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Doctor-Patient Trust, Task Performance, and Patient Health Outcomes: A Relationship Analysis Based on Self-perception

SUN Zheng

Doctor of Management

Supervisors:
PhD Dália Maria dos Santos Nogueira, Affiliate Member,
ISCTE University Institute of Lisbon
PhD Dong Roman XU, Professor,
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April, 2025

BUSINESS
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Abstract

This study investigates the effects of self-perceived trust between doctors and patients on physician task performance and patient health outcomes. Fieldwork was conducted in tertiary hospitals in Zhanjiang, Guangdong Province, using a mixed-methods design that integrated semi-structured interviews, the Delphi method, and structured questionnaires. Data were collected from 331 physicians and 993 patients.

Interview findings revealed that while doctor–patient relationships appear generally stable, trust remains fragile due to communication challenges and contextual constraints. Five key influencing paths were identified: organizational support, individual motivation, task design, communication mechanisms, and institutional environment. Patients tended to trust based on doctors' competence and care, while physicians emphasized mutual understanding and cooperation.

Two control variables—patient educational level and communication time—were selected through Delphi expert consultation. A structural equation model was constructed and analyzed using partial least squares (PLS-SEM). Results showed that patient-perceived trust directly improved health outcomes, whereas physician-perceived trust influenced outcomes indirectly via enhanced task performance. Higher patient education was also associated with better self-reported health.

The study highlights the asymmetry in how trust affects medical outcomes from the perspectives of doctors and patients. Trust serves both as a psychological resource that motivates physicians and as a behavioral driver of patient cooperation. Management should tailor strategies to each side: strengthening physician support systems while improving patient communication, emotional care, and health literacy. These efforts are essential to enhancing both medical performance and human-centered healthcare value.

Keywords: Self-perception; Patient-doctor trust; Task Performance; Patient Health Outcomes
JEL: C80, C21

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Resumo

O estudo investiga os efeitos da confiança entre médico e doente no desempenho profissional dos clínicos e nos resultados obtidos em saúde. O trabalho de campo, que teve como base uma análise auto-percetiva realizada pelos grupos em estudo, foi desnvolvido em hospitais terciários em Zhanjiang, na Província de Guangdong, na China, com recurso a uma abordagem metodológica mista que integrou entrevistas semiestruturadas, o método Delphi e questionários estruturados. A recolha de dados abrangeu 331 médicos e 993 doentes.

Os resultados das entrevistas revelaram que, embora as relações médico-doente se apresentem, em geral, como estáveis, a confiança permanece frágil, condicionada por desafios comunicacionais e constrangimentos contextuais. Foram identificados cinco percursos de influência principais: apoio organizacional, motivação individual, desenho das tarefas, mecanismos de comunicação e ambiente institucional. Os doentes tendem a confiar com base na competência e na atenção demonstrada pelos médicos, ao passo que estes valorizam sobretudo a compreensão mútua e a cooperação.

Através de consulta a peritos pelo método Delphi, foram selecionadas duas variáveis de controlo: o nível de escolaridade dos doentes e o tempo de comunicação. Foi construído e analisado um modelo de equações estruturais com mínimos quadrados parciais (PLS-SEM). Os resultados indicam que a confiança percebida pelos doentes melhora diretamente os resultados em saúde, enquanto a confiança percebida pelos médicos influencia esses resultados de forma indireta, através de uma melhoria no desempenho. Verificou-se ainda que níveis de escolaridade mais elevados nos doentes se associam a uma melhor autoavaliação do estado de saúde.

O estudo sublinha a assimetria dos efeitos da confiança nos resultados clínicos, conforme a perspetiva seja do médico ou a do doente. A confiança funciona, simultaneamente, como um recurso psicológico que motiva o médico e como um elemento dinamizador da cooperação do doente. A gestão hospitalar deve adotar estratégias diferenciadas para cada grupo, reforçando os sistemas de apoio aos profissionais de saúde de modo a promover uma melhor comunicação entre o médico e o doente, o cuidado emocional e a literacia em saúde. Estes esforços revelam-se fundamentais, tanto para a a eficácia clínica, como para o desenvolvimento de um modelo de cuidados centrado na pessoa.

Palavras-chave: Autoavaliação; Confiança Médico-Paciente; Desempenho de Tarefas; Resultados de Saúde dos Pacientes

JEL: C80, C21

摘　要

本研究探讨了医患双方“自我感知”信任对医生任务绩效与患者健康结局的影响机制。研究在广东省湛江市的三甲医院开展实地调研，采用半结构访谈、德尔菲法与结构化问卷相结合的混合研究方法，共收集了 331 名医生与 993 名患者的数据。

访谈结果表明，尽管医患关系整体较为稳定，但信任基础依然脆弱，受制于沟通质量与环境因素。研究识别出五类关键影响路径：组织支持、个体动机、任务设计、沟通机制与制度环境。患者更倾向于基于医生的专业能力与人文关怀建立信任，而医生则更看重患者的理解与配合。

通过德尔菲专家咨询，遴选出“患者教育程度”与“就医沟通时长”作为控制变量。研究构建结构方程模型，并采用偏最小二乘法（PLS-SEM）进行估计与检验。结果发现，患者信任可直接提升健康结局，而医生信任则通过提升任务绩效间接发挥作用；患者教育水平越高，其健康感知越积极。

本研究揭示了医患信任在路径机制上的非对称性。信任既是激发医生投入的重要心理资源，也是推动患者积极配合的重要行为动因。管理实践应针对医患双方差异，分别优化医生激励机制与患者服务体验，从沟通、情感支持与健康教育等方面系统提升医疗绩效与人本价值。

关键词：自我感知；医患信任；任务绩效；患者健康结局

JEL: C80, C21

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As I bring this doctoral thesis to completion, I have been fortunate to receive the support and encouragement of many people along the way. This academic pursuit has been not only a process of personal growth but also a meaningful journey shared with my mentors, classmates, family, and friends. With heartfelt gratitude, I would like to extend my sincere thanks to everyone who has supported and guided me throughout my doctoral studies.

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enthusiasm have been invaluable to my growth.

Additionally, I owe a debt of gratitude to my family, especially my wife, Zhou Xiaohua, and my two children, Sun Lang and Sun Xin. Over the years of my doctoral studies, they have been my pillar of strength. My wife not only supported me financially and shouldered our family responsibilities, but also stood by me with her understanding and encouragement during every challenging moment. My son, Sun Lang, and daughter, Sun Xin, with their pure innocence and boundless energy, have filled my life with joy and inspiration. Whenever the pressure overwhelmed me, their smiles never failed to remind me of my purpose and renew my determination to press on.

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List of Acronyms

CFA	Confirmationary Factor Analysis
COR	Conservation of Resources Theory
CV	Coefficient of Variation
DPT	Doctor-Perceived Trust
DID	Difference-in-Difference
EFA	Explanary Factor Analysis
HO	Health Outcomes
PLS	Partial Least Squares
PPT	Patient-Perceived Trust
SEM	Structural Equation Modeling
SET	Social Exchange Theory
SPT	Self-Perception Theory
SRMR	Standardized Root Mean Square Residual
TP	Task Performance
PDRQ	Patient–Doctor Relationship Questionnaire
IOM	Institute of Medicine
IPA	Importance–Performance Analysis
P4P	Pay-for-Performance
PPP	Public–private partnership
PP	Project Performance
QMP	Quality Management Practices
IC	Intellectual Capital
RP	Role Physical
CDC	Centers for Disease Control and Prevention
PF	Physical Functioning
BP	Bodily Pain
GH	General Health
SF	Social Functioning
RE	Role Emotional
MH	Mental Health

AVE	Average Variance Extracted
GH	General Health
PLS-SEM	Partial Least Squares Structural Equation Modeling
CFIR	the Consolidated Framework for Implementation Research
DMC	Duration of Medical Communication
PEL	Patient Educational Level
KMO	Kaiser-Meyer-Olkin
HTMT	Heterotrait–Monotrait Ratio
NFI	Normed Fit Index

Chapter 1: Introduction

1.1 Research background

1.1.1 Real-word context

The practice environment for physicians in China has long been a focal point of concern for both the state and the public. This environment not only reflects the socioeconomic development level of a region but also serves as a significant indicator of governmental commitment and investment in the healthcare sector (X. Y. Han, 2016; C. Li & Zhang, 2015). The term "practice environment" encompasses not only the physical workplace but also includes elements such as work scheduling, remuneration, career advancement opportunities, and psychological stress—all critical components of professional support (Q. Q. Sun et al., 2018; J. Y. Tong et al., 2018). Among these factors, the physician–patient relationship represents a particularly salient manifestation of the practice environment in China.

In recent years, however, the frequent occurrence of disruptive incidents such as “medical disturbances” (yinao), along with a steady rise in medical disputes, has contributed to a deteriorating professional climate for physicians. These developments have intensified tensions in physician–patient interactions and, in some cases, have even posed threats to physicians’ personal safety. Additional stressors such as disproportionate compensation relative to workload and long working hours have further exacerbated the situation (C. Li & Zhang, 2015).

Official statistics show that, in 2016, medical disputes nationwide decreased by 6.7% compared to 2015, and criminal offenses involving healthcare incidents declined by 14.1%. These figures suggest some degree of improvement. Nonetheless, recent surveys indicate that 62% of physicians do not perceive a tangible improvement in their working conditions, and 50% of medical personnel feel that their contributions remain unrecognized by society. These sentiments are consistent with those reported in 2015, likely reflecting increased physician awareness of professional challenges and highlighting deficiencies in local governmental efforts to safeguard their rights.

A supportive practice environment not only enhances healthcare providers’ working conditions and service quality but also plays a vital role in improving physician–patient

relationships, increasing patient satisfaction, promoting public health, and advancing the development of the national healthcare system. To ensure the legitimate rights of practicing physicians, the Law of the People's Republic of China on Practicing Physicians classifies them as a special labor group. In addition to enjoying the basic rights conferred by the Constitution of the People's Republic of China and the Labor Law of the People's Republic of China, physicians are entitled to specific legal protections related to their profession.

A series of legal and regulatory frameworks have been established to this end, including the Law on Practicing Physicians, the Regulations on the Administration of Medical Institutions, the Duties of Hospital Staff, and the Hospital Work System. President Xi Jinping has emphasized the importance of maintaining hospital order and protecting the safety of medical personnel, affirming that any unlawful acts against healthcare workers must be strictly punished under the law. In August 2015, the Standing Committee of the National People's Congress officially included severe "medical violence" incidents under the criminal offense of "gathering to disrupt public order," thereby providing stronger legal protection for medical professionals (Z. G. Yang, 2015).

In recent years, in order to curb illegal behaviors such as "yinao," several policy documents have been issued by relevant government departments, including Opinions on the Legal Punishment of Medical-Related Crimes to Maintain Order in Medical Institutions, Special Action Plan for Combating Medical-Related Crimes, Notice on Maintaining Order in Medical Institutions, and Notice on Strengthening Punishment for Medical-Related Crimes. Despite these efforts, such disruptive incidents remain prevalent across the country (L. Zhu & Yuan, 2014). Moreover, the working hours and intensity of physicians' labor continue to exceed the legal limits stipulated in the Labor Law of the People's Republic of China. Thus, improving the practice environment for physicians remains a pressing and long-term challenge.

1.1.2 Theoretical background

In healthcare delivery systems, strained physician–patient relationships and a lack of trust have become key factors undermining service quality and health outcomes. To explore the underlying mechanisms linking physician–patient trust, physician task performance, and patient health outcomes, this study introduces three representative management theories: Social Exchange Theory, Self-Perception Theory, and Conservation of Resources Theory. These theories provide essential conceptual foundations for understanding the psychological

processes and behavioral outcomes inherent in physician–patient interactions.

First, Social Exchange Theory (SET), proposed by Blau (1964), emphasizes that interpersonal relationships are fundamentally based on reciprocity. Trust is considered a prerequisite for establishing and maintaining social exchange relationships. In the healthcare context, physicians and patients develop mutual trust through information exchange, emotional expression, and service feedback, which in turn influence their willingness to cooperate and behavioral responses. For instance, when patients perceive a physician's professional competence and caring attitude, they are more likely to express trust and compliance. In response, physicians tend to show higher levels of engagement and task performance when met with positive patient feedback. Therefore, trust functions not only as an emotional bond but also as a mechanism of social exchange that significantly affects both task performance and health outcomes (Ahmad et al., 2023; Cook et al., 2013; Cropanzano et al., 2017).

Second, Self-Perception Theory, developed by Bem (1972), posits that individuals form attitudes or emotional assessments about themselves by observing their own behavior. In this study, physicians' and patients' self-perceptions serve as key interpretive pathways, highlighting their subjective evaluations of trust, performance, and health status. Specifically, physicians may evaluate their trustworthiness and effectiveness based on feedback, self-reflection, and patient responses. Similarly, patients may assess their perceived health changes and level of trust based on their experiences during medical encounters. Self-perception thus functions both as an antecedent of trust and performance and as a determinant of subsequent behavioral choices and emotional reactions. It offers a critical cognitive perspective for understanding the dynamics of physician–patient relationships (Fazio, 2014; Robak, 2001).

Third, Conservation of Resources Theory (COR), formulated by Hobfoll (1989), centers on the idea that individuals are motivated to obtain, retain, and protect resources—including material, psychological, and social assets. When these resources are threatened or depleted, individuals are likely to experience stress, anxiety, or negative behavioral reactions. In the context of physician–patient interactions, trust can be viewed as a key social resource. When physicians receive trust from patients, they gain affirmation of their professional value and emotional support, which can boost motivation and task performance. Likewise, patients who trust their physicians are more likely to experience psychological comfort and a sense of safety, contributing positively to the healing process. In contrast, a lack of trust may trigger a perception of resource loss, potentially leading to physician burnout, patient dissatisfaction, or

reduced treatment adherence. COR thus illuminates the critical role of trust in alleviating stress and fostering positive outcomes in medical settings (Cooper & Quick, 2017; Hobfoll, 2011; Wright & Hobfoll, 2004).

In summary, Social Exchange Theory, Self-Perception Theory, and Conservation of Resources Theory provide multidimensional theoretical support for this study from the perspectives of interactional mechanisms, subjective cognition, and resource regulation. Collectively, these frameworks assist in constructing a causal model linking trust, task performance, and health outcomes, while also offering valuable insights into the motivational and psychological dynamics underlying physician and patient behaviors during healthcare delivery.

1.2 Research problem and questions

At present, strained physician–patient relationships have become a widespread social issue within China's healthcare system. This problem is particularly acute in small to medium-sized cities and resource-constrained regions such as Zhanjiang, where the foundation of mutual trust between physicians and patients is notably fragile. Although existing studies have explored physician–patient relations from perspectives such as communication and institutional trust, relatively few have systematically examined the self-perceived trust levels of both physicians and patients, or how such trust influences physicians' task performance and patients' health outcomes. In addition, limited research has investigated how sociodemographic characteristics—such as gender, age, and urban–rural background—affect trust in the medical context and corresponding health results.

Furthermore, while a growing body of literature has addressed perceived injustices experienced by patients and their families within physician–patient relationships, significantly less attention has been paid to the rights and psychological well-being of physicians (X. Luo & Li, 2024; P. Wan & Jia, 2024). These studies tend to overlook the challenges physicians face under conditions of high occupational stress, professional demands, disproportionate compensation, and limited social recognition. Research from the physician's perspective has often focused on variables such as cognitive-emotional regulation strategies, interpersonal trust, and psychological capital (Chu, 2013; M. Fang, 2017). Therefore, greater scholarly and policy attention is urgently needed to protect physicians' rights, enhance their psychological resilience, and improve their working conditions—critical steps toward fostering a more harmonious physician–patient relationship and improving healthcare service quality.

Aligned with the study's objectives and methodological framework, this research aims to address the following key questions:

RQ1: Do sociodemographic characteristics influence physician–patient trust and health outcomes?

RQ2: How does physician–patient trust affect physicians' task performance?

RQ3: How does physician–patient trust influence patients' health outcomes?

RQ4: Is there a mediating or moderating pathway among physician–patient trust, physician task performance, and patient health outcomes?

1.3 Research objectives

Amid increasing complexity in physician–patient relationships, the erosion of trust has become a major barrier to improving the quality and efficiency of healthcare services. To gain a deeper understanding of the mechanisms through which trust operates within medical service delivery, this study adopts the concept of self-perception as a core analytical lens. Focusing on both physicians and patients as key actors, it systematically explores the interrelationships among physician–patient trust, physician task performance, and patient health outcomes. Using Zhanjiang as the research setting, this study employs a mixed-methods approach—including semi-structured interviews, the Delphi method, and a large-scale questionnaire survey—to examine the theoretical and empirical pathways through which trust affects healthcare processes and outcomes.

First, semi-structured interviews with physicians and patients are conducted to investigate their experiences and self-perceptions of trust during clinical interactions, aiming to provide a grounded understanding of trust dynamics in grassroots medical institutions. Second, the Delphi method is employed to gather expert consensus on how sociodemographic variables—such as gender, age, and urban–rural background—may influence physician–patient trust and health outcomes, thereby identifying key population-based differentiating factors.

Third, a large-scale survey is conducted to quantitatively test how physician–patient trust influences physician task performance using structural equation modeling (SEM). This allows for an empirical examination of the motivational role of trust in enhancing physicians' service engagement and work outcomes. The study also investigates the effect of patients' perceived trust on subjective health status, including dimensions such as vitality, mental well-being, and social functioning. Lastly, the research constructs an integrated path model linking trust, task

performance, and health outcomes, and analyzes potential mediating or moderating mechanisms to reveal the complex interactional processes by which trust shapes healthcare results.

In summary, this study aims to develop a self-perception-based model of the trust mechanism in physician–patient relationships. The findings are expected to enrich the interdisciplinary dialogue between management and health service research, and to provide both theoretical insight and practical guidance for alleviating tensions in physician–patient interactions, optimizing healthcare resource allocation, and enhancing service performance.

1.4 Research methods

This study employs a comprehensive approach that integrates interviews, the Delphi method, and survey research to analyze the complex relationships between physician-patient trust, physician task performance, and patient health outcomes.

First, the study utilizes interviews to gather insights from four key stakeholder groups: clinical healthcare providers, hospital administrators, patient families, and hospital leaders. The goal of the interviews is to identify the critical factors influencing physician-patient trust, physician performance, and patient health outcomes. Participants were asked to share their perspectives on doctor-patient relationships, physician behavior, and patient health, providing valuable input for the construction of the research model. These interviews ensure a multidimensional and comprehensive dataset, capturing diverse viewpoints across different healthcare sectors.

Second, to further enhance the accuracy and scientific rigor of the study, the Delphi method was incorporated. A panel of experts was consulted in two rounds to identify potential confounding factors that could affect the model's latent variables. These factors were carefully identified and integrated into the structural equation modeling (SEM) analysis as control variables. The Delphi method ensures that expert opinions are systematically incorporated, reducing potential biases and increasing the validity of the findings. Additionally, it improves the external validity of the study by ensuring that expert knowledge and field-specific insights are considered.

Finally, a survey was conducted to collect data based on the key factors identified through the interviews and Delphi method. The survey was widely distributed to patients and healthcare professionals to further validate the conceptual model. After data collection, structural equation modeling (SEM) was employed to analyze the survey results. SEM not

only elucidates the direct relationships between physician-patient trust, physician task performance, and patient health outcomes but also clarifies the causal pathways and interrelationships among latent variables. This analytical approach allows for a systematic assessment of the multifaceted influence of trust on health outcomes and a deeper understanding of the complex interactions between variables.

By combining interviews, the Delphi method, and survey research, this study maximizes the use of multiple data sources and analytical techniques, ensuring the reliability, validity, and scientific rigor of the findings. The study provides profound theoretical insights and practical implications regarding the role of physician-patient trust in healthcare.

1.5 Research significance

1.5.1 Practical Significance

This study addresses the widespread issue of physician–patient trust deficits in China's healthcare system. Drawing on field research conducted in Zhanjiang, it quantitatively examines self-perceived trust from both physicians and patients and employs path analysis to uncover the mechanisms by which trust influences physician task performance and patient health outcomes. These findings are not only theoretically valuable but also offer important implications for healthcare management, service process optimization, and primary care governance. The practical significance is reflected in the following aspects:

First, the study provides empirical evidence and actionable directions for improving physician–patient relationships. The results show that physicians' self-perceived trust significantly and positively predicts their task performance, while patients' trust in physicians is closely associated with their subjective health outcomes. This indicates that strengthening mutual trust between physicians and patients can not only enhance service efficiency but also significantly improve patient treatment experiences and perceptions of recovery. Accordingly, healthcare institutions can foster trust by building more effective communication mechanisms, enhancing the humanistic literacy of medical personnel, and optimizing the clinical environment to reinforce collaborative foundations.

Second, the study offers data-driven insights for the design of physician performance evaluation and incentive systems. By quantifying the positive relationship between trust and performance from the physician's perspective, it reveals that physicians are more likely to demonstrate proactive professional behaviors when they feel trusted by patients. This has

direct application value for hospitals in formulating performance appraisal systems, service quality assessments, and incentive policies. Hospital administrators could incorporate “patient trust feedback” as a dimension of physician performance metrics, thereby encouraging physicians to value not only professional competence but also humanistic care and service quality.

Third, the research provides a practical foundation for advancing a patient-centered model of healthcare delivery. As healthcare reforms continue to evolve, patient satisfaction and health outcomes are becoming increasingly important indicators of service quality. By emphasizing the close relationship between patient trust and perceived health outcomes, the study reinforces the importance of the “trust–performance–health” pathway. Healthcare institutions should place greater emphasis on the subjective experiences of patients throughout the service process and promote informed communication, empathetic interaction, and participatory decision-making to build truly patient-centered service systems.

In conclusion, this study not only reveals the critical role of trust in healthcare systems but also provides empirical support and practical guidance for policymaking, hospital management, and behavioral improvements among healthcare providers. It holds considerable potential for real-world application and broader social promotion.

1.5.2 Theoretical significance

This study adopts self-perception as a central analytical lens to systematically examine the influence of physician–patient trust on physician task performance and patient health outcomes. Grounded in three foundational theories—Social Exchange Theory, Self-Perception Theory, and Conservation of Resources Theory—it seeks to enrich and extend the application of these frameworks in the field of healthcare service management by integrating perspectives from behavioral interaction, cognitive psychology, and resource dynamics. The theoretical contributions are threefold:

First, the study expands the application paradigm of Social Exchange Theory in physician–patient interaction research. Social Exchange Theory (Blau, 1964). posits that individuals engage in interactions driven by reciprocity, fairness, and relationship maintenance. By conceptualizing the physician–patient relationship as an “informal, trust-centered social exchange process,” this study highlights how physicians earn patient trust through the provision of professional knowledge and emotional support, while patients reciprocate through respect, cooperation, and positive feedback. The identified trust–

performance–outcome chain illustrates that physician–patient interactions are not merely transactional but are characterized by ongoing exchanges of resources, responsibilities, and expectations. This insight strengthens the explanatory power of Social Exchange Theory in high-risk, high-uncertainty medical contexts.

Second, the study deepens the explanatory utility of Self-Perception Theory in linking trust formation to behavioral outcomes. According to Self-Perception Theory (Bem, 1972)., individuals infer their attitudes toward others or events based on observations of their own behavior in specific contexts. This study views the construction of "trust" by physicians and patients as a subjective cognitive evaluation process. It employs quantitative questionnaires to capture self-perceived trust and further examines its impact on task performance (e.g., physician engagement, information provision, emotional investment) and health outcomes (e.g., patient vitality, mental state, and perceived recovery). By emphasizing subjective perception, the study addresses the overreliance on objective indicators in prior research and offers a more nuanced understanding of the psychological processes underpinning physician–patient trust.

Third, the study extends the contextual application of Conservation of Resources (COR) Theory to the domain of healthcare stress and performance. COR Theory (Hobfoll, 1989, 2011) suggests that individuals strive to acquire, retain, and protect resources such as emotional support, professional identity, and health. This study conceptualizes physician–patient trust as a key socio-psychological resource. When physicians receive trust from patients, they experience affirmation of professional value, emotional support, and respect, which in turn motivate higher task commitment and responsibility. Similarly, when patients trust their physicians, they are more likely to experience a sense of safety and care, which fosters treatment adherence and perceived health improvements. By empirically validating the resource pathway through which trust enhances performance and health, the study broadens the theoretical scope of COR from organizational settings to the micro-context of physician–patient interactions.

In summary, through the integrated application of three classic management and psychological theories, this study constructs a comprehensive model from the perspectives of behavioral interaction, subjective cognition, and resource dynamics. It offers a multidimensional explanatory framework for understanding physician–patient trust mechanisms and provides valuable theoretical insights for interdisciplinary research in healthcare management, health psychology, and organizational behavior.

1.6 Thesis structure

To systematically examine the mechanisms linking physician–patient trust, physician task performance, and patient health outcomes—and to progress from theoretical framework construction to empirical analysis—this thesis is organized into five chapters as follows:

Chapter 1: Introduction

This chapter begins by addressing the prevalent tension and trust deficits within China's healthcare system, thereby introducing the core research problem and motivation. It then clearly outlines the study's objectives, research questions, and the key academic controversies it aims to address. The mixed-methods approach adopted in this research—integrating interviews, the Delphi method, and a questionnaire survey—is briefly introduced. In addition, the chapter discusses the theoretical and practical significance of the study and presents an overview of the thesis's overall structure, setting the foundation for the chapters that follow.

Chapter 2: Literature Review

This chapter reviews relevant domestic and international literature across three key domains: (1) the conceptualization, structure, and measurement of physician–patient trust; (2) the definition and empirical progress of physician task performance research; and (3) the evaluation indicators and influencing factors of patient health outcomes. The chapter then integrates Social Exchange Theory, Self-Perception Theory, and Conservation of Resources Theory to construct the theoretical framework, clarifying the logical relationships among variables. Based on this framework, seven research hypotheses (H1–H7) are proposed, covering both direct and mediating effects. A conceptual model is developed to provide a basis for empirical testing.

