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Evidence-based general practice: a scoping review

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Abstract

Background Evidence-based medicine(EBM) is widely used across various disciplines globally. However, in general practice, we need a more person-centered approach rather than a disease-centered one. The differentiation of evidence-based general practice (EBGP) is essential. This scoping review aims to extract a potential definition of EBGP and uncover its characteristics in implementation.

Methods We conducted a comprehensive search across three databases - PubMed, Embase, and Cochrane Library - spanning from the inception of these databases to September 24, 2023. The inclusion criteria encompassed studies focusing on EBM in general practice, involving general practitioners as study participants, and reporting any aspects related to providing evidence-based care. Our screening process involved evaluating titles, abstracts, and full texts to extract definitions and characteristics from all relevant records discussing EBGP. These identified characteristics were then categorized and thematically grouped following the guidelines outlined in the Consolidated Framework for Implementation Research (CFIR).

Results We initially retrieved 20,263 records from the original search. Among these, 40 records aligned with our inclusion criteria. The majority of these records took the form of reviews, qualitative studies, comments, cross-sectional surveys, or editorials. From these 40 studies, we extracted 33 unique characteristics of EBGP. Subsequently, these characteristics were thematically grouped into 19 categories, which fell under five overarching themes: evidence base, GP's role, person's role, care process, and care environment.

Conclusions We propose the following definition for EBGP: Applying a combination of the best available evidence, integrated within the inner and outer contexts of general practice, person preferences, and the expertise of the general practitioner to formulate shared, person-centered decisions aimed at holistic care. This definition provides a solid foundational framework for the development of EBGP guidelines and policies.

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Keywords Evidence-based medicine, General practice, Evidence-based general practice, Scoping review

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Introduction

Evidence-based medicine (EBM) emerged in the early 1990s and was initially defined as 'a combination of the explicit, rigorous, and judicious use of current best evidence, the doctor's clinical expertise, and the preferences and situation of the patient in making clinical decisions for personal care [1]. Over the past three decades, the concept of EBM has gained global recognition and is considered an indispensable clinical approach that significantly influences healthcare provision [2]. It has garnered widespread acceptance among clinicians and has seen extensive development across various fields [3]. In response to this evolution, EBM has become integrated into general practice, leading to the emergence of evidence-based general practice (EBGP). Each general practitioner (GP) would navigate through thousands of clinical decisions, spanning diagnoses, patient management, and prognoses every year [4].

Implementing EBM in general practice presents unique challenges compared to disease-focused and specialized settings [5]. A study in Croatia indicates that approximately 50% of GPs adhere to an evidence-based approach in their clinical practice [3]. Research conducted in the UK revealed that around two-thirds of evidence-based recommendations were executed in general practice [4]. However, awareness and utilization of crucial EBM resources, such as the Cochrane Database of Systematic Reviews, among GPs remains limited. For instance, a survey conducted in Wessex, UK, discovered that only 40% of 302 GPs were aware of this database, and less than 10% had utilized it. This discrepancy could be attributed to the distinctive nature of general practice, which encompasses a wide spectrum of symptoms and addresses the medical, social, and psychological needs of individual patients [5]. A seminal article published by Lionel D Jacobson et al. in the British Journal of General Practice in 1997 emphasized that although EBM is a crucial component of clinical decision-making in primary care, general practice remains firmly rooted in the doctor-patient relationship, a humanistic ethos, and contextual considerations [6]. This suggests that while EBM provides valuable insights, it may not wholly align with the intricate realities of general practice. Subsequent studies by Gabbay J and Le May in 2004 revealed that despite the advancements of EBM in primary care, GPs often rely on intuition and discussions with colleagues, experts, pharmaceutical representatives, and patients [7].

