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Report on methodological quality assessment of primary care and general practice research in China in 2021:Qualitative and mixed methods research section☆

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ABSTRACT

Background: General practice, with its interdisciplinary nature, is well-suited to both qualitative and mixed-methods research. In recent years, the number of relevant academic publications in China has steadily increased, yet the overall quality has not been systematically assessed.

Objective: This study aims to evaluate the methodological quality of qualitative and mixed-methods studies published in the field of primary care and general practice in China.

Methods: From August 2022 to April 2023, four investigators analyzed and assessed the methodological quality of qualitative and mixed methods research published in the field of primary care and general practice in China in 2021 using the qualitative assessment tools of Critical Appraisal Skills Programme(CASP) and Mixed Methods Appraisal Tool(MMAT), respectively. The researchers worked in pairs, independently conducting data extraction and quality evaluation.

Results: A total of 35 qualitative research and 9 mixed methods research were included. Key issues in qualitative studies included: insufficient attention to ethical considerations (65.71 %, 23/35), lack of discussion on participant recruitment (94.29 %, 33/35), limited consideration of the researcher-participant relationship (82.86 %, 29/35), sample sizes of <20 participants in 42.86 % (15/35) of studies, and lack of data saturation discussion in 25.71 % (9/35). Major issues in mixed-methods studies included a lack of clarity in research design type (8/9 studies) and ineffective integration of qualitative and quantitative components to answer the research question (8/9 studies).

Conclusion: The methodological quality of such qualitative and mixed methods research in primary care and general practice published in 2021 in China is still partially limited, especially in the areas of ethics, reliability, and data saturation in qualitative studies and integration of methods in mixed-methods research. Improved training in research methodology and adherence to design and reporting standards are essential to enhance the quality of future research and the robustness of evidence generated for decision-making.

General practice is both a distinctive clinical discipline and a core pillar supporting China's basic healthcare system.[1] Research in this field is inherently interdisciplinary, involving clinical medicine, social medicine, medical psychology and other fields.[2] In clinical practice, general practitioners(GPs) are required to diagnose and treat a wide range of illnesses and to manage long-term follow-up for patients. Therefore, the research methodologies applied in this discipline encompass not only quantitative methods rooted in clinical epidemiology but also qualitative methods common in social science research, as well as mixed-method approaches that integrate both quantitative and qualitative research.[3]

Compared to commonly used quantitative research methods, such as cross-sectional surveys and randomized controlled trials, qualitative research methods are especially useful for evaluating patient and physician perspectives on specific health services, exploring the complexities inherent in general practice, and developing new conceptual and theoretical frameworks directly from practice.[4-6] Mixed-methods research, as a relatively new approach, integrates both quantitative and qualitative methods, enabling a more comprehensive, in-depth, and insightful analysis.[7]

In recent years, the use of qualitative research and mixed methods studies has grown steadily in the fields of primary care and gen-

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eral practice in China, accompanied by a consistent increase in related publications. However, there remains a significant gap evaluating the methodological quality of studies that employ these approaches. As part of the "2021 China Basic Medical and Health Service Research Quality Evaluation Project" initiated by the journal of Chinese General Practice, this study assesses the methodological quality of qualitative and mixed methods research published Chinese researchers within primary care and general practice in 2021. Additionally, this study identifies key insights and recurring challenges in study design and reporting. The aim is to provide valuable insights and references for researchers in related fields, thereby enhancing research capabilities within the discipline and ultimately enhancing the evidence base for better decision-making in healthcare.

Materials and methods

Literature search and inclusion

This study builds on a preliminary investigation titled *A Study on the Research Productivity of Primary Care and General Medicine Scientific Papers in China in 2021*, which used a scoping review approach to outline specific literature search and categorization methods, detailed in the original article.[8] In this follow-up study, two scientific editors conducted a targeted selection process from August 2022 to April 2023, focusing on research methods. Based on the methodological classification criteria, 35 qualitative research papers and 9 mixed-methods research papers (including 2 studies employing multi-method studies closely resembling mixed methods) were extracted from the initial pool of 3122 publications. These selected articles serve as a representative sample of the literature produced by Chinese researchers in primary care and general practice in 2021.

