

A Review of Common and Impactful Teaching Methods in Continuing Medical Education

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Abstract

As medical science continually evolves, continuing education programs play an important role in keeping healthcare professionals updated with the latest advancements. In response to this need, the present review aimed to examine the common and effective teaching methods used in continuing education, identifying strategies that promote sustainable learning and improve educational outcomes. This review covers literature published between 2000 and 2023, sourced from databases such as Google Scholar, Elsevier ISI (Web of Science), and Scopus, using keywords including “educational method,” “continuing education,” and “common method of teaching.” The findings highlight that teaching methods are among the most influential factors in the success of continuing education programs. Numerous studies emphasize the pivotal role of instructional strategies in facilitating effective learning for healthcare professionals. While traditional methods remain relevant, the integration of innovative approaches—such as group discussions, problem-solving techniques, collaborative models, clinical education, e-learning, simulation-based training, and evidence-based medicine—significantly contributes to lasting learning outcomes. Employing a combination of these methods can motivate ongoing professional development and support long-term competence in healthcare delivery.

Keywords: Effective teaching strategies, Teaching methods, Continuing medical education, Continuing education

Introduction

The core mission of medical education is to prepare competent and qualified professionals who possess the necessary knowledge, attitudes, and skills to promote and protect public health [1]. Achieving this goal is not feasible without structured and ongoing training, as medical and health-related education is vital throughout

the personal and professional lives of healthcare providers. Delivering quality care requires more than just practical skills; it demands a solid foundation of knowledge and clinical expertise [2]. Modern healthcare goals can only be realized when human resources are equipped with up-to-date scientific knowledge and technological proficiency [3–5]. Therefore, to achieve effective education, it is essential to integrate innovative teaching approaches alongside traditional methods, and necessary reforms must be implemented within healthcare training systems.

In response to the ever-growing body of scientific information and the rapid pace of advancement in medical knowledge, many countries have begun adopting reformative strategies in medical education [4–6].

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Studies show that over time, individuals' retention of knowledge diminishes, while the volume of new scientific discoveries—particularly in the field of medicine—continues to increase. It is estimated that within 4–5 years, half of current medical knowledge becomes outdated, and within 8–10 years, nearly 75% is obsolete [3–5]. For this reason, continuous education in medical sciences has become an essential component of professional development. Healthcare professionals must remain in regular contact with emerging medical advancements to maintain and enhance their competency.

Globally, many nations are actively pursuing effective training models and methods aimed at improving the quality of care, reducing healthcare costs, and bridging the gap between theoretical knowledge and clinical practice [7–10]. Even if initial university education is deemed sufficient for student performance, the transient nature of useful knowledge necessitates frequent, structured continuing education. By employing blended teaching strategies and modern tools, continuing education programs can reduce information loss among graduates and better serve both the professionals and the communities they care for [11–13].

Continuing education encompasses post-graduate activities aimed at enhancing knowledge, developing skills, and strengthening professional competence [14, 15]. The primary goal of these programs is to optimize healthcare services and achieve high standards in delivering care to the community [16–18]. Globally, continuing education is recognized as a fundamental principle and an essential component of professional development. Identifying the most effective methods for continuing education is critical for improving physicians' clinical competencies and enhancing patient care [19, 20]. One of the key criteria used by specialized institutions to renew medical certifications is the completion of continuing education courses and the accumulation of required annual credits [21]. Given the ongoing advancements in medical science, continuing education programs are structured to keep healthcare professionals up to date with the latest knowledge and practices. In light of these considerations, the present study aims to review the most common and effective educational methods in continuing medical education, to introduce strategies that promote long-term learning and enhance educational effectiveness.

Materials and Methods

This study is a narrative review conducted between 2000 and 2023. Articles were retrieved through systematic searches in major academic databases, including Google Scholar, Elsevier ISI (Web of Science), and Scopus. The search was carried out using relevant keywords such as educational method, continuing education, and common method of teaching, and was performed by one of the study's authors. Following the initial screening of titles and abstracts, articles were assessed based on their methodology and results sections. Only studies that met the inclusion criteria were selected for detailed analysis.