The intricacies and uncertainties involved in managing patients within community settings present significant challenges for both research and care [5]. While there is consensus on the possibility of integrating best evidence, patient situations, and GP preferences into practice [8], some authors highlight distinctions between patients in primary care settings and those in secondary and tertiary care settings, where much of the evidence originates. Patients in primary care often present with diverse disorders, ambiguous symptoms, and multiple co-morbidities [5, 9]. Moreover, general practice places a greater emphasis on striking a balance between the scientific, biological aspects, and the humanistic, non-technical aspects [10, 11]. These unique attributes exert a substantial influence on the clinical decision-making processes of GPs and play a crucial role in shaping the effectiveness of evidence-based practice within the field of general practice [8].

Hence, conducting a scoping review to explore the definitions and characteristics of EBGP becomes essential to gauge the scholarly community's understanding of EBGP. This study aims to establish a comprehensive list of definitions and characteristics of EBGP. The outcome of this scoping review could serve as a fundamental framework for developing practice guidelines in general practice, contributing to evidence-based decision-making and potentially improving patient care.

Methods

Study design

This scoping review aims to address two interrelated research questions: (1) What constitutes the definition of EBGP? (2) What specific characteristics define EBGP?

When we try to define EBGP, a core challenge is to distinguish EBGP from evidence-based specialty care. The unique attributes of applying EBM in general practice are key points that differentiate EBGP from other fields. Therefore, we will not only seek potential defining terms but also characteristic statements that describe the implementation of EBM in general practice.

The scoping review followed the JBI methodology and adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines [12]. The choice of a scoping review aligns with its objective of mapping the literature landscape in a specific field while addressing broad research questions.

Our research team comprised both researchers and knowledge users, including GPs, collaborating through regular meetings. These meetings facilitated the precise definition of research questions, development of search strategies, and synthesis of evidence. The review protocol was registered on the Open Science Framework at https://doi.org/10.17605/OSF.IO/2UNX7.

Search strategy

The search strategy was developed according to previous systematic reviews [13–15], and implemented across three databases (PubMed, Embase, and The Cochrane Library). It involved a combination of search terms categorized into two broad themes: "General Practice" and

"Evidence-based Medicine" (detailed search strategies provided in supplementary file Table S1).

For instance, in PubMed, the search strategy included the following keywords:

1. General Practice:
   - Mesh terms: general practice; family practice; general practitioners; physicians, family; primary health care.
   - Free text: family practice; general practice; family medicine; family physician*; family doctor*; general practitioner*; GP*; primary care physician*; primary care; primary healthcare; community health service; community healthcare.
2. Evidence-Based Medicine:
   - Mesh terms: Evidence-Based Medicine, Evidence-Based Practice.
   - Free text: Evidence-Based; Evidence Based.

The search encompassed literature from the inception of each platform to September 24, 2023, and was restricted to English publications. Adaptations in vocabulary and syntax were made across the databases.

Inclusion and exclusion criteria

The inclusion criteria for eligible studies focused on EBM within general practice, involving GPs as study participants and reporting any facets related to delivering evidence-based care. In this scoping review, 'studies' encompassed articles, reports, and other digital documents discussing, characterizing, or describing evidence-based practice. This scope included original research (both experimental and observational), commentaries, editorials, and narrative summaries. However, studies concentrating solely on training or education in EBM and general practice or primary care were excluded from consideration because this review aims to explore the implementation and application of evidence-based practice in general practice rather than the educational strategies used to teach evidence-based principles. To streamline the inclusion and exclusion criteria, they were mapped into the JBI Population (or Participants)-Concept-Context (PCC) mnemonic (Table 1).

Screening and data extraction

The data extraction form (Supplementary file Table 2) was developed and piloted before the commencement of data extraction. Initially, two researchers (ZC and CY) independently screened titles and abstracts against the predefined inclusion criteria. Subsequently, the full texts of the identified abstracts were assessed for eligibility. Our sample was limited to articles providing a definition or characteristics of EBM in general practice. In cases where discrepancies arose between the two researchers in the abstract and full-text screenings, a consensus was reached through discussion between the researchers. If consensus could not be reached, a third researcher (JY) was involved to resolve discrepancies.

