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Research Article

Essential competencies in family practice for undergraduate medical education: a scoping review

Competências essenciais em medicina de família e comunidade para a graduação médica: uma revisão de escopo

Competencias esenciales en medicina familiar y comunitaria para la educación médica de pregrado: una revisión de objetivo

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ABSTRACT

Introduction: High-quality medical education is essential to ensure safe, equitable, and socially responsible healthcare. Competency-Based Medical Education guides curricula according to population needs and healthcare systems demands. Family Practice (FP) stands out as a strategic specialty for acting directly within Primary Health Care, providing an integrated and contextualized learning environment. **Objective:** To map and analyze the competencies related to FP required for undergraduate medical education as described in the scientific literature. **Methods:** A scoping review was conducted in accordance with the JBI methodology and PRISMA-ScR guidelines. Searches were conducted in eight databases and gray literature, including studies published between 1994 and 2025. Competencies were extracted, categorized based on conceptual similarity, grouped into domains and analyzed according to their frequency of recurrence in the included studies. **Results:** Twenty-one articles from different continents were included, with the majority published within the last decade. Limited interdisciplinary collaboration was observed, with few experiences of collaboration between different areas or professions. The most frequently cited competency domains were clinical communication, person-centered care, management of chronic and acute diseases, cultural competence, community orientation, interprofessional work, health promotion, and care coordination. Competency domains such as family approach, continuity of care, evidence-based practice, and ethics appeared at an intermediate frequency. Procedural skills, palliative care, occupational health, professional well-being, digital health, and advocacy were rarely cited. **Conclusions:** This study identifies a core set of family medicine competencies for undergraduate medical education based on the existing literature, while also highlighting gaps in emerging areas, interdisciplinary competencies, and competencies historically valued in the specialty. These findings can inform the updating of curricular guidelines and foster debate about formative needs in undergraduate medical training.

Keywords: Education, medical, undergraduate; Competency-based education; Family practice.

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Resumo

Introdução: A formação médica de qualidade é essencial para assegurar cuidados em saúde seguros, equitativos e socialmente responsáveis. A Educação Baseada em Competências orienta currículos com base nas necessidades da população e dos sistemas de saúde. A Medicina de Família e Comunidade (MFC) constitui-se como especialidade estratégica por atuar diretamente na Atenção Primária à Saúde, proporcionando um cenário de aprendizado integrado e contextualizado. **Objetivo:** Mapear e analisar as competências relacionadas à MFC necessárias para a formação médica na graduação descritas na literatura científica. **Métodos:** Revisão de escopo conduzida conforme o Joanna Briggs Institute (JBI) e *Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews* (PRISMA-ScR), com busca em oito bases de dados e literatura cinzenta, abrangendo estudos publicados entre 1994 e 2025. As competências foram extraídas, categorizadas por similaridade conceitual, agrupadas em domínios e analisadas quanto à frequência de recorrência nos estudos incluídos. **Resultados:** Foram incluídos 21 artigos, predominantemente publicados na última década, provenientes de diferentes continentes. Observou-se limitada interdisciplinaridade, com pouca colaboração entre diferentes áreas ou profissões nos estudos. Os domínios de competência mais frequentemente citados envolveram comunicação clínica, cuidado centrado na pessoa, manejo de doenças crônicas e agudas, competência cultural, abordagem comunitária, trabalho interprofissional, promoção da saúde e coordenação do cuidado. Domínios como abordagem familiar, continuidade do cuidado, prática baseada em evidências e ética apresentaram frequência intermediária. Habilidades procedimentais, cuidados paliativos, saúde do trabalhador, bem-estar profissional, saúde digital e papel advocatício foram pouco citados. **Conclusões:** O estudo revela um núcleo de competências da MFC frequentemente citado na literatura para a formação médica na graduação, mas destaca lacunas em áreas emergentes e em competências historicamente valorizadas na especialidade. Os achados podem subsidiar a atualização de diretrizes curriculares e fomentar debates sobre as necessidades formativas na graduação médica.

Palavras-chave: Educação de graduação em medicina; Educação baseada em competências; Medicina de família e comunidade.

Resumen

Introducción: La formación médica de calidad es esencial para garantizar una atención en salud segura, equitativa y socialmente responsable. La Educación Basada en Competencias orienta los currículos a partir de las necesidades de la población y de los sistemas de salud. La Medicina Familiar y Comunitaria (MFC) se constituye como una disciplina estratégica por su actuación directa en la Atención Primaria de Salud, proporcionando un escenario de aprendizaje integrado y contextualizado. **Objetivo:** Mapear y analizar las competencias relacionadas con la MFC necesarias para la formación médica de pregrado, según lo descrito en la literatura científica. **Métodos:** Revisión de objetivo realizada según las directrices del JBI y PRISMA-ScR, con búsqueda en seis bases de datos y literatura gris, abarcando estudios publicados entre 1994 y 2025. Las competencias fueron extraídas, categorizadas por similitud conceptual , agrupadas en dominios y analizadas según la frecuencia de recurrencia en los estudios incluidos. **Resultados:** Se incluyeron 21 artículos, predominantemente publicados en la última década y provenientes de diferentes continentes. Se observó una limitada interdisciplinariedad, con poca colaboración entre diferentes áreas o profesiones en los estudios. Los dominios de competencias más frecuentemente citados incluyeron la comunicación clínica, la atención centrada en la persona, el manejo de enfermedades crónicas y agudas, la competencia cultural, el enfoque comunitario, el trabajo interprofesional, la promoción de la salud y la coordinación del cuidado. Dominios como el enfoque familiar, la continuidad del cuidado, la práctica basada en evidencias y la ética presentaron una frecuencia intermedia. Habilidades procedimentales, cuidados paliativos, salud laboral, bienestar profesional, salud digital y abogacía en salud fueron poco citados. **Conclusiones:** Este estudio identifica un conjunto central de competencias en medicina familiar para la formación de pregrado en medicina, basado en la literatura existente, pero también pone de manifiesto lagunas tanto en áreas emergentes como en competencias históricamente valoradas en la especialidad. Los hallazgos pueden contribuir a la actualización de directrices curriculares y a fomentar debates sobre las necesidades formativas en la educación médica de pregrado.

