcare workers are educated to run through the challenges a healthcare system faces while always caring for their patients as the top priority. Nevertheless, CBME requires improvements in infrastructure and readiness for change within the institution. Schools and colleges should focus on helping their staff, planning their lessons, and using technology to teach through competencies (10).

This also includes giving professors both content knowledge and the ability to guide, support, teach, and work towards strengthening the education provided. The combination of teaching and evaluation needs significant changes in culture and ongoing support from the leadership team. There are specialties such as family medicine and psychiatry where the challenges of using CBME become even more severe. Since patients and their needs vary, some skills are not easy to measure and clinical situations are also different, adjustable curriculum and assessment are essential (11, 3). Because of the COVID-19 pandemic, the flexibility and limitations of competency frameworks became more noticeable. During this emergency, education had to redesign goals, teaching methods, and how students are tested to uphold educational quality and play a role in preventing the spread of the illness (12).

The setting for CBME can have a substantial effect on what it achieves. Program success depends partly on whether organizations are prepared, people's attitudes toward assessments, and what is available for the process (13). Additionally, using digital tools and new platforms has started to improve how teaching, learning, and giving feedback take place in competency-based education. They may improve how and when feedback is provided, encourage people to learn independently, and show real-time progress toward achieving required skills (14). Ultimately, changing the learning process in medical schools from coursework to competency-based training will significantly change the training and assessment of medical students. Confronted by challenges and additional tasks, the shift to CBME is needed as it promises better results for students, better matching to healthcare needs, and more effective patient care.

Objective: To explore the challenges and opportunities associated with adapting medical education to a competency-based framework, focusing on implementation strategies, assessment methods, and contextual factors influencing educational outcomes.

MATERIALS AND METHODS

Design: Descriptive, Qualitative study.
Study setting: The study was performed at Hamdard University, Karachi, a top tertiary care teaching hospital in Pakistan.
Duration: The study was carried out over a six-month period, from February, 2024 to July, 2024.
Inclusion Criteria: The participants were medical educators, curriculum creators, trainees still practicing medicine, and administrative leaders who played a role in CBME. All participants in the study possessed at least one year of training in a CBME-structured program so they could provide meaningful information.
Exclusion Criteria: Those without CBME experience or a role in designing, implementing, or reviewing curricula and assessments were excluded. The study did not involve undergraduate students or faculty from other fields except medicine.

Methods

Interviews were carried out according to a semi-structured guide, and focus group discussions were conducted with participants chosen from Hamdard University, Karachi. Recruitment included 20 people, including CBME participating faculty, postgraduates, and leaders of the curriculum planning team. All interviews and discussions were led by a set protocol that asked about perceived issues, advantages, and ideas for improvements in CBME implementation. All interviews were recorded, and the transcription was done precisely as spoken, with the participant's knowledge. The data was studied using thematic analysis, which helped find repeated patterns and main themes. Using NVivo, we arranged and coded the research data. No individual or identifiable data was revealed throughout the sessions. The study was approved by the Institutional Review Board of Hamdard University before the data was collected. The researchers designed their approach to explore in detail both the challenges and successes of applying competency-based education to postgraduate medical programs.

RESULTS

The study included opinions from 20 participants, including eight faculty members, 6 postgraduate trainers, and 6 curriculum coordinators involved in implementing CBME at Hamdard University in Karachi. They found a selection of challenges and benefits that could be grouped into essential called awareness and preparedness, assessment burden, resource availability and impact on learning and feedback culture.

1. Awareness and Preparedness for CBME Implementation

There were differences in how much faculty and curriculum coordinators understood CBME principles. While CBME was widely seen as a step forward, many participants doubted how it could be carried out effectively. Faculty underlined the need for structured courses and defined rules so their teaching matches CBME principles. Trainees said they received limited information about their jobs and how they would be evaluated.

Table 1: Participant Understanding of CBME Concepts

Understanding Level	Faculty (n=8)	Trainees (n=6)	Coordinators (n=6)
High	2	1	3
Moderate	4	3	2
Low	2	2	1

2. Assessment Load and Feedback Systems

Many people pointed out that the assessment requirements were too heavy. It was noted that faculty spent too much time filling out paperwork for evaluations, and trainees felt the feedback was often confusing and inconsistent. Several participants suggested that better digital tools would make assessment procedures faster.