We collected information on various aspects of the included studies, including the corresponding author's name, their country, publication year, study design, the country associated with the corresponding author's organization, and the journal name. Additionally, we recorded whether each paper provided a definition or characteristic of EBGP, including both explicit and implicit descriptions (e.g., direct statements or inferred meanings).

For articles meeting our criteria, we extracted text segments describing the traits or characteristics of EBM in general practice. The data extraction process was conducted independently by one researcher (CY) with verification from a second researcher (JY). Any discrepancies between the two researchers were resolved through discussions.

Table 1 Inclusion and exclusion criteria for included studies

Category	Inclusion criteria	Exclusion criteria
Population	General practitioners	Other health professionals such as dentists, nurse, or allied health workers
Concept	(1) Literature discussing the definitions of EBM in general practice (2) Literature discussing the characteristics of EBM in general practice	Studies without substantial discussions about the definitions or characteristics of EBM in general practice
Context	General practice in community setting	Other settings such as hospital, pharmacy, or aged care
Types of evidence source	Original research (both descriptive and interventional, qualitative and quantitative), reviews, systematic reviews, narrative reviews, commentaries	None
Publication Year	No date limits	None
Language	English	All other languages
Other		(1) Studies for which full-text access cannot be obtained (2) Studies focusing solely on evidence-based education in general practice

Data analysis and presentation

To illustrate the characteristics of the included studies, we presented frequency distributions of their features.

Our qualitative content analysis aimed to address the two research questions. Two researchers (CY, JY) independently coded the extracted data using an inductive open coding process. These initial codes were then refined into categories by comparing their similarities and differences.

We try to distinguish EBGP from evidence-based specialty care because GP has unique implementation characteristics. Since the core challenge of EBGP lies not only in defining its principles but also in effectively applying them in real-world general practice settings, an implementation science framework was necessary to structure our analysis. To achieve this, we mapped the categories into the "Consolidated Framework for Implementation Research (CFIR)" [16] to derive key themes. CFIR is a typical implementation science theory that provides a comprehensive typology to verify what functions in various contexts and under what conditions [17]. CFIR was chosen because it provides a comprehensive lens to examine the contextual factors influencing evidence implementation, aligning well with the complexities of general practice. Among various frameworks, CFIR was chosen because it offers a well-established and adaptable structure for examining the factors influencing the implementation of healthcare practices. Additionally, its emphasis on inner and outer contextual factors aligns well with the unique nature of general practice, where evidence application is deeply intertwined with patient interactions, healthcare systems, and community settings. This was an iterative process where the two researchers (CY and JY) collaborated closely. Regular meetings were held to resolve discrepancies and achieve consensus.

Results

Characteristics of the included publications

The search yielded 20,263 publications for screening based on titles and abstracts. From these, 116 publications underwent a full-text review for eligibility. Ultimately, 40 publications authored by individuals from 17 different countries were included for data extraction and subsequent analysis (Fig. 1).

More than half (57.5%) of the included articles consisted of reviews ($n = 13$), comments ($n = 6$), and editorials ($n = 4$). Qualitative studies were the predominant form of original research ($n = 11$, 27.5%), followed by cross-sectional surveys ($n = 4$, 10%), mixed methods studies ($n = 1$, 2.5%), and interventional studies ($n = 1$, 2.5%).

The majority of the included studies (57.5%) were conducted in Europe, with the UK having the highest representation ($n = 9$, 22.5%), followed by Australia ($n = 6$, 15.0%), Canada ($n = 4$, 10,0%), and the USA ($n = 3$, 7.5%). Only 5 (12.5%) articles were conducted in developing countries, including China (2), Turkey (1), South Africa (1), and Malaysia (1).

Regarding publishing years, 10 articles were published before 2000, 15 between 2000 and 2009, and 15 after 2010 (Supplementary Table S2).

Definition of evidence based general practice

Two articles presented a working definition of EBGP, both highlighting three core components: the role of patients, the clinical expertise of GPs, and the utilization of evidence in clinical decisions. Both definitions advocated for a patient-centered shared decision-making approach (Table 2). The expressions of EBGP definitions may vary across studies. All included studies mention one or more parts of this concept, and all mentioned aspects align with the definitions provided in these two articles.