Palabras clave: Educación de pregrado en medicina; Educación basada en competencias; Medicina familiar y comunitária.

INTRODUCTION

The quality of medical training is fundamental for health systems to provide safe, equitable, and socially responsible care.[1] Preparing physicians to meet population health demands requires more than the transmission of technical knowledge; it entails training that is sensitive to the social determinants of health and oriented toward comprehensive care and intersectoral articulation.[2,3] From this perspective, Competency-Based Education (CBE) has become established as a pedagogical model in the education of health professionals, shifting the focus to the learner and valuing the developmental process,[4,5] in contrast to the traditional model centered on the accumulation of theoretical content and the completion of required instructional hours. Within this framework, competencies are defined as the integrated mobilization of knowledge, skills, and attitudes to address concrete problems in clinical practice.[4] Accordingly, CBE not

only strengthens the technical-scientific competence of future physicians but also fosters the development of critical thinking, interprofessional collaboration, and ethical and social commitment to health outcomes.[3]

To effectively implement a competency-based curriculum, it is essential to establish clear objectives aligned with graduate profiles that are consistent with the needs of health systems. This process involves identifying the core competencies that will guide the entire curricular structure, from the selection of appropriate teaching methods to the design of assessment strategies capable of measuring the development of these competencies.[1,6,7]

Since the *Edinburgh Declaration* (1988), the understanding that medical education should be directly connected to the community has become well established.[8] The document emphasizes that learning cannot be confined to the university hospital; instead, teaching must be articulated with local health services to ensure that the curriculum is responsive to the demands of professional practice and the populations served.[8] This perspective was subsequently reinforced by international organizations such as the World Federation for Medical Education, the World Health Organization, and the Pan American Health Organization, all of which recognize Primary Health Care (PHC) as a structuring axis of medical education.[9-11] In Brazil, the 2014 National Curriculum Guidelines (*Diretrizes Curriculares Nacionais* DCN) align with this orientation by placing PHC at the core of medical training and assigning graduates expanded social responsibility within the scope of the Brazilian Unified Health System (*Sistema Único de Saúde* – SUS), with competencies focused on comprehensive care, interdisciplinary practice, and collective health.[12]

In this context, Family Practice (FP) emerges as a strategic discipline within medical education. Characterized by longitudinal care, comprehensiveness, and a person-, family-, and community-centered approach, FP is practiced directly within PHC services. By placing individuals, families, and communities at the core of the educational process, FP facilitates a direct integration between academic learning and community health needs.[13-15] Evidence indicates that early exposure to PHC during medical training significantly enhances the acquisition of general clinical skills, positively influences the choice of generalist career paths, and strengthens the commitment of future physicians to public health policies and the promotion of community well-being.[16-18]

Despite the increasing recognition of the importance of FP in medical training, significant gaps remain. The absence of specific national guidelines defining FP competencies in Brazilian undergraduate medical programs hinders the consolidation of curricula aligned with the needs of SUS and PHC.[9] Moreover, the direct adaptation of international guidelines has inherent limitations, as in many countries comprehensive medical training is largely completed during residency.[3,11,19]

Given the growing relevance of this topic and the diversity of approaches adopted across educational contexts, a scoping review represents a pertinent methodological strategy for mapping existing knowledge, identifying prevailing trends, and highlighting areas requiring further investigation. The findings of this study are intended to support the development of intentional, socially committed curricula aligned with PHC within the Brazilian context.

METHODS

This review was conducted in accordance with the guidelines of the Joanna Briggs Institute (JBI) and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR), ensuring methodological rigor and adherence to best practices.[20,21]

The review process comprised the following stages: identification of the topic and formulation of the research question, an initial exploratory search, definition of the search strategy, development of the review protocol, database searching, study selection, data extraction, data analysis, and presentation of the results. The review protocol was developed in accordance with JBI and PRISMA-ScR guidelines and was registered in the Open Science Framework (https://doi.org/10.17605/OSF.IO/UF9SX).[21,22]

The research question and inclusion criteria were defined according to the structure proposed by JBI, based on three core dimensions: population, concept, and context (PCC).[20] The population comprised undergraduate medical students, the concept was a competency-based curriculum, and the context was FP. Studies published in English, Portuguese, or Spanish over the last three decades (1994–2025) were considered. No restrictions were applied regarding study design.