Methodological quality assessment

For the qualitative studies, the Critical Appraisal Skills Programme (CASP) tool was used to evaluate methodological quality.[9] Widely applied in the medical field, this tool assesses the reliability and validity of qualitative research, covering dimensions such as research objectives, methodology, study design, sampling, data collection, researcher reflexivity, ethics, data analysis, findings, and the overall value of the study. For the mixed-methods studies, the Mixed Methods Appraisal Tool (MMAT) was employed to assess the quality of study design, implementation, analysis, and reporting.[10] The MMAT includes two initial screening questions, followed by specific appraisal criteria for the qualitative component, quantitative randomized controlled trials, quantitative non-randomized controlled trials, quantitative descriptive studies, and the integrated mixed-methods component.

Evaluator recruitment and implementation of the evaluation process

The recruitment and grouping of evaluators for this study followed procedures similar to those used in the quantitative evaluation phase. Four evaluators, each with extensive theoretical and practical experience in research methodology, were recruited, including three with backgrounds in general practice and one specializing in clinical research methodology. The evaluators were divided into two groups, each independently assessing half of the assigned studies. Results were then compared, and any discrepancies were resolved through discussion or by consulting a third party if needed. To avoid potential bias, each team was instructed not to evaluate studies published by their own institution.

Recording and analysis of results

The evaluation results were documented using Microsoft Excel 2019, and descriptive statistics were conducted using SPSS 27.0. Frequencies and percentages were used to describe outcomes across various items in the methodological quality assessments. For measurement data that did not follow a normal distribution, the median (M) and interquartile range (P25, P75) were used to present the data.

Table 1
Basic characteristics of qualitative research literature.

Item	Proportion
Language type	
Chinese	9 (25.71)
English	9 (25.71)
Research question type	
Current needs or problems	13 (37.14)
Influencing factors	9 (25.71)
Intervention implementation evaluation	8 (22.86)
Experiences and views	5 (14.29)
Participants	
Healthcare personnel	20 (57.14)
Healthcare personnel and management	5 (14.29)
Patients and/or family caregivers	5 (14.29)
Healthcare personnel and patients	3 (8.57)
Healthcare institution managers	3 (8.57)
Research methodology	
General qualitative research	29 (82.86)
Phenomenological research	5 (14.29)
Grounded theory	1 (2.86)
Data collection methods	
Individual interview	22 (62.86)
Focus group	10 (28.57)
Observation	1 (2.86)
Not specified	2 (5.71)
Sample size[Median (Interquartile Range)]	25.0 (13.0, 42.5)[a]
< 20 Participants	15 (42.86)
20–40 Participants	11 (31.43)
> 40 Participants	9 (25.71)

Note: Due to rounding, the sum of some percentage values may not equal 100.00 %; [a] denotes the median sample size (lower quartile, upper quartile).

Results

Basic characteristics of qualitative studies

This study analyzed 35 qualitative research papers that met the inclusion criteria, with 74.29 % of them published in Chinese. Among the types of research topics addressed, 37.14 % focused on evaluating current conditions, needs, or problems; 25.71 % investigated influencing factors; 22.86 % assessed intervention outcomes; and 14.29 % examined participants' experiences and perceptions. Healthcare professionals were the primary participants in these studies, comprising 57.14 % of the total. Most studies employed a general qualitative research approach (82.86 %). Regarding data collection, 62.86 % used individual interviews, while 28.57 % employed focus group discussions. The basic characteristics of the included literature are shown in Table 1.

Methodological quality of qualitative studies

In general, the 35 qualitative studies demonstrated strong methodological quality in three areas: clear articulation of the research purpose, appropriate application of qualitative methods, and alignment between study design and research objectives. Nonetheless, several methodological issues were prevalent: 65.71 % (23 out of 35) of the studies did not adequately address ethical considerations, 94.29 % (33 out of 35) of the studies failed to discuss participant recruitment processes, 82.86 % (29 out of 35) of the studies did not sufficiently consider the researcher-participant relationship, 42.86 % of studies (15 out of 35) had fewer than 20 participants, and 25.71 % (9 out of 35) did not address data saturation. The detailed quality assessment results are summarized in Table 2.

Table 2
Results of the methodological quality assessment of the included qualitative research literature.

