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Variation in quality of care by medical institute level in China: a systematic review protocol

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ABSTRACT

Introduction Quality variation has been widely witnessed and discussed in China. However, limited evidence reveals quality gaps by the medical institute level, especially between hospitals and primary care institutes. This systematic review will synthesise the available evidence on quality variation between medical institutes at different levels in China. By adopting a quality framework, we will also explore the detailed domains (structure, process and outcomes) and dimensions (safety, effectiveness, timeliness, patient-centredness, efficiency, integration and equity) of quality gaps.

Methods and analysis An extensive literature search will be conducted on eight key electronic databases: MEDLINE, Web of Science, Cochrane Library, Scopus, EMBASE, ProQuest, China National Knowledge Infrastructure and WANFANG database. The Grey Matter Checklist will be used to screen relevant grey literature. The publication time limit should be before 31 December 2022 when we plan to conduct a literature search. All kinds of studies that revealed the quality difference between medical institutes at different levels will be included, no matter if quality improvement intervention is involved. All quality measures and indicators will be recorded and sorted into appropriate domains and dimensions. For those studies that took the completion rate of standard operations to assess the quality, we will also record the name of the clinical pathways, guidelines or checklists used. Two reviewers will independently perform the study selection, data extraction and quality assessment process. A narrative or quantitative synthesis will be performed based on the available data.

Ethics and dissemination Ethics approval is not applicable. The results of this study will be submitted to a widely accepted peer-review journal. The findings will also be used to inform administration about quality gaps by different medical institute levels and, therefore, help them to design policies that will minimise the quality variation.

PROSPERO registration number CRD42022345933.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This will be the first study to test the widely accepted assumption in China that the quality of care in higher-level medical institutes is better than that in lower-level medical institutes.
⇒ A well-defined and structured quality framework will be used to explore quality gaps.
⇒ Literature screening, data extraction and quality assessment will be conducted by two independent reviewers, and conflicts will be discussed and solved by the third reviewer.
⇒ Unless we can confirm the homogeneity between specific studies, comparison or pooling among results from different studies will not be sought.

INTRODUCTION

Improving the quality of care (QoC) is a goal of international interest.[1 2] It has long been recognised that QoC is an essential link between healthcare and health outcomes.[3] Therefore, a healthcare system that consistently delivers high-quality care is essential to improve or maintain health, build trust relations, respond to the changing health needs of the local population and function as a bulwark against outbreaks or other public health emergencies.[4]

Since 2009, the Chinese government has initiated a new round of healthcare system reforms, one of whose objectives is to strengthen the low-level medical institute. However, quality variation has been widely witnessed and discussed in China.[5 6] Current studies have found that the QoC at higher-level medical institutes seems better than that at lower-level medical institutes, especially between hospitals and primary care institutes.[7–9] Because of the quality variation, two adverse implications have emerged. The first one comes from the poor-quality care itself, particularly in the primary care institute.[10] As estimated by Li *et al*, the poor quality of risk control and prevention of hypertension at the primary care level in China had tremendous cost consequences: ¥2691 million (approximately US$00 million) and monetised quality-adjusted life-years losses of ¥2609 million (approximately US$385 million) per year.[11] In addition, due to the inferior QoC in lower-level medical institutes, patients tend to choose hospitals for medical assistance and

bypass primary care institutes.[12 13] Therefore, China's healthcare system is becoming increasingly hospital-centred,[14 15] which further worsens the quality of primary care and impedes the resilience of the whole healthcare system.

Although there have been a limited number of reviews on the QoC in China, none of them have followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol and overall included little evidence on the quality variation by medical institute levels. In addition, a well-defined and structured quality framework is missing in existing reviews, and consequently, it is difficult for policy makers to determine the dimension(s) of the widest quality gap(s) where quality improvement efforts should start.[2]

In recent years, China has sent a strong signal about healthcare system transition.[16] High-quality and integrated healthcare service is one of the essential goals, which requires better QoC on medical institutes at all levels. Our objectives are to gather all the literature on the current QoC state in China targeted variation by medical institute levels and to highlight the domains or dimensions of quality difference. We also stress the methods or measurements used to evaluate QoC and provide methodological guidance for further research. If possible, we will compare the quality variation before and after China's healthcare system reform in 2009 and explore its impact.

METHODS

This systematic review protocol follows the PRISMA protocols[17 18] and has been registered in PROSPERO's database (registration number: CRD42022345933). The planned start and end dates for the study are 1 August 2022 and 30 May 2023, respectively.

