INQUIRY: The Journal of Health Care Organization, Provision, and Financing
Volume 62: 1–9

DOI: 10.1177/00469580251368004
journals.sagepub.com/home/inq
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# "Patient-Centered" Self-Efficacy and Chronic Disease Management: Associations with Doctors' Intentions and Perceived Treatment Effectiveness

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## Abstract

"Patient-centered" self-efficacy enhances patient satisfaction and compliance, thereby improving the effectiveness of chronic health management. This study assesses the "patient-centered" self-efficacy of doctors in China and explores its association with their intentions and perceived treatment effectiveness in chronic disease management within county medical alliances. A cross-sectional survey was conducted among 539 doctors from 6 county-level hospitals and 18 community health centers in Zhejiang Province, China. The Self-Efficacy in Patient-Centeredness Questionnaire (SEPCQ) was used to measure doctors' self-efficacy. The average total score of the SEPCQ in our sample was $88.28 \pm 17.61$. For domain scores, dealing with communicative challenges had the highest average score ($3.43 \pm 0.70$), while sharing information and power had the lowest average score ($3.38 \pm 0.71$). The total SEPCQ score was associated with higher odds for individuals with a monthly per capita income of 5001 to 7000 RMB (OR = 1.597, 95% CI: 1.002-2.545) and for those from the southeast area district (OR = 1.719, 95% CI: 1.131-2.615). Each domain of the SEPCQ was associated with higher odds for doctors' intentions, perceived treatment capacity, and perceived treatment effectiveness in chronic disease management. The study finds that doctors in China have high "patient-centered" self-efficacy, which is crucial for quality health management services. Future efforts should target interventions to further elevate doctors' self-efficacy and optimize the quality of care within county medical alliances.

## Keywords

patient-centered care, self-efficacy, intention, treatment effectiveness, chronic disease management

**What do we already know about this topic?**
Doctors, as the direct providers of chronic health management services, possess "patient-centered" self-efficacy, which can enhance patient satisfaction and compliance, thereby improving the effectiveness of chronic health management.

**How does your research contribute to the field?**
This study assesses the SEPCQ levels among doctors in eastern provinces of China and finds them to be relatively higher than those in other developing countries. It also demonstrates that each domain of the SEPCQ is positively associated with doctors' intentions, perceived treatment capacity, and perceived treatment effectiveness in chronic disease management.

**What are your research's implications toward theory, practice, or policy?**
This study highlights that doctors in China have high "patient-centered" self-efficacy, which is crucial for quality health management services. They perform well in handling communicative challenges but score lower in sharing information and power, hinting at barriers in patient decision-making involvement. Doctors with moderate incomes and those from the southeast region tend to have higher self-efficacy, influenced by career stage and regional healthcare reforms.

## Introduction

Chronic diseases present a substantial global health challenge, and their effective management requires sustained attention. With the evolution of health service reforms and changing social health needs, the traditional "disease-centered" service model is gradually being replaced by a "patient-centered" approach.[1,2] While existing research on patient-centered service delivery mainly focuses on patient perspective,[3-5] there is limited research on provider perspectives, particularly regarding their self-efficacy in delivering patient-centered care.[6,7] The Self-Efficacy in Patient-Centeredness Questionnaire (SEPCQ-27), developed in 2015, is one of the few tools designed to assess provider self-efficacy in this areas.[6]

The SEPCQ-27 has been widely used across different countries to assess the self-efficacy of doctors in exhibiting patient-centered behaviors. However, variations in SEPCQ-27 scores have been observed across different countries. These differences could be influenced by various factors, including cultural contexts, healthcare system structures, and sociodemographic characteristics.[6,8,9] For example, a study conducted in Denmark reported a mean total score of 83.9 on the SEPCQ-27, showing positive associations between SEPCQ scores and years of clinical experiences as well as communication skills.[6] Another study in Germany reported a mean total score of the SEPCQ-27 was 82.3, with occupational experience and gender found to be associated with SEPCQ scores. These studies also suggest that the SEPCQ-27 is sensitive to cultural adaptions.[6,8,9]

Previous studies utilizing the SEPCQ-27 have provided valuable insights into the correlates of provider-rated self-efficacy and its relationship with patient experience and satisfaction.[8,10,11] For example, 1 study found that doctors' self-efficacy in patient-centeredness is positively correlated with communication skills and educational interventions.[8] Another study demonstrated that doctors' self-efficacy in patient-centeredness is associated with greater patient participation in medical decision making, which in turn leads to higher satisfaction with medical services.[10,11] However, existing studies have primarily focused on the patient perspective, examining how provider self-efficacy improves patient experiences. There is limited research exploring the influence of provider self-efficacy on doctors' intentions to provide care and their perceived treatment effectiveness, especially within the context of chronic disease management in county medical alliances.