The search strategy was developed in three stages. First, a preliminary, non-controlled search was conducted in the United States National Library of Medicine (PubMed) and the Virtual Health Library (VHL) to identify relevant studies and key terms related to the topic. Based on the descriptors associated with the PCC framework and the keywords identified in these studies, a comprehensive search strategy was then developed and independently reviewed by two reviewers to ensure accuracy and completeness.

The following Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH) were selected: *Competências*/Competency-Based Education; *Competência Clínica*/Clinical Competence; *Educação de Graduação em Medicina*/Education, Undergraduate Medical; *Estudantes de Medicina*/Students Medical; *Estágio Clínico*/Clinical Clerkship; *Currículo*/Curriculum; *Medicina de Família e Comunidade*/Family Practice.

A combination of terms and their synonyms was used to enhance search sensitivity and maximize the retrieval of relevant studies. This strategy was subsequently adapted for the following databases: PubMed, BVS, EMBASE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus, OVID/Medical Literature Analysis and Retrieval System Online (MEDLINE), Education Resources Information Center (Eric), and Web of Science.

The detailed search strategy for the PubMed database, including Boolean operators and search fields applied across all databases, is presented in Chart 1.

In addition to searches conducted in indexed bibliographic databases, grey literature was explored using two complementary strategies: manual screening of the reference lists of included studies and searches in the Catalog of Theses and Dissertations of the Coordination for the Improvement of Higher Education Personnel (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (*Catálogo de Teses e Dissertações da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* – CAPES) and in ProQuest Theses and Dissertations Global. For these sources, the same combination of descriptors and keywords used in the indexed databases was applied, with adaptations to the specific search interfaces.

The search was conducted between August 2024 and April 2025. All retrieved records were collected and uploaded to the Rayyan® application, and duplicate references were removed. Two independent reviewers carried out the initial screening based on the predefined inclusion and exclusion criteria, as well as data extraction using a standardized form. The extracted information included authorship, year of publication, country of origin, population, concept, context, methodological approach, and main findings relevant to the review. Disagreements were resolved by consultation with a third reviewer. All selected studies were subsequently assessed in full text to confirm eligibility.

Finally, a frequency analysis of the competency domains described in each study was performed. To this end, competencies were independently extracted from the full text of each included article,

Chart 1. Search Strategy.