Results and Discussion

Teaching methodology emerged as one of the most critical factors influencing the effectiveness of continuing medical education (CME). Several studies have emphasized the significant role of instructional approaches in shaping the success of physicians' ongoing training programs. For example, one study analyzing the first five years of CME implementation within the medical community highlighted that inadequate time allocation for Q&A sessions and overly condensed content were key sources of participant dissatisfaction. These issues were primarily attributed to weaknesses in instructional methods used in CME programs [22].

Identifying and evaluating studies that explore the impact of teaching methods within medical universities can offer valuable guidance for enhancing the implementation of continuing education initiatives. In support of educational reform in medical sciences, research by Makarem *et al.* revealed that while CME programs for dentists had notable strengths, they also faced challenges. These shortcomings—such as outdated content, lack of practical relevance, and inefficient delivery—can be addressed through careful validation and revision. The study recommended improvements in teaching strategies, the selection of relevant and applicable topics, and the alignment of content with the current needs of dental professionals [23].

A study by Ahmadijouybary *et al.* [24] compared the effectiveness of two continuing education approaches—workshops and lectures—in enhancing the knowledge of general practitioners. The findings indicated that the workshop approach had a significantly greater impact on increasing the physicians' average awareness level compared to traditional lectures [24]. Similarly, research by Karimi Moghani *et al.* [25], which focused on evaluating the effectiveness of innovative teaching

strategies in medical universities, demonstrated that modern approaches—such as problem-solving techniques, group discussions, metacognitive strategy packages, and concept mapping—positively influenced student satisfaction and promoted more durable learning outcomes.

Further supporting these results, Ahmadijouybary *et al.* [24] found a statistically significant improvement in general practitioners' knowledge before and after participating in workshops and lectures, with workshops showing a greater effect. These findings align with those of Baghcheghi *et al.* [26], who also observed superior outcomes from group discussions compared to lectures. Likewise, the study by Javadi *et al.* [27] confirmed the enhanced effectiveness of workshops over lectures.

Additional studies have highlighted that blended educational methods—incorporating question-and-answer sessions, group discussions, and the use of advance organizers—lead to more sustainable learning compared to traditional lecture-based teaching [28]. Specifically, group discussions have been shown to yield a more substantial impact on learning retention than lecture formats [29]. Due to its effectiveness and lasting impact, this instructional model holds potential across various educational contexts, including research, academic management, and clinical bedside training [30].

Conversely, in a study by Kakoei *et al.* [31], educational methods such as using audio recordings, attending seminars and congresses, and utilizing the Internet were rated as the least effective strategies in continuing education programs related to oral and dental health.

In the study by Sadeghi and Bakhshi [18], participants found several instructional methods suitable for implementing continuing education in restorative dentistry. These included hands-on practice in workshops, observing practical demonstrations, combining practical work and lectures with video presentations, viewing educational videos, and attending seminars and congresses [31]. Complementing these findings, another study indicated that general practitioners prioritized non-attendance methods and journals as their preferred format for educational programs. This was followed by preferences for practical training on patient interactions, workshops, and lectures, in that order [32]. Similarly, in Butterworth's research, physicians identified hands-on practical work as the most effective teaching method, placing lectures at the lowest rank in terms of preference [33].

In a study by Yousefy and Rezaie [34] titled “Continuing Education of the Medical Community as a Platform for Improving the Quality of Healthcare Services,” the authors emphasized the pivotal role of continuing education in enhancing healthcare service quality. They highlighted it as a strategic foundation for quality improvement initiatives within the healthcare system [34].