In 2019, China initiated the construction of people-oriented county medical alliances to address the challenges of providing integrated healthcare services in rural areas. These alliances were formed to enhance patient-centered care by integrating resources across different levels of the healthcare system, promoting collaboration among healthcare providers, and improving the efficiency and quality of care.[12-14] Specific measures included designing integrated chronic disease clinics to optimize the diagnosis and treatment process, facilitating patient access to health records through information platforms, and offering personalized contracting services by family doctors.[12,15] Given these developments, understanding the current state of doctors' patient-centered self-efficacy and its association with health management services is crucial. This study aims to fill the gap by examining these associations and their implications for enhancing patient-centered care within the context of county medical alliances. The current study aims to (1) evaluate the SEPCQ levels among doctors in the county medical alliances in China; (2) explore the significant correlates of SEPCQ total scores; and (3) investigate the associations between SEPCQ levels and doctors' intentions as well as perceived treatment effectiveness in chronic disease management.

## Methods

### *Study Design & Setting*

A cross-sectional study was conducted from October to November 2023. Data were collected using self-administered questionnaires. The study was conducted in 6 county medical alliances located in Zhejiang Province, selected based on geographical location: 2 in the north (Hangzhou and Jiashan), 2 in the southeast (Jiangshan), and 2 in the southwest (Yuhuan). Each county medical alliance includes

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Received: March 12, 2025; revised: June 27, 2025; accepted: July 18, 2025

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1 township hospital and all community health centers within its jurisdiction (about a dozen or so). For each county medical alliance, 1 township hospital and 3 of its associated community health centers were chosen to represent the well-, middle-, and less-developed economic levels. In total, 6 township hospitals and 18 community health centers were selected as the investigation sites. This study has followed the STROBE guideline for cross-sectional studies.

### Participants

Participants were recruited from doctors in specific departments within each township hospital and community health center. In the township hospitals, doctors from the departments of internal medicine, surgery, gynecology, pediatrics, traditional Chinese medical, and public health departments were invited to participate. In the community health centers, doctors from the general outpatient and public health departments were included. These departments were selected based on their direct involvement in patient care and the relevance of their roles to the study aims, as they cover the core business departments of the hospital. The investigator visited the selected departments to distribute the questionnaires, which were completed by the doctor and then collected. Eligibility criteria for participation included the following: (1) having at least 1 year of professional experience to ensure that participants had sufficient experience to provide meaningful insights; (2) having no cognitive disabilities (as determined by self-reporting and observation of normal understanding and responses during the questionnaire completion process); (3) agreeing to participate in the study. Doctors were excluded if they had less than 1 year of professional experience or were unwilling to participate.

### Sample Size Determination

This study primarily focused on the association between SEPCQ levels and intentions as well as perceived treatment effectiveness in chronic disease management, employing a binary logistic regression model for the analysis. The sample size was determined a priori using G*Power software, which estimated 113 participants for this survey, assuming an odds ratio of 2, an $\alpha$ level of .05, and a power of 0.8. An additional 20% was added to account for potential nonresponse. Finally, a total of 590 participants were invited, and 539 participants accepted the invitation and completed the questionnaires at the survey site, resulting in a response rate of 91.36%.

### Study Measures

The Self-Efficacy in Patient-Centeredness Questionnaire (SEPCQ) was developed by Zachariae et al[6] and comprise 27 items.6 Considering the ambiguity in the understanding of articles between Chinese and Western cultures, as well as the results of the reliability and validity analysis conducted in China, the item "Focus on compassion, care and symptomatic treatment, when there is no curative treatment" was deleted. So the Chinese version comprises 26 items,[16] and covers 3 domains: exploring the patient perspective (9 items), sharing information and power (10 items), and dealing with communicative challenges (7 items). In the current study, each item was rated on a 5-point Likert scale ranging from 0 (very low degree) to 4 (very high degree). Higher scores indicated physicians had higher self-efficacy in patient-centeredness, which is associated with improved patient health outcomes and lower levels of burnout among physicians. The Cronbach's $\alpha$ ranges from .74 to .95 in previous studies,[16] and was .99 in this study.