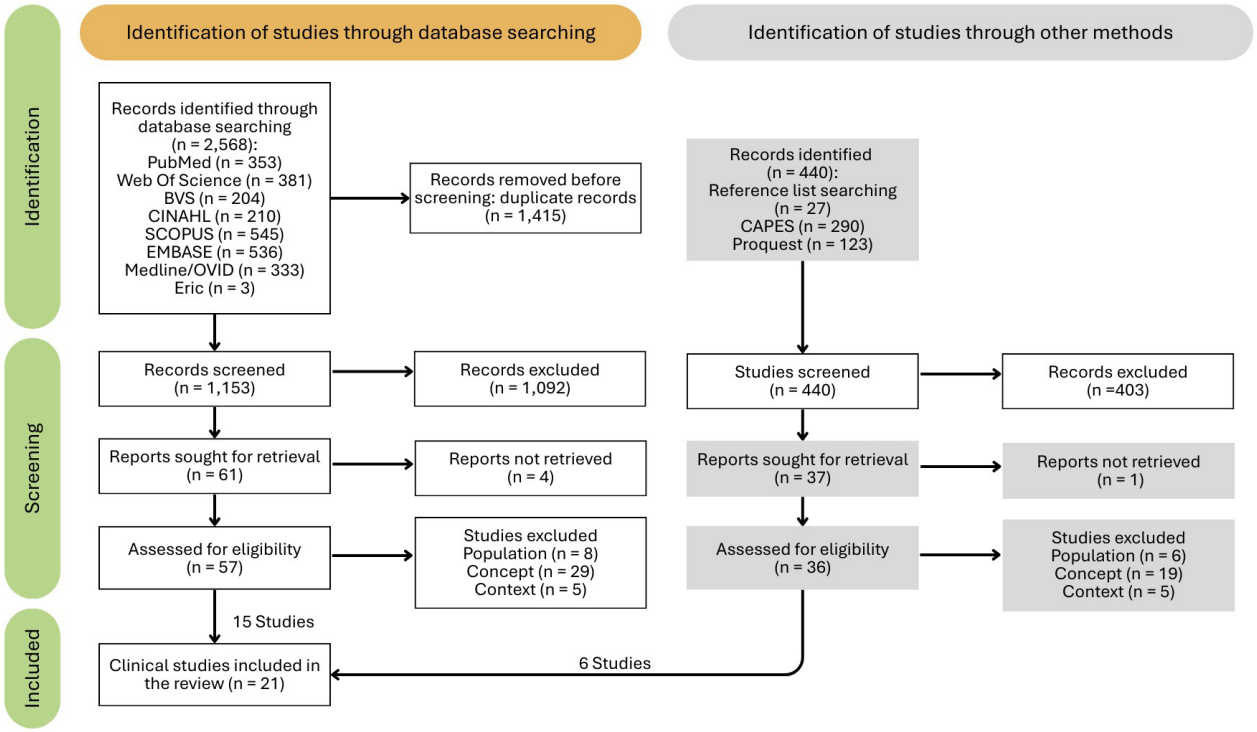
Source	Strategy
PUBMED	((Family Practice[MeSH Terms]) OR ("Family Practice"[Title/Abstract] OR "Family Practices"[Title/Abstract] OR "Family Medicine"[Title/Abstract] OR "medicina de familia"[Title/Abstract] OR "medicina familiar"[Title/Abstract] OR "general practice"[Title/Abstract] OR "general medicine"[Title/Abstract] OR "general medical practice"[Title/Abstract])) AND ((Education, Medical, Undergraduate[MeSH Terms]) OR (Students, Medical[MeSH Terms]) OR (Clinical Clerkship[MeSH Terms]) OR ("Education, Medical, Undergraduate"[Title/Abstract] OR "Undergraduate Medical Education"[Title/Abstract] OR "Students, Medical"[Title/Abstract] OR "Medical Student"[Title/Abstract] OR "Medical Students"[Title/Abstract] OR "med student"[Title/Abstract] OR "medical school student"[Title/Abstract] OR "clinical clerkship"[Title/Abstract] OR "clinical apprenticeship"[Title/Abstract] OR "clinical apprenticeships"[Title/Abstract] OR "clinical clerkships"[Title/Abstract] OR "clinical teaching"[Title/Abstract] OR "clinical education"[Title/Abstract] OR "undergraduates"[Title/Abstract] OR "bachelor students"[Title/Abstract] OR "baccalaureate students"[Title/Abstract] OR "ensino médico"[Title/Abstract] OR "ensino clínico"[Title/Abstract] OR "educación médica de pregrado"[Title/Abstract])) AND ((Competency-Based Education[MeSH Terms]) OR (Professional Competence[MeSH Terms]) OR (Clinical Competence[MeSH Terms]) OR ("Competency-Based Education"[Title/Abstract] OR "Competency Based Education"[Title/Abstract] OR "competency based educational program"[Title/Abstract] OR "competency based learning"[Title/Abstract] OR "competency based program"[Title/Abstract] OR "competency based teaching"[Title/Abstract] OR "competency based training"[Title/Abstract] OR "Professional Competence"[Title/Abstract] OR "Generalization of Expertise"[Title/Abstract] OR "Technical Expertise"[Title/Abstract] OR "competency based medical training"[Title/Abstract] OR "competency based medical education"[Title/Abstract] OR "Core Competencies"[Title/Abstract] OR "Competency Framework"[Title/Abstract] OR "Skill-Based Education"[Title/Abstract] OR "Outcome-Based Education"[Title/Abstract] OR "Clinical Competence"[Title/Abstract] OR "Clinical Competency"[Title/Abstract] OR "Clinical Competencies"[Title/Abstract] OR "Clinical Skill"[Title/Abstract] OR "Clinical Skills"[Title/Abstract] OR "competência clínica"[Title/Abstract] OR "competência profissional"[Title/Abstract] OR "educação baseada em competências"[Title/Abstract] OR "competencia clínica"[Title/Abstract] OR "competencia profesional"[Title/Abstract] OR "educación basada en competencias"[Title/Abstract] OR "technical competence"[Title/Abstract])) AND ((Curriculum[MeSH Terms]) OR ("Curriculum"[Title/Abstract] OR "Curricula"[Title/Abstract] OR "Short-Term Courses"[Title/Abstract] OR "Short-Term Course"[Title/Abstract] OR "Short Term Courses"[Title/Abstract] OR "integrated curriculum"[Title/Abstract] OR "curriculum development"[Title/Abstract] OR "plan de estudios"[Title/Abstract] OR "malla curricular"[Title/Abstract] OR "core curriculum"[Title/Abstract] OR "course design"[Title/Abstract] OR "program of study"[Title/Abstract]))

considering both explicitly stated competencies and those implicitly described in the results, discussion, or recommendations. All identified competencies were then organized into thematic categories based on the analysis of conceptual similarities and comparison with international frameworks. This process enabled the grouping of competencies into broader domains, enhancing comparability across studies and facilitating the analysis of the frequency and distribution of these domains throughout the reviewed literature.

RESULTS

The database search yielded 2,568 records, and an additional 440 records were identified through grey literature sources. The study selection process is detailed in the PRISMA flow diagram (Figure 1). Ultimately, 21 studies were included in the review.

Analysis of the exclusion criteria across all stages of the review indicated that 65.8% of exclusions were related to the concept. The excluded studies primarily addressed educational strategies for implementing competency-based curricula, including comparisons across different stages of training and



Source: adapted from Haddaway et al.[23]

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.

teaching settings, the use of active learning methodologies, and the application of educational technologies, including artificial intelligence. Additionally, several publications examined student characteristics, specialty choice, or assessment strategies without describing or measuring specific competencies. Among the excluded studies, 20.5% focused exclusively on medical residency populations, postgraduate education, or specialist practice, thereby failing to meet the predefined population criterion. The remaining 13.7% were excluded for not specifically addressing the context of FP.

Analysis of the 21 included studies demonstrated a diverse geographical distribution, with a predominance of research conducted in North America (seven studies, or 33.3%). This was followed by Asia (three studies, or 14.29%), Europe (three studies, or 14.29%), Latin America (three studies, or 14.29%), the Middle East (two studies, or 9.52%), and Oceania (one study, or 4.76%). In addition, two studies (9.52%) were intercontinental in scope (involving collaborations between Ibero-America and Europe or the Middle East). The included publications spanned the period from 1994 to 2024, with 61.9% published within the last decade (2014–2024).

