

INTISARI

Latar belakang: Transformasi pelayanan kesehatan abad ke-21 akibat globalisasi dan perkembangan teknologi digital menuntut pendidikan kedokteran dan kesehatan untuk memperkuat kompetensi abad ke-21. *Problem-based learning* (PBL) banyak digunakan untuk mendukung pembelajaran aktif, namun efektivitasnya bervariasi antar institusi karena perbedaan desain kasus, peran tutor, dinamika kelompok, integrasi teknologi, dan dukungan institusional. Kajian yang secara komprehensif memetakan komponen PBL yang efektif serta keterkaitannya dengan kompetensi abad ke-21 masih terbatas.

Tujuan: Mengidentifikasi, mensintesis, dan memetakan komponen PBL yang efektif dalam pendidikan kedokteran dan kesehatan abad ke-21 serta keterkaitannya dengan luaran kompetensi abad ke-21.

Metode: *Scoping review* dilakukan mengikuti pedoman PRISMA-ScR dengan pendekatan PCC (*Population, Concept, Context*). Pencarian pada PubMed/MEDLINE, Scopus, ScienceDirect, dan Google Scholar tahun 2016–2025 menggunakan strategi Boolean. Seleksi studi dilakukan melalui skrining judul–abstrak dan telaah full-text oleh dua reviewer independen menggunakan Rayyan. Data kemudian diekstraksi dan dianalisis secara deskriptif dan tematik untuk mengidentifikasi determinan PBL yang efektif dan luaran kompetensi abad ke-21.

Hasil: Dari 2.106 artikel yang teridentifikasi, 14 studi memenuhi kriteria inklusi. Sintesis tematik menunjukkan enam determinan utama PBL efektif, yaitu desain kasus dan struktur PBL, peran tutor, dinamika kolaborasi kelompok, integrasi teknologi pembelajaran, penguatan *self-directed learning*, serta faktor kontekstual dan dukungan institusional. PBL secara konsisten meningkatkan *critical thinking* dan *problem solving*, serta memperkuat kolaborasi, komunikasi, *self-directed learning*, literasi digital, dan adaptabilitas.

Kesimpulan: Efektivitas PBL ditentukan oleh kombinasi determinan pedagogik dan institusional. Implementasi PBL yang optimal memerlukan desain kasus autentik, fasilitasi tutor yang kompeten, strategi partisipasi kelompok yang seimbang, integrasi teknologi yang tepat, serta dukungan tata kelola institusi.

Kata kunci: *problem-based learning*, pendidikan kedokteran, kompetensi abad ke-21, *scoping review*, *self-directed learning*

ABSTRACT

Background: The transformation of 21st-century healthcare driven by globalization and rapid digital technological advancements requires medical and health professions education to strengthen 21st-century competencies. Problem-based learning (PBL) is widely used to support active learning; however, its effectiveness varies across institutions due to differences in case design, tutor roles, group dynamics, technology integration, and institutional support. Comprehensive reviews mapping the effective characteristics of PBL and their relationship to 21st-century competencies remain limited.

Aims: To identify, synthesize, and map the effective characteristics of PBL in 21st-century medical and health professions education and their relationship to competency outcomes.

Methods: A scoping review was conducted following PRISMA-ScR guidelines using the PCC framework (Population, Concept, Context). Literature searches were performed in PubMed/MEDLINE, Scopus, ScienceDirect, and Google Scholar (2016–2025) using Boolean strategies. Study selection involved title–abstract screening and full-text review by two independent reviewers using Rayyan. Data were extracted and analyzed descriptively and thematically to identify key determinants of effective PBL and related competency outcomes.

Results: A total of 2,106 identified articles, 14 studies met the inclusion criteria. Six key determinants of effective PBL were identified: case design and PBL structure, tutor roles, group collaboration dynamics, integration of educational technology, reinforcement of self-directed learning, and contextual or institutional support. PBL consistently improved critical thinking and problem-solving while strengthening collaboration, communication, digital literacy, and adaptability.

Conclusion: Effective PBL depends on both pedagogical and institutional factors, requiring authentic case design, competent tutor facilitation, balanced participation, appropriate technology integration, and strong institutional support.

Keywords: problem-based learning, medical education, 21st-century competencies, scoping review, self-directed learning