Chapter 3: Research Methodology

This chapter outlines the mixed-methods research design, which is divided into two stages: qualitative exploration and quantitative validation. The qualitative stage involves semi-structured interviews with physicians and patients to explore their subjective perceptions and cognitive differences regarding trust. The Delphi method is then used to refine measurement items and extract key influencing factors based on expert input. In the quantitative stage, structured questionnaires are used to collect primary data from 331 physicians and 993 patients. The survey items are adapted from validated scales and adjusted based on interview findings. For data analysis, the study employs both parametric and non-parametric tests, regression analysis, and structural equation modeling (SEM) to examine path relationships and mediating effects.

Chapter 4: Research Findings

This chapter presents the results from interviews, the Delphi method, and the questionnaire survey. First, thematic analysis is used to extract key themes and points of consensus from the interview data, highlighting similarities and differences in trust perception between physicians and patients. Second, the chapter reports on the Delphi process, including expert opinion convergence and the finalization of measurement dimensions. Finally, the chapter presents descriptive statistics, reliability and validity testing, and SEM results from the survey data, empirically testing the seven hypotheses. Particular attention is paid to the direct effects of physician–patient trust on physician performance and patient health outcomes, as well as the mediating role of physician task performance.

Chapter 5: Discussion and Conclusion

This chapter provides an in-depth discussion of the findings, interpreting the results in light of existing theories and previous research. It summarizes the study's theoretical contributions and innovations in model validation. Practical implications are proposed for healthcare administrators, medical professionals, and public health policymakers, including strategies for enhancing physician–patient trust, improving performance evaluation systems, and optimizing patient care experiences. The chapter also acknowledges the study's limitations, such as geographic sampling constraints and potential self-report bias, and suggests directions for future research, including sample expansion, longitudinal tracking, and intervention design for trust enhancement. The chapter concludes with a synthesis of the study's value and key findings.

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Chapter 2: Literature Review

2.1 Theories adopted in this study

2.1.1 Social exchange theory

Social Exchange Theory (SET) is a foundational theoretical framework in sociology and organizational behavior that explains interpersonal interactions and resource allocation based on the evaluation of costs and rewards. Its core premise is that the formation and maintenance of social relationships are driven by individuals' rational assessments of reciprocity and benefits derived from such interactions. Rather than engaging in unconditional cooperation, individuals make decisions grounded in reciprocity, trust, and the perceived value of exchanged resources (Homans, 1958).

The theory was first introduced by Homans (1958), who approached social behavior from a behaviorist perspective. He conceptualized social interactions as akin to economic exchanges governed by the principle of cost and reward. According to Homans, individuals tend to repeat behaviors that yield positive outcomes (rewards), and reduce those that lead to costs or punishment. This micro-level behavioral logic laid the groundwork for the early formulation of Social Exchange Theory.

Blau (1964) later extended the theory by broadening its application from individual behavior to macro-level social structures and organizational interactions. He emphasized that social exchanges are not merely rational transactions but are embedded within social norms, role expectations, and long-term trust. Blau distinguished between economic and social exchanges: the former is contractual, immediate, and based on equivalence; the latter is characterized by reciprocity, trust, and delayed returns, often with unequal outcomes. The sustainability of social exchange relies on the expectation that one party will fulfill obligations over time, and in this context, trust becomes a crucial psychological bond that maintains informal relationships and guides interactions under uncertainty. Blau (1964) also highlighted that in asymmetrical exchanges, the party controlling valuable resources may gain power, potentially affecting the stability and equity of the relationship.

In the 21st century, Social Exchange Theory has been increasingly applied in organizational management and service behavior studies. Cropanzano and Mitchell (2005)

provided a comprehensive review of SET and categorized its application across various interaction levels—such as between individuals and organizations, leaders and subordinates, or service providers and clients. They emphasized that social exchange involves not only tangible resource flows but also psychological resources such as emotional commitment, respect, support, and loyalty. Among these, trust is identified as the central mediating mechanism and sustaining force within the exchange process.

In summary, Social Exchange Theory rests on three fundamental assumptions (Cropanzano et al., 2017; Cropanzano & Mitchell, 2005):

a). Individuals seek to maximize rewards in social interactions;

b). Exchanges are governed by reciprocity, with an expectation of future return;

c). Trust is essential for sustaining relationships under asymmetric information and uncertainty.

In social exchange relationships, individuals develop expectations about others' behavior—these may not be immediate or equivalent, but they carry potential return value. Long-term relationships are built on recognition and trust in the behavior of others. Once trust is established, exchanges are likely to continue and deepen; in contrast, the absence or loss of trust can lead to relationship breakdown (Ahmad et al., 2023; Molm, 2003).

In the context of healthcare services, physician–patient interactions represent a typical form of social exchange: physicians offer professional expertise and emotional care, while patients reciprocate through trust, cooperation, and positive feedback. When patients trust the competence and ethics of physicians, they are more likely to comply with medical advice and engage in proactive communication—thereby enhancing treatment outcomes (Grembowski et al., 2002). Likewise, when physicians feel respected and recognized by patients, they are more likely to increase their service engagement and improve performance and attitudes. Thus, trust functions as a critical connector between "resource provision" and "behavioral response" in this exchange relationship, offering important theoretical insight into how physician performance and patient health outcomes are formed (Trinchero et al., 2019).

2.1.2 Self-perception theory

Self-Perception Theory (SPT) is a foundational theory in social psychology, proposed by American psychologist Bem (1972). As a theoretical response to the traditional Cognitive Dissonance Theory, SPT posits that individuals often infer their internal attitudes, emotions, or beliefs by observing their own overt behavior and the contextual cues surrounding it, rather

than relying solely on introspection or deep cognitive processing (Bem, 1972).

According to Bem (1972), individuals do not always assess whether they trust someone or like something by directly accessing their inner thoughts. Instead, they function like external observers, making logical attributions such as: "I must hold this attitude because I behaved in this way." For example, if a patient frequently undergoes health check-ups and complies with medical advice, they may infer, "I trust my doctor." In this sense, behavior precedes the formation of attitude—challenging the traditional unidirectional assumption in psychology that attitudes lead to behavior. SPT emphasizes the reverse: that behavior can shape cognition.

Importantly, Bem (1972) identified three conditions under which this attribution-based attitude formation is more likely to occur:

a). The individual lacks a strong or clearly defined initial attitude (e.g., "I am not sure whether I trust this doctor");

b). The behavior is voluntarily enacted without external coercion (i.e., not driven by rewards or punishments);

c). There are salient environmental cues linking the behavior to an attitude inference (e.g., feedback from others, diagnosis results, or service experiences).

Within this theoretical framework, Bem also distinguished between "self-perception based on direct behavioral experience" and "abstract cognitive attitude expression". He noted that in ambiguous, complex, or information-poor social contexts, individuals are more inclined to adopt the former approach. This distinction has since inspired a wide range of studies in service experience, consumer behavior, and organizational commitment (Mohebi & Bailey, 2020).

In the context of healthcare services, Self-Perception Theory offers a unique lens for understanding how both physicians and patients form and express the abstract construct of "trust." Medical interactions are characterized by high professionalism and information asymmetry, which often makes it difficult for individuals to clearly articulate whether they "trust" the other party (Wichowski & Kubsch, 1997). As a result, both physicians and patients may rely on reviewing their own behaviors during interactions—such as attentive listening, proactive communication, or willingness to cooperate—to infer their attitudes toward the physician–patient relationship. Through this behavior-to-cognition attribution process, perceived trust is gradually constructed and may subsequently influence further behaviors and psychological states (Jodar I Solà et al., 2016).

In this study, Self-Perception Theory not only provides a theoretical foundation for conceptualizing self-perceived trust but also supports the hypothesized pathways through

which trust—formed via cognitive attribution—impacts physician task performance and patient health outcomes. By quantifying physicians' and patients' evaluations of their own trust-related behaviors, this research aims to reveal how trust attitudes are constructed and reproduced in interactional contexts. In doing so, it enriches existing physician–patient trust literature by advancing a deeper understanding of the psychological mechanisms underlying trust formation.

2.1.3 Conservation of resources theory

Conservation of Resources Theory (COR) was proposed by American psychologist Stevan E. Hobfoll (1989) with the aim of establishing a more universal and structured framework for understanding stress. In contrast to traditional stimulus–response-based models of stress, It was argued that stress does not arise directly from external events themselves, but rather from an individual's subjective appraisal that their valued resources are threatened or have been lost (Halbesleben et al., 2014; Hobfoll, 1989).

Hobfoll (2011) emphasized that the resources individuals possess or strive to obtain are fundamental to maintaining daily functioning, achieving life goals, and resisting stress. He defined resources as objects, conditions, personal characteristics, and energies that are valued by the individual or that serve as a means for attainment of these objects. Specifically, COR theory classifies resources into four major categories:

a). Object resources – e.g., money, housing, transportation tools;

b). Condition resources – e.g., employment status, marital status, social identity;

c). Personal characteristics – e.g., self-esteem, confidence, optimism;

d). Energy resources – e.g., time, knowledge, attention, physical health.

A key innovation of COR theory lies in the primacy of resource loss. Hobfoll (2011) posited that the negative psychological impact of resource loss is significantly stronger and longer-lasting than the positive effects of resource gain. Resource loss is more likely to trigger stress responses and can generate a persistent sense of vulnerability, wherein individuals become hypersensitive to potential future losses. Additionally, Hobfoll introduced the concept of resource spirals, suggesting that individuals who experience initial resource loss are less able to acquire new resources, which can lead to cascading losses and psychological breakdown. Conversely, those with abundant resources are more likely to enter positive gain spirals, strengthening their resilience and coping capacity.

In subsequent developments, Hobfoll (2011) expanded the definition of resources to

include not only material assets and personal traits but also relational resources, such as interpersonal trust, social support, and emotional security. This extension provides a valuable foundation for understanding psychological mechanisms in complex interpersonal contexts like physician–patient interactions.

In the healthcare setting, both physicians and patients operate in environments characterized by high informational asymmetry, medical risk, and intense role-related stress. These conditions may serve as significant triggers for resource depletion (Alvaro et al., 2010; Halbesleben, 2010). For example, when physicians encounter disrespect or lack of cooperation from patients, they may experience a loss of emotional energy and diminished professional identity, ultimately affecting their task performance. Similarly, patients who perceive a lack of empathy or professional support from physicians may enter a state of resource erosion marked by distrust and anxiety (Wright & Hobfoll, 2004).

In such contexts, physician–patient trust functions as a vital social–psychological resource with dual functions. On one hand, it helps alleviate uncertainty and role pressure during medical interactions, thereby promoting stability in diagnostic and treatment behaviors. On the other hand, trust itself constitutes an essential part of the individual's resource system, influencing emotional resilience, positive affect, and behavioral motivation.

2.2 Physician–patient relationship

2.2.1 Definition

The physician–patient relationship refers to the interactive, communicative, and cooperative connection established between physicians, healthcare personnel, and patients (as well as their families) throughout the medical process (Emanuel & Emanuel, 1992). It is one of the core elements of healthcare service delivery. Physicians and patients are the central agents in all medical activity. The aim of medicine is not only to cure disease and restore health, but also to help patients adjust to themselves, to society, and to become friendly, constructive members of the community (Emanuel & Emanuel, 1992; Hellín, 2002; Hoff & Collinson, 2017; Murphy et al., 2001).

Szasz and Hollender (1956) categorized the physician–patient relationship into three distinct models based on earlier research:

a). Activity–passivity model: In this model, the physician acts as the dominant party while the patient remains passive and dependent. The physician leads the entire interaction, which is

typically applied in cases involving unconscious or incapacitated patients.

b). Guidance–cooperation model: The physician provides medical guidance and recommendations based on professional knowledge, and the patient cooperates accordingly. This model is commonly used in treating curable illnesses.

c). Mutual participation model: Both physician and patient engage collaboratively in the medical decision-making process through negotiation. The degree of patient participation varies depending on the severity and complexity of the condition.

From another perspective, Balint (1955) analyzed the physician–patient relationship along two dimensions. On the one hand, he regarded the physician as a central therapeutic instrument, playing a leading role in the healing process. On the other hand, he approached the relationship as a dynamic and evolving process in which the physician gains a deeper understanding of the patient's characteristics and behaviors over time through repeated interactions, ultimately aiding in the recovery process.

In the field of psychology, Chinese scholars often conceptualize the physician–patient relationship as a special form of interpersonal relationship. G. M. Wang et al. (2018) similarly emphasize that the physician–patient relationship is a relationship grounded in clinical practice, with the physician's professional integrity at its core. The relationship forms and evolves throughout the diagnostic and therapeutic process, aiming to relieve patients from illness and restore their bodily functions. The relationship involves mutual obligations and role fulfillment by both parties.

The physician–patient relationship is crucial to the effectiveness of healthcare services. At its heart lies mutual trust, which is fundamentally interpersonal in nature. As Y. H. Xu (2003) notes, the physician–patient relationship operates through a series of activities aimed at establishing, developing, utilizing, and maintaining mutual obligations during healthcare interactions. Trust from the patient refers to the belief and expectation that the physician will act in a way that serves the patient's best interests. Trust from the physician, in turn, reflects the degree to which the healthcare provider has confidence in the patient. Only when trust is mutual and stable can a sustainable physician–patient relationship be maintained. Therefore, preserving physician–patient trust is essential for achieving high-quality healthcare outcomes.

However, despite the continuous improvements in China's medical infrastructure, treatment environments, and technological capabilities, the development of physician–patient relationships has lagged behind, often becoming a significant barrier to effective medical care.

2.2.2 Current status in China

Since the implementation of China's reform and opening-up policy, China's healthcare system has undergone continuous improvement alongside rapid economic and technological development. Advancements have been made in medical equipment, clinical environments, and treatment technologies. However, despite these improvements, the physician–patient relationship in China has become increasingly strained, with frequent incidents of violence against healthcare professionals, including physical assaults and even fatal attacks (Chen et al., 2020; Xiao et al., 2021).

As early as 2011, a national study conducted by the Center for Social Research and Development at Peking University and the Health Statistics and Information Center of the Ministry of Health pointed out that "institutional arrangements have positioned physicians and patients as adversaries" (Deng & Bao, 2011). Structural flaws in the healthcare system have contributed to various problems, most notably the unequal distribution of medical resources, with nearly 80% of high-quality medical resources concentrated in urban tertiary hospitals, leaving primary care facilities severely under-resourced. This has led to overcrowding in major hospitals and widespread difficulties in accessing affordable medical care.

In this context, some physicians have resorted to informal compensatory practices, such as accepting cash gifts, kickbacks, and overprescribing medications, further increasing patients' financial burden and eroding public trust in the healthcare system (Bao, 2014). As a result, mutual distrust between physicians and patients has become a deeply rooted cause of relational deterioration. This distrust often escalates into conflict, creating a vicious cycle in which rising conflict fuels further mistrust.

Numerous high-profile cases of violence have brought the physician–patient relationship back into the national spotlight. For instance, on July 12, 2018, a gastroenterologist in Tianjin was fatally stabbed during a routine outpatient consultation by three unidentified assailants. On September 22, 2018, a dispute over whether to perform a cesarean section escalated into a physical assault against an on-duty obstetrician in a Beijing hospital. In 2020, another doctor in Beijing was attacked and chased with a weapon. These incidents reflect not only the frequency but also the increasing severity of violence in medical settings, making physician–patient conflict one of China's most pressing social tensions (Ma et al., 2021).

In fact, violence against healthcare workers is a global issue, affecting nearly all healthcare systems, but the scale, frequency, and brutality of such incidents in China are particularly alarming (Lancet, 2020). According to reports circulating on Chinese social

media, from 2009 to 2018, there were a total of 295 severe medical violence incidents, resulting in 362 injured physicians and 24 deaths (Si, 2021).

Data from the Chinese Medical Doctor Association's 2017 White Paper on Physician Practice Conditions revealed that 62% of physicians had experienced medical disputes, and 66% had encountered some form of physician–patient conflict, with verbal abuse accounting for 51% of these cases. In a 2010 survey, only 43.8% of patients expressed trust in medical staff, while only 26.0% of healthcare workers believed there was mutual trust between physicians and patients (Dong, 2010). These figures indicate a grim reality for physician–patient relations in China.

Furthermore, data from the Alpha Law Case Database, a leading legal case retrieval platform in China, show that there were 5,074 medical malpractice litigation cases in 2022, down from 10,746 cases in 2021. For reference, the number of cases recorded was 12,734 in 2017; 12,249 in 2018; 18,112 in 2019; and a peak of 18,670 in 2020—a 3% increase from 2019 and a 50% increase compared to 2018 (Y. Wang & Du, 2023). These fluctuations are illustrated in Figure 2.1.

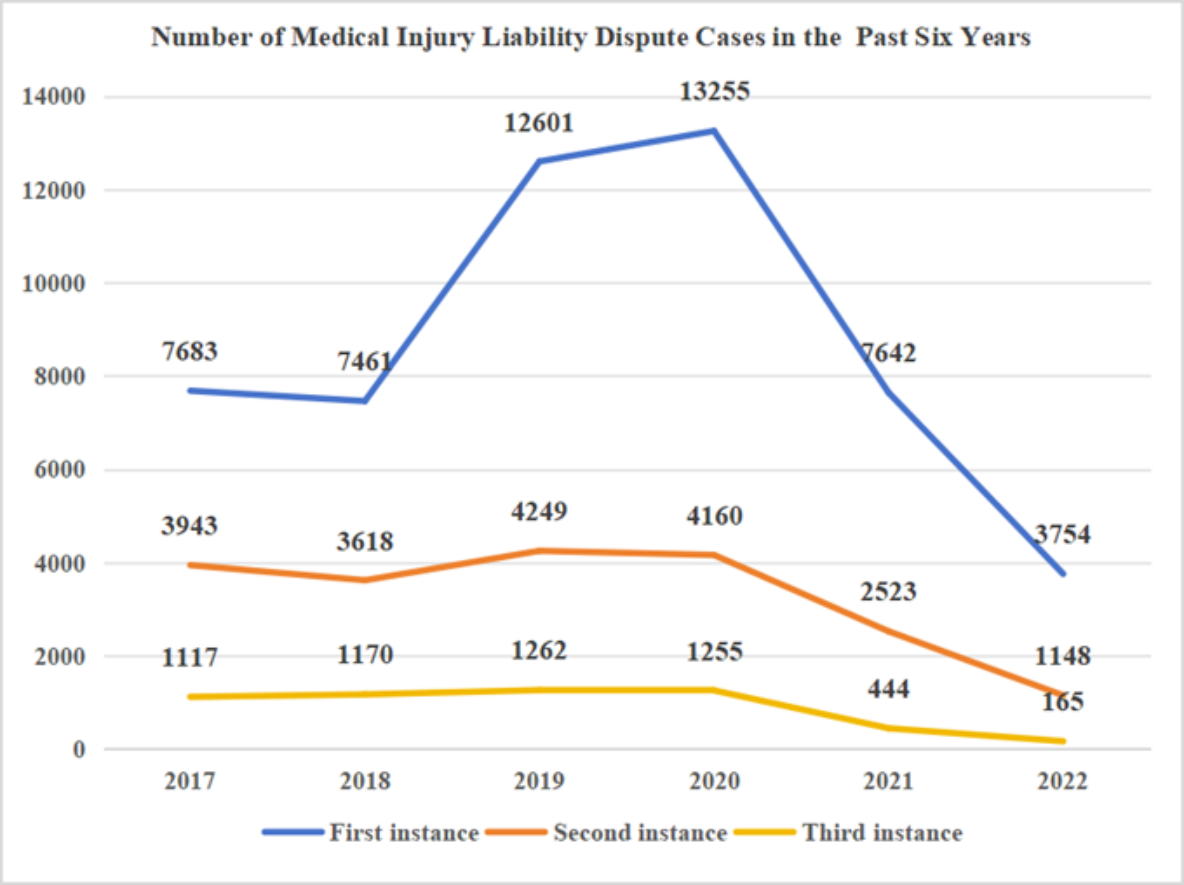

Figure 2.1 Number of medical injury liability dispute cases in the past six years

Source: Yifahui (2023)

Although a cross-sectional study conducted jointly by the Second Xiangya Hospital of

Central South University and Texas Tech University found that following the outbreak of COVID-19 in 2020, the average Patient–Doctor Relationship Questionnaire (PDRQ) score increased from 34.74 (pre-pandemic) to 37.65 (during the pandemic)—indicating a seemingly positive shift in physician–patient relationships (B. Xu, 2022)—subsequent data from the following two years suggest that medical disputes have remained persistently high, and problems in the physician–patient relationship continue to warrant serious attention.

Challenges in the physician–patient relationship are evident not only temporally, but also spatially. In terms of regional distribution, the top five provinces with the highest number of medical malpractice litigation cases in 2022 were Shandong, Liaoning, Beijing, Henan, and Hunan, with Shandong ranking first. Notably, Hunan recorded 284 cases in 2022, surpassing Jiangsu to enter the top five. In contrast, Henan had the highest number of such cases in 2017 and 2018, while Shandong took the lead in 2019 and 2020, and Liaoning ranked first in 2021 (Yifahui, 2023). These statistics demonstrate that medical dispute cases are prevalent to varying degrees across all provinces, and that resolving physician–patient tensions remains an enormous challenge across regions. See Figure 2.2 for details.

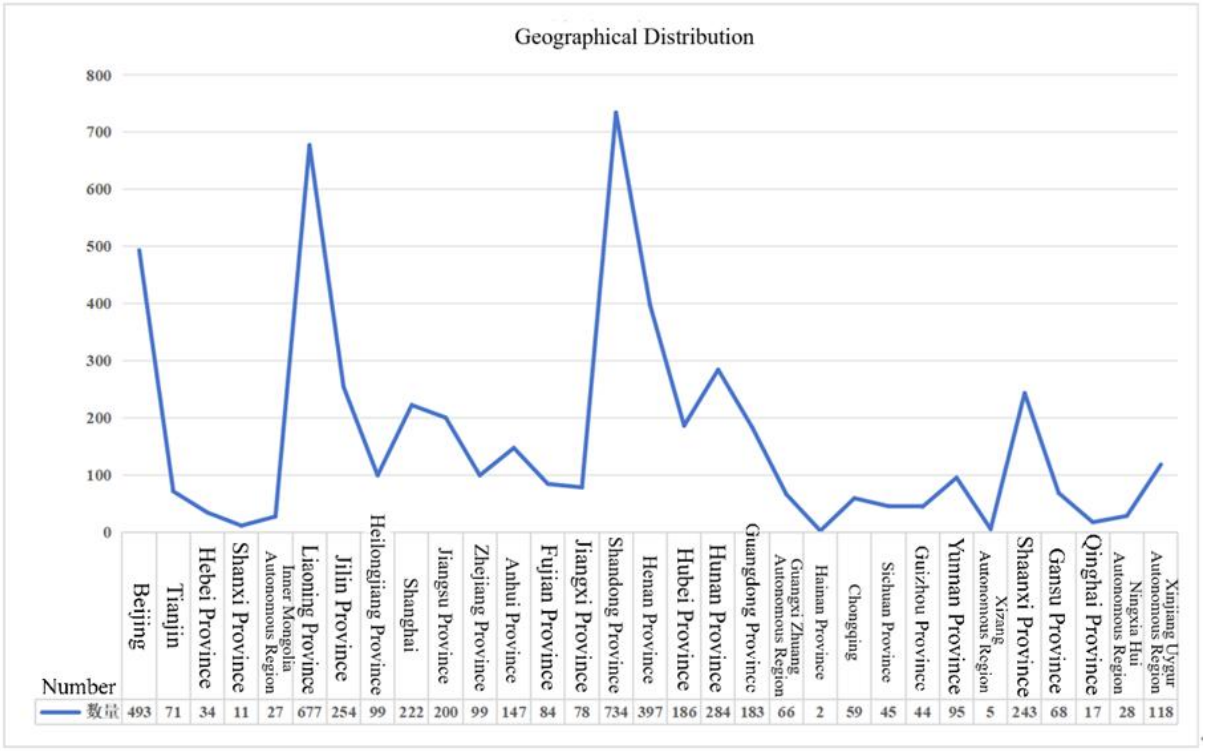

Figure 2.2 Geographical distribution of medical injury liability dispute cases nationwide in 2022

Source: Yifahui (2023)

2.3 Physician–patient trust

2.3.1 Definition

In The Contemporary Chinese Dictionary, the term "trust" is defined as “believing in someone to the extent that one dares to entrust them.” Within the Chinese linguistic and cultural context, trust is often conflated with related notions such as credit, integrity, confidence, affection, or respect. In contrast, Western academic traditions tend to conceptualize trust as a distinct construct, especially used to describe an individual’s psychological state and behavioral response when facing uncertainty in social interactions.

One of the most widely cited definitions comes from the American psychologist and behavioral scientist Deutsch (1958), who reconceptualized trust in a way that has since become foundational in trust research. He defined trust as “an individual’s non-rational choice behavior made in the face of an uncertain event in which the potential loss is perceived to outweigh the potential gain.” This definition has been considered classic and highlights several essential characteristics of trust:

a). Trust reflects an individual's expectation toward an event or outcome, which is ultimately revealed through behavioral choices;

b). Trust arises particularly under conditions of uncertainty, when the perceived potential loss outweighs the perceived potential gain—in such cases, individuals cannot rely purely on rational cost–benefit analysis and must instead rely on trust;

c). Trust is not purely rational; it is not the result of deliberate calculation, but rather a psychological and often emotional commitment under risk (Y. J. Qi et al., 2018).

From this perspective, trust serves as a critical psychological mechanism that guides decision-making under conditions of unpredictability and perceived vulnerability—a dynamic highly relevant to the physician–patient context, where information asymmetry and emotional stakes are often high.

2.3.2 Current status in China

A series of high-profile violent incidents in recent years have starkly exposed the fragile and deteriorating state of physician–patient trust in China. While these events have triggered widespread public concern, they have also, perhaps inevitably, led to growing distrust among physicians toward their patients. This phenomenon is not the result of isolated incidents but rather the cumulative consequence of a complex interplay of systemic and societal issues

(Tucker et al., 2016).