The most frequently employed methodologies among the included studies were experience reports (typically based on guideline reviews associated with the development of curricular proposals by expert groups) and the Delphi technique for achieving expert consensus. Each of these approaches was used in six studies (28.6% of the total). Interviews and focus groups were applied in four studies (19%) to explore the perceptions and experiences of students, faculty, and health professionals. Additionally, three studies (14.3%) adopted narrative or integrative literature review designs, and two were opinion articles (9.5%).

Chart 2 summarizes the studies included in the review, presenting their country of origin, methodological approach, and main findings.

Chart 2. Articles included according to country, methodology used, and main findings.

Authors and year of study	Country	Methodology	Main Findings
Anderson et al., 2007	Brazil	Review of guidelines and qualitative analysis with focus groups	Proposal for transversal and longitudinal curricular integration of FP, defining core contents and the challenges faced.[13]
Demarzo et al., 2012	Brazil	Curriculum development by experts and public consultation	Guideline with learning objectives, methodology, and key stakeholders, emphasizing the longitudinal integration of PHC in medical education.[18]
Kronemann et al., 2024	Germany	Qualitative analysis of interviews with experts	Identification of essential competencies, mainly soft skills, emphasizing practical training as a teaching method.[24]
Fujikawa et al., 2024	Japan	Qualitative documentary analysis by experts	Identification of competencies and learning objectives related to generalism, emphasizing a multisystemic perspective and the psychosocial context.[25]
Hashim, 2022	United Arab Emirates	Integrative literature review	Synthesis of educational practices in FP in undergraduate and postgraduate clerkships.[26]
Schneider et al., 2019	United States	Expert experience report and qualitative analysis with students	Identification of competencies and educational activities with curricular implementation.[27]
Blythe et al., 2018	United Kingdom	Opinion article	Discussion of curricular guidelines, emphasizing person- and population-centered care and the development of consultation and diagnostic skills.[28]
Shewade et al., 2017	India	Delphi technique	Validated Delphi instrument to assess competencies, including 7 domains and 74 items.[29]
Ben et al., 2017	Brazil	Literature review and expert report	Identification of 18 competencies for FP clerkships organized into four axes (general, individual, family, and community approaches), with key teaching and assessment methods.[30]
Morley et al., 2017	United States	Group concept mapping	Consensus on 116 competencies grouped into 12 clusters and three meta-categories (clinical, community, and culture; understanding of the health system; data science and population health).[31]
Coppolillo et al., 2016	Ibero-America	Qualitative analysis and focus group with experts	Analysis of the potential for incorporating FP in undergraduate education, curricular challenges, and faculty development.[32]
Gouveia et al., 2016	Australia	Delphi technique	Identification of 26 core and 158 secondary competencies grouped into 6 domains (cognitive, technical, affective, relational, integrative, and contextual) for rural medicine.[33]
Raghav et al., 2016	India	Delphi technique	Consensus on competencies for an FP discipline, divided into clinical, FP, professionalism, epidemiology, and teaching.[34]
Fazio et al., 2016	United States	Expert experience report	Identification of curricular elements and learning objectives. PHC curriculum model divided into 3 domains: care management; approach to acute, chronic, and population care; and understanding the role of PHC within the health system.[35]
Mudiyanse, 2014	Sri Lanka	Opinion article	Curricular proposal for the implementation of FP, discussing gaps in teaching competencies such as communication, collaboration, professionalism, and management.[36]
Kaprielian et al., 2013	United States	Expert experience report	Identification and curricular implementation of population health in undergraduate and residency training. Competencies organized into 4 domains and 3 performance levels, aligned with Bloom's taxonomy.[37]
Sylvester et al., 2011	Canada and USA	Delphi technique	Definition of procedural skills for undergraduate FP training.[38]
Tandeter et al., 2011	European countries and Israel	Delphi technique	Consensus on competencies and learning topics for FP clerkships.[39]

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Chart 2. Continuation.

Authors and year of study	Country	Methodology	Main Findings
O'Brien-Gonzales et al., 2007	United States	Expert experience report	Curriculum with competencies and resources for FP clerkships.[40]
Milman et al., 1997	Israel	Delphi technique	Educational objectives for FP clerkships, highlighting common PHC problems, the biopsychosocial model, and the physician-patient relationship.[41]
Noble et al., 1994	Canada and USA	Literature review and curricular analysis	Shared curricular proposal among FP, pediatrics, and internal medicine, emphasizing a patient- and community-centered curriculum.[42]

The frequency analysis enabled the identification of the main competency domains described in the included studies. Chart 3 summarizes these findings, presenting, for each competency domain, its frequency of occurrence and the studies in which it was identified.

Another aspect assessed concerned the recommended teaching settings for the development of competencies in FP. Among the 21 studies analyzed, 19 identified PHC as the main training environment, encompassing both primary care clinics and activities conducted within communities and households. The hospital setting was reported in eight studies, particularly for training in clinical procedures and

Chart 3. Competency domains identified in the reviewed studies, with frequency and references of the included articles.