Characteristics of evidence based general practice

Nineteen distinct categories were derived from the 33 codes, aligning with five themes adapted from the CFIR framework: evidence base, GP's role, person's role, care process, and care environment. Table 3 delineates the definition of these 19 categories and their respective thematic attachments (For comprehensive coding results, refer to Supplement Table S4).

Figure 2 illustrates the connections between the five themes and their respective categories within the adapted CFIR framework. It showcases the implementation of EBM principles within general practice. EBGP is shown to rely not only on customized evidence for primary care and empowered person but also on effective communication between GPs and patients. Additionally, it highlights the influence of both inner and outer environments on EBGP (Fig. 2).

Discussion

This scoping review identified 40 articles discussing the definition and characteristics of EBGP, revealing a scattered distribution over the years without a significant momentum in academic attention. It is noteworthy that EBM was initially introduced in the early 1990s, and since then, general practice has been considered one of the medical specialties urged to adopt EBM principles.

General practice differs fundamentally from other medical specialties in its emphasis on the doctor-patient relationship and the integration of biomedical, personal, and contextual factors in clinical decision-making. Unlike hospital-based specialties, which often focus on well-defined conditions and standardized treatment pathways, general practice requires a more flexible approach to evidence application. The complexity and variability of primary care cases necessitate the use of different research