Criteria	Yes	No	Partially
Is the research purpose clearly stated?	35 (100.00)	0 (0.00)	0 (0.00)
Is the qualitative research method appropriately applied?	35 (100.00)	0 (0.00)	0 (0.00)
Is the research design suitable for the research purpose?	35 (100.00)	0 (0.00)	0 (0.00)
Is the participant recruitment strategy appropriate?	17 (48.57)	14 (40.00)	4 (11.43)
Is there an explanation of how participants were selected?	35 (100.00)	0 (0.00)	0 (0.00)
Is there an explanation of why selected participants can provide valuable information for the study?	23 (65.71)	0 (0.00)	12 (34.29)
Is there any discussion about participant recruitment issues, such as why certain groups were not included?	2 (5.71)	0 (0.00)	33 (94.29)
Are the data collection methods suitable for the research topic?	25 (71.43)	10 (28.57)	0 (0.00)
Is the data collection setting appropriate?	20 (57.14)	1 (2.86)	14 (40.00)
Is the data collection method described?	29 (82.86)	0 (0.00)	6 (17.14)
Is the choice of data collection methods reasonable?	32 (91.43)	3 (8.57)	0 (0.00)
Is the data collection method described in detail?	25 (71.43)	6 (17.14)	4 (11.43)
Did the methodology change during the study? If so, did the researcher explain how and why it was revised?	0 (0.00)	0 (0.00)	35 (100.00)
Is the form of the data clearly described?	34 (97.14)	0 (0.00)	1 (2.86)
Did the researcher discuss the issue of data saturation?	26 (74.29)	0 (0.00)	9 (25.71)
Is there sufficient consideration of the relationship between the researcher and the participants?	6 (17.14)	0 (0.00)	29 (82.86)
Did the researcher critically examine their own role and potential biases, as well as the impact of these biases?	4 (11.43)	0 (0.00)	31 (88.57)
How did the researcher respond to related events during the research process?	0 (0.00)	0 (0.00)	35 (100.00)
Was sufficient attention given to ethical issues?	12 (34.29)	11 (31.43)	12 (34.29)
Is the informed consent process described in detail?	13 (37.14)	11 (31.43)	11 (31.43)
Did the researcher discuss related issues?	5 (14.29)	6 (17.14)	24 (62.86)
Did the study obtain ethical committee approval?	14 (40.00)	2 (5.71)	19 (54.29)
Is the data analysis sufficiently rigorous?	11 (31.43)	20 (57.14)	4 (11.43)
Is the data analysis process described in detail?	11 (31.43)	20 (57.14)	4 (11.43)
Is the method for extracting themes from the data clearly described?	20 (57.14)	2 (5.71)	13 (37.14)
Is the method for extracting data from the original sample explained?	20 (57.14)	8 (22.86)	7 (20.00)
Is there sufficient support for the research results in the data?	24 (68.57)	10 (28.57)	1 (2.86)
If there are contradictions in the data, were they adequately considered?	0 (0.00)	31 (88.57)	4 (11.43)
Did the researcher reflect on the influence of their own impact during data analysis?	4 (11.43)	1 (2.86)	30 (85.71)
Are the research results clearly described?	24 (68.57)	11 (31.43)	0 (0.00)
Are the research results clear and unambiguous?	33 (94.29)	1 (2.86)	1 (2.86)
Did the researcher sufficiently discuss evidence supporting and contradicting their viewpoint?	8 (22.86)	7 (20.00)	20 (57.14)
Did the researcher discuss the reliability of the research results?	16 (45.71)	2 (5.71)	17 (48.57)
Are the research results relevant to the research questions?	35 (100.00)	0 (0.00)	0 (0.00)
Is the value of the research discussed?	32 (91.43)	3 (8.57)	0 (0.00)
Did the researcher discuss the contribution of the study to existing knowledge?	23 (65.71)	3 (8.57)	9 (25.71)
Did the researcher identify new areas for further research?	14 (40.00)	11 (21.43)	10 (28.57)
Did the researcher discuss whether and how the results can be applied to other populations?	11 (31.43)	7 (20.00)	17 (48.57)

Basic characteristics of mixed methods studies

This study analyzed a total of 9 mixed methods research articles, with the majority (5 out of 9) published in Chinese. Most studies (6 out of 9) focused on evaluating intervention implementation. However, 8 out of the 9 studies did not explicitly specify the type of mixed methods design used. Data collection in these studies primarily combined individual interviews and questionnaires (6 out of 9). For the qualitative component, over half of the studies included fewer than 20 participants (5 out of 9), and 6 studies had fewer than 40 participants. Further details on the characteristics of these studies are provided in Table 3.