Competency Domains	Articles citing (n, %)	Studies (Author, year)
Clinical communication	21 (100)	Kronemann, 2024; Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Blythe, 2018; Shewade, 2017; Ben, 2017; Morley, 2017; Coppolillo, 2016; Gouveia, 2016; Raghav, 2016; Fazio, 2016; Mudiyanse, 2014; Kaprielian, 2013; Demarzo, 2012; Sylvester, 2011; Tandeter, 2011; O'Brien-Gonzales, 2007; Anderson, 2007; Milman, 1997; Noble, 1994
Person-centered care	19 (90)	Kronemann, 2024; Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Blythe, 2018; Ben, 2017; Morley, 2017; Coppolillo, 2016; Gouveia, 2016; Raghav, 2016; Fazio, 2016; Mudiyanse, 2014; Demarzo, 2012; Tandeter, 2011; O'Brien-Gonzales, 2007; Anderson, 2007; Milman, 1997; Noble, 1994; Kaprielian, 2013
Chronic disease management	19 (90)	Kronemann, 2024; Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Blythe, 2018; Shewade, 2017; Ben, 2017; Morley, 2017; Coppolillo, 2016; Gouveia, 2016; Raghav, 2016; Fazio, 2016; Mudiyanse, 2014; Kaprielian, 2013; Demarzo, 2012; Tandeter, 2011; O'Brien-Gonzales, 2007; Anderson, 2007; Milman, 1997
Acute disease management	17 (81)	Kronemann, 2024; Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Blythe, 2018; Shewade, 2017; Ben, 2017; Morley, 2017; Coppolillo, 2016; Gouveia, 2016; Raghav, 2016; Fazio, 2016; Mudiyanse, 2014; Demarzo, 2012; Tandeter, 2011; O'Brien-Gonzales, 2007; Anderson, 2007
Cultural competence	17 (81)	Kronemann, 2024; Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Blythe, 2018; Shewade, 2017; Ben, 2017; Morley, 2017; Coppolillo, 2016; Gouveia, 2016; Raghav, 2016; Fazio, 2016; Mudiyanse, 2014; Kaprielian, 2013; Demarzo, 2012; Anderson, 2007; Noble, 1994
Community-oriented approach	17 (81)	Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Shewade, 2017; Morley, 2017; Ben, 2017; Coppolillo, 2016; Gouveia, 2016; Raghav, 2016; Fazio, 2016; Kaprielian, 2013; Demarzo, 2012; Tandeter, 2011; O'Brien-Gonzales, 2007; Anderson, 2007; Milman, 1997; Noble, 1994
Interprofessional collaboration	17 (81)	Kronemann, 2024; Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Morley, 2017; Mudiyanse, 2014; Kaprielian, 2013; Demarzo, 2012; Tandeter, 2011; Anderson, 2007; O'Brien-Gonzales, 2007; Raghav, 2016; Fazio, 2016; Coppolillo, 2016; Gouveia, 2016; Milman, 1997; Noble, 1994

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Chart 3. Continuation.

Competency Domains	Articles citing (n, %)	Studies (Author, year)
Health promotion and prevention	16 (76)	Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Blythe, 2018; Shewade, 2017; Morley, 2017; Ben, 2017; Coppolillo, 2016; Gouveia, 2016; Raghav, 2016; Fazio, 2016; Mudiyanse, 2014; Kaprielian, 2013; Demarzo, 2012; Tandeter, 2011; O'Brien-Gonzales, 2007
Care coordination	16 (76)	Kronemann, 2024; Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Morley, 2017; Ben, 2017; Mudiyanse, 2014; Shewade, 2017; Demarzo, 2012; Tandeter, 2011; Anderson, 2007; O'Brien-Gonzales, 2007; Raghav, 2016; Fazio, 2016; Gouveia, 2016; Milman, 1997
Professionalism	14 (67)	Hashim, 2022; Mudiyanse, 2014; Raghav, 2016; Anderson, 2007; Gouveia, 2016; Ben, 2017; Morley, 2017; Fazio, 2016; Coppolillo, 2016; Kaprielian, 2013; O'Brien-Gonzales, 2007; Demarzo, 2012; Tandeter, 2011; Milman, 1997
Family-oriented approach	12 (57)	Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Ben, 2017; Tandeter, 2011; Demarzo, 2012; Anderson, 2007; Noble, 1994; Coppolillo, 2016; Gouveia, 2016; Kaprielian, 2013; Fazio, 2016
Health systems and management	12 (57)	Kronemann, 2024; Fujikawa, 2024; Hashim, 2022; Schneider, 2019; Shewade, 2017; Morley, 2017; Raghav, 2016; Fazio, 2016; Kaprielian, 2013; O'Brien-Gonzales, 2007; Anderson, 2007; Blythe, 2018
Ethics	12 (57)	Morley, 2017; Hashim, 2022; Anderson, 2007; O'Brien-Gonzales, 2007; Gouveia, 2016; Raghav, 2016; Kaprielian, 2013; Mudiyanse, 2014; Demarzo, 2012; Fazio, 2016; Coppolillo, 2016; Tandeter, 2011
Longitudinality	11 (52)	Kronemann, 2024; Hashim, 2022; Schneider, 2019; Fazio, 2016; Tandeter, 2011; O'Brien-Gonzales, 2007; Anderson, 2007; Milman, 1997; Noble, 1994; Ben, 2017; Morley, 2017
Evidence-based practice	11 (52)	Hashim, 2022; Kaprielian, 2013; Morley, 2017; Demarzo, 2012; Fazio, 2016; Coppolillo, 2016; O'Brien-Gonzales, 2007; Gouveia, 2016; Schneider, 2019; Fujikawa, 2024; Noble, 1994
Lifelong learning	8 (38)	Hashim, 2022; Ben, 2017; Kronemann, 2024; Mudiyanse, 2014; Anderson, 2007; Milman, 1997; Gouveia, 2016; Noble, 1994
Advocacy	7 (33)	Morley, 2017; Shewade, 2017; Raghav, 2016; Gouveia, 2016; Kaprielian, 2013; O'Brien-Gonzales, 2007; Muhammad-Jawad, 2022
Procedural skills	6 (29)	Sylvester, 2011; Hashim, 2022; Milman, 1997; Schneider, 2019; Gouveia, 2016; Fazio, 2016
Digital health	5 (24)	Schneider, 2019; O'Brien-Gonzales, 2007; Fazio, 2016; Shewade, 2017; Gouveia, 2016
Palliative care	5 (24)	Muhammad-Jawad, 2022; Fujikawa, 2024; Noble, 1994; O'Brien-Gonzales, 2007; Schneider, 2019
Patient safety	4 (19)	Schneider, 2019; Fazio, 2016; Shewade, 2017; O'Brien-Gonzales, 2007
Physician physical and mental well-being	4 (19)	Hashim, 2022; Gouveia, 2016; Kronemann, 2024; Noble, 1994
Occupational health	3 (14)	Morley, 2017; Coppolillo, 2016; Kaprielian, 2013