Treatment intention, perceived treatment capacity, and perceived treatment effectiveness in chronic disease management were assessed using 3 questions specifically developed for this study.[12,17] These questions were designed based on existing literature and previous qualitative interviews. A pilot study with 20 doctors was conducted to ensure clarity and relevance. Feedback from the pilot study was used to refine the questions to ensure they effectively capture the doctors' willingness, perceived ability, and perceived effectiveness in managing chronic diseases. The questions are as follows: "Are you willing to offer chronic disease management services?" "What is your treatment capacity in chronic disease management services?" "What do you think of the treatment effectiveness for chronic disease management services?." The response options used a 5-point Likert scale, ranging from "very unwilling" to "very willing," "very low" to "very high," and "very ineffective" to "very effective," scored from 1 to 5 points, respectively.

### Statistical Analysis

Data were entered using EpiData 3.1 (The EpiData Association, Odense, Denmark) and analyzed with SPSS 23.0 (SPSS Inc., Chicago, IL, USA). Descriptive analyses were performed for socio-demographic variables, and categorical data presented as frequencies and percentages. Each item score of the SEPCQ was presented as frequencies, and percentages, while each domain scores of the SEPCQ was presented as means and standard deviations. Binary logistic regression was conducted to explore the significant correlates of the SEPCQ. The total score of the SEPCQ was used as the dependent variable and regressed on gender, age, job title, educational level, individual incoming per month, and district. The average total score of the SEPCQ is 88 points, with the corresponding binary variable set as ($>$88 points = 1, $\leq$88 points = 0). Binary logistic regressions were also conducted to explore the significant correlates of treatment intention, perceived treatment capacity, and perceived treatment effectiveness separately, with the 3 domain scores of SEPCQ as independent variables after controlling for socio-demographic variables. The corresponding binary variables were set as follows: "willing" and "very willing" = 1,

others = 0; "high" and "very high" = 1, others = 0; "effective" and "very effective" = 1, others = 0. The significant level for all the regressions was set as $P < .05$.

### Ethics Considerations

This study was approved by the Ethics Board (No. 2022-1118, Date: 2022-03-03). Written informed consent form was obtained from each participant prior to the enrollment. A copy of the signed consent form was provided to each participant.

## Results

### Sample Characteristics

Table 1 shows the socio-demographic characteristics of the study sample. The mean age of the participants was 39.59 ± 9.52 years old, with 64.4% of them aged between 31 and 50 years old. About 66.8% of them were female, and 62.9% had intermediate or higher job titles. A majority of the participants (79.0%) had an undergraduate education level. About 53.8% of the participants had a monthly per capita income of 5000 RMB or less. 38.0% of the participants were from hospitals in the north area of province, and 35.3% were from hospitals in the south-east area.

**Table 1.** Sample Characteristics [n (%)] N = 539.

| Variate | n ($\bar{x}$) | % (SD) |
|---|---|---|
| Gender | | |
| Male | 179 | 33.2 |
| Female | 360 | 66.8 |
| Age (years) | | |
| ≤30 | 107 | 19.8 |
| 31-40 | 196 | 36.4 |
| 41-50 | 151 | 28.0 |
| >50 | 85 | 15.8 |
| Job title | | |
| Junior and below | 200 | 37.1 |
| Intermediate | 193 | 35.8 |
| Senior | 146 | 27.1 |
| Education level | | |
| Junior college and below | 88 | 16.3 |
| Undergraduate college | 426 | 79.0 |
| Master degree and above | 25 | 4.7 |
| Individual incoming per month | | |
| Less than 5000 RMB | 249 | 46.2 |
| 5001-7000 RMB | 132 | 24.5 |
| More than 7000 RMB | 158 | 29.3 |
| District | | |
| North area | 205 | 38.0 |
| South-east area | 190 | 35.3 |
| South-west area | 144 | 26.7 |

### The Mean Scores of SEPCQ

The average and total scores of each SEPCQ items, domain and the overall scale are listed in Table 2. The average total score of the SEPCQ was 88.28 ± 17.61. For domain scores, "dealing with communicative challenges" had the highest average score (3.43 ± 0.70), while "sharing information and power" had the lowest average score (3.38 ± 0.71).