As early as 2011, a nationwide study on physician–patient relationships conducted by the Center for Social Research and Development at Peking University and the Health Statistics and Information Center of the Ministry of Health pointed out that "institutional arrangements have positioned physicians and patients as adversaries" (Deng & Bao, 2011). Indeed, structural deficiencies in China's healthcare system have contributed to numerous problems. One prominent issue is the unequal distribution of medical resources, forming an inverted pyramid where approximately 80% of high-quality medical resources are concentrated in urban tertiary hospitals, leaving primary care institutions severely under-resourced. This has led to overcrowding in major hospitals, long wait times, and high out-of-pocket costs—fueling public dissatisfaction and perceptions of inaccessibility and unaffordability.

Moreover, a subset of physicians, facing systemic pressures and income constraints, have turned to informal and unethical practices such as accepting "red envelopes" (cash gifts), taking kickbacks, or prescribing unnecessary treatments to obtain compensation through unofficial channels. Such behaviors further exacerbate patients' financial burdens and erode public trust in the medical profession.

As a result, institutional flaws have deeply undermined trust between physicians and patients. The erosion of trust leads to increased conflict, which in turn reinforces mutual distrust, trapping both parties in a vicious cycle that is difficult to break. The consequences of this cycle go beyond interpersonal friction; they pose serious threats to the stability, efficiency, and ethical integrity of the entire healthcare system (Y. Han et al., 2022).

In summary, physician–patient relationships in China have remained persistently tense in recent years, and the current state of physician–patient trust is far from optimistic. Although advancements in China's economy and technological capacity have contributed to significant improvements in medical equipment, treatment technologies, and overall healthcare quality, deep-rooted institutional issues have continued to undermine trust within the healthcare system. Violent attacks on medical personnel and frequent medical disputes have attracted widespread public attention and serve as indicators of a deteriorating relationship between physicians and patients.

On a systemic level, the uneven distribution of medical resources—with high-quality services largely concentrated in major cities and top-tier hospitals—has left patients in lower-tier regions struggling with difficulties in access and affordability. This disparity has intensified the adversarial nature of the physician–patient dynamic. At the same time, some healthcare professionals have engaged in improper practices, such as accepting informal

payments or kickbacks, in pursuit of additional compensation. These behaviors further exacerbate the crisis of trust from the patient's perspective (Tucker et al., 2016).

While there were some signs of temporary improvement in physician–patient relations during the COVID-19 pandemic—as reflected by a slight increase in trust scores—rebuilding long-term trust remains a formidable challenge. Importantly, the trust deficit is not only temporal but also geographically uneven. Certain provinces, particularly those with more developed economies or more concentrated healthcare resources, report disproportionately high numbers of medical disputes and legal cases.

Collectively, these severe incidents underscore the fragility of physician–patient trust in China. The erosion of trust further escalates conflict and ultimately undermines the quality and effectiveness of healthcare services. Addressing this crisis requires a multi-faceted approach: reforming institutional structures, optimizing the allocation of healthcare resources, enhancing physician–patient communication, and restoring public confidence in medical professionals. Only by breaking the cycle of mistrust can China achieve meaningful and sustainable improvements in physician–patient relationships (Du et al., 2020).

2.3.3 Antecedents

The factors influencing patient trust have long been a central focus in the study of physician–patient trust. These antecedents can generally be categorized into three major domains:

First, patient-related factors, including individual characteristics, psychological states, and medical satisfaction, play a significant role. Several studies have shown that socioeconomic status is negatively associated with patient trust (B. W. Zhu & Luo, 2017). Patients with excessively high expectations or attributional biases in the context of medical errors tend to exhibit reduced trust in healthcare. In contrast, patient satisfaction has been consistently identified as a key positive predictor of trust (S. X. Chi et al., 2020). Moreover, patients' expectations regarding respect, dignity, and trust can intensify tensions and conflicts in physician–patient interactions and between patients and other medical staff (Yan, 2018).

Second, provider-side factors also significantly affect trust. These include physicians' personal characteristics as well as the nature and classification of the medical institution. Ozawa and Sripad (2013) highlighted several physician traits that influence patient trust, such as honesty, confidence, responsibility, fairness, communication skills, professional competence, and respect for patient privacy. Variations in institutional type and hospital grade—reflected in differences in medical technologies, infrastructure, and risk

management—can lead to divergent processes and degrees of trust-building.

Third, broader socio-environmental factors—such as legal frameworks, policy structures, and media influence—also shape the development of trust. Barriers within medical dispute resolution mechanisms can hinder conflict resolution and may push patients toward non-institutionalized forms of rights protection. In addition, media bias and negative portrayals of healthcare incidents contribute to stereotypes of physician–patient antagonism, directly undermining trust in healthcare professionals (B. W. Zhu & Luo, 2017).

In recent years, the pathways through which physician–patient trust is constructed have shifted from rational evaluation to inference based on behavioral cues. A study by X. Liu et al. (2025) on patient consultation behavior on online health platforms found that patients often infer physicians' altruistic motives based on the type of services offered (e.g., free vs. paid services), which subsequently influences their trust levels and behavioral intentions. This finding highlights the importance of perceived pathways and inferential mechanisms in the formation of trust and supports the present study's focus on self-perception as a psychological basis for understanding physician–patient trust.

Their study further revealed that free services are more likely to signal trustworthiness, thereby increasing patients' willingness to consult. Such trust, strengthened by physician behavior, promotes proactive patient engagement. In other words, the service behavior displayed by physicians is not merely informational but also serves as an important cue through which patients infer trustworthiness (X. Liu et al., 2025). Once trust is established, it can enhance patients' willingness to cooperate, platform engagement, and adherence to health recommendations, thereby providing a cognitive foundation for improved health outcomes.

In a large-sample empirical study conducted in private hospitals in Jordan, Al-hilou and Suifan (2023) employed a structural model to validate the "service quality → trust → satisfaction" path. Their findings revealed that patient trust partially mediates the relationship between service quality and patient satisfaction. Specifically, service quality had a significant direct effect on patient satisfaction, and also significantly enhanced patient trust in healthcare providers. In turn, trust had a strong positive impact on satisfaction. Mediation analysis using the Sobel test further confirmed the significant mediating effect of trust in this pathway, supporting the idea that trust functions as a psychological bridge that transforms service experience into positive emotional evaluations. These results suggest that when patients perceive professional competence, empathy, and responsiveness during medical service interactions, they are more inclined to build trust toward physicians and hospitals. This trust, in turn, translates into higher satisfaction and greater compliance. The study provides

empirical support for the conceptualization of trust as a mediating psychological mechanism in the pathway from physician task performance to patient health outcomes—a core proposition in the current thesis.

Current research on trust in physicians remains relatively limited and primarily focuses on three domains: individual characteristics, professional factors, and sociocultural influences. Studies by J. J. Sun et al. (2018) and X. J. Wang and Wang (2016) found that younger physicians, those with lower professional ranks, and those with lower income levels tend to maintain higher levels of trust from patients. Additional factors such as the type of hospital, working hours, satisfaction with the work environment, and the frequency of conflicts or unpleasant interactions with patients or their families significantly influence the level of physician–patient trust (X. J. Wang & Wang, 2016). Beyond objective occupational conditions, physician burnout and low enthusiasm for their work also negatively impact the physician–patient relationship.

2.4 Task performance

Task performance refers to the behavioral responses individuals exhibit in order to achieve a defined level of performance (Stajkovic & Luthans, 2003), as well as the organization's forward-looking evaluation and expectation of the work outcomes that individuals or teams may achieve within a specific time frame, based on the enhancement of their capabilities and qualities (H. Wang, 2021). According to previous research, task performance generally encompasses three core components: (1) the product or outcome of the task, (2) the necessary behaviors required to perform the task, and (3) the information systems used to evaluate task execution (Bakker et al., 2008; Kluger & DeNisi, 1996; Wood, 1986). As the healthcare industry becomes increasingly standardized and data-driven, the scientific assessment and effective enhancement of physicians' work performance has emerged as a key concern in healthcare management.

Evaluating physician performance is a multidimensional and complex process, involving various elements such as clinical expertise, communication skills, team collaboration, and leadership abilities. Among these, task performance is particularly critical, as it directly reflects a physician's competence and efficiency in executing medical duties. Task performance not only influences patient treatment outcomes, but also plays a significant role in the optimal allocation of medical resources and the operational efficiency of healthcare institutions.

In recent years, numerous studies have explored the factors that affect physicians' task performance (J. Han, 2018; T. Y. Huang, 2017; She, 2019). These factors include individual professional competence, work environment, patient characteristics, and healthcare policy, among others. A deeper understanding of these influencing factors not only contributes to a more substantive grasp of healthcare service delivery, but also provides valuable insights for policymakers and administrators to develop targeted strategies and improvement measures—ultimately enhancing the quality and efficiency of medical services.

2.4.1 Definition

Task performance plays a pivotal role in the delivery of healthcare services, and physicians' task performance is a particularly critical factor that not only affects patient recovery and treatment outcomes but also influences physicians' own well-being and job satisfaction. This study delves into the multidimensional nature of task performance in the healthcare context and explores its implications for physicians, healthcare systems, and the quality of patient care.

Task performance in the medical profession can be broadly categorized into two components: direct medical activities and indirect support activities. Direct medical activities involve face-to-face interactions between physicians and patients and include core clinical services such as diagnosis, treatment planning, and surgical procedures. These activities represent the primary responsibilities of physicians and have a direct impact on the patient experience and the overall quality of healthcare delivery. In contrast, indirect support activities refer to tasks that, while not directly involving patient treatment, are essential for ensuring the efficiency and continuity of medical services (Boyce, 2011; El Boghdady & Ewalds-Kvist, 2021). These include coordination and communication with other healthcare team members, maintenance of medical documentation, and participation in academic or professional development events. Although these activities are not visible to patients, they play a crucial role in maintaining workflow, promoting team effectiveness, and supporting institutional performance.

In real-world clinical environments, achieving high task performance requires not only advanced clinical knowledge and technical skills, but also strong managerial and organizational abilities. Physicians must demonstrate proficiency in team collaboration, time management, and decision-making—especially under time pressure or in emergency situations (Johnson et al., 2020). Additionally, the ability to allocate resources efficiently and

optimize work processes is essential for enhancing performance. As such, improving physicians' task performance is of great importance for elevating service quality and boosting patient satisfaction (Keeton et al., 2020).

2.4.2 Classification

2.4.2.1 Performance evaluation based on work content

Physicians engage in a wide range of professional activities, including clinical diagnosis and treatment, surgical operations, and continuous medical education. Therefore, evaluating performance based on work content allows for a more comprehensive assessment of physicians' capabilities and achievements across various functional domains (Boyce, 2011; Johnson et al., 2020). Such evaluation plays a crucial role in physician appraisal and competency reviews.

(1) Clinical Performance

Clinical performance primarily assesses physicians' competencies in ward rounds, specialized diagnostic procedures, and treatment planning (X. N. Luo et al., 2004; McCance et al., 2012). This content-based evaluation reflects a physician's ability and work quality in core clinical tasks. In many institutions, performance outcomes are directly linked to qualification reviews and career advancement. As a result, attending physicians often focus their efforts on clinical excellence to attain favorable evaluations. Systematic clinical capability assessments not only provide administrators with valuable first-hand data but also facilitate the early identification and resolution of clinical challenges, thereby strengthening institutional oversight and enhancing management effectiveness.

(2) Surgical Technical Performance

Surgical performance is a key metric for evaluating a physician's technical proficiency and operative outcomes in surgical settings (Atesok et al., 2017). Indicators such as surgical success rates, procedural complexity, intraoperative roles, postoperative recovery, operation duration, and blood loss are commonly used to assess surgical expertise. Together, these metrics offer a multidimensional understanding of a surgeon's performance in operative care.

(3) Medical Knowledge Performance

Medical knowledge performance refers to a physician's mastery and application of medical knowledge (Shirkhodaie et al., 2023). It is typically evaluated through periodic knowledge assessments and clinical case analyses, which help gauge a physician's ability to integrate new medical advances into clinical practice. This form of assessment encourages

ongoing learning and ensures that physicians remain up-to-date in an ever-evolving medical landscape.

2.4.2.2 Performance evaluation based on work objectives

Physicians are tasked with a range of professional goals, such as improving treatment outcomes and enhancing patient satisfaction. Performance evaluation based on these work objectives allows for a direct assessment of physicians' effectiveness in achieving intended healthcare outcomes (Johnson et al., 2020).

(1) Treatment Performance

Treatment performance refers to the physician's ability to achieve positive patient outcomes during the treatment process. It is a key indicator of both clinical competence and service quality (Nash et al., 2005). This dimension is typically assessed through metrics such as treatment success rates, complication incidence, alignment with patients' and families' expectations, and hospital readmission rates. A comprehensive evaluation across these indicators enables a well-rounded assessment of a physician's expertise in clinical care and the quality of services delivered.

(2) Patient Satisfaction

Patient satisfaction is one of the most widely used indicators to evaluate healthcare service quality from the patient's perspective (Van Zuuren et al., 2021). It reflects patients' subjective evaluations based on their expectations and experiences related to health, illness, and quality of life. Satisfaction is typically measured through patient surveys, feedback forms, or complaint data, offering actionable insights for physicians to improve service quality and patient-centered care.

(3) Healthcare Quality Indicators

According to the Institute of Medicine (IOM), healthcare quality is defined as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" (Brenner et al., 2020; M. Li & Chen, 2012). The IOM emphasizes that "desired outcomes" include not only clinical results, but also patient satisfaction and well-being. Importantly, the IOM definition broadens the scope of healthcare quality from institutional services to preventive care and health promotion for both individuals and communities.

The concept of "current professional knowledge" highlights the importance of evidence-based practice while acknowledging that healthcare quality is dynamic and evolving (IOM, 2001). Inspired by the IOM's framework, many organizations have developed

healthcare quality indicators that are increasingly used as benchmarks for physician evaluation and performance management. Incorporating these indicators into physician appraisal systems allows for a more objective and structured evaluation of clinical performance, while also incentivizing continuous improvement in care quality and health outcomes.

2.4.2.3 Performance evaluation based on work environment

Physicians operate in complex and dynamic work environments that involve team collaboration, organizational structure, and leadership dynamics. Performance evaluation based on the work environment reflects a physician's ability to adapt to and perform effectively within specific contextual settings (Albertsen et al., 2010; Palvalin & Vuolle, 2016; Stroud et al., 2015).

(1) Teamwork Performance

Teamwork performance assesses a physician's role and effectiveness within collaborative clinical teams (Hoegl et al., 2003). It serves as an important indicator of the physician's interpersonal and coordination skills (Manzoor et al., 2011). By evaluating a physician's ability to cooperate with others and communicate with fellow team members, organizations can gain insight into the physician's contribution to team-based healthcare delivery (Schmutz et al., 2019; Sonoda et al., 2018).

(2) Leadership Performance

Leadership performance measures a physician's ability to assume leadership and managerial responsibilities. This includes evaluating competencies such as decision-making, delegation, and supervision of junior staff. Leadership performance reflects both the physician's current adaptability to leadership roles and their potential for future administrative or supervisory responsibilities (Geier, 2016; Nixon et al., 2012).

2.4.2.4 Performance evaluation based on work characteristics

Physicians work in diverse clinical contexts, such as emergency departments and outpatient clinics, each presenting unique operational demands. Performance evaluation based on job characteristics provides insight into a physician's capacity to adapt and perform under varying clinical conditions (Hernaus & Mikulić, 2014; Kahya, 2007; Park, 2017).

(1) Emergency Care Performance

Emergency care performance assesses a physician's effectiveness in fast-paced, high-pressure environments, where timely decisions are critical. Evaluation criteria include

the physician's speed and accuracy in diagnosis, emergency intervention skills, and ability to manage life-threatening situations. This form of performance evaluation not only reflects technical competency but also helps reduce potential physician–patient conflicts and treatment risks in emergency settings (Sørup et al., 2013; Zachariasse et al., 2019).

(2) Outpatient Care Performance

Outpatient care performance evaluates a physician's efficiency and quality in routine clinical encounters, which are often high-volume and time-constrained. Key assessment indicators include consultation time, diagnostic accuracy, and patient throughput, all of which reflect the physician's professional competence and service quality in the outpatient context (Hedeen et al., 2002; Jacobsen et al., 2011; Mendes et al., 2005).

2.4.3 Measurement

Within the broader fields of human resource management and organizational behavior, the measurement of task performance holds significant importance. In the healthcare industry in particular, accurately evaluating physicians' task performance is essential for ensuring medical quality and patient safety. At present, a variety of measurement methods are widely employed in this domain, including standardized scales, survey questionnaires, peer evaluations, field observations, and analyses based on objective outcome data (Borman et al., 2017; Boyce, 2011). Each method has its own advantages and limitations, and the combined use of multiple methods often yields a more comprehensive and reliable performance assessment.

Scales and questionnaires are among the most commonly used tools due to their structured and standardized formats, which facilitate efficient and consistent data collection. In the medical context, well-designed instruments can comprehensively evaluate physicians' performance across various dimensions, including clinical operations, patient care, and teamwork (Koopmans et al., 2014a; Koopmans et al., 2012; Ramos-Villagrasa et al., 2019). For instance, the Work Performance Scale developed by Motowidlo and Van Scotter has been adapted for use in healthcare to measure both direct clinical behaviors and indirect support activities (M. Li & Chen, 2012). In this study, task performance is assessed using the task performance subscale of the performance questionnaire developed by Wan (2018). This subscale includes four items, rated on a five-point Likert scale ranging from "strongly disagree" to "strongly agree," with higher scores indicating higher task performance levels.

Field observation provides a more direct and real-time assessment approach. Trained observers can capture nuanced behaviors that may not be reported in self-assessments or

surveys. Observing physicians in their natural clinical settings offers valuable insights into task execution. However, this method is resource-intensive and may be affected by the observer effect, in which individuals alter their behavior due to the awareness of being observed (Boxstaens et al., 2015; Corsby & Jones, 2020; McCall, 1984; Yanes et al., 2016). Additionally, objective performance indicators, such as surgical success rates and patient recovery times, serve as important measures of task performance. These data points are typically highly quantifiable and objective, but they may be influenced by external factors such as patient conditions, team dynamics, or institutional resources (Koopmans et al., 2014b; Koopmans et al., 2012; Shavelson et al., 1991; Yuan et al., 2012). Therefore, interpreting such metrics often requires a multifactorial analysis to ensure accuracy and fairness.

Padamata and Vangapandu (2025) conducted a structured Importance–Performance Analysis (IPA) based on responses from 350 inpatients across six private tertiary hospitals in Andhra Pradesh and Telangana, India. The study systematically evaluated the perceived importance and performance of ten core healthcare service attributes. The top three attributes rated most important by patients were: doctors' competencies and responsiveness, safe and effective patient care, and the range of services provided. Among them, "doctors" were assigned the highest importance rating, and also ranked first in performance perception (mean score: 7.96/10), yet were still categorized as a "key area for continuous improvement" in the IPA matrix.

The study emphasized that physicians are the most influential factor in shaping patient perceptions of healthcare quality and hospital choice. A physician's clinical expertise and responsiveness not only influence patients' medical decisions but are also closely associated with satisfaction and treatment adherence. These findings offer strong empirical support for theoretical assertions regarding the link between physician trust, performance, and patient health outcomes.

Through a two-dimensional IPA grid, the authors categorized the attributes into four quadrants and further identified "accessibility" as another high-importance, high-performance item, highlighting the need for healthcare services to guarantee both physical access and professional service quality. Notably, "affordability" ranked fifth in perceived importance but scored the lowest in performance, suggesting that high medical costs remain a significant pain point for patients and may indirectly undermine their overall evaluation of physician services.

In sum, the measurement of physician task performance is a complex yet critical process. In the healthcare context, this process requires not only rigorous and multidimensional evaluation tools, but also careful consideration of the unique nature of medical practice and

the multifaceted roles of physicians. By integrating scales, surveys, peer assessments, field observations, and objective clinical outcome data, task performance can be evaluated more comprehensively and accurately, thereby providing robust support for improving the overall quality of healthcare delivery.

2.4.4 Antecedents influencing healthcare workers' task performance

Research has consistently shown that various individual, organizational, and systemic factors significantly influence the task performance of healthcare professionals. For instance, Y. H. Yu et al. (2021), in their study on improving the performance of staff in primary healthcare institutions, found that a positive work experience and a highly satisfactory work environment enabled healthcare workers to internalize external incentives as intrinsic motivation, thereby enhancing their job performance.

Similarly, Buchelt et al. (2021) conducted a qualitative study in Polish hospitals, identifying key factors that attract and retain physicians, including salary and benefits, working conditions, career development opportunities, infrastructure, and work-related values. These findings align with Z. Q. Yang's (2010) theoretical synthesis, which identified four categories of organizational characteristics that contribute to performance enhancement: basic structural factors, operational features, organizational climate, and management mechanisms. As such, factors such as the work conditions provided by hospitals, their operational performance, institutional values, and the compensation and benefits offered to physicians are all critical in shaping physician task performance.

Currently, physicians' professional identity and motivation are deeply affected by the dual pressures of hospital environments and strained physician–patient relationships. Inadequate protection of physicians' and patients' rights by local governments in some regions has contributed to persistent dissatisfaction among front-line doctors and low perceived improvement in their work environments (Barbour & Lammers, 2015; Moller et al., 2019; Wyatt et al., 2021). This in turn contributes to patients' low satisfaction with healthcare quality. The growing incidence of medical disputes and violence against physicians has severely impacted doctors' psychological well-being, often leading to occupational burnout and increased turnover, which ultimately jeopardizes patient health outcomes (Bakker et al., 2000; Chênevert et al., 2021; Feng et al., 2022; Misra-Hebert et al., 2004).

Under high stress and ongoing tension in clinical environments, physician motivation and performance may decline sharply. Survey data show a worrying trend: the proportion of

physicians who do not wish their children to become doctors increased significantly between 2009 and 2011. Although this percentage decreased slightly by 2014, it still remained high at 64.48%, indicating enduring dissatisfaction and anxiety about the medical profession (Lin et al., 2014).

Physicians' task performance is influenced not only by individual factors such as competence, motivation, and attitudes, but also by a range of external work environment conditions. As the foundational setting in which physicians carry out their duties, the work environment encompasses physical infrastructure, institutional arrangements, interpersonal atmosphere, and emotional demands. Its overall quality has a direct impact on physicians' physical and psychological well-being, professional functioning, and the consistency of service delivery (Davis et al., 1995; Wenghofer et al., 2009).

In healthcare performance research, Pay-for-Performance (P4P) schemes are commonly employed to improve physicians' task performance. However, the effectiveness of such financial incentives is often moderated by physicians' subjective perceptions and professional value orientations. In a large-scale empirical study based on a U.S. physician network, Young, et al. (2012) examined the impact of P4P programs on diabetes care performance. Their findings revealed that although overall performance improved following the implementation of incentives, physicians' attitudes toward the incentive scheme—particularly whether it was perceived as threatening to autonomy or aligned with professional values—significantly moderated its effectiveness.

Specifically, when physicians perceived that the incentive program supported their professional goals, performance improvements were more pronounced. Conversely, if the program was viewed as undermining clinical autonomy or promoting misaligned performance metrics, resistance behaviors were observed, and performance gains diminished. The study advanced two key insights:

(1) The effectiveness of incentives is not solely determined by monetary value but depends on physicians' cognitive alignment with the program's goals and mechanisms;

(2) The utility of performance incentives must be interpreted in the context of physicians' professional value structures, motivational attributions, and subjective evaluations of task relevance.

In clinical settings, physicians' task performance is not only shaped by individual capabilities and resource conditions, but also constrained by team structures and relational dynamics. In a study of healthcare teams in Pakistan, Mansoor et al. (2025) developed a model examining the role of team empowerment, shared leadership, and task performance,

introducing relational conflict as a moderating variable. Their findings demonstrated that team empowerment has a significant positive effect on task performance, suggesting that when team members are granted greater decision-making participation and discretion, they exhibit higher proactivity and responsibility in clinical tasks, thereby enhancing performance outcomes. Moreover, shared leadership was found to mediate the relationship between empowerment and performance. In teams where responsibility and information are collectively shared, coordination and execution capacity are strengthened, serving as a critical organizational mechanism for sustaining high-performance delivery. These findings underscore the importance of fostering participatory governance and collaborative structures in medical teams to maximize performance potential.

In recent years, research on the antecedents of physician task performance has gradually expanded beyond the traditional focus on individual capabilities and resource availability, to encompass the interaction between organizational context and psychological mechanisms. Atatsi et al. (2025), drawing on data from 637 healthcare employees across several hospitals in Ghana, developed a chain mediation model starting from organizational leadership, mediated by psychological ownership and workplace innovation, to examine how internal organizational factors enhance employee performance. Using structural equation modeling (SEM), the study confirmed that organizational leadership had a significant direct effect on task performance, and also exerted indirect effects through the two mediators, both individually and as part of a serial mediation pathway.

Physician task performance is thus not only influenced by individual abilities and organizational resources, but also closely linked to management practices at the organizational level. In a related study, Shah et al. (2025) surveyed 329 healthcare professionals involved in public–private partnership (PPP) healthcare projects in Pakistan, and constructed an SEM model examining the relationship between Quality Management Practices (QMP), Intellectual Capital (IC), and Project Performance (PP). The results demonstrated that QMP had a significant positive impact on project performance, with intellectual capital serving as a key mediating factor. In this model, intellectual capital was conceptualized in three dimensions:

a). Human capital (e.g., employees' professional expertise and experience),

b). Structural capital (e.g., organizational systems, processes, and information assets), and

c). Relational capital (e.g., networks and relationships both internal and external to the organization).

All three dimensions were found to mechanistically support the link between QMP and performance outcomes. These findings highlight that effective quality management systems,

when supported by robust intellectual resources, can foster a performance-enhancing organizational ecosystem, particularly in healthcare environments characterized by cross-sector collaboration and complex service delivery demands.