Quality framework

Based on the results of the preliminary literature search, the QoC measures are highly heterogeneous. Quality is complex and multidimensional. Therefore, we need to develop a comprehensive understanding of the measures and dimensions of QoC they attempt to evaluate. Then, we adopt a well-structured and comprehensive framework to define quality,[19] as shown in figure 1 and as follows:

Domains

According to Donabedian, a model consisting of three dimensions was recommended to evaluate the quality: (1) structure or the characteristics of a healthcare setting; (2) process or what is done to patients and (3) outcomes or how patients do after healthcare interventions.[20 21]

Dimensions

Quality may be disaggregated into different dimensions. The model recommended by the Institute of Medicine and World Bank Group will be used in this study, which identifies dimensions of safety, effectiveness, timeliness, patient-centredness, efficiency, integration and equity.[22 23] Safety means care should minimise harm, including preventable injuries and medical errors; effectiveness means the high-quality care is based on scientific knowledge and evidence-based guidelines; care of timeliness keeps delays in providing and receiving services to a minimum; patient-centredness means care should respect and respond to patient preferences, needs and values; efficiency stresses care that avoids waste of resources including equipment, medicines, energy and ideas; integration means care
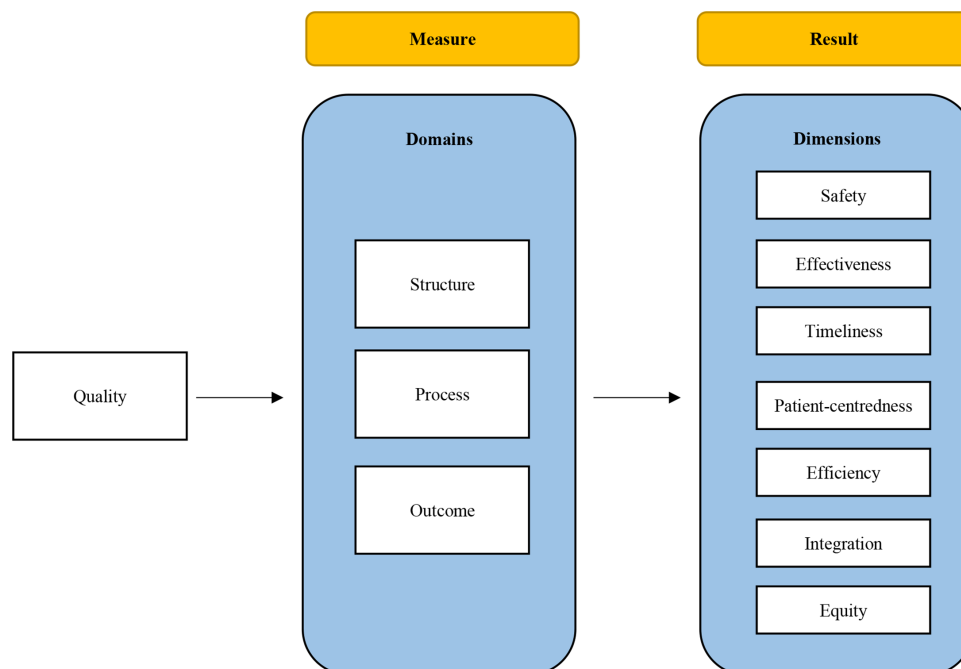

Figure 1 Quality framework.

should be coordinated across facilities and provides, as well as into the community; care of equity means that the care received does not vary according to a patient's personal characteristics such as gender, race, ethnicity, geographical location and socioeconomic status.[23]

Three domains will enable us to explore and compare the different parts of quality evaluated and reported by different studies. They will also function as a basic paradigm for us to categorise quality measures. The dimensions will be the linkage between study results and health outcomes, suggesting quality variation by medical institute level.

Inclusion criteria

Participants

Medical institutes at all levels in China will be the targeted participants of this systematic review, including hospitals (secondary hospitals and tertiary hospitals) and primary care institutes (community health centres/stations, township hospitals and village clinics).

Interventions and control

The quality improvement intervention falls beside the expected results of this study, as well as any control strategy. Considering that there might be some studies reporting quality variation during the quality improvement process, we will still include these studies and extract relevant information.

Outcomes

The outcomes of interest include all results revealing quality variation by medical institute level, such as correct diagnosis rate, consultation completion rate, waiting time, referral waiting time and qualification of medical staff. We are also interested in quality measures, such as case reviews, unannounced standardised patient (USP) surveys, prescription reviews, etc. For those studies that took the completion rate of standard operations to assess the QoC, we will also record the name of the clinical pathways, guidelines or checklists used. We will expend extra effort on distinguishing quality and quality perceived by the patient (if any), since the latter, as a subjective indicator, is also influenced by care accessibility, costs, health status, expectations, immediate outcomes of care and gratitude[2] and might affect healthcare utilisation patterns, retention in care and people's decision to bypass facilities.[24 25] For those experimental studies that implemented a quality improvement plan, we will record the intervention, as well as the QoC before and after interventions (if any).