### The Influence of Socio-Demographic Characteristics on SEPCQ Scale Total Score

The association between socio-demographic characteristics and the SEPCQ total score was analyzed using binary logistic regression, and is shown in Table 3. The total score of the SEPCQ was associated with higher odds for individuals with a monthly per capita income of 5001 to 7000 RMB (AOR = 1.597, 95% CI: 1.002-2.545), and for those from the south-east area district (AOR = 1.719, 95% CI: 1.131-2.615). Gender, age, job title, and education level were not associated with the SEPCQ total score.

### The Influence of SEPCQ Scale Scores on Intentions and Perceived Treatment Effectiveness of Chronic Disease Management

The influence of SEPCQ scale scores on intentions and perceived treatment effectiveness in chronic disease management was analyzed using binary logistic regression, and is shown in Table 4. Treatment intention was associated with higher odds for dealing with communicative challenges (AOR = 1.181, 95% CI: 1.049-1.331). Perceived treatment capacity was associated with higher odds for sharing information and power (AOR = 1.278, 95% CI: 1.126-1.450). Perceived treatment effectiveness was associated with higher odds for exploring the patient perspective (AOR = 1.128, 95% CI: 1.021-1.247), and sharing information and power (AOR = 1.125, 95% CI: 1.020-1.241).

## Discussion

Patient-centered communication is a core competency in modern health care. This study is the first to investigate the level of doctors' patient-centered self-efficacy since the establishment of county medical alliances in China. Our study provides actionable recommendations for policymakers to optimize the implementation of healthcare reforms and enhance the sustainability of county medical alliances. Additionally, our findings could inform the development of targeted interventions to enhance doctors' self-efficacy, thereby improving the quality and effectiveness of health services in these areas.

The total score of the SEPCQ among doctors in the county medical alliances of Zhejiang province is 88.28 ± 17.61, which is slightly higher than the scores reported in studies from Denmark (83.9 ± 11.4 in 2015), Pakistan (87.72 ± 13.10 in 2021), and Germany (82.3 ± 12.5 in 2025).[6,9] While these

**Table 2.** SEPCQ Domain and Total Scores.

| Variate | Items | Scores | Average score of each domain ($\bar{x} \pm SD$) | Average score of each item ($\bar{x} \pm SD$) |
|---|---|---|---|---|
| Exploring the patient perspective | 9 | 0-36 | $30.49 \pm 6.15$ | $3.39 \pm 0.68$ |
| Sharing information and power | 10 | 0-40 | $33.78 \pm 7.12$ | $3.38 \pm 0.71$ |
| Dealing with communicative challenges | 7 | 0-28 | $24.02 \pm 4.88$ | $3.43 \pm 0.70$ |
| Total scores | 26 | 0-104 | $88.28 \pm 17.61$ | $3.40 \pm 0.68$ |

**Table 3.** Binary Logistic Regression of Demographic Characteristics on Total Scores of SEPCQ Scale (Standardized β value).

| Variables | β | Wald | AOR | *P* | 95% CI |
|---|---|---|---|---|---|
| Gender | | | | | |
| Male | 1 | 1 | 1 | 1 | 1 |
| Female | −.087 | 0.197 | 0.917 | .657 | 0.625, 1.345 |
| Age | −.015 | 1.483 | 0.985 | .223 | 0.962, 1.009 |
| Job title | | | | | |
| Junior and below | 1 | 1 | 1 | 1 | 1 |
| Intermediate | .058 | 0.065 | 1.060 | .798 | 0.677, 1.659 |
| Senior | .194 | 0.420 | 1.214 | .517 | 0.675, 2.184 |
| Education level | | | | | |
| Junior college and below | 1 | 1 | 1 | 1 | 1 |
| Undergraduate college | .070 | 0.071 | 1.072 | .790 | 0.642, 1.790 |
| Master degree and above | −.249 | 0.264 | 0.779 | .607 | 0.301, 2.018 |
| Individual incoming per month | | | | | |
| Less than 5000 RMB | 1 | 1 | 1 | 1 | 1 |
| 5001-7000 RMB | .468 | 3.871 | 1.597 | .049 | 1.002, 2.545 |
| More than 7000 RMB | .335 | 1.835 | 1.398 | .175 | 0.861, 2.270 |
| District | | | | | |
| North area | 1 | 1 | 1 | 1 | 1 |
| South-east area | 0.520 | 6.419 | 1.719 | .011 | 1.131, 2.615 |
| South-west area | .386 | 2.428 | 1.471 | .119 | 0.905, 2.389 |