emergency management. The importance of internships in rural or remote areas was highlighted in nine studies, justified by workforce shortages and the epidemiological diversity of these regions. Finally, eight publications emphasized the role of classrooms and seminars for case discussions, theoretical foundations, and the integration of theory and practice.

DISCUSSION

A scoping review is an appropriate methodological approach for exploring broad topics, mapping the available literature, and identifying knowledge gaps.[43] Using this approach, the present study mapped the competencies in FP described in the scientific literature related to undergraduate medical education.

During the review process, analysis of the exclusion criteria revealed notable trends. There was a predominance of publications focused on strategies for implementing CBE, active learning methodologies,

and the application of technologies such as artificial intelligence and clinical simulation. In addition, 20.5% of the excluded studies addressed exclusively postgraduate populations, reflecting the training tradition in many countries, particularly in the Global North, where FP is predominantly structured within specialization or residency programs.[19,45-49]

These findings indicate that, despite the growing volume of publications on medical education and competencies, studies that systematize and assess the essential competencies of FP for undergraduate medical students constitute only a small proportion of the literature and remain limited relative to the overall body of research.

Analysis of the 21 studies included in this review highlights a concentration of publications within the last decade (2014–2024), reflecting a global movement toward curricular standardization and the validation of essential competencies in recent years.[1,4] This trend seeks to ensure that graduates are adequately prepared to operate within contemporary health systems by aligning clinical, social, and organizational skills with population health demands.[2]

Furthermore, analysis of the geographical diversity of the included studies indicates that, although certain competencies are widely recognized internationally, their application requires adaptation to specific regional contexts, taking into account epidemiological, social, and cultural particularities.[6,7] Publications from North America and Europe predominated, together accounting for 47.6% of the included studies, whereas only 14.3% were conducted in Latin America. This distribution underscores a relevant limitation, as the applicability of these competency frameworks to the Latin American context remains limited. Such geographical asymmetry suggests that some identified competencies may reflect priorities, practices, and health system characteristics distinct from those present in Brazil, thereby reinforcing the need for critical contextualization and national validation prior to their incorporation into medical curricula.[6,7]

Beyond geographical considerations, it is evident that although interdisciplinarity is mentioned in several studies, few effectively document concrete collaboration with other specialties and health professions. Only one study, published in 1994, explicitly demonstrates interaction among Pediatrics, Internal Medicine, and FP, underscoring how incipient this dimension remains.[42] In addition, most studies focus on specific stages of the curriculum, such as short-term clerkships or internships, with limited attention to the longitudinal and integrated development of competencies across the entirety of medical training.

All analyzed studies acknowledge the importance of incorporating FP competencies into undergraduate medical education, regardless of students' future specialty choices, thereby reinforcing their cross-cutting relevance in the training of general practitioners.[9] The most frequently cited competency domains, such as clinical communication (identified in 100% of the studies) and person-centered care (90%), constitute the core of FP and were considered essential for medical students.[15] Clinical communication encompasses active listening, the use of clear language, and shared decision-making. Its presence across all included studies highlights its transversal character and its indispensability for quality care. These findings further underscore the need for medical schools to develop interpersonal competencies alongside technical and scientific skills.[1,4,44]

Also noteworthy among the most frequently cited domains in the analyzed studies were: cultural competence, management of chronic diseases, management of acute conditions, health promotion and disease prevention, a community-based approach, and interprofessional collaboration. These findings are consistent with the recommendations of international health organizations, which advocate for medical education committed to equity, responsive to cultural diversity, oriented toward addressing prevalent health conditions, and grounded in collaborative interprofessional practice.[9,11]

Despite the historical relevance of competencies specific to FP, such as the family-centered approach, continuity, and longitudinality of care, these domains were identified in approximately half of the reviewed studies.[15] This finding may indicate that, although acknowledged as central to the specialty, such competencies have been regarded as less of a priority within undergraduate medical education, becoming more explicitly emphasized during residency training programs.