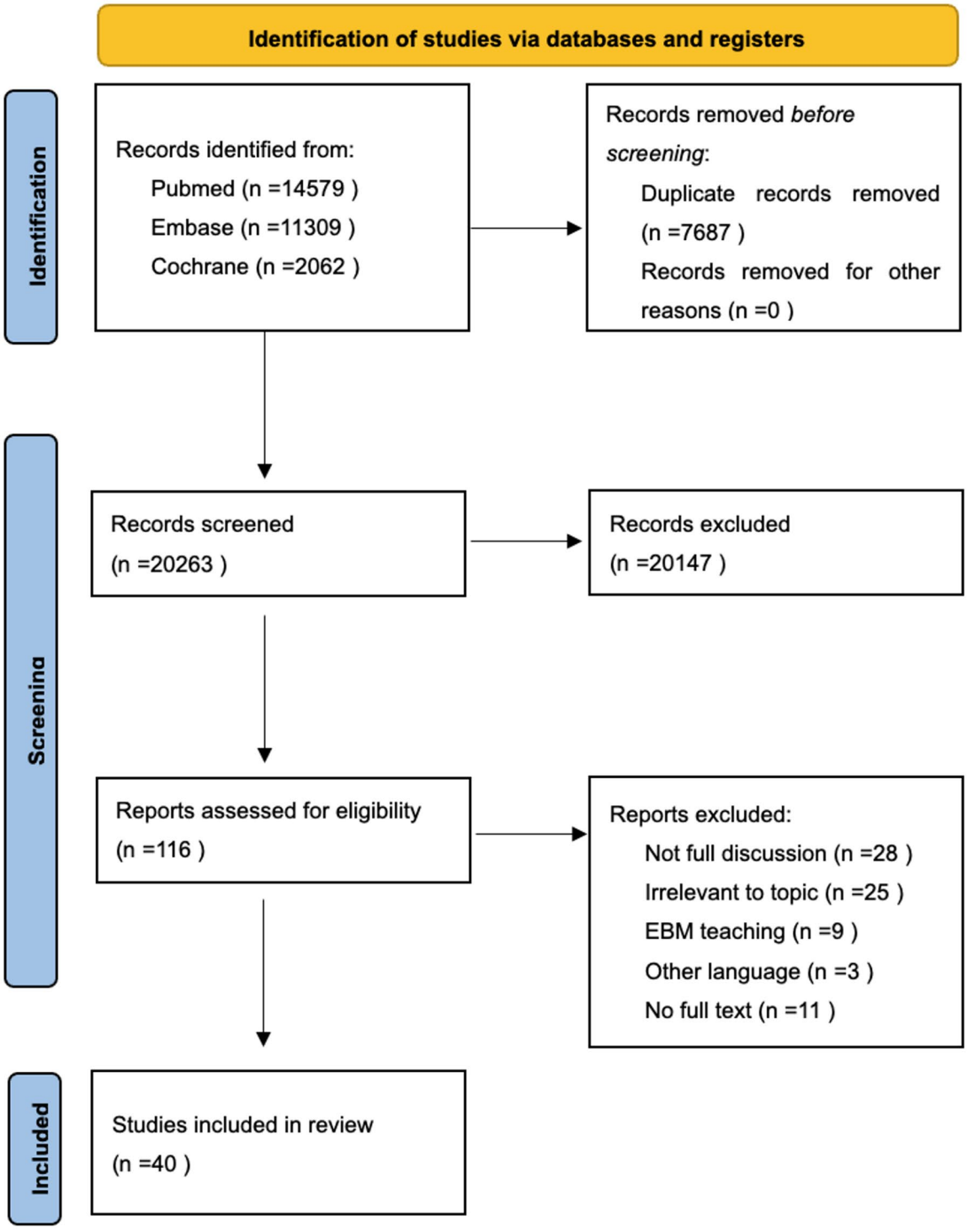

Fig. 1 Flow diagram of the scoping review process

Table 2 Definition of evidence based general practice

Authors	Year	Definition of evidence based general practice
E. O'Brien, et al [18]	2023	GPs endeavor to use a patient centered approach to achieve shared decision making, through the integration of clinical evidence, clinical judgement, and patient priorities
L. S. Welink, et al [19]	2020	Evidence-based medicine (EBM) in general practice involves applying a complex combination of best available evidence, the patient's preferences and the general practitioner's (GP) clinical expertise in decision-making.

Table 3 Key features of evidence based general practice

Theme	Category	Supporting studies	Definition
Evidence base	Appraised advice	[2–4, 18, 20–29]	Implementation of pre-appraised and summarized secondary source of evidence such as clinical practice guidelines or summaries
	High-quality original	[30–35]	Patient-oriented evidence from randomized control trials (RCTs) used
	Practicality	[3, 6, 21, 24, 30, 32, 36]	Applicablily, availablily, and cost-effectiveness of evidence considered in primary care
GP's role	Awareness of evidence	[3, 20, 24, 26, 37]	Awareness and recognition of the need to seek trustworthy information to ensure best practice
	Knowledge and skills of EBM	[20, 22, 24, 26, 27, 38–40]	Knowledge and skills to inquire, acquire, appraise, apply and evaluate the best evidence available and to incorporate the relevant evidence into daily routines
	Experience as a valuable asset	[20, 23, 34, 39]	Past experience used as a good reference for clinical decisions, considering the best options for people
	Evidence generation	[5, 9, 30, 31, 33, 41]	Derive research questions from clinical practice, participate in high-quality research to find answers, and engage in the development of clinical guidelines