Study design

Primary studies of any design that reveal the quality variation by the medical institute level will be included. For those involved interventions, we will stress the methods used to assess quality improvement, such as difference in difference (DID) or interrupted time-series analysis. Editorials, policy documents, reviews, case reports and protocols that lack concrete data for analysis will be excluded.

Search strategy

We will conduct an extensive literature search in the following eight key electronic databases: MEDLINE, Web of Science, Cochrane Library, Scopus, EMBASE, ProQuest, China National Knowledge Infrastructure and WANFANG. We will also collect grey literature by using the Grey Matter Checklist.[26] The search time span will be before 31 December 2022.

We will use a building block searching strategy to ensure that all the relevant studies are screened. To construct the search, Medical Subject Heading (MeSH), Title/Abstract, Topic or Subject Word will be used properly in selected databases, and the basic search query will be "quality of care" AND "medical institute by levels" AND "China". For "quality of care", we choose terms including quality of care, quality of healthcare, safety, effectiveness, timeliness, patient-centredness, efficiency, integration and equity; for "medical institute by levels", we will include studies mentioned both medical institute (medical institute, hospital, primary care institute) and level (level and grade) or at least two kinds of medical institutes (hospital, primary care institute, community health centre/station, township hospital and clinic) in the title/abstract. Considering that the USP survey is a widely used method to evaluate the QoC, we also included studies that mentioned 'standardised patients'. See online supplemental appendix table 1 for detailed information on the search process.

Study selection

Covidence (Covidence Company, Australia) will be used to manage the literature, remove duplicate studies and record the selection process. We will expend special efforts on the same sample(s) among different papers. Two reviewers (QW and XT) will independently conduct the study selection (review of titles and abstracts, review of full texts and final decision), data extraction and quality assessment. All non-English and non-Chinese articles will be translated to English by using TranslateGo (Hangzhou Qingxun Science and Technology, China). Manual reference screens from the included studies will be performed to ensure the inclusion of all eligible studies. Covidence will automatically record explicit reasons for exclusion of studies during the full-text review step. Conflicts between the two reviewers will be discussed and eventually solved by the third author (LY). Figure 2 shows the study selection process.

Data extraction

By using Excel, we will design an extensive form to collect and record all relevant information from selected studies, as follows:

1. Basic information: title, publication date, journal, first author, location, funding, interest conflicts.
2. Method Information: study design, method, multi/single-centre, interventions, sampling, levels of included medical institute, validation.
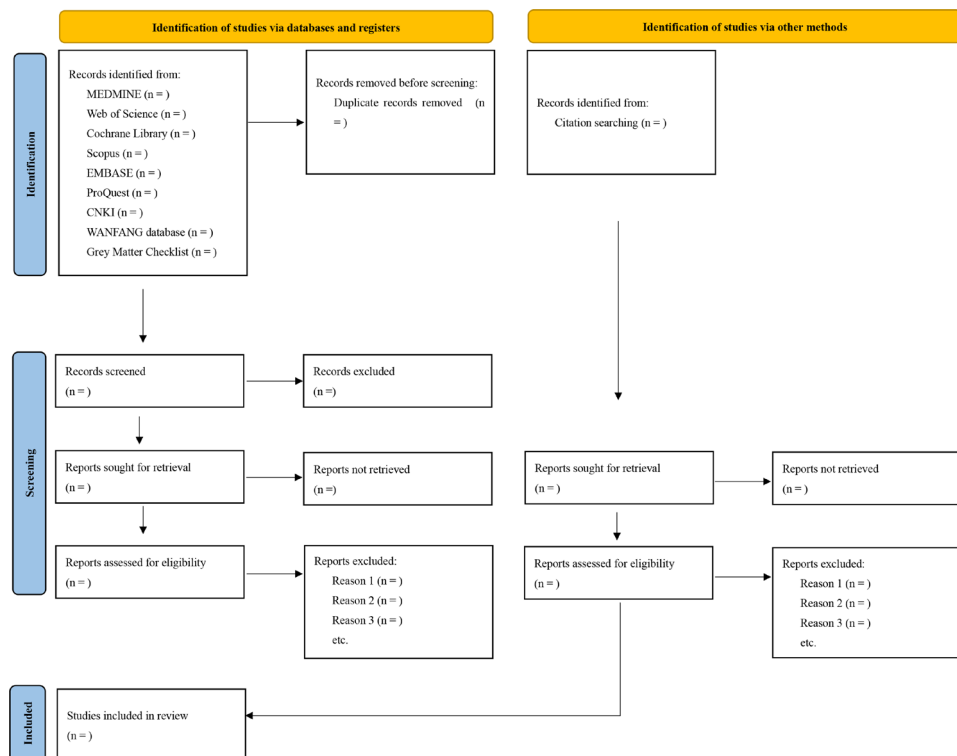
Figure 2 Flow chart of the study selection procedure.