2.5 Self-perception

In the context of contemporary healthcare systems, the evaluation of healthcare service quality has shifted beyond the traditional focus on physicians' clinical skills and knowledge, placing greater emphasis on the quality of physician–patient interactions and the comfort of the medical environment (Heritage & Maynard, 2006; X. Z. Wang, 2019). Two key indicators—physicians' job performance and patients' treatment experience—jointly shape the perceived quality of healthcare services (Bellio & Buccoliero, 2021; A. Turan & Bozaykut-Bük, 2016). Physician performance not only affects patient health outcomes and safety but also reflects the humanistic care dimension of the physician–patient relationship. Conversely, patient experience directly embodies how patients perceive and evaluate service attitudes, emotional support, and treatment effectiveness throughout the medical process (Davis et al., 1995).

Within this evaluative framework, self-perception emerges as a pivotal factor in shaping physician–patient interactions. Healthcare professionals' understanding of their professional identity and their self-assessment of service effectiveness and quality play a critical role in determining their behavioral responses and caregiving approaches. On the patient side, self-perceived interpretations of personal health status, expectations for treatment outcomes, and prior assumptions about service quality all influence their expectations and satisfaction with care delivery. Therefore, evaluations of both physician performance and patient treatment experience must account for the role of self-perception (Abidova et al., 2021; Duggirala et al., 2008).

By examining the interplay between physicians' and patients' self-perceptions, along with the factors influencing these perceptions, researchers and practitioners can gain a more comprehensive understanding of the multidimensional nature of healthcare service quality. On this basis, more effective strategies and interventions can be designed to optimize physician performance and enhance patient experiences, ultimately contributing to the overall improvement of healthcare quality.

2.5.1 Definition

In the field of medicine, self-perception is a multifaceted concept that encompasses an individual's view of themselves and their health. It is a subjective evaluation that plays a pivotal role in patient care, influencing not only how patients approach their health but also how healthcare providers administer treatment (Mendias et al., 2001). This study explores the definition of self-perception, its impact on patient care, and its relevance to healthcare professionals' self-awareness, particularly within the framework of evidence-based medicine (EBM).

Self-perception is defined as an individual's interpretation of themselves and their reality, constructed through cognitive processes and personal experience (Aguirre-Raya et al., 2016). More specifically, it refers to a coherent pattern of beliefs about how a person perceives themselves. This concept is not limited to the general population—it is especially critical for physicians, as their self-perceived knowledge and competence—particularly in disciplines such as EBM—serve as the foundation for effective learning and clinical decision-making (Romano et al., 2020).

The theoretical foundation of self-perception primarily stems from the work of psychologist Daryl Bem. According to Bem's Self-Perception Theory, when individuals are uncertain about their internal attitudes or feelings, they may observe their own behavior to infer these internal states (Mohebi & Bailey, 2020; N. Turan, 2018). This theory provides a useful framework for understanding how people deduce their attitudes, emotions, and beliefs from their own actions. It also helps explain why, in certain contexts, behavior may not align with pre-existing attitudes, offering new insights into the complex relationship between cognition and behavior.

2.5.2 The importance of self-perception in physicians' and patients' self-evaluation

Self-perception occupies a central role in physicians' self-evaluation frameworks. The Dunning–Kruger effect reveals that individuals with low competence in specific domains tend to overestimate their abilities, fail to recognize their own deficiencies, and are often unable to accurately assess others' competence (Y. J. Chen et al., 2013). In clinical practice, physicians' self-perception—particularly their subjective views of professional competence, clinical experience, and diagnostic judgment—directly influences how they evaluate their own medical performance and their motivation to improve.

A physician's self-perception is shaped by multiple factors, including but not limited to:

personal clinical experience, peer feedback, patient satisfaction, and ongoing professional training. Variability in these factors may lead to distortions in self-assessment. Therefore, developing a structured and standardized self-evaluation mechanism is critical to ensuring the accuracy and comprehensiveness of physicians' self-assessments.

Self-assessment plays a profound role in career development. Through systematic self-evaluation, physicians can clearly identify their strengths and weaknesses, enabling them to design targeted continuing education plans and professional growth strategies (Hu et al., 2024). When a physician recognizes a gap in diagnostic skills within a particular specialty, they may seek targeted training programs or consult with expert mentors. Moreover, a physician's decision-making process is often rendered more prudent and evidence-based through effective self-evaluation, ultimately contributing to improved clinical performance and patient outcomes.

Patients' perception of their own health status is a critical factor influencing their health outcomes and treatment results. The Health Belief Model (HBM), grounded in psychology, integrates motivational theory, cognitive theory, and expectancy-value theory, and has been widely applied in fields such as preventive medicine and health communication (Khodaveisi et al., 2021). Rooted in the principles of cognitive theory, the HBM emphasizes that subjective psychological processes—such as expectations, reasoning, and belief systems—play a dominant role in shaping behavior. The formation of health beliefs is thus essential for individuals to accept medical guidance, abandon harmful behaviors, and adopt health-promoting actions. In clinical practice, patients' self-perception influences when they seek medical attention, how they interact with healthcare providers, and the extent to which they accept treatment plans.

The construction of patient self-perception is shaped by various factors, including cultural background, educational level, previous healthcare experiences, and the presence of social support networks. These factors influence how patients understand and interpret health problems, how they describe symptoms, and how they process medical information—ultimately shaping their expectations regarding treatment outcomes (Keil, 2025; Tomasi, 2016).

For the individualization of treatment plans, it is essential for physicians to gain a deep understanding of patients' self-perceptions. This understanding can be achieved through effective communication, allowing physicians to adapt their communication strategies based on patients' psychological and cognitive frameworks. With such insights, physicians can tailor medical interactions to ensure that patients fully comprehend the rationale, process, and

expectations of the treatment plan, thereby enhancing patient engagement. Moreover, professional guidance from physicians can help patients align their self-perceptions with their actual health status, improving both treatment adherence and overall clinical effectiveness (Fernández Ortega et al., 2011; Van De Kerkhof, 2009).

2.5.3 The application of self-perception in physician evaluation

For healthcare professionals—particularly physicians—knowledge of self-perception plays a vital role in evidence-based medicine (EBM), which emphasizes the integration of the best available evidence into patient care decisions. A study by Aguirre-Raya et al. (2016) sought to examine the relationship between physicians' self-perceived relevance of EBM and their actual foundational knowledge of the discipline. The findings demonstrated that self-perception is closely linked to physicians' practical understanding and application of EBM in clinical settings.

A physician's self-evaluation is often constrained by the accuracy of their self-perception. When physicians possess an accurate sense of their capabilities, their self-assessments tend to be more valid and reliable. However, professional development can be hindered by biases in self-perception, whether in the form of underestimation or overestimation. Physicians who undervalue their competence may miss opportunities for advancement, while overconfident individuals may overlook areas for improvement. Thus, improving the accuracy of self-perception is essential not only for individual career progression but also for enhancing the overall quality of healthcare services (Kuhn et al., 2022).

Natanzon et al. (2010) further emphasized that self-perception is central to physicians' professional growth. Physicians with a high degree of self-awareness are more capable of constructively utilizing feedback from peers and patients, transforming it into a tool for self-improvement. These individuals tend to maintain an open attitude toward feedback, whether positive reinforcement or constructive criticism, and actively incorporate it into their practice. Importantly, a physician's response to external feedback is itself influenced by their level of self-perception. Those with strong self-awareness are more likely to view feedback as an opportunity for skill enhancement, whereas those with distorted self-perception may exhibit resistance, thereby limiting their potential for professional development.

Physicians' self-perception can be significantly influenced by variations in medical environments. Under conditions of increased work intensity and environmental pressure, physicians often face greater challenges in self-evaluation, which may lead to distortions in

self-perception (Aguirre-Raya et al., 2016). In high-stress clinical settings, the pursuit of short-term performance outcomes may cause physicians to neglect long-term professional development and limit the depth of self-reflection (Martínez et al., 2018).

Cultural background also plays a pivotal role in shaping physicians' self-perception. In certain cultures, self-confidence is strongly encouraged, which may lead to overestimations of one's abilities and achievements. Conversely, in cultures where humility is regarded as a virtue, physicians may be more prone to underestimating their competencies and contributions, potentially hindering professional confidence and assertiveness in clinical decision-making (Busari et al., 2008; Railey & Barnett, 2022; T. Sun et al., 2021).

In summary, physicians' self-perception is a multidimensional construct that encompasses their awareness of professional skills, efficacy, strengths, and limitations. Enhancing the capacity and accuracy of self-perception can facilitate professional growth, improve the quality of healthcare services, and increase job satisfaction. Achieving this goal requires ongoing self-reflection and learning on the part of physicians, as well as institutional support that fosters deeper understanding and application of self-perception in clinical practice. Healthcare organizations should establish structured feedback mechanisms and provide educational resources that help physicians develop a balanced and constructive view of their professional identity.

2.5.4 The application of self-perception in patient evaluation

With the emergence of patient-centered care models, understanding how patients perceive their healthcare experiences has become essential for healthcare professionals aiming to improve service quality and treatment outcomes. A more comprehensive and nuanced evaluation of healthcare services often stems from patients with a well-developed sense of self-perception, which enables them to accurately identify and articulate their needs and expectations. Furthermore, such patients tend to provide more specific and constructive feedback when dissatisfied, making their evaluations a valuable source of insight for identifying concrete service-related issues within healthcare institutions (Epstein & Street, 2011).

Patient self-perception also significantly influences how they interpret and evaluate treatment outcomes. Optimistic expectations regarding treatment are often associated with positive self-perception, whereas negative self-perception may lead to pessimistic interpretations of the same therapeutic results. Thus, self-perception not only shapes overall

patient evaluations of their medical experiences, but also directly affects their satisfaction with treatment outcomes (Goodwin & Olfson, 2002; Øien et al., 2009; Wand et al., 2014).

According to self-perception theory, individuals infer their attitudes and emotions by observing their own behavior and the surrounding context. In the healthcare setting, patients' self-cognition influences their satisfaction with and evaluation of care received. For instance, belief in one's ability to recover, self-esteem, and perceived social support have all been shown to significantly affect patient satisfaction with medical services (Reeves et al., 2013). Although patient satisfaction is widely recognized as a standard metric of healthcare quality, it is often undervalued in practice. Satisfaction encompasses multiple dimensions, including patients' perceptions of their illness, treatment process, and institution-specific service quality.

In light of the COVID-19 pandemic, the development of objective tools to assess patient satisfaction has been increasingly emphasized as a strategic means to enhance healthcare delivery (Hawrysz et al., 2021). These tools must take into account the role of patient self-perception in shaping responses, expectations, and evaluations.

Ultimately, both patients' and physicians' self-perceptions play a central role in assessing the healthcare experience. Healthcare institutions can enhance service quality and patient satisfaction by improving communication efficacy and supporting the development of accurate self-perception. To this end, institutions should establish training programs and feedback mechanisms to help both doctors and patients develop more realistic and constructive self-awareness, thereby jointly fostering a higher standard of care.

2.5.5 Research progress on self-perception in the field of healthcare

Empirical research underscores that adequate self-assessment is critical for physicians' self-regulation, which is why it has been integrated into numerous lifelong learning models and emphasized as a central element of medical education (Davis et al., 2006; Duffy & Holmboe, 2006). Similarly, patients' accurate self-perception of their health status has been found to significantly influence treatment outcomes, particularly in terms of adherence to medical advice and engagement in therapy (Fernandez-Lazaro et al., 2019; Striberger et al., 2023).

Over the past decade, studies exploring self-perception in healthcare evaluation have shown a notable upward trend, especially in the context of the rising prominence of patient-centered care philosophies (Donnelly et al., 2022; Hautz et al., 2019). This shift highlights growing recognition of the cognitive and emotional roles that patients and

healthcare providers play in shaping service outcomes.

Self-assessment has become a fundamental component of medical education, as it enables students to develop a realistic understanding of their knowledge and skills. Research indicates that medical students' self-assessments influence not only their academic performance, but also their preferences for self- and peer-evaluation mechanisms (Capan Melser et al., 2020). Participation in self-assessment encourages learners to take ownership of their progress and has been shown to enhance both short-term and long-term learning outcomes.

Despite the growing body of research on self-perception in healthcare evaluation, several limitations remain. One of the primary concerns is the lack of sample diversity; many studies focus on specific regions or population subgroups, limiting the generalizability of findings.

2.5.6 The relationship between doctor–patient trust and task performance

Doctor–patient trust, as a core element of clinical practice, has become a pivotal research topic in the field of medical sociology, particularly with regard to its multidimensional influence on health outcomes. Larson and Yao (2005) proposed the dual-dimensional model of trust, which categorizes trust into cognitive trust and affective trust. This theoretical framework provides a valuable analytical lens for examining how different types of trust exert differential effects on treatment outcomes. Cognitive trust refers to patients' rational evaluation of a physician's professional competence, while affective trust involves emotional bonding and a sense of psychological safety in the doctor–patient relationship. An imbalance between these two forms of trust may influence health outcomes through distinct psychological and behavioral mechanisms.

At the level of institutional trust, Wickramasinghe et al. (2004) developed a healthcare system trust model, emphasizing that patients' overall perceptions of the healthcare system significantly shape their care-seeking behavior. When systemic trust is deficient, even a strong interpersonal trust between doctor and patient may not be sufficient to ensure treatment adherence; patients may still withdraw from care due to concerns about systemic integrity. This finding is echoed by Lee and Lin (2011), whose communication practice theory suggests that institutional-level barriers can amplify micro-level trust fractures, thereby generating what they term a "trust attenuation effect."

In clinical practice, healthcare professionals inevitably engage in communication and interaction with patients. When medical staff receive positive psychological reinforcements—such as respect, trust, and support—from patients during the treatment

process, they tend to perceive the doctor–patient relationship as being of high quality. This mutual trust between doctor and patient strongly motivates medical staff to engage more proactively in service delivery, thereby enhancing their sense of accomplishment and professional value (Y. H. Xu, 2003).

According to the Conservation of Resources (COR) theory, when employees receive psychological resources such as being trusted and respected, these resources serve as motivators to effectively cope with work-related challenges and improve task performance (Q. Li & Li, 2021). Numerous international studies support this view, indicating that doctor–patient trust plays a critical role in shaping physicians' work behaviors and performance outcomes. As early as 2005, Boerner et al. found that strained doctor–patient relationships negatively affect physicians' work behaviors, significantly reducing their self-efficacy.

Self-efficacy is a vital component of an individual's psychological capital and has been shown to have a strong impact on work performance. The higher the level of self-efficacy perceived by medical staff, the more likely they are to deliver high performance. Therefore, self-efficacy may serve as a mediating mechanism between doctor–patient trust and physicians' task performance (Bai et al., 2021).

Kuşcu Karatepe et al. (2022) also demonstrated that healthcare professionals with higher self-efficacy experience fewer negative emotions related to their work, exhibit more positive work attitudes, and achieve higher task performance than those with lower self-efficacy. Individuals with low self-efficacy tend to lack confidence and focus more on potential negative outcomes, making it difficult for them to mobilize psychological resources in response to adverse events, which can result in work stagnation and decreased performance.

Moreover, perceived organizational support has been shown to significantly enhance job satisfaction among healthcare workers involved in doctor–patient conflicts. Y. H. Xu et al. (2003) found that perceived organizational support plays a negative moderating role in the relationship between perceived doctor–patient relationship quality and self-efficacy. Specifically, higher levels of organizational support weaken the negative impact of poor doctor–patient relationships on healthcare providers' self-efficacy. On one hand, organizational support can fulfill the emotional needs of healthcare professionals, helping them develop positive emotional responses in clinical practice and alleviate the stress induced by strained patient interactions.

On the other hand, Al-Hamdan and Bani Issa (2022) emphasized that when organizations offer robust workplace protection and employees feel that their efforts are recognized and valued, their confidence in managing job demands increases, thereby improving self-efficacy.

Similarly, Kim and Jang (2018) argued that perceived organizational support is positively correlated with self-efficacy, indicating that a supportive organizational environment helps individuals face job-related challenges with greater confidence—including conflicts with patients.

According to Conservation of Resources (COR) theory, psychological resources can be both accumulated and depleted. Therefore, when perceived organizational support is high, healthcare professionals are less likely to experience excessive resource depletion during doctor–patient disputes. This resource conservation facilitates the development of higher self-efficacy, which in turn enhances task performance (Al-Hamdan & Bani Issa, 2022).

Relational conflict has been shown to have a significant negative impact on team performance in healthcare settings. When healthcare professionals experience interpersonal tension, emotional confrontation, or mutual distrust, the team's communication efficiency, willingness to collaborate, and capacity for resource integration are substantially constrained. This, in turn, undermines their performance under high-pressure clinical tasks. Mansoor et al (2025)underscores the synergistic role of structural support and psychological coordination in enhancing healthcare team performance. More importantly, it suggests that physician task performance should not be examined solely from the perspective of individual capability or organizational configuration. Rather, it should be contextualized within the framework of doctor–patient interaction and interpersonal trust dynamics.

2.5.6.1 Variations in treatment behavior induced by differences in trust

Treatment adherence serves as a critical mediating variable between doctor–patient trust and health outcomes, and its mechanism has been extensively explored in academic research. A longitudinal study by Lee and Lin (2011) revealed that for every one standard deviation decrease in trust, medication adherence among chronic disease patients dropped by 23%, even after controlling for demographic covariates. Notably, this effect is asymmetric—the damaging impact of negative trust experiences on adherence significantly outweighs the promotive influence of positive trust (Hall et al., 2001).

At the level of doctor–patient interaction, the shared decision-making model proposed by Larson and Yao (2005) suggests that trust deficiency may lead to a phenomenon known as “information filtering.” Out of fear of being judged or misunderstood, patients may selectively withhold critical symptom information. This defensive communication pattern has been shown to correlate with a higher rate of misdiagnosis. Furthermore, a meta-analysis found that patients in low-trust conditions are more inclined to seek alternative or parallel

treatment options, a decision-making behavior that may delay timely and optimal care (Birkhäuer et al., 2017).

2.5.6.2 Mediating and moderating roles of psychological factors

Psychological stress has increasingly been recognized as a mediator between trust differentials and health outcomes. According to the stress model proposed by Kerse et al. (2004), persistent doctor–patient trust crises may induce chronic psychological stress, which in turn affects immune function through neuroendocrine mechanisms. This "trust-related stress" has been especially pronounced among oncology patients, manifesting in reduced treatment tolerance and shortened survival times (Lelorain et al., 2015).

Self-efficacy, as a key psychological regulatory variable, plays a dual role in trust relationships. Drawing on Bandura's (2004) Social Cognitive Theory, positive doctor–patient interactions are shown to enhance patients' disease management efficacy, which serves as a psychological resource buffer in chronic disease management. Conversely, Armstrong et al. (2007) found that when patients perceive a breach of trust by the medical provider, their self-efficacy plummets, resulting in a psychological state akin to learned helplessness. This condition has demonstrated a dose–response relationship with negative health outcomes.

2.5.6.3 Structural trust disparities and health inequity

Disparities in the distribution of medical resources have led to trust differentials that transcend individual factors, evolving into a structural issue of health equity. According to Van der Schee et al. (2006) and their medical ecology model, the establishment of doctor–patient trust in resource-constrained regions faces three key systemic challenges: reduced consultation time, lack of continuity in care, and limited treatment options. These structural deficiencies in trust-building exhibit an association with adverse health outcomes more than twice as strong as that of individual-level trust factors.

Moreover, cultural dimensions exert a significant heterogeneous influence on how trust is constructed in medical interactions. A cross-cultural study by Kagawa-Singer et al. (2010) found that patients in collectivist cultures tend to place greater emphasis on the institutional authority of the medical provider, whereas those in individualist cultures prioritize personalized care and empathy. These cultural cognition differences can result in over 40% variation in trust measurement scores under the same medical scenarios, directly affecting patients' willingness to participate in treatment decisions and adherence to care plans.

2.6 Patient health outcomes

2.6.1 Definition

In healthcare services research, patient health outcomes are generally defined as the actual effects or changes in a patient's health status resulting from medical interventions or services (Berkman et al., 2011; Birkhäuer et al., 2017; Donabedian, 1988). These outcomes encompass not only objective clinical indicators—such as symptom relief, improvement in physiological parameters, incidence of complications, and hospital readmission rates—but also subjective dimensions of perception, including quality of life, functional recovery, self-assessed health status, and overall satisfaction (Cinaroglu & Baser, 2018; Jee & Or, 1999; Rohrer et al., 2007).

Kane (2006) emphasized that health outcomes should be understood as a comprehensive reflection of whether a medical intervention has brought about meaningful improvements in a patient's life. These may be quantified using “hard” endpoints such as survival rates or disease stability, but equal importance should be placed on patient-reported improvements, such as pain reduction, enhanced sleep quality, and improved emotional well-being.

In recent years, the evaluation of patient health outcomes has become increasingly multidimensional. According to the World Health Organization, modern outcome assessment frameworks should incorporate physiological, psychological, and social functioning to more comprehensively reflect the overall effectiveness of healthcare services (Jenkinson, 2013). Accordingly, patient health outcomes are not only the ultimate target for assessing healthcare quality, but also serve as a critical variable in evaluating the effectiveness of doctor–patient interactions, service experiences, and clinical interventions (Parrish, 2010).

In this study, patient health outcomes are treated as a key dependent variable, used to systematically capture the actual benefits that patients derive from physician task performance and the level of trust in the doctor–patient relationship. This construct holds significant theoretical and practical relevance for healthcare quality assessment and service optimization.

2.6.2 Antecedents of patient health outcomes

According to a systematic meta-analysis by Kane (2006) covering 27 empirical studies, an increased registered nurse (RN)-to-patient ratio is generally associated with improved clinical outcomes, particularly in surgical and intensive care units where the effect is more pronounced.

In a comprehensive literature review, Clarke (2009) further emphasized that the causal link between nursing staff levels and patient safety has gained increasing empirical support. Beyond individual competence and organizational support, the configuration and efficiency of medical process systems have also been identified as critical mediating factors influencing physician performance.

Although some inconsistencies remain across empirical findings, Clarke (2009) attributed these discrepancies primarily to methodological limitations—such as variation in study design, insufficient statistical power, measurement errors in variables, or failure to control for confounding factors—rather than to the absence of a true relationship. The study emphasized a critical logical argument: "If nurse staffing affects the quality of nursing work, and nursing quality determines patient welfare, then nurse staffing should logically affect patient outcomes." This reasoning can be analogously extended to physicians, suggesting that if physician performance reflects their task execution capability, and such capability directly influences the quality of diagnosis and treatment, then physician performance should significantly impact patient health outcomes.

Moreover, Clarke (2009) pointed out that the positive effects of high nurse staffing levels are often intertwined with other organizational support variables—such as investment in education and training, safety protocols, and interdepartmental collaboration—indicating that the work environment may play a moderating or mediating role in the relationship between staff performance and health outcomes.

In exploring the mechanisms through which healthcare providers' task performance influences patient health outcomes, Blegen et al. (2013) conducted a comprehensive evaluation using quarterly data from over 11,000 hospital units across 54 university-affiliated hospitals. Their study assessed the effects of total nursing hours per patient day (TotHPD) and registered nurse (RN) skill mix on multiple nursing-sensitive health outcomes, while also comparing performance across safety-net and non-safety-net hospitals.

The results indicated that in general care units, TotHPD significantly reduced the rates of congestive heart failure (CHF) mortality, hospital-acquired infections, failure-to-rescue events, and prolonged length of stay, with p-values ranging from <0.01 to <0.10. Meanwhile, a higher RN skill mix was associated with consistently lower rates of infections and failure-to-rescue. In intensive care units, TotHPD was negatively correlated with infection rates and the incidence of pressure ulcers, while RN skill mix showed a significant protective effect against postoperative sepsis and failure-to-rescue.

Interestingly, although nurse staffing levels in safety-net hospitals were comparable to

those in non-safety-net institutions, patient outcomes were overall poorer in the former. Moreover, in safety-net settings, some staffing–outcome pathways differed in both direction and significance. For example, increased TotHPD was unexpectedly associated with higher CHF mortality, suggesting that baseline patient conditions and systemic disparities may moderate the strength and direction of performance-outcome effects. These findings underscore that high-level nurse staffing contributes to enhanced task performance by facilitating early monitoring, complication prevention, and postoperative support, thereby improving patient health outcomes.

In a separate large-scale review, Naylor et al. (2013) conducted a systematic comparison of 389 empirical studies published in 2004 and 2009, examining the associations between nursing interventions, staffing levels, work environments, and patient outcomes. The analysis revealed consistent positive correlations between nursing care and improvements in care quality, patient satisfaction, and health outcomes across non-experimental, quasi-experimental, and randomized controlled trials. Notably, nurse-led interventions demonstrated significant effectiveness in chronic disease management, health promotion, and inpatient rehabilitation. These interventions were also associated with reduced readmission rates, improved treatment adherence, and enhanced patient-reported health status.

Importantly, the study highlighted the pivotal role of nurses in interdisciplinary teams—especially in complex interventions and chronic care programs. Collaborative structures involving nurses, physicians, dietitians, and social workers were found to be more effective in achieving optimal patient outcomes.

In the empirical investigation of how healthcare providers' task performance influences patient health outcomes, Dube et al. (2016) offer robust quasi-experimental evidence. Utilizing comprehensive data from all hospital nurse union elections in California between 1996 and 2005, the authors matched these with patient discharge records and employed a difference-in-differences (DID) model to estimate the impact of successful unionization on 13 nurse-sensitive patient outcomes.

After controlling for hospital fixed effects, patient demographics, and hospital-specific time trends, the study found that in 12 out of the 13 outcomes examined, hospitals with successful union elections exhibited significantly better patient outcomes than those with failed union efforts. The most notable improvements were observed in reductions in metabolic derangement, pulmonary failure, and central nervous system complications (e.g., depression, delirium), with outcome improvements ranging from 15% to 60% relative to baseline averages. Further dynamic panel modeling revealed that these improvements were most

pronounced during the year of unionization and the subsequent one to two years. The results remained robust when comparing both hospitals that had failed union elections and those that had never attempted unionization.