Person's role	Value and preference	[25, 26, 39, 40, 42, 43]	Expectations, preferences, and values of persons towards clinical decision-making respected and considered
	Undifferentiated symptom	[11, 24, 26, 30, 39, 44]	Presentations of vague, unrepresentative and undifferentiated symptoms common in primary care, deviating from diagnosis-anchored evidence in clinical practice
	Comorbidity and multimorbidity	[5, 9, 10, 28, 30, 32, 33, 39]	Comobidity and multimorbidity common in primary care, requiring person-centered multifaceted interventions
	Bio-psycho-esocial needs	[5, 6, 9, 11, 30, 32, 45]	Biomedical, psychological, and social care needs combined, requreing holistic care
Care environment	Inner setting	[2, 3, 20, 21, 23, 26, 27, 35, 38–40, 45]	Workplace environment and culture critical for implementation of evidence based practice, such as access to internet and electronic medical records, professional development, and management arrangements
	Outer setting	[20, 23, 38, 39]	Health financing, policy, and government and media involvements critical in shaping inner settings and clinical practice
Care process	Person-centered	[24, 26, 46]	Patient treated as a whole person with unique story and experience, requiring comprehensive, continuous and coordinated care
	Communication	[5, 24, 26, 39, 42, 47]	A safe environment and effective communication strategies required to enable people to make informed decisions
	Best fitness	[5, 6, 11, 24, 32, 37, 47–49]	Clinical decisions weighing up the balance between available evidence, person's preference, and GP's expertise
	Contextualized evidence	[24]	Relevant evidence contextualized to individual person in the specific setting of primary care
	Person empowerment	[28, 49]	People educated and empowered to share decision making at all levels of care processes
	Shared decision making	[20]	Shared clinical decision making by people and GPs in primary care