Methodological quality of mixed methods studies

In the mixed methods studies analyzed, the qualitative components all scored above 3 points, with 5 out of 9 achieving the maximum score of 5. Nevertheless, data collection and interpretation of findings in the qualitative sections indicated areas for improvement. The quantitative components, primarily descriptive studies, generally scored lower; two studies scored only 2 points, while 5 out of 9 studies used a sampling method deemed suitable for addressing the research questions. The quality of integration within the mixed methods approach was generally low, with only one study effectively synthesizing qualitative and quantitative components. This result suggests that the majority of studies lacked comprehensive interpretation and integration of the findings across both qualitative and quantitative results, indicating inconsistent methodological rigor for meeting qualitative and quantitative standards individually. Detailed results for each methodological quality assessment item are presented in Table 4.

Table 3
Basic characteristics of mixed methods research literature.

Item	Proportion
Language type	
English	4/9
Chinese	5/9
Research focus	
Evaluation of intervention	6/9
Influence factors	1/9
Current status or issues	2/9
Research design type	
Not clearly defined	8/9
Exploratory sequential design	1/9
Data collection methods	
Individual interview + systematic registration data	1/9
Individual interviews + focus group + Survey	1/9
Individual interviews + survey	6/9
Focus groups + survey	1/9
Research participants	
Healthcare providers	1/9
Management personnel	2/9
Healthcare providers and management personnel	2/9
Patients and/or family caregivers	2/9
Healthcare providers and patients	2/9
Sample size for qualitative component	15 (8, 22)[a]
<20	5/9
20–40	3/9
>40 people	1/9
Sample size for quantitative component	370 (22, 624)[a]
<40	6/9
≥40	3/9

Note: [a] denotes the median sample size (lower quartile, upper quartile).

Table 4
Results of the methodological quality assessment of the included mixed-methods research literature.

Evaluation Item	Yes	No	Unclear/not Applicable
Is there a clear research question?	9 (100 %)	0	0
Can the collected data answer the research question?	9 (100 %)	0	0
Qualitative Research Section			
Is the qualitative research method appropriate to answer the research question?	9 (100 %)	0	0
Is the qualitative data collection method sufficient to answer the research question?	8 (88.89 %)	1 (11.11 %)	0
Is the collected data sufficient to extract research findings?	5 (55.56 %)	4 (44.44 %)	0
Is there sufficient data to support the interpretation of the results?	5 (55.56 %)	4 (44.44 %)	0
Is there consistency between the sources, collection, analysis, and interpretation of qualitative data?	8 (88.89 %)	1 (11.11 %)	0
Quantitative Research Section			
Is the sampling method appropriate to answer the research question?	5 (55.56 %)	4 (44.44 %)	0
Is the sample representative of the target population?	8 (88.89 %)	1 (11.11 %)	0
Is the measurement method appropriate?	9 (100 %)	0	0
Is the risk of non-response bias very low?	5 (55.56 %)	0	4 (44.44 %)
Is the statistical analysis method appropriate?	8 (88.89 %)	0	1 (11.11 %)
Mixed Methods Section			
Is there sufficient justification for using a mixed methods design to address the research question?	7 (77.78 %)	0	2 (22.22 %)
Are the different components of the study effectively integrated to answer the research question?	1 (11.11 %)	6 (66.67 %)	2 (22.22 %)
Are the results of both the qualitative and quantitative sections adequately explained?	4 (44.44 %)	5 (55.56 %)	0
Has the study adequately addressed the discrepancies and heterogeneity between qualitative and quantitative results?	4 (44.44 %)	0	5 (55.56 %)
Do the different components of the study meet the quality standards of each traditional method involved?	2 (22.22 %)	7 (77.78 %)	0

Discussion

This study analyzed qualitative and mixed methods research papers published in 2021 in the field of primary care in China, identifying five common issues affecting methodological quality. affecting in the context of methodological theory.

Issue 1: Insufficient attention to ethical risks in qualitative research

One of the most significant findings in this study is the considerable lack of ethical reporting in qualitative research. Approximately 60 % of these studies did not provide an ethical statement, and nearly half of the qualitative studies published in the journal of Chinese General Practice in 2021 lacked any documented ethical approval. This gap underscores an urgent need for attention from research institutions, researchers, and academic journals. Although ethical approval procedures in China's primary care research institutions may currently be complex and time-consuming, these logistical challenges cannot justify overlooking ethical considerations. Richards and Schwartz[11] identify five main areas of risk faced by participants in qualitative health services research: emotional or psychological distress triggered by interviews, power imbalances between researchers and participants, limitations on participants' autonomy due to research design or implementation, privacy risks from potential disclosure of personal information, and the time and resource burdens placed on participants.