Furthermore, Borji *et al.* [35] conducted a study to gather general practitioners' perspectives on the content of written continuing education programs. The results revealed that 78.8% of participants preferred the inclusion of practical content, while 7.2% valued advance notification about the topics and reference materials. Additionally, 76.3% expressed a preference for content that addressed seasonal and local health issues and supported topic selection based on participant surveys. These findings underscore the need for significant improvements in continuing education programs. To better align with participants' expectations, program planners should prioritize relevant topic selection, carefully structure the timing of educational sessions, focus on endemic and seasonal health concerns, use surveys to guide content planning, and provide advance information about session outlines and resources [35].

Interactive educational strategies appear to significantly boost learner engagement and satisfaction in continuing medical education. Several studies emphasize that the opportunity to actively participate in educational discussions plays a crucial role in how these programs are perceived. For example, Arash *et al.* [36] reported that fewer than half of the participating physicians were content with the extent of their involvement in discussions. Supporting this, Davis *et al.* [37] reviewed fifty studies and concluded that interactive formats—those that facilitate two-way communication—are consistently more impactful than passive formats like lectures. Safa *et al.* [38] reached a similar conclusion, highlighting the effectiveness of interactive approaches in enhancing educational outcomes.

Although lectures remain the default method in many continuing education programs, they are often insufficient on their own—particularly in dynamic and evolving healthcare environments [39]. Findings from Hosseini *et al.* [40] revealed that participants preferred sessions that included interactive formats such as Q&A segments and practical workshops over lecture-only settings.

Another important factor affecting participant motivation is the use of instructional aids. Their absence was frequently cited as a weakness in educational program design. Conversely, in Arash *et al.*'s evaluation of Golestan University's medical education programs, more than half of the respondents expressed strong approval for the use of such aids [36], describing them as highly beneficial to their learning. This was consistent with Borji *et al.* [35], who also emphasized the positive role of visual and interactive teaching tools.

Further insights from Ataei *et al.* [39] point to a range of pedagogical strategies employed in the medical sciences. These include traditional lectures, group work, e-learning, clinical rotations, evidence-based teaching, and medical simulations. Among these, clinical education, simulation-based instruction, and evidence-guided practice are particularly tailored to the specific demands of medical training, while methods like problem-solving and group discussion are applicable across disciplines.

Despite the variety of instructional approaches, a recurring criticism among program participants is the disconnect between the curriculum content and the practical demands of their professional roles [16, 41]. This misalignment underscores the importance of designing educational interventions that are both practical and profession-specific, ensuring that the knowledge gained can be directly applied in clinical settings.

One major reason many professors continue to rely heavily on lecture-based teaching is their limited exposure to modern instructional techniques, particularly collaborative learning strategies [42]. This highlights the pressing need for comprehensive needs assessments, using diverse and reliable sources, to gather accurate and objective data. Consequently, a reassessment of how continuing education programs are delivered becomes essential. Educational planners are strongly encouraged to adopt active and problem-based learning methods [43]. Moreover, integrating interactive teaching styles into formal continuing education frameworks is crucial for enhancing their effectiveness. Research has consistently shown that traditional lectures, when used alone, have minimal impact on changing physicians' behavior in clinical settings [37]. In contrast, learner-centered approaches—such as workshops and hands-on demonstrations—create dynamic learning environments with more opportunities for discussion and have proven to be significantly more effective than lectures [25, 26]. Thus, a shift toward more engaging and interactive

teaching practices in continuing education programs is imperative [42].

Learning is a fundamental outcome of education, and in today's rapidly evolving world, lifelong learning has become an indispensable component of professional growth and personal development [44]. A prominent example of lifelong learning is continuing education, which has undergone significant evolution in both its theoretical underpinnings and implementation strategies. These changes reflect the emerging demands in medical service delivery and education [21].