strategies and a broader interpretation of evidence, allowing for "circumstantial" rather than strictly "watertight" conclusions based solely on randomized controlled trials [50, 51]. Additionally, general practitioners must place greater emphasis on patient preferences, past experiences, and shared decision-making, as they often manage chronic conditions and long-term care. Moreover, the growing pressures on primary care systems, including increased workload and declining trust in healthcare providers—evidenced by the rising number of complaints in recent years [52, 53]—highlight the urgent need for an new framework. By incorporating both the principles of EBM and the unique contextual challenges of general practice, EBGP aims to provide a more applicable and sustainable model for evidence-based decision-making in primary care settings. However, the EBM campaign primarily focuses on diagnosis and treatment of well defined single conditions, which may not consistently align with the features and diverse needs inherent in general practice.

Our scoping review revealed a total of 33 characteristics of EBGP, categorized into 19 distinctive categories, which were further mapped into the CFIR framework, resulting in the emergence of five key themes: evidence base, GP's role, person's role, care process, and care environment. These themes elucidate the nature of EBGP and reveal the potential barriers and facilitators that influence the implementation of EBM principles within primary care settings.

Based on these themes and the two existing definitions of EBGP, we propose a refined definition: Applying a combination of the best available evidence, integrated

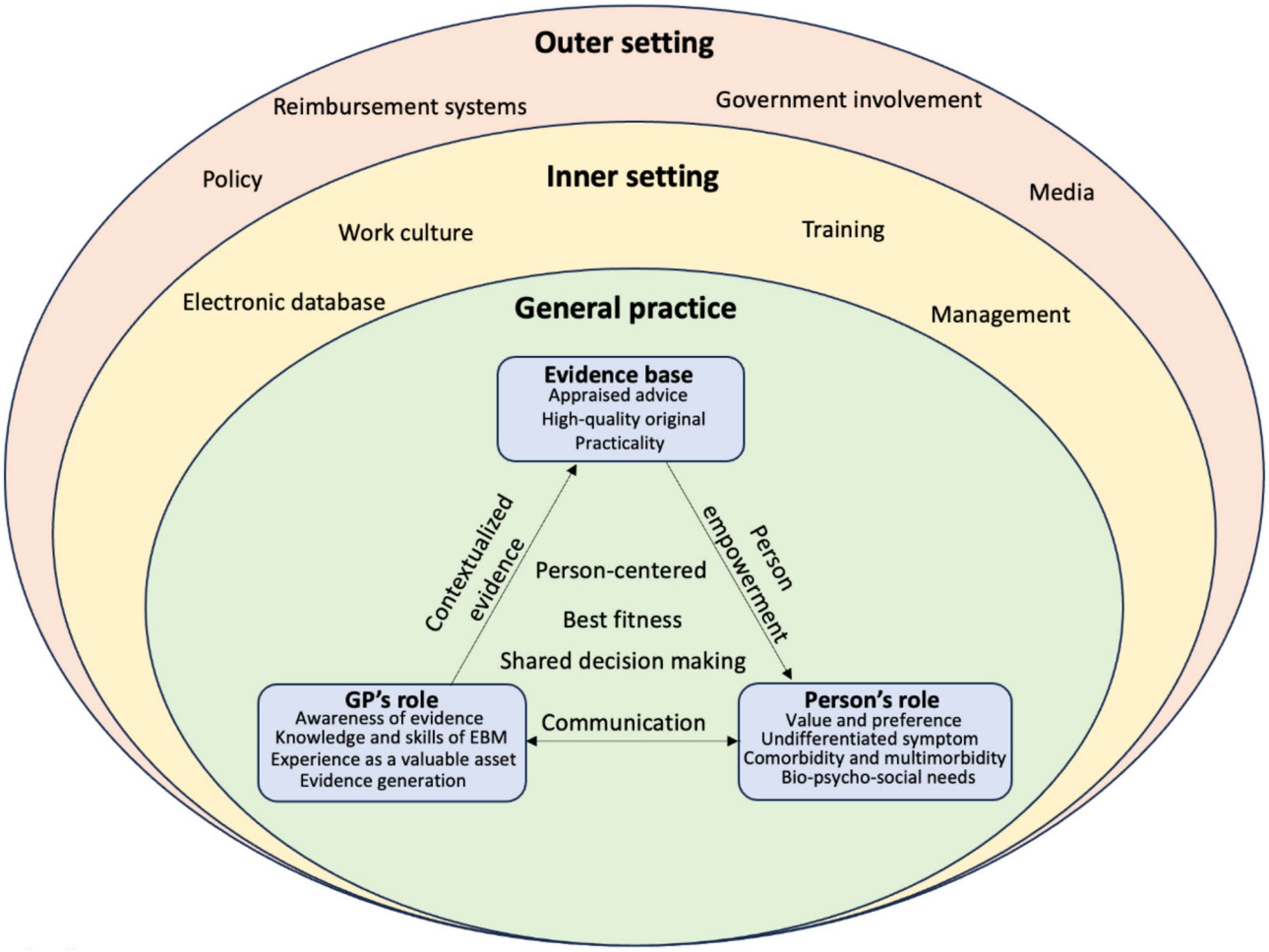

Fig. 2 Implementation of Evidence-based general practice based on CFIR framework

within the inner and outer contexts of general practice, person preferences, and the expertise of the general practitioner to formulate shared, person-centered decisions aimed at holistic care.

Adhering to EBM principles, the evidence base and the pivotal roles of patients and GPs are fundamental components of the care process in EBGP. In general, GPs prefer pre-appraised, high quality and pragmatic evidence summaries or guidelines. Existing studies indicate that clinical guidelines represent the most frequently utilized form of evidence in general practice [2, 20]. However, these guidelines predominantly center around specific, single -condition diagnosis and treatments, lacking sufficient incorporation of the unique contexts inherent in general practice.

GPs are tasked with evaluating and customizing available evidence to meet the specific needs of each person as a whole individual. Moreover, GPs often face limitations in engaging with scientific research [54–56], potentially hindering their ability to effectively assess and adopt available evidence. General practice involves addressing undifferentiated person complaints and complex needs across biological, psychological, and social domains. This complexity surpasses the scope of many clinical guidelines. The specialty of general practice requires high-quality research focusing on common primary care problems, and calls for the collaboration of qualitative and quantitative research [5].

There is a notable paucity of research in primary care settings, highlighting the need for more studies to build an evidence base tailored to general practice.

The successful implementation of EBGP necessitates favorable inner and outer environments, crucial in shaping patient care processes. Empirical evidence underscores the significant impact of managerial arrangements on patient care outcomes [57]. Despite the global endorsement of medical professionals' autonomy in clinical decision-making within health systems, non-clinical factors such as financial incentives can significantly influence practitioners' behaviors [58]. Workplace culture would influence GPs' practice of EBM. Impoverished learning environments can diminish engagement

with EBM, leading to reduced participation, emotional exhaustion, and a diminished sense of professional accomplishment. In contrast, a positive learning climate fosters continuous learning and professional development, ultimately improving healthcare quality [20, 59].