Given the direct and prolonged interaction between researchers and participants, the potential for harm in qualitative research may exceed that in observational studies, approaching the risk levels of certain interventional studies. This heightened risk necessitates active oversight and preventative measures. Research institutions, researchers, and academic journals in the field must collectively prioritize both the supervision and mitigation of ethical risks in qualitative studies to ensure participant safety and the ethical integrity of the research.

Issue 2: Lack of clarity in reporting interviewee selection and exclusion criteria

An analysis of the 35 qualitative studies revealed that although >60 % explained the rationale for selecting interviewees, only around 5 % clarified the reasons for excluding other potential participants. Given that most studies reviewed here discuss policies, services, and clinical practices related to primary care and general practice—often from the perspectives of patients and healthcare providers—omitting these exclusion criteria may lead readers and editors to question whether certain participant selections might reflect conflicts of interest. For example, one study evaluated user satisfaction with a mobile app developed by a district-level Center for Disease Control (CDC). Conducted by CDC personnel, the study involved interviewees exclusively from community health service centers in the same district, and results indicated high satisfaction from both patients and providers. However, the lack of transparency in participant recruitment raises questions about possible "conflict of interest" bias, potentially diminishing the credibility of the findings.

Bourdieu provides a classic example that illustrates the consequences of insufficient consideration in selecting interviewees: "Imagine studying the field of judicial knowledge in 1950s and excluding Sartre, or examining American academia but omitting Princeton University. As long as these figures and institutions play central roles, the field remains incomplete".[12] In qualitative research, where findings heavily rely on the perspectives of interviewees, careful consideration must be given to both selection and exclusion criteria, and ample contextual information should be provided to readers.

The sampling method, along with how interviewees are chosen and balanced, can influence several critical aspects: the framing of research questions, the dynamics between researchers and participants, and the validity of the findings.[13-14] Standards for qualitative research reporting also emphasize the need for authors to specify "how many people declined participation, and why?" to ensure that the qualitative discourse is based on clear and well-justified evidence.[15]

Issue Three: Insufficient reporting on the role and influence of researchers

A notable issue identified in this study is that over 80 % of the qualitative research papers did not address how researchers' characteristics and their relationships with interviewees might have impacted the study's design, process, and results. Like the previously discussed issue, this omission can undermine the reliability of findings due to possible social status disparities between researchers and participants or conflicts of interest between researchers and the research topic and outcomes.

In qualitative research, the researcher plays a dual role—serving as both the investigator and a critical research instrument. As investigators, their personal biases can shape research questions and perspectives; as instruments, their characteristics influence social relations with participants, interactions during interviews, and ultimately the authenticity, selection, and interpretation of data.[12] Reflexivity—the process by which researchers critically assess their influence throughout the study—is thus essential to ensuring rigor in qualitative research, akin to reliability.[14]

An example from this review involves a study conducted by researchers employed at a community health center. The study aimed to

evaluate job satisfaction among the primary care practitioners in the center, with findings indicating high employee satisfaction.

However, this study did not provide sufficient detail on the researchers' backgrounds, their relationships with participants, or how these relationships might have affected data collection and analysis. Additionally, it was not clear whether findings were validated with participants to mitigate bias. In the absence of such information, readers may question the reliability of the findings, asking whether the researchers' characteristics might have influenced staff members' responses on satisfaction or if the researchers' professional affiliation could have introduced cognitive bias during analysis, potentially skewing the study's results and interpretation.

Issue Four: Potentially Low Sample Sizes in Some Qualitative Studies

In the qualitative studies evaluated for this research, approximately 25 % did not report on data saturation, and nearly half of the studies included fewer than 20 participants. Such omissions raise questions about the adequacy of the sample sizes and the data richness in these studies. The minimum sample size required for qualitative research has long been a topic of academic debate.

Unlike quantitative research, where sample size can be calculated using statistical formulas, qualitative research typically relies on achieving saturation—where no new information or themes emerge from additional data collection. This threshold is often determined heuristically, based on the nature of the research question.[16-18] Consequently, researchers' reports on achieving data saturation are commonly regarded as key indicators of sample adequacy.