Table 2: Perceived Challenges in CBME Assessment

Challenge	Frequency (No. of mentions)
Excessive documentation	17
Inconsistent feedback	14
Time constraints	13
Lack of assessor training	11
Misalignment between tools & goals	10

3. Institutional and Resource Barriers

Experts pointed out that faculty members and technological equipment were in short supply. Most departments did not have sufficient software or people to conduct continuous assessments and personal learning for every student. Many people felt that overcoming these obstacles depends on committing to the institution and adequate financial resources.

Table 3: Institutional Barriers to CBME

Barrier	No. of Participants Reporting
Inadequate staffing	15
Poor digital infrastructure	14
Lack of administrative support	10
Inadequate training budget	12

4. Perceived Benefits and Opportunities

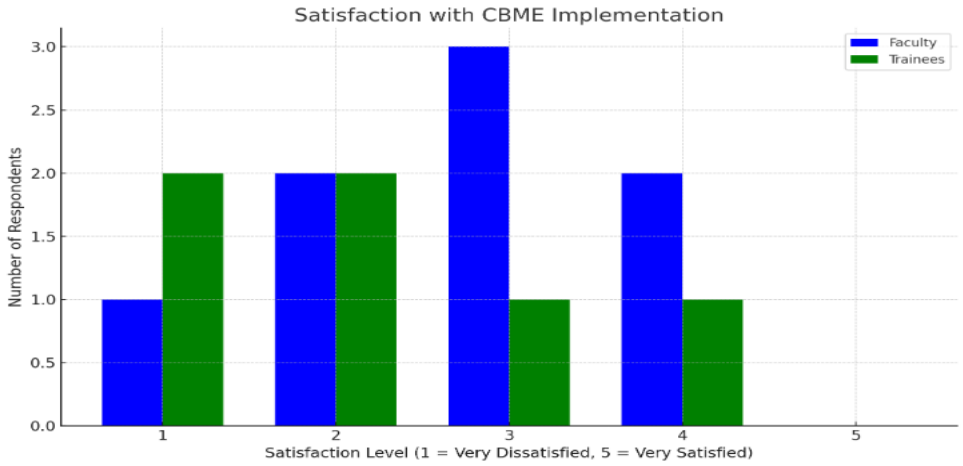
Despite the barriers they met, participants believed there were significant advantages. Faculty thought CBME made it easier for students to learn what they need for real-world care. Trainees liked that the program was organized and offered them personal advice. Those responsible for the curriculum highlighted how CBME can result in more competent physicians.

Table 4: Reported Benefits of CBME

Benefit	No. of Participants Mentioning
Improved skill alignment	16
Enhanced clinical readiness	14
Opportunity for personalized learning	13
Better feedback cycles	12

Graph: Faculty and Trainee Satisfaction with CBME Implementation

A bar graph below indicates the satisfaction ratings (rate of 1 to 5) shared by both faculty and trainees about CBME implementation.



The graph suggests that many participants are not fully satisfied, as most have rated their experience as being around levels 2 or 3. The research found that supporters of CBME believe it can improve medical education, but Hamdard University faces difficulties in using the model because of unresolved knowledge issues, too much assessment work, and organizational challenges. However, these advantages suggest that solving the problems would greatly benefit the health system.

DISCUSSION

By adopting Competency-Based Medical Education (CBME), medical training is evolving to emphasize what learners achieve, their practical training, and their full development as healthcare professionals. At Hamdard University, Karachi, the study identified that participants held hopeful and concerned opinions about using CBME. The research agrees with other studies, proving that a structured and institutional approach is essential for successfully adopting CBME. The main point of this research is that stakeholders have different levels of awareness and readiness. Although most participants understood the benefits of CBME in theory, they had difficulties translating it into practice. Similarly, Penrabel et al. report that, despite many supporting CBME, a significant difference exists between knowing the principles and applying them in practice (1).

Szulewski et al., during our sessions with faculty members, identified they wanted additional training and more straightforward guidelines for using CBME (2). Lack of proper orientation and ongoing training can make it challenging for faculty members to follow the competency framework. Another major issue discussed by participants was the amount of evaluation required with CBME. Having frequent reviews, providing feedback through narratives, and keeping proper records was usually felt to take up a lot of time and reduce the amount of effective teaching and connection with students.