Governments play an important role in encouraging EBGP. Governments should also develop policies encouraging easy access to and use of the best evidence [39]. By investing in healthcare infrastructure, governments can create an environment conducive to EBGP. This includes upgrading medical facilities, integrating advanced technologies, and fostering interoperability to enhance the seamless flow of information. Aligning financial incentives is another strategic step in promoting EBGP. Governments can implement funding models that reward healthcare providers for delivering high-quality and cost-effective care, in addition to developing and promulgating evidence-based clinical guidelines for GPs [38]. Streamlining governance and management arrangements is also essential for the effective implementation of EBGP. Clear governance structures and streamlined management processes promote equitable allocation of GP services and enhance coordination among healthcare stakeholders, facilitating the integration of evidence-based practices into routine care delivery [27]. This collaboration ensures that primary care evolves in response to the latest research findings and adapts to the changing healthcare landscape.

Professional training is a cornerstone in promoting EBGP, yet its effectiveness relies on more than training alone [3]. Trust between GPs and patients stands as a critical factor. Both parties require a secure environment to engage in shared decision-making [39]. However, recent years have witnessed a decline in trust between patients and healthcare providers [52], posing challenges in effective communication - particularly when person preferences diverge from clinical guidelines. It is essential to note that person-centeredness does not equate to unconditional endorsement of person preference; GPs must prioritize their persons' best interests [37]. It is essential to note that person-centeredness does not equate to the unconditional endorsement of patient preferences. While GPs should prioritize their patients' best interests, defining 'best interests' is inherently nuanced. In EBGP, decision-making must integrate biomedical evidence, patient-specific circumstances, and contextual factors rather than rely solely on 'watertight' evidence from randomized controlled trials [37]. Given that general practice relies on holistic clinical decision-making—integrating diverse types of knowledge, emotions, and patient-specific contexts—the strict application of EBM may present limitations. Evidence implementation is not a linear process; rather, it evolves through dynamic interactions between the GP and the patient, influenced by trust, communication, and shared decision-making [48]. Therefore, shared decision-making is essential in reconciling evidence-based recommendations with the realities of individual patient care.

In resource-poor systems, challenges in accessing electronic health records and scientific literature further compound the barriers to EBGP [38]. Person empowerment can be enhanced through techniques that support self-management, helping individuals better understand their health status and make informed decisions to improve health outcomes [28].

Our scoping review acknowledges several limitations. Firstly, despite our efforts to comprehensively search various literature sources, we may have missed relevant resources, such as books and grey literature. Secondly, we did not conduct an assessment of the quality of the included articles, which is not uncommon in scoping reviews. Thirdly, our inclusion criteria focused solely on GPs in community settings, potentially overlooking valuable insights from GPs working in hospitals and aged care settings. Lastly, our review was limited to English-language articles, possibly excluding valuable contributions from literature published in other languages. This review did not include articles relating to the teaching or education of EBM in GP because this study focused on the application of EBM in general practice rather than its teaching or educational aspects. Future research could explore how EBM training influences its application in general practice.

The findings of this scoping review hold notable academic and policy implications. Establishing a consensus regarding the definition and characteristics of EBGP is crucial, as it has been an overlooked area in past research endeavors. This consensus could serve as a foundation for robust research designs, filling a historical void in this field. Moreover, a consensus definition and clear characteristics of EBGP can facilitate the effective implementation of EBGP within primary care settings. It could provide valuable guidelines for GPs and primary care managers, enhancing their ability to leverage EBGP effectively and maximize its value in person care.

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

Supplementary Material 3

Supplementary Material 4

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Author contributions
CY was responsible for data screening, extraction and coding. ZC searched and screened data. LCJ completed the initial draft of the manuscript. JY resolved discrepancies and completed data extraction and coding. YR helped the analysis of all data and the coding process. ZYG designed the search terms. HJJ contributed to the conceptualisation of the study. LY contributed to darfting and revision of the manuscript. LXY designed the study and acts as the guarantor for this study.

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Data availability
All data and materials are included in this article and its supplementary files.

Declarations

Ethics approval and consent to participate
Not applicable.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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