Given the fast-paced advancements in the healthcare sector—ranging from shifting treatment protocols and the introduction of novel pharmaceuticals to the emergence of new diseases and technologies—continuing education is no longer optional. It has become an essential element for healthcare professionals who must stay current with ever-changing diagnostic and therapeutic practices [34]. Furthermore, knowledge retention naturally declines over time, while the influx of scientific and clinical discoveries continues at an unprecedented pace. Among all disciplines, the field of medicine is particularly affected by these rapid developments, reinforcing the critical role of ongoing education within medical universities.

Today, continuing education in medical and health sciences has become a global priority. Over the past several decades, its importance has grown substantially, largely due to its direct impact on public health. Ensuring the quality and relevance of these educational programs is vital for sustaining healthcare excellence and meeting the evolving needs of society.

On the other hand, continuous education programs demand a considerable investment of both time and money. If these programs are not carefully planned and effectively managed, there is a risk of wasting valuable resources. One of the key elements that can significantly enhance the quality of these programs—and serves as a common theme across research—is the emphasis on the teaching methods used in continuing education for medical professionals [45]. Furthermore, there is a pressing need to reassess the teaching methods used in continuous education programs, with a particular focus on the adoption of active learning strategies. Interactive teaching methods, which create more opportunities for participant discussion, have proven to be far more effective than passive methods such as traditional lectures [37].

It is important to note that no teaching method is inherently good or bad on its own. Instead, the effectiveness of a teaching method is determined by how it is implemented and the context in which it is applied. There is no one-size-fits-all “best” teaching method; rather, the most effective approach depends on how well the method fits with the goals and outcomes expected in the educational environment [46]. The World Federation for Medical Education (WFAME) standards also emphasize the importance of using various teaching and learning methods, such as structured courses, seminars, lectures, problem-solving and case-based learning, practical training, participation in conferences, and independent research. Additionally, digital platforms, where medical professionals can engage in online discussions about treatment strategies and challenges, can be considered part of a modern, multifaceted approach to teaching.

Alongside choosing the most appropriate teaching method, it is equally important to design educational content that is directly aligned with the needs of the learners. Doing so will lead to improved awareness, attitudes, and performance among medical professionals. The success of continuous education programs is not only determined by the teaching methods but also by factors such as the alignment of the program with the learners’ needs, the involvement of doctors in managing the learning process, and the presentation of both practical and scientific materials. Teaching methods that motivate learners from within can lead to greater engagement and overall satisfaction. The correct application of continuous education programs has the potential to enhance ethical compliance, foster better relationships between healthcare providers and patients, and improve the knowledge, skills, and motivation of medical professionals [45, 47].

The selection of teaching methods and the development of educational content tailored to the learners’ needs play a crucial role in improving the quality of healthcare and treatment, which in turn benefits both patients and doctors. Research has consistently shown that the most important factor for achieving the goals of continuing education is the proper application of teaching methods, along with well-structured content. Given these insights, it is essential for developing countries to incorporate new and efficient approaches to the provision of healthcare services and medical education.

Conclusion

Given that the primary aim of continuous education is to enhance professional performance, it is essential for this training to be structured and systematic. As medical science education evolves rapidly, the demand for practical teaching methods becomes increasingly evident. It is recommended to incorporate strategies such as shifting from theoretical knowledge to hands-on techniques, leveraging modern educational technologies, implementing innovative and effective teaching methods, introducing new instructors into the educational framework, and ensuring easy and affordable access to medical information and data sources. Additionally, improving the speed of access to resources and utilizing teaching methods based on clinical evidence are vital components of effective organizational training.

Alongside traditional lectures, a variety of effective educational strategies such as group discussions, cooperative learning models, problem-solving techniques, e-learning, clinical training, evidence-based medicine, and simulation-based education can be employed. Given the close relationship between continuous education and learning that occurs in real-world settings, this type of education plays a significant role in influencing behavior, promoting behavioral change, and maintaining proper health practices in clinical environments. By using diverse methods focused on fostering deep and lasting learning, the effectiveness of education can be evaluated through health-related outcomes and indicators during the active practice period, thus providing valuable insights into the impact of education.

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