**Table 4.** Binary Logistic Regression of SEPCQ Scale Scores on Intentions and Perceived Treatment Effectiveness of Chronic Disease Management [AOR (95% CI)].

| Variables | Treatment intention | Perceived treatment capacity | Perceived treatment effectiveness |
|---|---|---|---|
| Exploring the patient perspective | 1.055 (0.973, 1.145) | 1.116 (0.988, 1.260) | 1.128 (1.021, 1.247)* |
| Sharing information and power | 0.984 (0.912, 1.062) | 1.278 (1.126, 1.450)*** | 1.125 (1.020, 1.241)* |
| Dealing with communicative challenges | 1.181 (1.049, 1.331)** | 0.829 (0.686, 1.003) | 0.932 (0.800, 1.086) |

*Note.* Adjusted for gender, age, job title, education level, Individual incoming per month, district.
*$P < .05$. **$P < .01$. ***$P < .001$.

comparisons provide some context, it is important to note that direct comparisons may be limited due to differences in study protocols, sampling procedures, and cultural contexts. The higher scores in our study may be attributed to several factors specific to the Chinese healthcare system and the implementation of county medical alliances. Firstly, the construction of county medical alliances in China has placed a strong emphasis on a people-oriented approach, which encourages doctors to pay more attention to residents' needs and actively involve them in diagnosis and treatment decisions related to their own health.[18] This approach may enhance doctors' self-efficacy by fostering a supportive environment that values patient-centered care. Secondly, cultural and systemic differences between the healthcare systems in China and those in other countries may also play a role in shaping doctors' self-efficacy.[6,8,9] The integrated nature of

the county medical alliances in China may provide doctors with more resources and support to practice patient-centered care compared to other settings.[19,20]

Among the domains of SEPCQ, the highest domain score is for dealing with communicative challenges, while the lowest domain score is for sharing information and power. This result differs from those in other countries and varies from country to country.[6,9] Chinese doctors scored high in dealing with communicative challenges, indicating that they consistently consider issues from the patient's perspective and do their best to address difficulties. This may be attributed to the strong emphasis on professional ethics and a sense of responsibility within the people-oriented county medical alliance, which uphold the "patient-centered" service concept.[21,22] This cognition encourages doctors to proactively attend to patients' emotions and needs, overcome their own emotional biases, and conduct diagnosis and treatment in the best interests of patients.[23,24] The low scores for sharing information and power suggest that doctors and patients may not fully share medical information, and patients may be less proactive in participating in treatment decisions. This may be due to several reasons. First, chronic disease management often involves elderly patients, whose lower educational levels may influence their engagement in decision-making. The elderly tend to leave decision-making power to doctors and are less likely to take the initiative in participating in diagnosis and treatment.[25-27] Second, there is a lack of incentive mechanisms to encourage patient participation in treatment. Patients may fear that their improper decision-making could lead to adverse outcomes, making them more willing to defer to doctors' recommendations regarding treatment.[28-30]

Doctors with a moderate monthly per capita income and those from the southeast area district were found to report significantly higher level of SEPCQ. Gender, age, job title, and education level were not associated with the SEPCQ total score. This differs from the findings in other literature.[6,9,31] Doctors with a moderate monthly per capita income may be in the middle stage of their career development. At this stage, they are more skilled at handling common diseases and face less work pressure than junior doctors.[32,33] They have not yet reached the stage where senior doctors take on excessive management responsibilities and have heavy teaching and research tasks. Thus, they can devote more energy to communicating with patients and providing diagnoses and treatments, thereby enhancing their patient-centered self-efficacy.[34-36] Doctors from the southeast area may report higher SEPCQ scores. As early adopters of patient-centric hospital reforms, these regions have implemented systematic training programs emphasizing shared decision-making. Their advanced medical infrastructure (eg, AI-assisted diagnostic systems) reduces time constraints on physician-patient interactions.[37,38] Moreover, residents in these areas generally have higher health literacy, making it easier for them to understand doctors' recommendations and participate in medical decisions.[39,40]