3. Result Information: quality measure, quality indicator, main finding.
4. Discussion Information: takeaway lesson, limit.

Two reviewers (QW and XT) will perform the data extraction independently, and the results will be double cross-checked by the third author (LY).

Quality assessment

We will adopt the Joanna Briggs Institute (JBI) Checklist for Analytical Cross-Sectional Studies to assess the quality of the included cross-sectional studies.[27] Eight questions regarding sample, exposure, measurement, validation and statistical analysis were used to evaluate the bias of the studies. For studies involving quality improvement plans, we will use the JBI Checklist for Quasi-Experimental Studies for quality appraisal.[27] Nine questions about sampling, exposure, measurement, validation, confounding factors and statistical analysis were used to evaluate the bias of the studies. Each question of the two checklists has detailed directions for making judgements about the risk of bias, and the answers are yes, no, unclear or not/applicable. Two independent reviewers (QW and XT) will assess the quality of the included studies, and discrepancies will be discussed until consensus is reached among three authors (QW, XT and LY).

Data synthesis

Structured forms will be used to describe the data from each study narratively to give an overview of the quality variation by medical institute level. The QoC of the medical institute level will be collected and illustrated as follows:
1. Tertiary hospital

2. Secondary hospital
3. Primary care institute
   – Community health centre/station (urban area)
   – Township hospital and village clinic (rural area)

In some studies, authors might combine secondary hospitals and tertiary hospitals together as the hospitals and compare their QoC with the primary care institutes. In these cases, we will collect information as the authors gave and discuss their results separately.

The measures and quality indicators used in each included study were categorised into corresponding domain(s) and dimension(s), respectively. Descriptive statistical analysis will be conducted to explore the most and poorest stressed domains and dimensions of quality. The results of quality perceived by the patient will be stressed and discussed specifically to explore the possible difference in quality. For those studies that conducted quality improvement plans, we will describe all interventions in detail and detect possible changes in quality variation before and after intervention. The benchmark method will be used to normalise comparable quality indicators in each included study, and the QoC of higher-level medical institutes will be set as the benchmark. The normalised quality indicator can reflect quality gaps in a more intuitive way to reveal the dimensions of the widest quality gaps. Unless we can confirm the homogeneity between specific studies, comparison or pooling among results from different studies will not be sought. We tress the value of series studies that provided comparable indicators and results among different locations, medical institutes or times. We will try to pool these results and

findings together and explore overall quality variation information. If possible, we will explore the quality variation before and after China's healthcare system reform in 2009 or other times. The narrative synthesis in this systematic review followed Cochrane's Consumers and Communication Review Group review protocol.[28]

Subgroup set

Socioeconomic factors have been proven to have a significant influence on QoC.[29 30] To further explore the association between quality variation and socioeconomic conditions, we will set subgroups based on the location of the included studies, especially for those conducted in a single centre. Studies will be grouped into the following subgroups based on their local GDP per capita: high, middle and low subgroups. Studies involving regions of multiple subgroups will not be categorised into any single subgroup to prevent possible bias.

Patient and public involvement

This study will not directly engage patients or members of the public in the design, conduct, reporting or dissemination plans. However, considering the complexity of QoC evaluation, especially by using clinical pathways or guidelines, we will invite front-line medical doctor(s) to help us explain the methods or findings and synthesise the results.

Ethics and dissemination

All the data of this study will be publicly available; therefore, no ethical approval is needed. The findings of this systematic review will be disseminated in a peer-reviewed journal and shared with stakeholders and policy makers to achieve a better QoC in China.

DISCUSSION

We believe this is the first review on QoC variation in China. We anticipate that the results of this systematic review will describe QoC variation by medical institute levels, methods used to measure the quality, and dimensions of widest quality gaps, which will also inspire similar studies in other countries or regions. The results can be used to inform the government on its quality policies and therefore help to design policies that would maximise the QoC in China.

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