Nevertheless, at least two widely accepted approaches exist to assess sample sufficiency. First, empirical guidelines suggest that small-scale qualitative studies typically reach saturation with approximately 9–17 in-depth interviews or 4–8 focus group discussions; the other involves using quantitative formulas to estimate the minimum sample size required to achieve data saturation.[17]

Given the rapid development of China's general practice and primary care systems, many qualitative studies in this field target common issues such as basic public health service programs, family doctor contracts, chronic and common diseases among the elderly, and workforce training. These studies address a broad, complex population of patients and healthcare providers within China's healthcare system. While small-sample qualitative studies may still uncover key insights, those with very limited sample sizes face significant quality limitations. For instance, one study focused on scientific and educational management within community health centers but included only five healthcare management personnel from a single district. Moreover, it did not address data saturation—a crucial factor in assessing the adequacy of qualitative findings. Consequently, the applicability of its findings may be limited to that specific district's community health centers, which constrains the reliability of the results and their transferability—that is, their relevance to similar institutions and healthcare personnel in other regions.[14]

Issue Five: Insufficient understanding of integrated design in mixed methods research

In assessing mixed methods studies, this research identified two recurring issues: (1) a lack of reporting on the specific type of mixed methods design used (observed in 8 out of 9 studies); (2) incomplete integration of qualitative and quantitative components (observed in 6 out of 9 studies). Both issues reflect a core principle of mixed methods research, which aims to create added value through the synergistic combination of quantitative and qualitative approaches, often described as achieving a "1+1=3″ effect.[19] These findings highlight that, as a relatively advanced and complex methodology, mixed methods research still requires broader dissemination and greater methodological understanding within China's primary care and general practice fields.

Our research team previously published a comprehensive methodological paper in late 2022 that explored the three primary designs in mixed methods research—convergent design, explanatory sequential design, and exploratory sequential design. This paper detailed their concepts, implementation steps, relevant applications, and techniques for integrating quantitative and qualitative data.[20] Using a study published in JAMA Network Open as an example, which investigated factors influencing the use of low-sodium salt substitutes among rural patients with hypertension and coronary heart disease—a topic closely tied to behavioral interventions in chronic disease management within primary care in China—the paper demonstrated combined presentation and integrative inference in mixed methods research. Specifically, it illustrated three common integration scenarios in mixed methods results: confirmation, expansion, and discrepancy.[13]

Given this prior work, we will not reiterate the theoretical foundations here. Instead, we encourage researchers in China's primary care and general practice fields to focus on the distinct design elements unique to mixed methods research. we will not elaborate on foundational theories here but instead recommend that researchers in China's primary care and general practice fields focus on the distinctive features of mixed methods research beyond the basics of quantitative and qualitative approaches. It is crucial to emphasize how qualitative and quantitative components can mutually reinforce, validate, and complement each other across four critical stages: formulation of research questions, methodology, results, and reporting.

Drawing from the five issues identified, along with consensus opinions from all reviewers, this study offers the following four recommendations for research administrators, researchers, and academic journal editors within primary healthcare and general practice:

(1) Prioritize ethical review and approval for qualitative research
To preserve the scientific integrity and enhance the quality of research in primary healthcare and general practice, rigorous ethical review processes must be established and adhered to in all qualitative studies. Ethical considerations should be systematically addressed as a fundamental aspect of each research project.
(2) Enhance reliability verification in qualitative research
Greater emphasis should be placed on verifying the reliability of qualitative research by focusing on the design, process, and validity of findings. Special attention should be given to participant validation (member checking) and reflexivity—two areas often overlooked. Transparent reporting and robust review mechanisms should be employed to mitigate potential biases introduced by researchers, which could otherwise affect the reliability of the results.
(3) Ensure adequate sample size and data richness in qualitative studies
Although there is ongoing debate within academia on sample size standards, qualitative studies should generally seek a sufficient sample size to reach data saturation and enhance transferability of findings. For studies addressing issues with broader relevance, researchers should avoid conducting and publishing qualitative studies with only a minimal number of participants.
(4) Strengthen the design and integration of mixed methods research

When conditions permit, researchers are encouraged to emphasize the rigorous design and integration aspects of mixed methods studies. This focus enables mixed methods research to realize its full value and scientific potential, positioning it as a powerful approach for generating high-quality evidence in primary care and general practice. Such rigor helps prevent mixed methods studies from becoming mere combinations of lower-quality quantitative and qualitative research, thereby enhancing their scientific credibility and relevance.

Members of the quality assessment group for qualitative and mixed methods research of Chinese general practice

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W.Y. is editorial member of Chinese General Practice Journal, C.X. is editor of Chinese General Practice Journal, they are not envolved in the editorial review or the decision to publish this article. All authors declare that there are no competing interests.

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