This study underscores the role of unionization as an institutional mechanism that improves patient health outcomes by enhancing nurses' working conditions, job involvement, and task control. The proposed mechanisms include reduced staff turnover, greater job satisfaction, and improved nurse–physician communication quality.

2.7 Critical summary of existing literature

2.7.1 Limitations of current research on doctor–patient trust

Trust represents a fundamental aspect of the doctor–patient relationship, significantly influencing patient satisfaction, treatment adherence, and overall health outcomes. Despite its critical importance within this dynamic relationship, research on doctor–patient trust remains limited in several key areas. A careful review of the existing literature reveals notable shortcomings and underscores the need to address persistent research gaps, including the following:

(1) Narrow research scope. Current studies on doctor–patient trust have primarily focused on primary care, chronic disease management, and palliative care settings (Leff & Burton, 2001; Yedidia, 2007). While these fields are undoubtedly important, they do not encompass the full spectrum of medical specialties. Other areas, such as pain management and rehabilitation medicine—where issues of trust may significantly affect patient care and safety—remain underexplored and lack quantitative empirical studies.

(2) One-sided focus on patients' trust in providers. Existing research has predominantly examined patients' trust in healthcare providers, with limited attention to how providers trust their patients. This one-directional perspective fails to capture the inherently reciprocal nature of trust in clinical environments. Providers' trust in patients can influence clinical decision-making, communication effectiveness, and the overall quality of care. This overlooked dimension warrants further empirical investigation.

(3) Underexamined impact of information availability. The rapid expansion of health information on the internet and social media has significantly altered how patients acquire and engage with medical knowledge. This information surge not only reshapes patient interaction with medical data but also challenges the traditional trust dynamic between patients and

providers. Contemporary patients increasingly approach medical advice with skepticism and a heightened sense of autonomy (Fried et al., 2002). It is imperative to explore how this shift in information-seeking behavior impacts trust and to identify strategies by which healthcare providers can adapt to maintain and strengthen trust under these evolving conditions.

(4) Influence of cultural and demographic characteristics on trust.

Studies have demonstrated that patients' trust in physicians varies significantly across racial and ethnic groups (Chi, 2022). Although preliminary analyses have acknowledged these disparities, the underlying causes and potential remedies remain largely underexplored. Future research should focus on uncovering the root drivers of low trust among specific demographic groups and on designing tailored interventions to improve trust across diverse patient populations. Such efforts are essential for fostering more equitable and inclusive doctor–patient relationships.

(5) Underdeveloped interventions for building mutual trust.

While several strategies for fostering patient trust have been proposed—such as prioritizing honesty, transparency, and enhancing communication skills—empirical evaluations of their effectiveness remain limited. Assessing these interventions in real-world clinical settings is crucial for developing evidence-based medical practices. Future studies should aim to validate the efficacy of such interventions across a broader range of healthcare environments, ensuring both their practical applicability and sustained impact on trust-building processes.

2.7.2 Limitations of current research on physicians' task performance

The healthcare sector represents a continuously evolving and complex environment that requires ongoing adaptation and improvement to meet the needs of both patients and medical professionals. Research plays a critical role in identifying areas for improvement and formulating strategies to enhance task performance within medical settings. However, despite its importance in ensuring the quality of care and safeguarding the well-being of healthcare providers, substantial gaps remain in the current body of research.

Adaptive performance is particularly vital in healthcare, as it encompasses professionals' ability to cope with dynamic conditions, acquire new competencies, and adjust work strategies. While the significance of adaptive performance is widely recognized, it remains underexplored compared to other dimensions of job performance, such as task and contextual performance. A systematic review revealed that only 8% of studies have addressed adaptive

performance, highlighting the limited understanding of how healthcare professionals respond to new technologies, policy changes, and evolving patient care practices (Nandini et al., 2022).

Moreover, counterproductive work behaviors—such as absenteeism, harassment, and workplace bullying—can severely undermine performance outcomes. Research in this domain is sparse, with only a few studies acknowledging the existence and impact of such behaviors in healthcare settings (Khalid et al., 2020). Gaining deeper insight into these detrimental behaviors is crucial for maintaining a safe and efficient work environment in clinical practice.

The U.S. Centers for Disease Control and Prevention (CDC) has also identified critical research gaps related to the surveillance, measurement, and reporting of safety threats affecting both patients and healthcare personnel. There is an urgent need to develop improved methodologies for tracking work-related adverse events and assessing workplace safety risks (Shehab et al., 2024). In addition, the CDC emphasizes the importance of proactive strategies to prevent healthcare-associated infections and combat antimicrobial resistance—issues that are intricately linked to physicians' task performance and organizational quality assurance.

2.7.3 Limitations of current research on patient health outcomes

Although existing research on patient health outcomes has made notable progress, several limitations remain. Most current studies tend to focus on single-dimension indicators—such as survival rates or symptom relief—while overlooking the comprehensive evaluation of patients' overall health status (L. W. Zhang et al., 2023). A holistic assessment of health outcomes should encompass physical, psychological, and social adaptation dimensions. However, the integration of these facets is often lacking in the existing literature.

Furthermore, although numerous studies have examined the impact of physician–patient relationships on health outcomes, most have emphasized aspects such as treatment adherence and trust (Auerbach, 2009; Lee & Lin, 2010; Wand et al., 2014). In contrast, limited attention has been given to the underlying mechanisms of physician–patient interaction, including emotional support, subjective patient experience, and the quality of interpersonal communication. The role of communication patterns, emotional connection, and relational quality in shaping patient outcomes remains underexplored, suggesting a need for more nuanced and multidimensional investigations in future research.

2.8.1 The direct impact of physician–patient trust on health outcomes

In the context of medical interaction, physician–patient trust not only influences communication and cooperation during care delivery but is also widely recognized as a critical psychological mechanism affecting patient health outcomes. According to Social Exchange Theory (SET), social behavior is structured as a reciprocal exchange system; individuals are more likely to respond with positive behaviors when they perceive goodwill, respect, and sincerity from others, thereby contributing to long-term relationship stability (Blau, 1964). In medical relationships, when patients perceive physicians to be both competent and compassionate, they are more likely to express their needs openly, provide accurate medical information, and adhere closely to treatment recommendations (Hall et al., 2001). This heightened trust fosters better communication and treatment compliance, which in turn enhances continuity, effectiveness, and satisfaction with care—ultimately resulting in improved health outcomes.

Empirical studies have also validated this mechanism. For instance, Ozawa and Sripad (2013) conducted a systematic review and found that patient trust significantly enhances adherence to treatment plans and improves various health outcomes, including quality of life, self-management capacity, and symptom alleviation. Therefore, it can be inferred that a high level of physician–patient trust not only improves the quality of medical interactions but also positively shapes patient behaviors and cognitive responses, thereby directly influencing health outcomes.

Based on the above analysis, the following hypotheses are proposed:

H1: Patiente perceived trust is positively associated with their health outcomes.

H2: Doctor perceived trust is positively associated with patients' health outcomes.

2.8.2 The direct impact of physician–patient trust on task performance

Mutual distrust between physicians and patients can not only lead to a decline in patient experience, inflated healthcare costs, and increased financial burden for patients, but it may also negatively affect healthcare professionals' work performance and daily job conduct.

In summary, there is a close and complex relationship between physician–patient trust and physicians' task performance. According to Social Exchange Theory (SET), human interactions are based on a belief system of reciprocity: when individuals perceive goodwill, respect, and trust from others, they are more likely to reciprocate with positive behaviors in order to maintain and strengthen the relationship (Blau, 1964). In the medical context,

physicians are not only service providers but also recipients and respondents of social trust. When patients demonstrate a high level of trust—such as accepting clinical recommendations, actively complying with treatments, and minimizing defensive questioning—physicians tend to experience a sense of recognition and psychological support. This, in turn, may stimulate greater work motivation, a stronger sense of responsibility, and deeper professional engagement.

Previous studies have also validated the motivational effect of trust in organizational behavior. For example, Cropanzano and Mitchell (2005) emphasize that the core of social exchange relationships lies in the accumulation of long-term reciprocity and emotional obligations; such informal psychological contracts often surpass formal systems in motivating individuals to perform positively within their roles. Specifically for physicians, trust from patients can be considered a form of "socially driven motivational resource" that encourages stronger role fulfillment, higher service quality, and more consistent professional behavior even under pressure. Therefore, it is reasonable to infer that when physicians perceive higher levels of patient trust, their task performance is likely to improve—manifested as greater clinical dedication, enhanced service responsiveness, and improved treatment outcomes.

Based on the above analysis, the following hypotheses are proposed:

H3: Patiente perceived trust is positively associated with doctors' task performance.

H4: Doctor perceived trust is positively associated with their own task performance.

2.8.3 The mediating role of task performance

According to the Conservation of Resources Theory (Hobfoll, 1989, 2011), individuals tend to acquire, protect, and accumulate valuable resources in the workplace. For physicians—who operate in a cognitively and emotionally demanding profession—their task performance is not only shaped by the availability of such resources but also determines their capacity to consistently deliver high-quality medical care. High levels of task performance reflect physicians' effective coordination and optimal utilization of resources such as professional knowledge, energy, time, and interpersonal communication. This effective resource allocation enhances service continuity, diagnostic accuracy, communication efficiency, and treatment adherence, thereby significantly improving patients' health outcomes and treatment satisfaction (Halbesleben et al., 2014).

From a mediating mechanism perspective, physician–patient trust can be regarded as a form of "social resource" accessible to doctors. This resource has the potential to alleviate

professional burnout, reduce interpersonal conflict, and enhance self-efficacy, thereby translating into improved task performance. In turn, task performance serves as a direct pathway through which enhanced health outcomes are realized. Consequently, physician task performance may function as a crucial mediator in the trust–health outcome relationship.

Furthermore, Self-Perception Theory suggests that when physicians operate within well-supported procedural environments, their professional behaviors are more likely to receive positive reinforcement (Bem, 1972). This reinforces their perceptions of competence and professional value, which can stimulate the continuation of high-performance behaviors. Therefore, this study incorporates a mediation pathway linking trust and performance, in order to comprehensively uncover the mechanisms by which physician–patient trust influences health outcomes.

Based on the above theoretical rationale, this study proposes the following hypotheses:

H5: Doctors' task performance is positively associated with patients' health outcomes.

H6: Doctors' task performance mediates the relationship between patient perceived trust and their health outcomes.

H7: Physicians' task performance mediates the relationship between doctor perceived trust and patients' health outcomes.

The conceptual model of this study is shown in Figure 2.3.

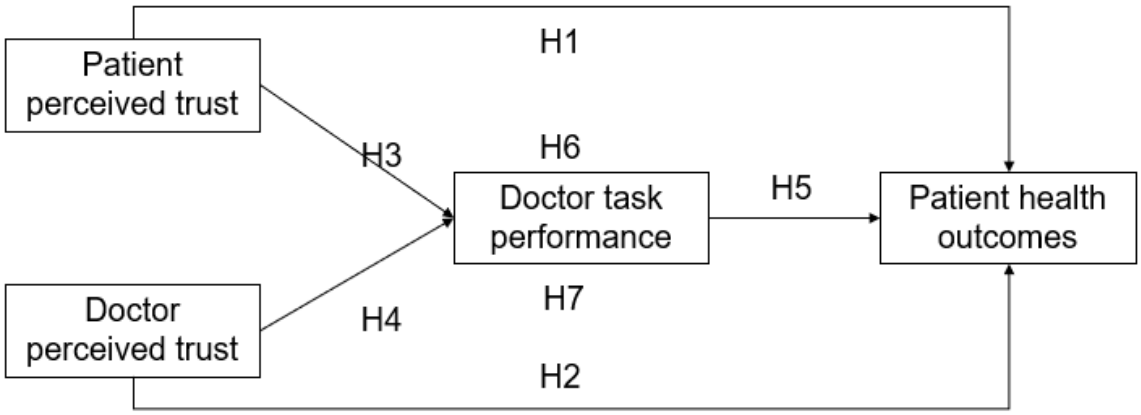

Figure 2.3 The conceptual model of this study

Chapter 3: Research Methods

This study adopts a mixed-methods approach, combining qualitative and quantitative methods to enhance the systematicity and robustness of the findings. The research process consists of three stages: first, a preliminary theoretical framework and key constructs were identified through semi-structured interviews; second, the framework was refined using a Delphi method involving multiple rounds of expert consultation; finally, a questionnaire survey was conducted and analyzed through Structural Equation Modeling (SEM) to empirically test the proposed pathways.

3.1 Semi-structured interviews

3.1.1 Research objectives

The objective of this phase is to explore the influencing factors of physicians' task performance and patient health outcomes. Given the complexity of physician–patient interactions, qualitative interviews were conducted as an exploratory phase to identify key determinants and provide a theoretical foundation for the subsequent Delphi process and empirical survey. In consideration of stakeholder diversity, this study includes four key stakeholder groups: clinical healthcare providers, hospital administrators, patient family members, and hospital leadership. Data were collected from multiple perspectives to strengthen the scientific validity and contextual relevance of the research framework.

3.1.2 Participant selection criteria

Inclusion criteria for healthcare professionals:

(1) Practicing physicians (including assistant physicians), nurses, or administrative personnel working in tertiary hospitals in Zhanjiang City;

(2) Have been engaged in relevant work for six months or more.

Exclusion criteria:

(1) Have been absent from work for one month or more for any reason;

(2) Are currently serving in temporary, rotating, or internship positions.

Inclusion criteria for patients:

(1) Aged 18 years or older;

(2) Free of psychiatric disorders, with the ability to think independently and communicate effectively;

(3) Reside in Zhanjiang City, regardless of household registration, with no plans to relocate in the next 12 months;

(4) Received outpatient or inpatient care at a tertiary hospital in Zhanjiang.

Inclusion criteria for patient family members:

(1) Aged 18 years or older;

(2) Free of psychiatric disorders, with the ability to think independently and communicate effectively;

(3) Residing in Zhanjiang City, regardless of household registration status, with no plans to relocate in the next 12 months.

Inclusion criteria for hospital leadership:

(1) Holding management positions in tertiary hospitals in Zhanjiang City;

(2) Have been engaged in hospital management work for six months or more.

Exclusion criteria (for both groups):

(1) Absent from work for one month or more for any reason;

(2) Temporarily assigned or on training programs (including secondments and academic leave).

3.1.3 Sample recruitment and interview arrangement

This study adopted a purposive sampling strategy to recruit information-rich and experientially representative individuals from tertiary hospitals in Zhanjiang City. The selection of these hospitals as interview sites was primarily based on the researcher's institutional affiliation, which facilitated sample access, ensured manageable research logistics, and helped maintain the quality of the interviews.

The planned sample included 6 to 8 patients and 6 to 8 family members, as well as 6 to 8 physicians, nurses, and administrative staff, respectively. In addition, 4 to 6 hospital leaders were targeted for recruitment. Sampling, interviewing, transcription, and coding were conducted in parallel. Data collection continued until thematic saturation was reached—that is, no new obstructive factors or conceptual categories emerged from the interviews.

3.1.4 Interview design and implementation process

3.1.4.1 Interview design

This study employed a semi-structured interview approach, using a pre-designed interview guide to collect qualitative data. The guide was developed based on the research objectives and findings from the literature review to ensure that the questions were both open-ended and focused, allowing respondents to fully articulate their perceptions and experiences related to physician–patient trust and physicians' task performance. Tailored interview protocols were developed for different respondent groups—including patients, family members, and medical professionals. The full version of the interview guide is provided in Appendix A.

3.1.4.2 Interview procedure

(1) Preparation Phase

Identifying Interviewees: Representative healthcare professionals were selected to ensure that the collected narratives accurately reflect the current state of physician–patient trust and its potential impact on physicians' task performance.

Establishing Rapport: Prior to each interview, the researcher communicated with the participant to explain the purpose, procedures, and confidentiality policy of the study. It was emphasized that all personal information would remain anonymous and that the recordings would be used solely for academic research. Audio recordings were conducted with the participants' informed consent.

Selecting the Interview Environment: Interviews were scheduled at a time and place convenient for the participant—either at their home or in an office setting outside of work hours—to ensure a comfortable, private, and distraction-free environment.

(2) Interview Execution

Opening and Warm-up: Each session began with casual conversation to ease the respondent into the discussion and reduce nervousness.

Clarifying the Topic: The purpose of the interview—to explore how physician–patient trust influences physicians' task performance—was clearly articulated, alongside the significance of the study.

Consistent Questioning Framework: A standardized questioning pattern was applied across all participants to enhance the comparability and validity of the responses.

Encouraging Detailed Descriptions:

Participants were asked to share their understanding of physician–patient trust and how

they perceive and experience it in daily practice.

They were encouraged to reflect on specific cases to describe how trust has affected their task execution, work efficiency, and service quality.

They were invited to provide concrete examples and stories where trust either facilitated or hindered their task performance.

Funneling Technique: The interview followed a funneling approach, beginning with broad questions and gradually narrowing to more specific themes. For example, participants were asked to describe how they handle patients with different levels of trust, their emotional responses, and how these experiences impact their task performance.

Closing and Appreciation: The interview concluded with expressions of gratitude for the participant's time and contributions. A brief summary of the interview was provided to ensure no misunderstandings or omissions.

(3) Post-Interview Work

Transcription and Coding: Audio recordings were transcribed verbatim, and the transcripts were organized and coded for analysis.

Data Analysis and Interpretation: The data were analyzed thematically to identify key factors and patterns in how physician–patient trust influences healthcare professionals' task performance.

Research Reporting: Findings from the interviews were compiled into a research report, providing empirical evidence and practical insights to improve physician–patient relationships and enhance healthcare providers' task performance.

3.1.4.3 Qualitative data analysis

The audio recordings from the qualitative interviews were transcribed verbatim. These transcripts were then reviewed and cleaned in conjunction with the interview notes to ensure accuracy and completeness. Subsequently, Nvivo 11.0 software was used to conduct manual coding of the transcripts. The coding process was guided by both the collected project data and the relevant literature, allowing for cross-validation and thematic analysis.

Themes were identified through iterative comparison and analysis. Redundant themes were removed, and similar themes were integrated to refine and enrich the emerging theoretical model. The entire data coding and analysis process was independently conducted by two researchers. In cases where discrepancies in thematic classification arose, the researchers engaged in discussions with the principal investigator until consensus was fully reached.

3.2 Delphi method

3.2.1 Objective

When examining the mechanisms through which physician–patient trust influences physician task performance and patient health outcomes, real-world conditions often introduce various confounding external factors. For instance, a physician's gender, age, professional title, and income level, as well as a patient's socioeconomic background, communication experiences, or visit frequency, may all exert effects on trust relationships and performance outcomes. Failure to control for these moderating factors could significantly weaken the explanatory power of the empirical analysis.

To enhance the scientific rigor, robustness, and predictive validity of the Structural Equation Modeling (SEM) framework used in this study, it is essential to identify and control for potential confounding variables. Based on prior qualitative interviews and literature review, this study adopts the Delphi expert consultation method to systematically screen and categorize potential influencing factors. This process aims to identify variables that may affect the latent constructs of the SEM model and to incorporate them as control variables, thus providing both theoretical and practical guidance for model specification.

3.2.2 Expert inclusion criteria

The Delphi method involves conducting structured, anonymous rounds of consultation with a panel of experts, wherein investigators design a questionnaire and solicit iterative feedback from the panel until a consensus is reached (Jorm, 2015). It is widely used in scale development to ensure the scientific validity and reliability of item selection.

According to established Delphi methodology, the optimal number of panel members typically ranges from 15 to 50 experts (Y. Wang et al., 2023). This study employs purposive sampling, selecting experts from across China based on the study's thematic focus. Panelists were drawn from academic and professional domains including medical education and administration, social medicine, exercise science, psychology, health policy, public administration, and health management.

Experts were required to meet the following inclusion criteria:

Holding at least an associate senior-level academic title;

Having more than 10 years of experience in a relevant field;

Demonstrating a high level of willingness and engagement to participate in the study.

3.2.3 Research design

A two-round Delphi consultation will be conducted using a double-blind approach with the invited panel of experts. The expert questionnaire consists of four main sections:

(1) An introduction to the study and an example of how to complete the questionnaire;

(2) Basic demographic and professional information of the expert;

(3) The main consultation section, which includes a list of potential confounding variables to be rated on importance, feasibility, and measurement suggestions;

(4) Evaluation of the basis of judgment and familiarity with the items, which will be used to calculate the expert authority coefficient (see Appendices B and C for details).

Prior to the first consultation round, the research team will organize a preliminary in-person expert workshop to review the list of variables identified from prior interviews and literature reviews. This workshop will clarify the definitions and groupings of each item. The consultation content will focus on three core research dimensions—physician trust in patients, patient trust in physicians, and physician task performance—along with a range of potential external influencing factors. Experts will be asked to rate each item and classify it as either a control variable or a mediating variable.

Based on the first-round feedback, the research team will analyze the following indicators: mean importance rating, proportion of full scores, coefficient of variation, and Content Validity Ratio (CVR). Items with high disagreement will be revised or removed. In the second-round consultation, the refined list will be redistributed to each expert, accompanied by summary feedback from the first round, and experts will be asked to re-evaluate any items still under discussion using a 5-point Likert scale (5 = strongly agree, 1 = strongly disagree).

Following two rounds of consultation, consensus among experts is expected to be achieved for all identified control variables. Data entry, cleaning, and statistical analysis of the consultation results will be performed using SAS and Microsoft Excel.

3.2.4 Delphi statistical analysis

The statistical analysis of the Delphi method includes the evaluation of expert engagement, authority, consensus, and the quantitative screening of items.

First, expert engagement is measured by the response rate of the returned questionnaires. A high return rate indicates strong interest and enthusiasm among experts for the research topic.

Second, the level of expert authority is quantified using the coefficient of authority (Cr),

which is calculated based on two components: the judgment coefficient (Ca) and the familiarity coefficient (Cs). See Formula 3.1 for details.

$$\mathbf{Cr = (Ca + Cs) / 2.} \quad (3.1)$$

The judgment coefficient (Ca) reflects the basis on which experts assess the importance of each item, including four components: theoretical analysis, professional experience, reference to domestic and international literature, and intuitive judgment. The familiarity coefficient (Cs) reflects how familiar the expert is with each item. A Cr $\geqslant$ 0.70 indicates a high level of expert authority and ensures the credibility of the consultation results (Linstone & Turoff, 1975).

Additionally, the Kendall's coefficient of concordance (W) and the coefficient of variation (CV) are used to assess the consensus level among experts. A W value closer to 1 signifies better agreement, while a CV < 0.20 indicates a high level of consensus on item acceptability (Linstone & Turoff, 1975). All statistical tests are considered significant at $P < 0.05$.

Finally, item screening is conducted using the threshold method. For each item, the full-score ratio, mean importance score, and CV are calculated. Thresholds are defined as follows: For the full-score ratio and importance score, the threshold is calculated as Mean – SD; items with values above the threshold are retained. For the CV, the threshold is Mean + SD; items with CV values below the threshold are retained. Items failing to meet all three thresholds are directly excluded. For items that meet only one criterion, decisions on whether to retain or remove them are made through expert judgment and full group discussion, adhering to scientific principles of item selection (C. Z. Wang & Si, 2011; H. N. Zhang et al., 2020).

This rigorous filtering process ensures the statistical robustness of the final control variables, laying a solid foundation for the construction of the structural equation model (SEM).

3.3 Questionnaire survey

To systematically examine the impact pathways through which patient and physician self-perceived trust influences physician task performance and patient health outcomes, this study developed a structured questionnaire. The questionnaire design was informed by prior literature review, expert consultations, and the results of the Delphi method. It serves as a quantitative measurement tool and provides empirical data to support the implementation of structural equation modeling (SEM).

3.3.1 Scale and questionnaire design

A structured questionnaire was used to collect data, consisting of five main sections: demographic information, physician task performance scale, SF-36 health outcome scale, physician trust in patients scale, and patient trust in physicians scale. All variables were measured using a five-point Likert scale, facilitating subsequent SEM path model estimation.

(1) Demographic Information

This section captures sociodemographic characteristics of both doctors and patients, including age, gender, education level, marital status, hospital level, and type of medical insurance. It also incorporates confounding variables identified via the Delphi method. These variables will be treated as control variables in the SEM model to correct for potential external biases.

(2) Physicians' Trust in Patients

Physicians' trust in patients is measured using the Chinese version of the physician-patient trust scale developed by Lv (2020). This scale is specifically designed to assess the degree of trust that healthcare professionals place in patients. It includes two dimensions: relational perception and defensive attitude, comprising a total of 8 items. Responses are rated from 1 ("strongly disagree") to 5 ("strongly agree"), with higher scores indicating greater physician trust in patients.

(3) Patient Trust in Physicians

This study adopts the Chinese version of the Wake Forest Physician Trust Scale (WFPTS-C-10), developed by B. H. Luo et al. (2022) based on the original WFPTS created by Hall et al., to assess patients' trust in physicians. The scale consists of 10 items rated on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Higher total scores indicate greater levels of patient trust in their physician.

(4) Physician Task Performance

Physician task performance is measured using the task performance subscale from the performance evaluation scale developed by H. Wang (2021), which is widely used and validated in Chinese healthcare settings. The scale includes four items, each rated on a five-point Likert scale from 1 ("strongly disagree") to 5 ("strongly agree"). Higher scores reflect better task performance by medical professionals.

(5) Patient Health Outcomes

Patient health outcomes are assessed using the Short Form-36 Health Survey (SF-36), also known as the Medical Outcomes Study Short Form-36 (Ware & Sherbourne, 1992). It is

one of the most widely used standardized instruments globally for measuring health-related quality of life. The SF-36 includes 36 items across nine domains, comprising eight health dimensions: Physical Functioning (PF), Role-Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-Emotional (RE), and Mental Health (MH). Additionally, it contains one dimension for Health Transition (HT), which compares current health status with that from one year prior. Although HT is not included in the subscale or total scores, it provides a useful measure of longitudinal health changes. Scoring is calculated by summing the weighted scores of relevant items within each domain and converting the raw scores to a standardized scale ranging from 0 to 100. Higher scores represent better perceived quality of life.

