

LETTER TO THE EDITOR**How the PICAR framework can benefit guideline systematic reviews: a call for greater attention
(Letter commenting on: J Clin Epidemiol. 2019; 108:64-76)**

A systematic review is a comprehensive and transparent methodology used to synthesize all relevant studies on a specific research question, providing a robust evidence base for informed decision-making [1,2]. The PICO framework (Population, Intervention, Comparison, Outcome) is widely adopted in systematic review to clarify the key components of a research question, particularly in clinical efficacy studies. PICO framework is primarily designed for intervention-based research and therefore has limitations when it comes to evaluating clinical practice guidelines (CPGs) and CPG recommendations (CPGRs) [3]. The CPG systematic review involves a thorough search of relevant guidelines or recommendations on a particular clinical issue, followed by a rigorous assessment of the methods and principles used in their development. This process aims to provide an overview of the current state of guidelines or recommendations, as well as identify any gaps in the evidence [4,5]. To address these limitations, the PICAR framework was introduced as an extension of PICO, specifically designed for CPG systematic reviews [4]. However, the current level of understanding and adoption of PICAR remains unclear.

Proposed in December 2018, the PICAR framework is a structured tool for evaluating CPGs and CPGRs [4]. It enables researchers to define the study scope and establish inclusion and exclusion criteria based on five key elements: (1) P: Population, Indication, Condition; (2) I: Intervention(s); (3) C: Comparator(s), Comparison(s), (key) Content; (4) A: Attributes of the CPG; (5) R: Recommendation Characteristics and "Other" Considerations. The PICAR framework offers a more precise definition of the research scope and provides a systematic approach to evaluating the quality of clinical practice guidelines. By doing so, it improves the reliability and consistency of CPGs systematic reviews, ensuring that they deliver more reliable and actionable evidence for clinical decision-making.

To assess the application and acceptance of the PICAR framework, we conducted a literature search across the PubMed and Web of Science (WOS) databases, with a

cutoff date of December 17, 2024. We selected studies published after 2019 that explicitly used the PICAR framework. The search strategy and selection process are outlined in [Appendix Table 1-2](#). We extracted data on the countries of the first authors, publication dates, and impact factors of the journals for articles employing the PICAR framework.

Our search yielded 601 studies related to CPG systematic reviews ([Appendix Figure 1](#)), of which 47 (7.8%) explicitly utilized the PICAR framework. Additionally, 27 studies used the PICO framework (4.5%), while one study each used the PCC (Participant, Concept, Context) framework [6] and the PIPOH (Population, Intervention, Professions, Outcomes, Healthcare system) framework [7]. The characteristics of CPG systematic review of utilizing the PICAR framework are summarized in [Table 1](#).

Although the PICAR framework has been applied in a subset of the CPG systematic reviews, its overall adoption remains limited. Our findings indicate a gradual increase in studies utilizing PICAR, with a concentration in a few countries, particularly China and Canada, which together account for 17% of the total. One possible explanation for China's prominent role is the detailed explanation and introduction of the PICAR framework in our previous article on CPG systematic reviews [5]. This has likely facilitated greater recognition and use of the framework among researchers in China, thereby driving its adoption and further development. Most studies using the PICAR framework were published in journals with an impact factor between 3 and 6 (47%), while those in high-impact journals (impact factor > 9) were fewer (2%).

Despite its advantages, the PICAR framework's acceptance and adoption are still relatively limited compared to the more established PICO framework. This may be attributed to the recent introduction of PICAR, as well as researchers' continued reliance on the more familiar PICO framework. Moreover, the process of implementing and standardizing the PICAR framework requires further refinement.

To promote broader adoption of the PICAR framework, we recommend increased promotion through academic conferences, professional training sessions, and other outreach channels. These efforts could enhance awareness among clinical researchers and guideline developers regarding the framework's potential benefits. Additionally, encouraging experts in relevant fields to adopt the PICAR framework when evaluating CPGs would ensure greater

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Table 1
Characteristics table of literature using the PICAR framework

	Literature (n [%])
Year	
2020	1 (2)
2021	7 (15)
2022	12 (26)
2023	15 (32)
2024.12.17	12 (26)
First author country	
China	8 (17)
Canada	8 (17)
Brazil	4 (9)
Italy	3 (6)
UK	3 (6)
Saudi Arabia	3 (6)
Ireland	3 (6)
Switzerland	2 (4)
Spain	2 (4)
Denmark	2 (4)
USA	2 (4)
Greece	2 (4)
Peru	1 (2)
New Zealand	1 (2)
Scotland	1 (2)
Poland	1 (2)
France	1 (2)
Impact factor	
1 < IF ≤ 3	16 (34)
3 < IF ≤ 6	22 (47)
6 < IF ≤ 9	8 (17)
9 < IF	1 (2)

PICAR, P: Population, Indication, Condition; I: Intervention(s); C: Comparator(s), Comparison(s), (key) Content; A: Attributes of the CPG; R: Recommendation Characteristics and “Other” Considerations; IF, impact factor.

consistency and quality, ultimately improving the acceptance of the guidelines.

In conclusion, the PICAR framework is a critical tool for CPG systematic reviews, addressing the limitations of the PICO framework in capturing the complexities of guidelines. It plays a pivotal role in improving the quality of guideline assessment and enhancing clinical decision support. While its application is still in the early stages, further promotion and research are expected to strengthen the scientific rigor and reliability of CPG systematic reviews.

CRedit authorship contribution statement

Yin Yu: Writing — original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation. **Zihan**

Huang: Data curation. **Hui Liu:** Writing — review & editing, Methodology. **Xuanlin Li:** Writing — review & editing, Methodology. **Lin Huang:** Writing — review & editing, Investigation. **Chengping Wen:** Writing — review & editing. **Yaolong Chen:** Writing — review & editing, Methodology.

Declaration of competing interest

None.

Supplementary data

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Data availability

Data will be made available on request.

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