Sahadevan et al. mentioned that starting CBME in psychiatry in India proved difficult because the role of assessors was very demanding, and standard methods to assess students were not widely available (3). Adding to this, providing service to patients while supporting students in their learning can create tension for teachers in busy clinical areas. According to Ryan et al., struggles to apply CBME have increased after COVID-19, as resources are not as available and clinical priorities have changed (4). Besides, the strength of infrastructure and the culture found in institutions were significant factors in CBME's success. Leiphrakpam and Are noted that shifting to competency-based models means more than adopting a new curriculum. It demands adjustments to faculty positions, policies and the overall philosophy of education (5). Participants in our study pointed out that problems include the lack of enough staff, bad or broken digital tools and inadequate administrative participation.

Such structural problems may limit the use of CBME, mainly in countries where resources are scarce (6). Stoffman's literature also pointed out that dealing with these barriers is essential to sustain using CBME in organizations (6). Remarkably, despite the challenges described, everyone agreed on the long-term value of CBME. Experienced academics realized that CBME is likely to develop physicians who are better suited to care for patients according to changing healthcare requirements. According to Ott et al., creating "principled" changes helps institutions use CBME methods that match their environment while still keeping the quality of education high (7). Everyone interviewed believed that making these changes was not only crucial for getting the program running smoothly but also for looking after learner progress.

Many students and teachers highlighted a supportive environment. Ideal conditions for CBME are those that focus on learning, allow for reflections, and ensure students receive feedback quickly (8). According to Ross et al., traditional hierarchies' teaching and grading approaches rarely match these values (8). At Hamdard University, it was found that trainees often faced unclear directions and mixed feedback, which lowered the usefulness of the competency assessments. Gonzalo et al. and colleagues argue for the importance of including quality improvement, teamwork, and patient safety in the curriculum for systems-based practice (9). Our study's curriculum coordinators welcomed CBME as a chance to develop system thinking in future doctors. Keeping institutional commitment and involvement from leaders emerged as necessary throughout the findings. Lomis et al. stated that for a university to successfully take up CBME, there needs to be a shift in culture among all groups and people involved set common decisions (10).

In our research, participants pointed out that leaders are responsible for distributing resources, deciding on key priorities, and showing what education should look like. Without strong leaders, making CBME happen and maintain becomes more challenging. Transforming assessment methods was commonly suggested to strengthen the use of CBME. Danilovich et al. pointed out that assessment in CBME continues to develop and requires using narrative evaluations, assessments at work, and structures for assessing the program as a whole (11). The people in our study wanted access to standardized digital tools to improve and streamline the assessments. By using digital technology, Arrighi et al. highlighted that CBME can remain practical even when the conditions change, such as during the COVID-19 pandemic (12).

The context of any research study affects the results more than is often realized. They noted that CBME should be matched to the culture of learning, the experience of training sites, and the policy situation within a country (13). Problems like weak faculty skills, strict chain of command among staff, and poor infrastructure in Pakistan suggest that solutions should be developed locally. Using technology together with new teaching ideas and feedback was viewed as a strong option to consider. According to Baboolal and Singaram, using technology increases the value of feedback, simplifies keeping track of abilities, and encourages students to participate in their learning (14). Our participants were positive about using these tools if they are simple to use and backed by their institution. Still, the success of CBME in Pakistan depends on overcoming practical, institutional and cultural difficulties. The findings indicate that with proper adjustments, effective leadership, and well-planned resource use, CBME can help produce healthcare professionals who are competent, reflective and able to deal with difficulties.

CONCLUSION

Moving to Competency-Based Medical Education (CBME) at Hamdard University shows both the benefits and challenges of modernizing education in medicine. This study noted that the main challenges are not enough preparation among faculty, extreme numbers of assessments, limited backing from the institution and a lack of necessary infrastructure. Even with these obstacles, those involved in this training understood that CBME could improve skills, adjust learning for each individual, and match education to the healthcare system's priorities. The data points out the importance of structured faculty development, the use of digital technologies, and strong leadership at the institution for implementation. Also, it is necessary to adjust approaches locally because resource-limited settings like Pakistan face systemic and cultural challenges. Purposeful planning,

feedback and teamwork can help CBME bring new life and clear results to medical education. Overall, achieving successful adoption will depend on regular investments in people, change, and a learning atmosphere that promotes both student and professional growth.

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