3.3.2 Inclusion and exclusion criteria of survey participants

This study recruited both healthcare professionals and their corresponding patients from five tertiary grade-A hospitals in Zhanjiang City. According to the classification of China's healthcare system, these hospitals include integrated traditional Chinese and Western medicine hospitals, general Western medicine hospitals, and maternal and child healthcare specialty hospitals, thus encompassing a wide range of disease types and patient groups. To enhance the representativeness and generalizability of the research findings, the questionnaire survey phase purposefully selected hospitals with distinct professional orientations to reflect broader medical practices and patient experiences. The inclusion and exclusion criteria for survey participants are as follows:

(1) Healthcare Professionals

Inclusion Criteria:

Individuals holding a valid practicing physician or assistant physician license;

Currently engaged in direct clinical work at a frontline medical post within the hospital;

Have continuously worked at the current institution for at least six months.

Exclusion Criteria:

Individuals on prolonged leave (e.g., due to illness, maternity leave, or off-site training) resulting in continuous absence from duty for $\geqslant$1 month;

Individuals who are seconded, undergoing departmental rotation, or still in internship.

(2) Patients

Inclusion Criteria:

Aged 18 years or older, or under 18 but accompanied by a legal guardian who provides

informed consent;

Possess basic language expression and reading comprehension abilities, and are able to independently complete the questionnaire or do so with guidance from a research assistant;

Have no severe mental disorders or cognitive impairments and are capable of making autonomous judgments and providing responses;

Are currently receiving outpatient or inpatient treatment at one of Zhanjiang's tertiary hospitals and consent to participate in the study.

Exclusion Criteria:

Patients in acute or critical condition, or with unstable clinical status that renders them unable to cooperate with questionnaire completion;

Individuals with significant speech or communication impairments (e.g., severe dysarthria or aphasia) that hinder effective data collection;

Patients or family members with unclear speech or impaired consciousness.

3.3.3 Sampling method of survey participants

This study employed a combination of stratified random sampling and systematic sampling to select healthcare professionals and patients. First, healthcare professionals were stratified according to their professional titles. Then, based on the proportion of staff within each stratum, the number of participants to be selected from each group was determined. Subsequently, an equal-probability random sampling method was used to draw the required number of clinical physicians from each stratum.

For the patient sample, systematic sampling was applied. Specifically, patients were selected according to the sequence of their outpatient visits or hospital admissions, with every third patient selected each day as a sample participant.

3.3.4 Pilot survey and formal survey

A pilot survey was conducted among approximately 25 participants, selected through convenience sampling from those who met the inclusion and exclusion criteria. Prior to participation, all respondents signed an electronic informed consent form. The questionnaire was expected to be completed within 20 minutes. Upon completion, participants were invited to provide feedback on the clarity and scientific design of the questionnaire, which informed subsequent revisions. They were also encouraged to suggest improvements in the wording and contextual relevance of the items to ensure alignment with the research context.

Before initiating the formal survey, the final version of the questionnaire was revised based on insights from the pilot phase. Three trained survey administrators were recruited to assist with data collection. During the survey, patients were asked to evaluate their trust in the physicians who treated them, while physicians were asked to rate their trust in their respective patients based on their clinical experience. Each sampled physician was matched with five patients from their consultations. All survey administrators received standardized training to ensure they understood the study objectives, could distribute the survey links in a timely and accurate manner, and were capable of guiding respondents through the completion process. The survey was administered using the Research Electronic Data Capture system (REDCap).

3.3.5 Data processing

This study utilized SPSS 24.0 and SmartPLS 4.1 to conduct comprehensive statistical analyses of the collected questionnaire data. The aim was to validate the hypothesized pathways between physician–patient trust, physician task performance, and patient health outcomes, as well as to assess the reliability and validity of the measurement instruments.

(1) Descriptive Statistics and Correlation Analysis

Firstly, SPSS 24.0 was used to perform descriptive statistics for all variables. Continuous variables were reported as mean ± standard deviation, while categorical variables were presented as frequency and percentage, providing a comprehensive overview of the sample characteristics. Pearson correlation coefficients were then calculated to assess the linear relationships among the core variables, including physician trust in patients, patient trust in physicians, task performance, and health outcomes. All correlation tests were two-tailed, with p-values < 0.05 considered statistically significant.

(2) Reliability Analysis

To ensure internal consistency of the scales, both Cronbach's alpha (α) and Composite Reliability (CR) were computed. Generally, $\alpha \geqslant 0.70$ indicates acceptable reliability, $\alpha \geqslant 0.80$ denotes good reliability, and $\alpha \geqslant 0.90$ suggests excellent internal consistency. A CR value $\geqslant 0.70$ is considered acceptable for construct reliability. If a construct fails to meet these thresholds, item-total statistics and corrected item loadings will be examined to determine whether revisions or item deletions are necessary (Hair Jr et al., 2021).

(3) Validity Assessment

Measurement validity was assessed from two perspectives:

Convergent Validity: Evaluated using Average Variance Extracted (AVE). An AVE $\geqslant$

0.50 indicates good convergent validity, meaning that the construct explains more than 50% of the variance in its observed indicators (Hair Jr et al., 2021).

Discriminant Validity: Assessed using the Fornell–Larcker criterion, which requires that the square root of a construct's AVE be greater than its correlation with any other construct. Additionally, cross-loading analysis was conducted to ensure that each item loads more strongly on its intended construct than on others (Hair Jr et al., 2021).

(4) Structural Model Estimation

After completing descriptive and measurement analyses, Partial Least Squares Structural Equation Modeling (PLS-SEM) was performed using SmartPLS 4.1 to test the hypothesized model involving five core latent variables: a). Patient-perceived physician–patient trust, b). Physician-perceived physician–patient trust, c). Physician task performance, d). Patient health outcomes, e). Control variables (identified through Delphi analysis and sociodemographic data), f). The model estimated standardized path coefficients (β), t-values, and significance levels (p-values), with statistical significance assessed via bootstrapping (5,000 resamples) (Hair Jr et al., 2021).

(5) Model Fit and Mediation Analysis

The model's goodness of fit was evaluated using the Standardized Root Mean Square Residual (SRMR), with values < 0.08 indicating acceptable model fit. The explanatory power of physician task performance and patient health outcomes was assessed using the coefficient of determination (R^2), while predictive relevance was examined using the Stone–Geisser Q^2 statistic, where $Q^2 > 0$ signifies predictive validity (Hair Jr et al., 2021).

To examine the mediation effects of physician task performance (e.g., "patient trust → task performance → health outcomes"), indirect effects and confidence intervals were calculated using the bootstrapping method (5,000 resamples). The statistical significance and stability of these indirect paths were evaluated to clarify the mediating role of task performance (Hayes, 2017).

(6) Control Variables

To enhance the robustness of the model and minimize confounding, control variables identified via the Delphi method and literature review (e.g., insurance type, marital status, hospital level) were incorporated into the structural model as covariates linking to key endogenous variables (i.e., task performance and health outcomes).

The impact of control variables was assessed through two approaches: (1) examining changes in R^2 before and after inclusion of control variables to evaluate improvement in

model explanatory power, and (2) analyzing the standardized coefficients (β) and significance levels of the control paths to determine the direction and strength of their direct effects on key outcome variables. This approach supports the identification of exogenous influences beyond physician–patient trust, thereby improving the scientific rigor and interpretive power of the SEM model (Hair Jr et al., 2021).

3.4 Chapter summary

This chapter systematically outlined the mixed-method research design and specific implementation procedures adopted in this study. At the design level, to enhance both the theoretical robustness and empirical applicability of the research framework, three complementary methodologies were integrated: semi-structured interviews, the Delphi method, and SEM. The interviews served to identify key constructs and provide grounded insights from real-world clinical contexts, offering practical guidance for the subsequent empirical investigation. The Delphi method was then employed to gather expert consensus, enabling the identification of potential control variables and strengthening the logical rigor of model specification. Finally, a structured questionnaire was administered, and PLS-SEM techniques were applied to empirically examine the pathways through which physician–patient trust affects physician task performance and patient health outcomes.

During data analysis, the study included descriptive statistics, reliability and validity assessments, and SEM path estimations. The overall model performance was evaluated using multiple fit and predictive indices. Moreover, control variable paths and mediation effects were incorporated to improve the model's explanatory power and enhance the depth of causal inference.

In summary, this chapter established a comprehensive research pathway from construct identification to empirical validation, thereby laying a solid foundation for the presentation and interpretation of findings in the subsequent chapter.

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Chapter 4: Research Findings

4.1 Qualitative interviews

4.1.1 Characteristics of the qualitative interview participants

A total of 20 medical staff were interviewed in this study, including 11 hospital administrators, four clinicians and four nurses. Among them, there were seven medical staff with senior professional titles, seven with intermediate titles, and six with junior and below titles. There was one medical staff with postgraduate degree or above, 16 medical staff with undergraduate degree and three with junior college degree. In addition, 14 of the medical staff had worked more than 10 years, four had worked five to ten years, and two had less than five years of working experience (see Table 4.1 for detail information). Considering that the current state of doctor-patient trust can also affect patient health outcomes, eight additional patients were interviewed for this study. Among them, four patients lived in urban areas, four in rural areas, four patients had a bachelor's degree, and four patients' annual income was more than 50,000 yuan (see Table 4.2 for detail information).

Table 4.1 Basic information of medical personnel in qualitative interview

No.	Gender	Age	Occupation	Job title	Education	Working years	Department
1	Female	50	Administrative personnel	Associate senior	Undergraduate	≥10	Office
2	Female	50	Administrative personnel	Associate senior	Undergraduate	≥10	Party office
3	Female	42	Administrative personnel	Junior	Undergraduate	≥10	Medical record statistics department
4	Male	35	Administrative personnel	Intermediate	Undergraduate	≥10	Personnel department
5	Female	34	Administrative personnel	Junior	Undergraduate	5-10	Party committee office
6	Female	32	Administrative personnel	Junior	Undergraduate	5-10	College office
7	Female	48	Administrative personnel	Junior	Undergraduate	≥10	Comprehensive archives room
8	Female	34	Administrative personnel	No title	Undergraduate	≥10	College office
9	Female	43	Administrative personnel	Intermediate	College	≥10	Outpatient department
10	Female	48	Administrative personnel	Associate senior	Undergraduate	≥10	Personnel department
11	Male	32	Administrative personnel	Intermediate	Undergraduate	5-10	Medical record statistics department
12	Female	50	Doctor	Senior	Undergraduate	1-5	Department of reproductive health
13	Male	41	Doctor	Associate senior	Undergraduate	≥10	Pediatric surgery department
14	Male	37	Doctor	Intermediate	Graduate	5-10	Department of reproductive health
15	Female	34	Doctor	Intermediate	Undergraduate	≥10	Breast surgery department
16	Female	29	Nurse	Junior	College	1-5	Pediatric breast surgery department
17	Female	37	Nurse	Intermediate	Undergraduate	≥10	TCM

								pediatrics
18	Female	51	Nurse	Associate senior	College	≥10	Disinfection supply room
19	Female	44	Nurse	Intermediate	Undergraduate	≥10	Postpartum rehabilitation department
20	Female	43	Nurse	Associate senior	Undergraduate	≥10	Child rehabilitation department

Table 4.2 Basic information of patients/patients' family in qualitative interview

No.	Gender	Age	Identity	Place of domicile	Nationality	Education	Occupation	Average income
1	Female	43	Patient	Rural	Han	High school and below	Agriculture, forestry, pastoral, fishing, water and support personnel	< 20,000
2	Female	25	Patient	Urban	Han	Undergraduate	Other	Unavailable
3	Female	45	Patient	Urban	Han	Undergraduate	Other	51,000 -100,000
4	Female	31	Patient	Rural	Han	Technical secondary school	Other	20,000-50,000
5	Female	32	Patient	Rural	Han	Undergraduate	Other	51,000 -100,000
6	Female	29	Patient	Rural	Han	High school and below	Other	Unavailable
7	Female	52	Patient	Urban	Han	Undergraduate	Other	51,000 -100,000
8	Female	38	Patient	Urban	Han	Undergraduate	Other	51,000 -100,000

4.1.2 Qualitative interview themes

(1) Status quo of doctor-patient trust

Firstly, at present, the doctor-patient relationship is generally harmonious. However, due to various factors such as the healthcare environment, patient demands, and educational backgrounds, there are still some frictions and challenges within the relationship. Trust and communication between doctors and patients, the professional competence of doctors, and improvements in the healthcare environment are all key factors influencing the doctor-patient relationship.

"The doctor-patient relationship is harmonious on the whole, but occasionally it is not harmonious." (A1)

"The doctor-patient relationship is average. The main reason is that our medical environment is antiquated. Moreover, in the modern society, patients have put forward more demands on doctors. What also matters is the level of education and personal cultivation of patients." (B2)

"The relationship between doctors and patients is good. Patients will turn to their familiar doctors, indicating that they receive effective treatment and good attitude." (C1)

Secondly, at present, the doctor-patient trust in China shows a complicated situation. On the one hand, many doctors are committed to providing high-level medical services, strive to build a trust-based relationship with patients, and pay attention to the rights and needs of patients. They earn their patients' trust by maintaining open communication, providing clear recommendations, and adopting an attitude of mutual respect. On the other hand, however, issues such as an increase in doctor-patient disputes, excessive work pressure on doctors that may lead to a decline in service quality, and patients' high expectations of medical outcomes have negatively influenced the trust between doctors and patients. These factors may lead doctors to hold a skeptical or distrustful attitude toward patients, which in turn affects communication and cooperation between the two. Overall, the current situation of doctor-patient trust in China presents both challenges and opportunities. Building a strong relationship of trust requires the joint efforts of both doctors and patients to promote better doctor-patient interaction and medical experience.

"Doctors generally trust their patients, but it's normal to be defensive." (A2)

"At present, doctors in our hospital still trust patients. Most of the time, our doctors will take the initiative to solve problems for patients, such as doctors in the pediatric health department. For some patients from poor families, sometimes they will lend a helping hand

and donate living materials, which is the concrete embodiment of a good relationship between doctors and patients." (E1)

"Doctors trust patients more, which depends on the premise that patients trust doctors enough." (F1)

Thirdly, in contemporary China, patients' trust in doctors presents a diverse phenomenon. On the one hand, there are still patients who highly trust doctors, respect their professional opinions, and are willing to follow treatment recommendations. These patients believe that their doctors can provide effective treatment and actively seek medical care and support from doctors. On the other hand, there are also patients with low trust in doctors, which may be caused by frequent medical disputes, problems in doctors' service attitude or inconsistencies in medical treatment. The proliferation of Internet information has also led some patients to be skeptical of doctors' advice and prefer to rely on online information for self-diagnosis and treatment. In general, the doctor-patient relationship in China is facing challenges, and patients' trust in doctors has declined. To build a healthy doctor-patient relationship, doctors and patients need to enhance communication and understanding and the transparency and interactivity of medical services need to be improved to enhance patients' trust in doctors.

"Hospital patients still have a lot of trust in doctors. Some time ago, a patient was originally in another hospital, and has not been cured. After hearing that our hospital experts are more professional, he came to our hospital. Under the careful examination and careful explanation of our doctors, he gradually established a sense of trust, and his condition is well controlled." (F2)

"There are many reasons why patients trust doctors, including the doctor's professional knowledge and experience, authority, communication and trust building skills, professional ethics, and medical equipment and environment. In the case of my patients, many of them come directly to me after years of treatment in other hospitals and repeated miscarriages or infertility." (G1)

"Patients trust doctors more because our hospital is a century-old hospital with good brand effect, professional doctors and nurses with good service attitude." (C3)

(2) Status quo of task performance

To solve a series of problems caused by doctor-patient conflict, this study will start from the root causes of doctor-patient mistrust in China, and adopt relevant theories such as management science and psychological behavior, combined with qualitative interviews and empirical research. It focuses on answering questions such as "How to build doctor-patient trust?", "What factors affect the task performance of medical staff?" and "What's the impact

of doctor-patient trust on hospital task performance?", to make up for the shortcomings of the current insufficient research on factors affecting doctor-patient trust and task performance.

Firstly, from the perspective of the patient treatment effect, the hospital has a good performance in the treatment success rate and recovery rate. Many patients can regain the expected health after receiving treatment, and their satisfaction is generally high. This shows that hospitals have certain advantages in medical technology and treatment programs.

"The results of patients' treatment are good, reaching their expectations, and patients' satisfaction is high. Doctors patiently explained the condition to patients during diagnosis and treatment, and the treatment plan made the patient recover well." (E2)

Secondly, from the perspective of medical service quality, the hospital enjoys a high evaluation. Medical staff can communicate with patients patiently in diagnosis and treatment, explaining the condition and treatment plan, which enhances the trust and satisfaction of patients.

"The medical service quality is one of the core indicators to evaluate hospital performance. Good medical quality means that a hospital can provide correct, safe and effective medical services. Indicators of medical quality can include the success rate of surgery, complication rate and medical error rate. Hospitals should establish a scientific medical quality management system and ensure medical quality meets standards through standardized procedures and clinical guidelines." (H2)

"Based on my work experience, I believe that the task performance of a hospital can indeed be seen as the performance of a team. A team in a hospital includes multiple roles such as doctors, nurses, and administrative staff, who work together to provide quality medical services to patients. Task performance refers to the performance and achievements of a team in fulfilling its core tasks and responsibilities. Understanding the task performance of a hospital needs to start from many aspects, including clarifying team tasks and responsibilities, improving individual skills and abilities, strengthening team collaboration and communication, focusing on patient needs and satisfaction, and continuous improvement and optimization. Through these efforts, hospital teams can continuously improve their task performance and provide better medical services to patients." (E3)

Thirdly, from the perspective of hospital management efficiency, hospital management tends to be standardized, which can timely pay salaries and allocate resources to ensure the normal operation of various departments. However, the cooperation between some departments still needs to be strengthened, which affects the overall work efficiency.

"I work in the personnel department. The monthly salary payment is completed in the specified time, and the accuracy is checked with the finance department to ensure that the payment can be made to the staff in time. The recruitment and training of talents, the planning of talents according to department application, the construction and recruitment of the hospital talent echelon, the timely replenishment of the urgently needed talents, and the guarantee of the normal operation of the department are all performance and results of the work." (G2)

(3) Factors affecting task performance and doctor-patient trust

In this study, the Consolidated Framework for Implementation Research (CFIR) was used to explore the influence of multiple factors on task performance and doctor-patient trust. For its comprehensiveness and multi-dimensionality, the CFIR framework provides a powerful tool for evaluating the effectiveness of health interventions and deepens our understanding of the complexity of implementation contexts. The framework considers not only the intervention itself, but also the organizational, external environment and individual characteristics, providing a systematic approach to analyze and interpret the complex implementation process.

1) Factors influencing task performance (based on CFIR)

a) Intervention characteristics

In terms of intervention characteristics, the study found that the clarity and adaptability of task design played a key role in improving the work performance of medical staff. "The administrative management level of hospitals directly impacts the efficiency and quality of medical services. When administrative management is well-executed, medical processes can flow more smoothly, improving diagnosis and treatment speed as well as patient satisfaction, thereby enhancing patients' trust in doctors. At the same time, efficient administrative management provides healthcare staff with a better working environment, which contributes to improved performance. The smooth communication between doctors, patients, and administrative departments is directly related to the success of the diagnosis and treatment process."(H2) Clear task design helps medical staff to better understand responsibilities and expectations, reduce uncertainty and hesitation in medical process, and improve work efficiency. Among them, the clear and well-arranged medical procedures allow the medical staff to focus more on the clinical decision, rather than wasting time on the method of performing the task. At the same time, adaptability is equally important. Flexible task design enables medical staff to adjust strategies according to the actual situation, effectively respond to emergencies or meet the special needs of patients. Moreover, the combination of task

design with the professional skills and experience of medical staff is another important factor to improve task performance. Designing tasks that match the background and abilities of medical staff significantly improves job satisfaction and career engagement. This interactive relationship not only enhances the confidence of the medical staff, but also promotes teamwork and improves overall work efficiency.

b) External environment for implementation

Research has shown that patients' needs and values have a significant impact on task performance. If medical services cater to patients' expectations and values, patient satisfaction and service evaluation will increase, which will indirectly promote the efficiency and quality of medical tasks.

> *"Patient satisfaction is one of the key indicators for assessing hospital performance. A high-performing hospital should be able to meet patients' medical needs and provide a positive healthcare experience. Patient satisfaction can be evaluated from various aspects, including the quality of medical services, the attitude of healthcare staff, and the convenience of the treatment process. High patient satisfaction not only increases patients' trust but also enhances the hospital's reputation, attracting more patients to seek treatment." (O1),*

> *"Hospitals should focus on patient treatment outcomes, including indicators such as cure rates and recovery rates. If a hospital demonstrates a high treatment success rate, leading to high patient satisfaction, it can be considered as having achieved good performance in its therapeutic objectives." (P1).*

There are several reasons for this phenomenon. How well patients' expectations of medical care fit with the actual service directly influences their experience. Understanding and meeting patients' concerns and expectations will promote patients' sense of being respected and valued, thus building a good doctor-patient trust relationship. This trust is the cornerstone of healthcare collaboration and encourages more active patient participation in health management and improved outcomes. Besides, external environmental factors such as policies and regulations, community support, and technical facilities have a significant impact on the delivery of medical services. Among them, a perfect medical information system can optimize the allocation of resources and improve the efficiency of medical staff in obtaining information to more accurately meet patients' needs. At the same time, public health policies and financial support can build an environment conducive to improving task performance. Different cultural backgrounds may lead to differences in patients' perceptions of health and expectations of medical services, and understanding these differences will help medical staff

develop more targeted intervention strategies to improve patient satisfaction and task performance.

c) Internal environment for implementation

In the internal environment for implementation, factors such as organizational structure, culture and norms have a critical impact on task performance.

> *"The performance of hospitals in areas such as patient consultation processes, protection of patient rights and privacy, medical professionals' ethics and codes of conduct, as well as quality control, all impact both doctor-patient trust and the performance of medical staff. Firstly, the smoothness and rationality of the consultation process are directly related to the patient's healthcare experience and the level of trust in the doctor. Simplified and well-defined consultation procedures help patients receive treatment more quickly, reducing wait times and inconvenience, thereby increasing patient trust in their healthcare providers. Secondly, the protection of patient rights and privacy forms the foundation of trust between patients and doctors. If hospitals fully respect patients' rights to informed consent, autonomy, and privacy, and take necessary measures to protect their personal information and medical records, patients are more likely to trust their doctors and establish a positive doctor-patient relationship." (Q1)*

Reasonable organizational structure of medical institutions directly affects resource allocation efficiency and promotes cooperation among medical staff. In an organization with a clear division of labor and hierarchy, medical staff can quickly get the support they need and receive timely help when needed, thus improving their work efficiency. Among them, institutions with interdisciplinary teamwork are better able to handle complex cases, realize the integration of expertise, and ultimately improve the quality of medical services. In addition, organizational culture plays a key role in shaping employees' behaviors and attitudes. An open and inclusive cultural atmosphere can motivate medical staff to give their opinions, promoting innovation and development. A culture that emphasizes team spirit and shared responsibility can also enhance staff cohesion and make medical staff more united in the face of challenges, thus improving the efficiency and effectiveness of task implementation. Clear norms and standards are essential for medical staff. Clear operating procedures and clinical pathways can provide clear guidance to medical staff and reduce errors and omissions caused by asymmetric information. When dealing with complex or high-risk medical procedures, strict adherence to norms is especially important to reduce the rate of medical errors and ensure patient safety.

d) Individual characteristics

From the perspective of individual characteristics, the internal factors such as medical staff's knowledge and skills, personal identity and motivation have a significant impact on task performance.

"The proficient mastery of professional knowledge and skills by healthcare professionals fosters patient trust, thereby enhancing our task performance." (M1)

Firstly, professional knowledge and skills are the cornerstones for medical workers to perform tasks, including clinical skills, communication skills and problem-solving abilities. Medical staff with rich knowledge and practical experience can deal with clinical challenges more confidently and make high-quality decisions. Continuous vocational training and learning opportunities are also key to keeping their skills up to date, helping to improve the overall quality and adaptability of medical staff. Secondly, personal identity and motivation are key to promoting the potential of medical staff. When medical staff have a deep understanding of the meaning and value of their work, medical staff will show higher engagement and job satisfaction. Self-efficacy, the belief in one's own abilities, also directly affects medical workers' daily performance. Incentives, such as career advancement, reward systems and recognition mechanisms, can effectively boost the motivation of medical staff and further promote their task performance.

e) Process

Communication, coordination, supervision and feedback mechanisms play an important role in performing tasks. Good communication should not be limited to among medical workers, but also include interaction with patients and their families. Effective communication ensures that all parties involved have a consistent understanding of task objectives and procedures, reducing misunderstandings and mistakes while improving work efficiency.

"My understanding of 'hospital task performance' does not refer to financial performance, but rather to the assessment of the completion of work tasks. Through the evaluation and judgment of employee and departmental performance, hospitals facilitate effective communication between management and staff, enhance employees' sense of crisis, mission, and responsibility, and thereby stimulate the enthusiasm and creativity of the workforce." (N1)

"The patient's level of education, language expression, and communication skills may influence the trust that doctors place in their patients." (T1)

The use of modern technologies such as electronic health records can significantly improve information sharing and ensure that all relevant parties are kept up-to-date on

patients' condition and treatment plans in real time. Coordination mechanisms involve cooperation between different functional departments. In a complex medical environment, medical staff with different professional backgrounds need to work closely together to design and revise treatment plans. Enhanced cross-departmental coordination can optimize resource allocation and improve service quality. Monitoring and feedback mechanisms are key to ensuring the quality of completing tasks. By establishing a regular evaluation and feedback mechanism, managers can identify and adjust problems in a timely manner and ensure that tasks are progressing towards their goals. Effective feedback not only helps medical staff to recognize their strengths and weaknesses, but also helps to continuously improve work processes and enhance task performance.