Each domain of the SEPCQ positively affects the intentions, perceived treatment capacity, and perceived treatment effectiveness of chronic disease management. Treatment intention is positively associated with handling communicative challenges, indicating that when doctors feel they have the ability to communicate effectively with patients, their willingness to serve is stronger. This may be because active communication builds patients trust, boosting doctors' self-confidence and service willingness.[41,42] Effective communication also improves patient compliance, leading to better cooperation with doctors' treatment plans and a smoother service process.[43,44] Perceived treatment capacity and perceived treatment effectiveness are positively associated with sharing information and power. In China, patients often passively accept doctor's diagnosis and treatment arrangements, viewing them as medical authorities.[45] This suggests that doctors should communicate treatment plans in real-time and encourage patient participation to improve chronic disease management. Perceived treatment effectiveness is also tied to exploring the patient perspective. This may be because when doctors identify patients' specific needs, they can create more personalized treatment plan. Such plans better match patient's actual situation, improving their acceptance and compliance, and enhancing the service effectiveness of chronic disease health management.[46,47]

This study had several limitations. First, this study was conducted only in Zhejiang Province and may not represent the overall situation in China. Second, the data were collected using a self-administered questionnaire, which may have caused recall bias. Third, the cross-sectional study precludes the establishment of causal relationships between the variables examined. Furthermore, the study relied on self-reported measures, which may not fully capture the complexity of clinical practice.

## Conclusions

This study highlights that doctors in Zhejiang's county medical alliances have high patient-centered self-efficacy, which is crucial for chronic health management. While they score highly in handling communicative challenges, lower scores in sharing information and power suggest barriers to patient participation in decision-making, possibly related to education levels and cultural norms. Doctors with moderate incomes and those from southeast regions show higher self-efficacy, influenced by career stage and regional reforms. Each domain positively impacts treatment intentions and perceived effectiveness. Enhancing patient-centered self-efficacy through targeted interventions is essential. Future efforts should focus on building a people-oriented culture, improving communication, and sharing practices to optimize

patient-centered care and improve the quality of chronic disease management.

## Acknowledgments

We thank the help of doctors and nurses from the six county hospital and 18 community health centers of Hangzhou, Jiashan, Yuhuan, Jiangshan Counties from Zhejiang Province, and all the research staffs during the surveys.

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## Ethical Considerations

This study was approved by the Hangzhou Normal University Ethics Board (University of Zhejiang, China; No. 2022-1118).

## Consent to Participate

All study methods were performed in accordance with relevant guidelines and regulations. Written informed consent form was obtained from each participant prior to the enrollment. A copy of the signed consent form was given to each participant.

## Author Contributions

Conceptualization: Chi Zhou, Kaixiao Qu. Data curation: Chi Zhou, Kaixiao Qu. Formal analysis: Chi Zhou, Xiaoling Lin, Qunfan Huang. Funding acquisition: Chi Zhou, Yin Dong. Investigation: Xiaoling Lin, Qunfan Huang, Zhiyu Wu, Hangyuan Gao, Yinuo Lian. Methodology: Chi Zhou, Kaixiao Qu. Project administration: Chi Zhou, Kaixiao Qu. Resources: Chi Zhou, Kaixiao Qu. Software: Chi Zhou, Xiaoling Lin, Qunfan Huang, Zhiyu Wu, Hangyuan Gao, Yinuo Lian. Supervision: Minmin Jiang, Yin Dong. Validation: Minmin Jiang, Yin Dong. Visualization: Minmin Jiang, Yin Dong. Writing-original draft: Chi Zhou, Kaixiao Qu. Writing-review & editing: Chi Zhou, Kaixiao Qu, Minmin Jiang, Yin Dong.

## Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study was supported by National Natural Science Foundation of China (No. 72274050), Zhejiang Provincial Hospital Association 2024 Zhejiang Kangenbe Hospital Management Soft Science Research Project (No. 2024ZHA-KNB211), Wenzhou Medical University 2022 Higher Education Teaching Reform Project (No. JG2022173).

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Data Availability Statement

The data can be requested from the corresponding author. All materials used for the purpose of this study are available at the request of the corresponding author.

## Supplemental Material

Supplemental material for this article is available online.

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