Some competency domains were infrequently reported in the studies included in this review, such as basic procedural skills, palliative care, occupational health, professionals' physical and mental well-being, digital health, and advocacy. The latter refers to the physician's commitment to representing and promoting patients' interests, ensuring that their needs are recognized and their voices considered both within and beyond the health system. This role encompasses activities ranging from supporting the interpretation of clinical information and facilitating access to care options to engaging in collective initiatives and public health policies.[50] Overall, the limited emphasis on these domains may be related to the fact that they are not exclusive to FP, as they represent transversal attributes shared across multiple medical specialties. This broader scope may contribute to their reduced prominence in frameworks specifically designed for undergraduate FP education.

A similar rationale applies to ethics, professionalism, and evidence-based clinical practice. Although these domains are widely valued in medical practice, they appeared with moderate frequency in the reviewed studies, possibly because they are regarded as transversal elements of medical education as a whole. In the specific case of digital health, the lower frequency may reflect the more recent incorporation and expansion of this theme within the health sector.[51] These observations suggest that the selection and prioritization of competencies are dynamic processes, influenced by changes in health policies, population needs, and technological developments.[9]

The limited recurrence of competencies related to the physician's socio-political role (advocacy) and to systems-based practice (health systems knowledge and management) underscores the need to expand the discussion on their relevance and on strategies for their effective integration into medical curricula.

A comparative analysis of national and international studies reveals specific characteristics of the Brazilian literature. Brazilian studies — Ben et al.,[30] Demarzo et al.,[18] and Anderson et al.[13] — emphasize the alignment of medical education with the Family Health Strategy and DCN, highlighting attributes inherent to PHC, such as care coordination, comprehensiveness, and a community-based approach. In contrast, less emphasis is placed on the systematization of emerging competencies, including digital health, patient safety, and advocacy. This gap indicates the need for continuous updating of national guidelines, as well as for the development of a competency framework capable of addressing contemporary challenges and the ongoing evolution of health systems.

Another relevant aspect for interpreting the findings of this review concerns the institutional context of FP within medical schools. Although the specialty is widely recognized as essential in undergraduate education, persistent challenges to its implementation remain, including limited institutional support, restricted availability of internships, and a shortage of specialized faculty.[52,53] In Brazil, an additional structural challenge is the still-fragile integration of FP within universities,[54,55] where it is often organized as a discipline linked to other departments[55] and staffed by a limited number of faculty members. This situation constrains curricular decision-making capacity, the provision of longitudinal training experiences, and the expansion of practice settings in PHC.[56] Such contextual factors may have contributed to some of the gaps and heterogeneity identified in this review. At the same time, the convergence of findings across studies affirming FP competencies as core for all undergraduate medical students reinforces the need to strengthen the specialty within medical schools. In accordance with World Health Organization recommendations, advancing this agenda involves establishing FP departments and teaching centers integrated into health

service networks (integration of education-service-community), supported by sustained governmental and institutional commitment to faculty development and preceptorship.[11,57]

Although PHC is recognized as a priority setting for teaching FP competencies during undergraduate medical education, the analyzed studies indicate that comprehensive training requires a diversity of complementary learning environments. In this regard, experiences in hospitals, specialized outpatient services, and emergency units are essential for the development of specific competencies, such as the management of acute conditions, proficiency in basic procedures, and understanding of care pathways within integrated health networks. At the same time, classroom-based activities and simulated learning environments remain important for theoretical grounding, discussion of ethical dilemmas, development of clinical reasoning, and promotion of interdisciplinary integration, thereby reinforcing the ongoing need to articulate theory and practice.

This review has limitations that should be acknowledged. The search was restricted to publications in Portuguese, English, and Spanish, which may have led to the exclusion of relevant studies published in other languages, thereby limiting the overall scope of the mapping. In addition, most included studies relied on methodologies centered on expert opinion, such as experience reports and Delphi studies. Although the Delphi technique is appropriate for achieving consensus, these approaches may introduce subjective bias and have limitations regarding representativeness. Finally, the frequency of the identified competency domains reflects only their presence or absence in the reviewed studies and does not assess their impact on medical training or their effectiveness within implemented curricula.

It is also important to note that the categorization of competencies into domains was based on the authors' interpretation, derived from a critical and systematic reading of the included studies. Although this process was guided by predefined conceptual criteria and discussed throughout the analytical stages, it involves an inherent degree of subjectivity, which may have influenced the distribution of identified competencies and limited direct comparability across studies.

FINAL CONSIDERATIONS

This scoping review made it possible to map priority competencies in FP for undergraduate medical education, identifying both recurring domains across the analyzed studies and gaps in emerging areas as well as in aspects historically central to the specialty. The findings reinforce the need for further research to deepen the definition, integration, and operationalization of these competencies within undergraduate medical curricula. Despite the growing academic output related to FP, there remains a significant lack of conceptual delimitation, systematic measurement, and validation of competencies specific to FP in generalist medical training, particularly within the Brazilian context.

CONFLICT OF INTERESTS

Nothing to declare.

AUTHORS' CONTRIBUTIONS

NBD: Conceptualization, Data Curation, Formal Analysis, Writing – Original Draft. BPM: Data Curation, Formal Analysis. JHSR: Data Curation, Formal Analysis, Writing – Review & Editing. JFB: Conceptualization, Formal Analysis, Writing – Review & Editing.

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