2) Influencing factors of doctor-patient trust (based on CFIR)

a) Intervention characteristics

Information transparency and communication methods are key elements in the construction of doctor-patient trust.

"If doctors are unable to communicate effectively with patients, it becomes difficult for patients to understand their condition and treatment plan, which may lead to conflicts and a lack of trust in the doctor-patient relationship." (B2)

Studies have shown that improving information transparency can significantly enhance patients' trust in medical services. Among them, patients often feel respected when medical staff explain their diagnosis and treatment in detail, which reduces uncertainty and anxiety and helps build trust. In addition, effective communication requires that medical professionals not only articulate, but also listen to and understand patients' concerns. Using non-technical terms and communicating in easy-to-understand language can enhance patients' understanding of medical decisions and their involvement in treatment. Both face-to-face communication and modern communication tools, such as video conferencing and online consultation, can further strengthen the connection between medical staff and patients and promote open and transparent doctor-patient relationships.

b) External environment for implementation

Doctor-patient trust is significantly affected by social and cultural background, laws and regulations.

"Respect the dignity and personality of patients, refrain from discriminating against any patient, and strictly protect patient privacy by not disclosing any personal information to others. During the process of medical history collection, physical examinations, and diagnosis and treatment, ensure that the patient's privacy is fully respected and

safeguarded. Adhere to relevant laws, regulations, and standards in the healthcare industry, and refrain from engaging in any illegal or unethical behavior. Uphold professional ethics and codes of conduct, avoid exploiting one's position for personal gain, and respect the rights of patients. Avoid unnecessary tests and treatments, prevent overmedicalization, and provide accurate, complete, and timely diagnosis and treatment plans. Ensure that treatment is not delayed or denied due to personal interests. All healthcare professionals must strictly abide by the professional ethics and codes of conduct, providing patients with safe, high-quality, and efficient medical services." (D4)

In a society with a sound legal system and a culture that respects the doctor-patient relationship, doctor-patient trust is easier to establish and maintain. Clear laws and regulations provide a clear framework of rights and obligations for both doctors and patients, ensuring that patients trust medical staff and are willing to share information and cooperate in treatment. Social and cultural background can also promote or restrict the formation of doctor-patient trust. In a culture that respects medical authority, patients tend to trust professional opinions, which is conducive to the establishment of a good doctor-patient relationship. On the contrary, in a culture lacking trust, patients may be suspicious of medical staff, affecting the effectiveness of cooperation. Therefore, fostering a medical culture of respect and understanding, and a sense of trust in medical workers through public publicity are important strategies to promote doctor-patient trust.

c) Internal environment for implementation

Medical environment and medical ethics have a direct impact on patients' trust.

"Hospitals, healthcare professionals, and patients form an interconnected system. A hospital with a good environment, complete facilities, excellent medical skills, and a positive attitude from healthcare providers can offer patients a positive and favorable healthcare experience, which in turn fosters greater trust from patients. When patients trust us, healthcare professionals are more likely to affirm the results and value of their work." (G3)

A good medical environment includes a comfortable physical space and good attitude and behavior norms of medical staff. Patients are more likely to build trust when they are treated in a friendly and caring environment. At the same time, the professional ethics of medical staff are important factors of trust. Medical workers who put patients' interests first and follow ethical principles win more trust. By cultivating good medical ethics, the professional identity of medical staff and the trust of patients in the medical team can be enhanced.

d) Individual characteristics

Doctors' professional competence and experience, as well as patients' perceptions and expectations, are crucial individual-level factors in the formation of doctor-patient trust.

"Healthcare professionals must possess a sense of responsibility, and their technical expertise is of paramount importance." (F3),

"When patients choose a hospital, they certainly hope to have their problems resolved. If our hospital can accurately and efficiently diagnose the patient's condition and achieve favorable treatment outcomes, it is crucial for establishing trust with the patients. This trust encourages patients to refer the hospital to other relatives and friends in need of medical care. The referral system among patients plays a vital role in enhancing the hospital's reputation, increasing patient volume, and improving the professional expertise of doctors." (G2).

First, a doctor's professional skills and clinical experience are direct determinants of patient trust. Studies have shown that patients tend to trust doctors who are experienced with more success cases. These doctors are often able to more accurately diagnose diseases, formulate rational treatment plans, and effectively deal with complex cases, thus enhancing patients' sense of dependence and security. In addition, a doctor's communication skills are equally critical. Good communication skills enable doctors to explain diseases and treatment options clearly, improving patient understanding and involvement. When patients are fully informed about their health condition and treatment options, they are more likely to feel respected and trust their doctor's judgment. Therefore, improving doctors' communication and interaction skills is an important strategy to enhance doctor-patient trust. On the other hand, patients' perceptions and expectations are also key. Different patients have different expectations for medical services based on their personal experience, sociocultural and educational background. Among them, some patients may pay more attention to the doctor's technical level, while others may be more concerned about the doctor's humanistic care. Understanding and meeting patients' individual needs can help improve satisfaction and trust, and medical institutions should guide patients to establish reasonable expectations through patient education to promote trust building.

e) Process

Constant communication and good interactions are key to building trust in doctor-patient interactions.

"Establishing a strong trust relationship can enhance healthcare professionals' focus on their work and alleviate stress. When patients trust healthcare providers, they are more likely to cooperate with treatment plans and follow recommendations, which facilitates

smoother work processes and improves work efficiency for medical staff. Furthermore, trust contributes to better communication between healthcare professionals and patients, enabling a deeper understanding of the patients' needs and concerns. Impact on patients: A positive trust relationship enables patients to feel more at ease with their treatment, thereby increasing the likelihood of successful outcomes. When patients trust their healthcare providers, they gain confidence and courage in facing their illness, reducing anxiety and fear. This trust also encourages patients to take a more proactive role in their treatment, enhancing their self-management and recovery abilities. Impact on hospitals: A strong trust relationship can enhance the hospital's reputation and patient satisfaction, thereby attracting more patients to seek care." (M2).

This process should not be limited to initial consultation communication, but rather a dynamic and ongoing interaction process. Medical staff need to stay in touch with patients regularly to ensure that the latter receive the necessary information in a timely manner during treatment. This communication helps patients constantly assess their trust in the healthcare team, as well as keeping doctors informed of patient needs. Good interactions include verbal and nonverbal communication such as eye contact and body language. The care and empathy shown by the medical staff can make the patient feel warm and supported, and thus more willing to trust doctors. In the face of patient concerns, active listening and responding can effectively alleviate negative emotions and consolidate trust. However, when trust is damaged, how to restore the trust effectively is an important challenge for medical institutions and workers. The trust repair is often more complex than building, involving reflection on and correction of previous mistakes. Transparent communication and honest analysis of the root cause of the problem are necessary. In the face of medical mistakes or miscommunication, medical staff should take the initiative to admit responsibility and show integrity and professionalism. At the same time, remedial measures such as adjusting treatment plans or providing additional support can increase the likelihood of restoring trust. Medical institutions should establish mechanisms to encourage medical staff to reflect and improve, and improve the quality of services through systematic training and feedback. Such strategies can help rebuild trust between doctors and patients, enhance the overall credibility of medical services, and lay a solid foundation for long-term relationships.

4.2 Delphi method

To scientifically identify control variables suitable for the structural equation model in this

study, the research team conducted two rounds of expert consultation using the Delphi method. Experts were selected based on the principles of expertise and representativeness. Ultimately, 19 experts from 10 research institutions participated in the consultation process, representing seven relevant disciplines, including hospital management, health services, health policy, health administration, clinical medicine, epidemiology, and health statistics. Details are provided in Table 4.3.

Table 4.3 Expert information

	First Round	Second Round
Age (years old)		
20–29	1（5.26%）	1（5.26%）
30–39	5（26.32%）	5（26.32%）
40–49	9（47.37%）	9（47.37%）
50–59	4（21.05%）	4（21.05%）
Years of Professional Experience		
Within 5 years	2（10.53%）	2（10.53%）
5–10 years	2（10.53%）	2（10.53%）
11–20 years	6（31.58%）	6（31.58%）
Over 20 years	9（47.37%）	9（47.37%）
Technical Title		
Senior Title (Full Professor)	4（21.05%）	4（21.05%）
Associate Senior Title	7（36.84%）	7（36.84%）
Intermediate Title	6（31.58%）	6（31.58%）
Others	2（10.53%）	2（10.53%）
Total	19（100%）	19（100%）

4.2.1 Expert engagement and authority

The response rates for both the first and second rounds of the Delphi survey were 100%, indicating a high level of engagement among the experts. The average authority coefficient (Cr) of the experts was 0.87 in the first round and 0.85 in the second round, reflecting a high degree of professional judgment and confidence in their respective fields. Detailed results are presented in Table 4.4.

Table 4.4 Expert authority in two rounds of delphi consultation

Round	Ca	Cs	Cr
First	0.93	0.81	0.87
Second	0.92	0.79	0.85

4.2.2 Expert consensus

This study employed Kendall's coefficient of concordance (W) to assess the consistency of expert ratings. The coefficient was 0.629 in the first round and 0.109 in the second round, both statistically significant based on the chi-square test ($p < 0.05$). These results indicate that

experts demonstrated statistically significant agreement in their evaluations of item importance across both rounds. Additionally, the coefficient of variation (CV) for item importance scores ranged from 0.14 to 0.43, further suggesting that the expert opinions exhibited a high degree of overall consistency and stability. Detailed results are presented in Table 4.5.

Table 4.5 Kendall's coefficient of concordance among experts

	First Round	Second Round
Number of items	36	10
Kendall's coefficient of concordance (W)	0.629	0.109
Chi-square value	705.135	18.653
p	＜0.001	＜0.05

4.2.3 Results of control variable selection

To further develop the control variable framework for the structural equation model, the research team conducted a systematic screening of candidate control variables based on the two rounds of Delphi expert ratings. The selection process integrated three evaluation metrics: the mean importance score, the full-score ratio, and the coefficient of variation, using the threshold method as the screening criterion. The specific thresholds were as follows: (1) Mean importance score $\geqslant$ 3.50; (2) Full-score ratio $\geqslant$ 0.40; (3) Coefficient of variation $\leqslant$ 0.40 (Diamond et al., 2014).

Based on expert input and practical research considerations, the following representative control variables were ultimately selected. In the first round of the Delphi process, a total of 11 candidate items were evaluated. Table 4.6 presents the expert ratings for each control variable under the three core constructs—doctor's trust in patients, patient's trust in doctors, and doctor task performance—reporting the mean importance score, full-score ratio, and coefficient of variation for each. The range of mean importance scores from the first round of Delphi expert evaluation was 2.57 to 4.57, with an overall average of 3.82. This indicates that most variables were considered to have at least moderate importance by the experts. Based on the threshold method criteria (mean score $\geqslant$ 3.50, full-score ratio $\geqslant$ 0.4, coefficient of variation $\leqslant$ 0.40), the preliminary screening results after the first-round ratings are presented in Table 4.7.

Table 4.6 First-round Delphi expert ratings (n = 19)

Core Construct Variable	Candidate Control Variable	Mean	Full-Score Ratio	CV
Physician's trust in patient	Average Monthly Income per Doctor	3.14	0.2	0.41
	Collaboration Among Hospital Departments	3.51	0.2	0.41
	Patient's Occupation	3.79	0.4	0.23
	Patient's Education Level	3.93	0.4	0.21
	Annual Per Capita Household Income of Patient	2.57	0,1	0.41
	Patient's Perceived Income Insufficiency	2.86	0.1	0.41
	Medical Treatment Environment	3.71	0.3	0.29
	Doctor's Professional Title	3.07	0.1	0.39
	Number of Complaints Against Doctor	3.86	0.4	0.26
	Duration of Doctor-Patient Communication	3.86	0.5	0.31
	Average Weekly Number of Consultations per Doctor	3.01	0.1	0.43
Patient's trust in physician	Average Monthly Income per Doctor	3.29	0.2	0.34
	Collaboration Among Hospital Departments	4.14	0.4	0.16
	Patient's Occupation	3.78	0.2	0.21
	Patient's Education Level	4.01	0.4	0.19
	Annual Per Capita Household Income of Patient	3.14	0.2	0.32
	Patient's Perceived Income Insufficiency	3.71	0.3	0.24
	Medical Treatment Environment	4.07	0.4	0.18
	Doctor's Professional Title	4.42	0.7	0.15
	Number of Complaints Against Doctor	4.21	0.8	0.27
	Duration of Doctor-Patient Communication	4.28	0.5	0.14
	Average Weekly Number of Consultations per Doctor	4.28	0.3	0.37
Physician task performance	Average Monthly Income per Doctor	4.14	0.3	0.29
	Collaboration Among Hospital Departments	3.93	0.4	0.21
	Patient's Occupation	2.79	0.1	0.45
	Patient's Education Level	3.36	0.4	0.33
	Annual Per Capita Household Income of Patient	2.93	0.1	0.43
	Patient's Perceived Income Insufficiency	3.29	0.3	0.41
	Medical Treatment Environment	3.64	0.1	0.17
	Doctor's Professional Title	4.29	0.6	0.17
	Number of Complaints Against Doctor	4.36	0.7	0.17
	Duration of Doctor-Patient Communication	3.64	0.3	0.29
	Average Weekly Number of Consultations per Doctor	4.36	0.7	0.37

Table 4.7 Results of the first round of Delphi screening (n=19)

Core Construct Variable	Candidate Control Variable	Mean	Full-Score Ratio	CV
Physician's trust in patient	Patient's Occupation	3.79	0.4	0.23
	Patient's Education Level	3.93	0.4	0.21
	Number of Complaints Against Doctor	3.86	0.4	0.26
	Duration of Doctor-Patient Communication	3.86	0.5	0.31
Patient's trust in physician	Collaboration Among Hospital Departments	4.14	0.4	0.16
	Medical Treatment Environment	4.01	0.4	0.19
	Doctor's Professional Title	4.07	0.4	0.18
	Average Weekly Number of Consultations per Doctor	4.42	0.7	0.15
	Patient's Occupation	4.21	0.8	0.27
	Patient's Education Level	4.28	0.5	0.14
Physician task performance	Number of Complaints Against Doctor	3.93	0.4	0.21
	Duration of Doctor-Patient Communication	4.29	0.6	0.17
	Collaboration Among Hospital Departments	4.36	0.7	0.17
	Medical Treatment Environment	3.36	0.4	0.33
	Doctor's Professional Title	4.36	0.7	0.37

To further enhance the scientific rigor and consistency of control variable selection, the research team conducted a second round of Delphi expert consultation, focusing on re-evaluating the candidate control variables identified in the first round (see Table 4.8). The evaluation dimensions remained the same—mean importance score, full-score ratio, and coefficient of variation—with the threshold method criteria unchanged.

Table 4.8 Results of the second round of Delphi expert evaluation (n=19)

Core Construct Variable	Candidate Control Variable	Mean	Full-Score Ratio	CV
Physician's trust in patient	Patient's Occupation	3.48	0.5	0.41
	Patient's Education Level	4.51	0.7	0.31
	Number of Complaints Against Doctor	3.78	0.6	0.27
	Duration of Doctor-Patient Communication	3.83	0.6	0.31
Patient's trust in physician	Collaboration Among Hospital Departments	4.01	0.7	0.21
	Medical Treatment Environment	4.51	0.7	0.31
	Doctor's Professional Title	3.86	0.5	0.34
	Average Weekly Number of Consultations per Doctor	3.61	0.6	0.38
	Patient's Occupation	4.01	0.8	0.23
	Patient's Education Level	3.89	0.7	0.27
Physician task performance	Number of Complaints Against Doctor	3.93	0.8	0.21
	Duration of Doctor-Patient Communication	4.29	0.7	0.17
	Collaboration Among Hospital Departments	3.37	0.5	0.43
	Medical Treatment Environment	4.36	0.7	0.29
	Doctor's Professional Title	3.96	0.6	0.37

In the second round of Delphi expert evaluations, two control variables were consistently assessed across all three core construct variables—doctor's trust in patients, patient's trust in doctors, and doctor task performance. These variables demonstrated stable performance across all three threshold method indicators (mean importance score, full-score ratio, and coefficient of variation), along with strong expert consensus, providing sufficient justification for their inclusion in the structural equation model:

(1) Patient's Education Level

The mean importance scores across the three constructs were 4.51, 4.51, and 4.36, respectively, with full-score ratios all reaching 0.7. The maximum coefficient of variation was 0.31, remaining within an acceptable range. As a key indicator of patients' health literacy and ability to comprehend medical information, this variable helps control for potential bias in trust formation and health outcome assessment arising from differences in education levels.

(2) Duration of Doctor-Patient Communication

The mean scores for this variable were 3.83, 3.89, and 3.89 across the three core constructs, with full-score ratios all above 0.6. The coefficients of variation were 0.31, 0.27, and 0.27, respectively, all meeting the threshold criteria. These results reflect expert consensus on the variable's importance in the doctor-patient interaction process. It effectively

controls for potential confounding effects of communication level on trust building and performance evaluation.

In summary, based on two rounds of Delphi expert consultation, this study identified the above two control variables for inclusion in the subsequent structural equation model analysis. These variables not only achieved high consistency in expert ratings but also possess strong explanatory and measurement validity in the practical context of doctor-patient interactions. Their inclusion is expected to enhance the model's estimation stability, explanatory power of path coefficients, and overall model fit.

4.3 Empirical analysis results

4.3.1 Basic characteristics of the sample

The questionnaire survey for this study was conducted in three tertiary hospitals in Zhanjiang City: Zhanjiang Maternal and Child Health Hospital, Zhanjiang First Traditional Chinese Medicine Hospital, and Zhanjiang Central People's Hospital. These institutions include a general hospital, a traditional Chinese medicine hospital, and a specialized maternal and child healthcare institution, offering good representativeness and structural coverage.

For the medical staff sample, a total of 334 questionnaires were distributed, and 331 valid responses were received, yielding a response rate of 99%. For the patient sample, 1,045 questionnaires were distributed, and 993 valid responses were collected, with a response rate of 95%.

4.3.1.1 Characteristics of the doctor sample

Table 4.9 presents a detailed description of the demographic and professional characteristics of the 331 doctors.

Table 4.9 Descriptive statistics of doctor sample characteristics (n = 331)

Variable	Type	Frenquency	Proposition (%)
Gender	Male	195	58.9
	Female	136	41.1
Marital Status	Married	261	78.9
	Unmarried	67	20.2
	Divorced	2	0.6
	Widowed	1	0.3
Education level	Doctorate	5	1.5
	Master's Degree	95	28.7
	Bachelor's Degree	224	67.7
	Associate Degree or Below	7	2.1
Qualification	Licensed Physician	324	97.9

	Licensed Assistant Physician	3	0.9
	None	4	1.2
Title	Not Evaluated	6	1.8
	Junior Professional Title	70	21.1
	Intermediate Professional Title	132	39.9
	Associate Senior Professional Title	85	25.7
	Senior Professional Title	38	11.5
Type of Workplace	General Hospital	154	46.5
	Traditional Chinese Medicine Hospital	101	30.5
	Maternal and Child Health Hospital	75	22.7
	Others	1	0.3
Level of Workplace	Primary Level or Below	3	0.9
	Secondary Level	74	22.4
	Tertiary Level	254	76.7
Age	Under 35 Years Old	109	32.9
	35–44 Years Old	144	43.5
	45–54 Years Old	63	19.0
	55 Years or Older	14	4.2
Patient Consultation	Low Consultation Volume	113	34.1
Volume	Lower-Middle Consultation Volume	56	16.9
	Upper-Middle Consultation Volume	89	26.9
	High Consultation Volume	73	22.1
Years of Work	0–5 Years	67	20.2
Experience	6–10 Years	63	19.0
	11–20 Years	131	39.6
	More Than 20 Years	68	20.5
Income	Less Than 100,000 RMB/Year	128	38.7
	110,000–120,000 RMB/Year	62	18.7
	130,000–166,000 RMB/Year	58	17.5
	More Than 166,000 RMB/Year	83	25.1

The majority of the doctors were male (58.9%), indicating a relatively higher proportion of male doctors in the region. A significant majority (78.9%) of the respondents were married. Most doctors held a bachelor's degree (67.7%), indicating a generally high level of formal medical education. Additionally, 28.7% had a master’s degree, showing that educational attainment among doctors in the region is concentrated at the undergraduate and master's levels.he largest age group was 35–44 years (43.5%). Only 14 doctors (4.2%) were aged 55 or above. Most doctors had 11–20 years of professional experience (39.6%). A majority reported an annual income of less than 100,000 RMB (38.7%). Nearly all respondents (97.9%) held a Physician’s License, indicating the legality and professionalism of the sample. Only 0.9% held an Assistant Physician License. The largest proportion held intermediate titles (39.9%), followed by associate senior titles (25.7%). Junior titles accounted for 21.1%, and senior titles for 11.5%. A small number (1.8%) had not yet been evaluated for a title. This distribution suggests a well-stratified hierarchy of professional titles, with intermediate and associate senior titles comprising the majority. Most doctors worked in general hospitals (46.5%), followed by traditional Chinese medicine hospitals (30.5%) and maternal and child health

hospitals (22.7%). Notably, 76.7% of the doctors were employed in tertiary hospitals, 22.4% in secondary hospitals, and only 0.9% in primary hospitals.

Overall, Table 4.9 indicates that among the 331 doctors surveyed, the majority were male, highly educated, and worked primarily in tertiary and general hospitals. The high proportion of certified physicians and the concentration of doctors with intermediate professional titles reflect the strong professional qualifications of the sample and the regional concentration of medical resources in high-level hospitals.

4.3.1.2 Characteristics of the patient sample

Table 4.10 provides a detailed description of the sociodemographic characteristics of the 993 patients included in the study.

Table 4.10 Description of basic characteristics of patient samples (n = 993)

Variable	Type	Frenquency	Proposition (%)
Gender	Male	381	38.4
	Female	612	61.6
Education Level	Postgraduate or Above	33	3.3
	Bachelor's / Associate Degree	361	36.4
	Secondary Technical / Vocational School	113	11.4
	Senior High School	152	15.3
	Junior High School	194	19.5
	Primary School or Below	140	14.1
Occupation	Government or Public Institution Employee	109	11.0
	State-Owned Enterprise Employee	62	6.2
	Private Enterprise Employee	75	7.6
	Farmer	239	24.1
	Self-Employed	216	21.8
	Retired	86	8.7
	Unemployed	46	4.6
	Student	47	4.7
	Others	113	11.4
Residence	Urban Area	493	49.6
	Township	297	29.9
	Rural Area	203	20.4
Type of Healthcare	Public Healthcare Coverage	42	4.2
	Urban Employee Basic Medical Insurance	264	26.6
	Urban Resident Basic Medical Insurance	530	53.4
	New Rural Cooperative Medical Scheme	106	10.7
	Commercial Insurance	9	0.9
	Medical Assistance	8	0.8
	No Medical Insurance	34	3.4
Hospital	Zhanjiang Maternal and Child Health Hospital	226	22.8
	Zhanjiang First Traditional Chinese Medicine Hospital	343	34.5
	Zhanjiang Central People's Hospital	424	42.7

In terms of gender distribution, female patients accounted for the majority at 61.6%, significantly higher than the proportion of male patients. Regarding educational attainment,

patients with a bachelor's or associate degree made up the largest proportion at 36.4%, indicating a relatively high education level overall. In contrast, only 3.3% of the sample held a graduate degree or above, suggesting a limited representation of highly educated individuals in the patient sample.

Occupationally, the largest group was farmers, accounting for 24.1%, which may be related to the regional characteristics or socioeconomic backgrounds of the respondents. The proportion of unemployed individuals was the lowest at 4.6%, which may reflect the economic conditions and employment types of the surveyed patients.

In terms of place of residence, some regional variation was observed. Patients living in urban areas accounted for 49.7%, slightly higher than those living in townships (29.9%), while rural residents made up 20.4% of the sample.

Regarding medical insurance coverage, the majority of patients were enrolled in Urban Resident Basic Medical Insurance, accounting for 53.4%, suggesting heavy reliance on basic healthcare services. This was followed by patients covered by Urban Employee Basic Medical Insurance, at 26.6%. Only 0.8% of patients required medical financial assistance, indicating that most patients were able to access healthcare through regular insurance channels.

As for hospital choice, Zhanjiang Central People's Hospital was the most frequently selected institution, accounting for 42.7% of visits, followed by Zhanjiang First Traditional Chinese Medicine Hospital at 34.5%. Zhanjiang Maternal and Child Health Hospital was chosen by a smaller proportion, at 22.8%.

Overall, the data in Table 4.10 reveal a diverse distribution of patients in terms of gender, education, occupation, and region, reflecting a range of socioeconomic characteristics. Although most patients had some form of medical insurance, differences remain—particularly in their preferences for different types of medical institutions.

4.3.2 Descriptive statistics of key variables

4.3.2.1 Doctor–patient trust level

As shown in Table 4.11, the overall scores indicate a relatively high level of mutual trust between doctors and patients, with both scores exceeding 4 on a 5-point scale. Specifically, the average score for doctors' trust in patients was 4.5 (SD = 0.5), which was notably higher than patients' trust in doctors (M = 4.2, SD = 0.6).

Table 4.11 Descriptive statistics of doctor–patient trust and its dimensions

	Mim	Max	Mean	SD
Patient's Self-Perceived Overall Doctor–Patient Trust Score	2.0	5.0	4.2	0.6
Doctor's Benevolence Dimension	2.2	5.0	4.0	0.7
Doctor's Technical Competence Dimension	1.8	5.0	4.4	0.6
Doctor's Self-Perceived Overall Doctor–Patient Trust Score	2.7	5.0	4.5	0.5
Relational Perception Dimension	2.2	5.0	4.5	0.6
Defensive Mindset Dimension	1.8	5.0	4.4	0.6

Among the dimensions of patient trust in doctors, trust in the doctor's technical competence received the highest rating, with a mean score of 4.4 (SD = 0.6), while trust in the doctor's benevolence was comparatively lower, with an average score of 4.0 (SD = 0.7). In contrast, for doctors' trust in patients, both the relational perception and defensive mindset dimensions received relatively high ratings, at 4.5 (SD = 0.6) and 4.4 (SD = 0.6), respectively. These scores were higher than all corresponding dimensions of patients' trust in doctors.

4.3.2.2 Physician task performance

According to the data in Table 4.12, the overall mean score for doctor task performance was 4.6, which is close to the maximum score, indicating that doctors demonstrated excellent overall performance and received highly favorable evaluations. In addition, the standard deviation was relatively low at 0.6, suggesting limited dispersion in the scores and a high level of consistency in the evaluations.

Table 4.12 Average score of physician task performance

	Mim	Max	Mean	SD
Total average score of physician task performance	1.0	5.0	4.6	0.6

4.3.2.3 Patient health outcomes

To assess patients' subjective health status, this study employed the SF-36 Health Survey to measure health outcomes (HO). The SF-36 consists of 36 items covering eight primary dimensions: Physical Functioning (PF), Role-Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-Emotional (RE), and Mental Health (MH). Each dimension score is derived by transforming raw scores into standardized values ranging from 0 to 100, with higher scores indicating better self-rated health status (Ware & Sherbourne, 1992).

To more intuitively reflect the overall health level, this study adopted the approach proposed by Gandek et al. (1998), calculating the arithmetic mean of the standardized scores of the eight dimensions to construct an aggregated index, "Health Outcomes (HO)," which

was included as the dependent variable in the structural equation model analysis. This method retains the multidimensional advantages of the SF-36 while simplifying the analysis process and improving model estimation efficiency.

Table 4.13 presents the descriptive statistics for patients' scores across the eight health dimensions and the aggregated health outcome index. In terms of mean scores, the highest was observed in the Bodily Pain (BP) dimension at 84.5 (SD = 18.1), indicating favorable subjective assessment of pain management. The lowest score appeared in the Vitality (VT) dimension, with a mean of 64.1 (SD = 18.5), suggesting some patients experience reduced energy and vitality in daily life. The average score across all eight dimensions was 71.3 (SD = 18.6), which serves as the composite indicator for patient health outcomes (HO).

Table 4.13 Descriptive statistics of patient health outcomes and dimension scores

Dimension	Mim	Max	Mean	SD
Physical Functioning (PF)	0	100	77.9	28.1
Role-Physical (RP)	0	100	67.1	43.5
Bodily Pain (BP)	0	100	84.5	18.1
Vitality (VT)	15	100	64.1	18.5
Social Functioning (SF)	0	100	68.4	23.5
Role-Emotional (RE)	0	100	69.2	43.2
Mental Health (MH)	0	100	65.4	18.1
General Health (GH)	0	100	73.7	29.0

4.3.3 Hierarchical data structure

This study collected 331 doctor questionnaires and 993 patient questionnaires, forming a typical "dual-source matched" data structure in which multiple patients correspond to a single doctor—constituting a nested structure where patients are nested within doctors. In such hierarchical structures, directly analyzing patient-level data may overlook differences at the doctor level and introduce statistical bias due to the non-independence of observations.

To enhance analytical efficiency, avoid redundant error computation, and ensure clarity in analytical logic, this study adopted an aggregation method during variable processing. Specifically, for each doctor, the mean scores of all corresponding patients on key variables (e.g., patient self-perceived doctor–patient trust and patient health outcomes) were calculated and assigned to that doctor. These aggregated patient-level variables were then merged with doctor-level self-assessments (e.g., doctor self-perceived doctor–patient trust and doctor task performance), resulting in a single, complete record per doctor.

As a result, the final sample size was standardized to 331, fully aligned with the doctor questionnaire dataset, and a unified dataset structure containing four core variables was established, as shown in Table 4.14.

Table 4.14 Summary of core variable structure

Variable	Form of data	Dimension	Number of items
Patient-Perceived Trust (PPT)	Aggregated Mean	2	10
Doctor-Perceived Trust (DPT)	Doctor Questionnaire	2	8
Task Performance (TP)	Doctor Questionnaire	1	4
Health Outcomes (HO)	Aggregated Mean	8	36

PPT and HO represent the aggregated mean variables derived from patient data at the doctor level, while DPT and TP are obtained from doctors' self-reported data. This data processing approach ensures alignment between research variables while minimizing the influence of data nesting on statistical analysis. It also facilitates a more streamlined and effective implementation of correlation analysis and structural equation modeling.

Although aggregation may reduce the granularity of individual patient-level variation to some extent, this method is widely adopted in doctor–patient paired studies and is considered both practical and methodologically sound.

4.3.4 Correlation analysis

To examine the relationships among the core variables, Pearson correlation analysis was conducted using SPSS 24.0. The correlation coefficient matrix is presented in Table 4.15.

Table 4.15 Pearson correlation matrix of core variables (n = 331)

Variable	PPT	DPT	TP	HO
PPT	1	0.312**	0.276**	0.398**
DPT	0.312**	1	0.452**	0.367**
TP	0.276**	0.452**	1	0.421**
HO	0.398**	0.367**	0.421**	1

Note: Patient's Self-Perceived Doctor–Patient Trust (PPT), Doctor's Self-Perceived Doctor–Patient Trust (DPT), Doctor Task Performance (TP), Patient Health Outcomes (HO).
** = Correlation is significant at the 0.01 level (2-tailed)

The results of the correlation analysis indicate that all four core variables are significantly and positively correlated with one another ($p < 0.01$), suggesting a strong interrelationship between doctor–patient trust, task performance, and health outcomes from both the doctor's and the patient's perspectives. These findings provide preliminary support for the main path relationships proposed in the research model.

Further observations reveal the following:

Although both doctor's self-perceived doctor–patient trust and patient health outcomes exhibit relatively high mean scores (4.5 and 71.3, respectively), their correlation coefficient is comparatively lower ($r = 0.367$). This may be attributed to greater variability within the "defensive mindset" subdimension, suggesting that doctors exhibit individual differences in their psychological defenses and risk perceptions when interacting with patients, which may weaken the overall strength of this relationship.

The correlation coefficients among the four variables range from 0.276 to 0.452, all below the empirical threshold of 0.80. This indicates moderate-to-strong associations while maintaining good discriminant validity, thus supporting the suitability of the variables for subsequent path analysis.

Among all correlations, the strongest relationship is observed between doctor's self-perceived doctor–patient trust and doctor task performance (r = 0.452), indicating a strong linkage between doctors' subjective perceptions of the doctor–patient relationship and their task-related performance. This finding provides empirical support for the hypothesized mediating path proposed in Hypothesis H4.

In summary, the correlation analysis results suggest that doctor–patient trust, as a key variable, not only directly influences doctors' behavioral outcomes but may also indirectly affect patient health outcomes. These findings offer foundational statistical support for the path specifications in the structural equation model.

4.3.5 Reliability testing

To assess the internal consistency of the measurement instruments for the core variables, this study conducted a reliability analysis using Cronbach's α coefficient. Except for Patient Health Outcomes (HO), which was constructed based on the SF-36 standardized subscales (scored from 0–100), the other three variables were measured using five-point Likert scales. The Cronbach's α coefficients for each variable and its corresponding dimensions are presented in Table 4.16.

Table 4.16 Reliability test results

Variable	Dimension	Item	Cronbach's α	Cronbach's α
PPT	Doctor's Benevolence	5	0.88	0.91
	Doctor's Technical Competence	5	0.86	
DPT	Relational Perception	4	0.87	0.89
	Defensive Mindset	4	0.83	
HO	Physical Functioning (PF)	10	0.89	0.93
	Role-Physical (RP)	4	0.87	
	Bodily Pain (BP)	2	0.81	
	General Health Perception (GH)	5	0.84	
	Vitality (VT)	4	0.83	
	Social Functioning (SF)	2	0.78	
	Role-Emotional (RE)	3	0.86	
	Mental Health (MH)	5	0.88	
TP	Task Performance	4	—	0.91

All four core variables in this study demonstrated Cronbach's α coefficients above 0.89, indicating a high overall level of internal consistency. Specifically, patient's self-perceived doctor–patient trust (PPT) and doctor's self-perceived doctor–patient trust (DPT) each

comprise two dimensions, with overall α coefficients of 0.91 and 0.89, respectively. The subscale reliability coefficients ranged from 0.83 to 0.88, suggesting strong internal consistency and discriminant validity within each construct. Doctor task performance (TP) is a unidimensional construct with an α coefficient of 0.91, reflecting high consistency in self-assessed performance. Patient health outcomes (HO), derived from the SF-36 scale's eight dimensions, yielded α coefficients between 0.78 and 0.89 across dimensions, and the aggregated index reached 0.93, indicating strong internal consistency in measuring individuals' subjective health status.

Overall, the instruments used in this study met high standards of reliability, with Cronbach's α coefficients for all variables and subdimensions well above the commonly accepted threshold of 0.70. These results confirm the measurement tools' stability and trustworthiness, providing a solid foundation for subsequent empirical analyses.

4.3.6 Validity testing

4.3.6.1 Content validity

The primary measurement instruments in this study were adapted from well-established domestic and international scales and adjusted based on the research context to ensure comprehensive coverage of the constructs' core dimensions. Based on prior qualitative interviews and contextual feedback from questionnaire administration, instruments such as those measuring doctor–patient trust and doctor task performance were moderately optimized to maintain both theoretical coherence and practical applicability. The SF-36 was used to measure patient health outcomes, a standardized and widely used tool in health assessment, recognized for its strong applicability and generalizability.

Therefore, the instruments used in this study demonstrate good representativeness and construct coverage, enabling accurate measurement of key features of the research subjects, thus exhibiting strong content validity.

4.3.6.2 Construct validity

The construct validity of the measurement model was evaluated in two stages. First, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity were used to assess the suitability of the data for factor analysis. Then, Confirmatory Factor Analysis (CFA) was conducted to evaluate both convergent and discriminant validity, examining the theoretical fit between items and latent variables.

To assess the stability of the variable structures and the appropriateness of the

measurement dimensions, KMO and Bartlett's tests were applied to the four main variables. The KMO statistic evaluates sample adequacy for factor analysis, while Bartlett's Test of Sphericity assesses whether the variables are significantly correlated. As shown in Table 4.17, all variables yielded KMO values above 0.80, indicating a "good" or better level of sampling adequacy. Bartlett's tests for all variables were statistically significant ($p < 0.001$), confirming the presence of substantial correlations among variables and suggesting the measurement models are well-structured and theoretically supported—suitable for subsequent structural equation modeling (SEM) analysis.

Table 4.17 Summary of KMO and Bartlett's test results

Variable	KMO	Bartlett'stest	
		χ^2	P
Patient's Self-Perceived Doctor–Patient Trust (PPT)	0.813	865.21	< 0.001
Doctor's Self-Perceived Doctor–Patient Trust (DPT)	0.905	791.45	< 0.001
Doctor Task Performance (TP)	0.843	312.74	< 0.001
Patient Health Outcomes (HO)	0.848	5342.15	< 0.001

To further validate the structural suitability of the measurement instruments, this study employed Confirmatory Factor Analysis (CFA) to assess the measurement models of the four core latent variables. CFA is a key method in evaluating construct validity, particularly in examining both convergent validity and discriminant validity, by testing the relationships between observed items and their corresponding latent constructs.

Using SmartPLS 4.1, the preprocessed questionnaire data were imported to construct the measurement models. The Partial Least Squares (PLS) Algorithm and Bootstrapping resampling were then applied to systematically assess the measurement quality and validity performance of each latent variable.

(1) Convergent Validity

As shown in Table 4.18, all four core latent variables demonstrated strong convergent validity. Specifically: The Composite Reliability for all constructs exceeded 0.89, well above the accepted threshold of 0.70, indicating high internal consistency of the measurement items. The Average Variance Extracted (AVE) for each construct was greater than 0.50, confirming that the items effectively captured the latent trait they were intended to measure, with strong explanatory power and internal convergence.

Table 4.18 Convergent validity of latent variables

Variable	CR	AVE
Patient's Self-Perceived Doctor–Patient Trust (PPT)	0.913	0.612
Doctor's Self-Perceived Doctor–Patient Trust (DPT)	0.902	0.598
Doctor Task Performance (TP)	0.894	0.684
Patient Health Outcomes (HO)	0.964	0.716

(2) Discriminant Validity

To ensure adequate structural independence among the latent variables in the model, this study applied the Fornell–Larcker criterion to assess discriminant validity. According to this method, the square root of the Average Variance Extracted (AVE) for each latent variable should be greater than its correlation coefficients with any other latent variables in the model.

Table 4.19 presents the square roots of AVE (highlighted in bold along the diagonal) and the Pearson correlation coefficients among the four core latent variables.

Table 4.19 Discriminant validity assessment

Variable	PPT	DPT	TP	HO
Patient's Self-Perceived Doctor–Patient Trust (PPT)	0.782			
Doctor's Self-Perceived Doctor–Patient Trust (DPT)	0.312	0.773		
Doctor Task Performance (TP)	0.276	0.452	0.827	
Patient Health Outcomes (HO)	0.398	0.367	0.421	0.846

Note: Fornell–Larcker Criterion

The analysis results indicate that the square roots of the AVE for all latent variables were greater than their correlations with any other variables, demonstrating good discriminant validity and confirming that the model does not suffer from serious construct overlap. For example, although Doctor Task Performance (TP) and Patient Health Outcomes (HO) were moderately correlated ($r = 0.421$, $p < 0.01$), both AVE square roots (0.827 for TP and 0.846 for HO) exceeded this value, thus meeting the Fornell–Larcker criterion. These results confirm that the measurement model exhibits clear structural separation among constructs.

To further verify discriminant validity, the Heterotrait–Monotrait Ratio (HTMT) was also applied. Recognized as a more sensitive and conservative method for testing discriminant validity, the commonly accepted threshold for HTMT is 0.85. The results showed that all HTMT values between construct pairs were below this threshold.

Specifically, HTMT values were between PPT and other variables. PPT & DPT: 0.309. PPT & TP: 0.337. PPT & HO: 0.398. between DPT and other variables: DPT & TP: 0.631. DPT & HO: 0.504. Between TP and HO: 0.516.

All values satisfied the HTMT threshold. Although the HTMT value between DPT and TP was relatively higher (0.631), it remained within the acceptable range and did not indicate construct redundancy.

Combining both the Fornell–Larcker criterion and HTMT results, the study confirms that the measurement model demonstrates good construct validity and discriminant validity, making it suitable for subsequent path analysis.

4.3.7 Structural equation modeling (SEM) analysis

4.3.7.1 Model specification

This study further tested the path relationships among doctor–patient trust, doctor task performance, and patient health outcomes, and explored the mediating effect of task performance in the influence of trust on health outcomes. The structural model was developed based on the research hypotheses (H1–H7) and included four core latent variables.

Since PPT (Patient's Self-Perceived Doctor–Patient Trust) and DPT (Doctor's Self-Perceived Doctor–Patient Trust) both consist of first-order dimensions, the study adopted a Reflective–Reflective Higher-Order Model to ensure consistency between the measurement and theoretical structures. The Repeated Indicators Approach was used for estimation, in which all items under the first-order dimensions are simultaneously loaded onto the second-order latent variable. This method is appropriate for reflective constructs and provides a comprehensive and valid measurement basis while maintaining internal consistency.

Specifically: PPT was modeled as a second-order latent variable with two first-order dimensions: Doctor's Benevolence and Doctor's Competence. DPT was also modeled as a second-order latent variable with two first-order dimensions: Relationship Perception and Defensive Attitude. In addition, TP (Doctor Task Performance) was modeled as a first-order reflective latent variable, measured using four items. HO (Patient Health Outcomes) was derived from the standardized eight-dimension structure of the SF-36. However, for simplicity and computational efficiency, it was modeled as a first-order latent variable using the average of the dimension scores.

The path diagram of the structural model is presented in Figure 4.1.

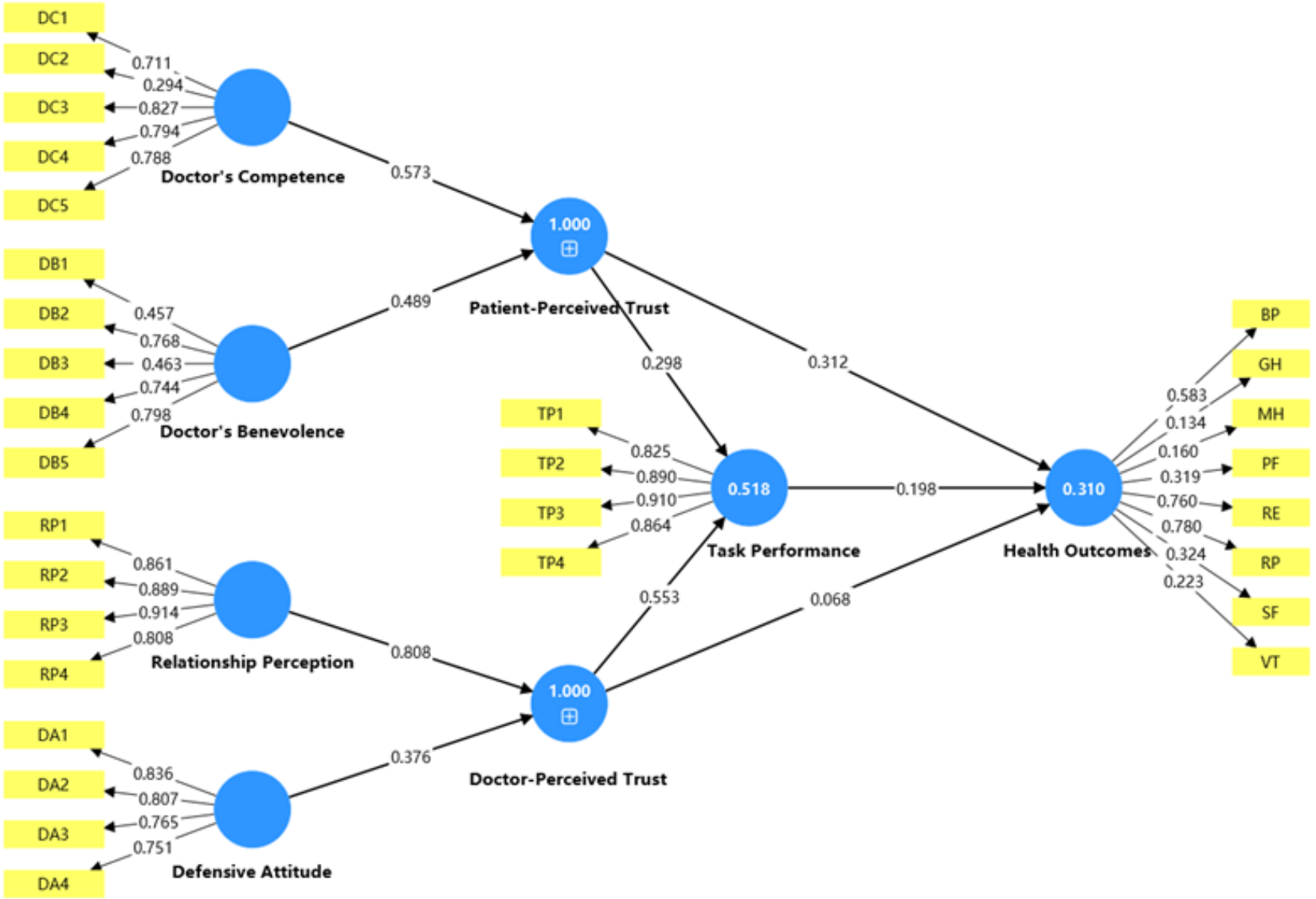

Figure 4.1 Path diagram of the structural model

4.3.7.2 Model fit and explanatory power

First, regarding the overall model fit, the Standardized Root Mean Square Residual (SRMR) was 0.063, which is below the recommended threshold of 0.08 (Henseler et al., 2016), indicating that the level of model residuals is acceptable and the model demonstrates good fit. In addition, the Normed Fit Index (NFI) was 0.921, exceeding the commonly accepted benchmark of 0.90, further confirming the structural adequacy of the model.

Second, the explanatory power of the structural model was assessed using the R^2 coefficient of determination. The R^2 for Task Performance (TP) was 0.518, suggesting that PPT and DPT together explain approximately 51.8% of the variance in TP, which falls within the moderate-to-high explanatory range (Cohen, 1988). For Patient Health Outcomes (HO), the R^2 was 0.310, approaching the threshold for moderate explanatory power, indicating that TP, PPT, and DPT have a meaningful but partial predictive effect on HO. Given that health outcomes are influenced by a multitude of factors, it is reasonable to assume that other variables may also contribute to the observed variability.

Furthermore, due to the use of the Repeated Indicators Approach for the two second-order latent variables (PPT and DPT), the system automatically identifies their measurement structures as being fully determined by their respective dimensions and items, resulting in R^2 values of 1.000 for both constructs.

In summary, the structural model demonstrates good model fit and acceptable explanatory power, providing a solid basis for subsequent analysis of path relationships and mediation effects.

4.3.7.3 Path analysis and hypothesis testing results

To examine the causal relationships among latent variables in the research model, the Bootstrapping procedure in SmartPLS was conducted with 5,000 resamples. The significance of each hypothesis was determined by evaluating the path coefficients (β), t-values, and p-values.

The results of the path analysis and hypothesis testing are presented in Table 4.20.

Table 4.20 Path coefficients and hypothesis testing results

	Path	β	t	p	Sig.	Results
H1	PPT → HO	0.312	7.896	0.000	***	Supported
H2	DPT → HO	0.068	1.204	0.229	Not sig	Not Supported
H3	PPT → TP	0.298	1.931	0.045	*	Supported
H4	DPT → TP	0.553	9.271	0.000	***	Supported
H5	TP → HO	0.198	1.832	0.034	*	Supported

Note: *=$p < 0.05$, **= $p < 0.01$, *** =$p < 0.001$

The results show that patient's self-perceived doctor–patient trust (PPT) has a significant positive effect on patient health outcomes (HO) ($\beta = 0.312$, $t = 7.896$, $p < 0.001$), supporting Hypothesis H1. This suggests that when patients exhibit higher levels of trust in their doctors, their subjective health assessments also improve. In other words, patients' positive perceptions of the doctor–patient relationship contribute to better health outcomes.

In contrast, doctor's self-perceived doctor–patient trust (DPT) showed a positive but statistically non-significant effect on HO ($\beta = 0.068$, $t = 1.204$, $p = 0.229$), indicating that Hypothesis H2 is not supported. This result suggests that a doctor's trust in the doctor–patient relationship does not necessarily translate directly into improved patient health outcomes, possibly due to moderating factors such as patient compliance or disease severity.

Regarding the effect on doctor task performance (TP), the path coefficient from PPT to TP was 0.298 ($t = 1.931$, $p = 0.045$), reaching statistical significance and thus supporting Hypothesis H3. This implies that patient trust helps enhance doctors' self-perceived task performance, potentially by stimulating their sense of responsibility and motivation to provide care. The influence of DPT on TP was even more significant ($\beta = 0.553$, $t = 9.271$, $p < 0.001$), supporting Hypothesis H4, indicating that doctors' positive perception of the doctor–patient relationship significantly contributes to their task performance levels. The path from TP to HO was also statistically significant ($\beta = 0.198$, $t = 1.832$, $p = 0.034$), supporting Hypothesis H5, and suggesting that improved doctor task performance positively contributes to better patient health outcomes.

Additionally, a key modeling feature of this study is the use of reflective–reflective second-order latent variable modeling for both PPT and DPT. The contribution weights and structural differences of their subdimensions are of particular interest:

PPT includes two first-order dimensions: Doctor's Benevolence and Doctor's Competence, with standardized path coefficients of 0.489 and 0.573, respectively. This indicates that patients place more emphasis on the doctor's technical competence when forming trust, although the importance of emotional care—such as compassion, respect, and communication—remains significant. These findings suggest that in the current healthcare context, professional competence is the primary foundation for patient trust, but relational qualities serve as important complementary factors.

DPT comprises Relationship Perception and Defensive Attitude, with path coefficients of 0.808 and 0.376, respectively—indicating a more pronounced difference. This suggests that doctors primarily build trust in the doctor–patient relationship based on positive interactive experiences, such as patient understanding, cooperation, and respect. While defensive

attitudes do exist, they are not the main source of trust formation for doctors.

In summary, the structural analysis of doctor–patient trust reveals that patients build trust on the dual foundations of "competence" and "attitude", whereas doctors' trust is shaped primarily by patients' perceived cooperation and understanding. Of the five hypothesized theoretical paths, four were supported (all except H2), further confirming the crucial role of doctor–patient trust in enhancing both doctor task performance and patient health outcomes. Notably, doctors' subjective sense of trust has a stronger impact on performance motivation.

4.3.7.4 Mediation analysis

To further test the mediating role of doctor task performance (TP) in the relationship between doctor–patient trust and patient health outcomes (HO), this study constructed two indirect paths based on Hypotheses H6 and H7. The mediation results are presented in Table 4.21.

Table 4.21 Mediation analysis results

	Path	Indirect effect β	t	p	Sig	VAF (%)	Results
H6	PPT→TP→HO	0.059	1.243	0.214	Not sig	15.9%	Not supported
H7	DPT→TP→HO	0.109	2.010	0.041	*	32.1%	Supported

Note: $p < 0.05$; VAF = Variance Accounted For, indicating the proportion of the total effect that is explained by the mediation effect.

The results show that the indirect effect of DPT → TP → HO is statistically significant ($\beta = 0.109$, $t = 2.010$, $p = 0.041$), supporting Hypothesis H7. The Variance Accounted For (VAF) was 32.1%, indicating a moderate partial mediation effect. This suggests that doctors' self-perceived trust in the doctor–patient relationship can positively influence patient health outcomes indirectly by enhancing their task performance. In other words, when doctors perceive strong trust from patients, they are more likely to invest greater effort in performing their medical tasks, which in turn contributes to improved patient-reported health outcomes.

In contrast, the indirect effect of PPT → TP → HO was $\beta = 0.059$, $t = 1.243$, $p = 0.214$. While the direction of the effect aligns with theoretical expectations, the strength of the effect was weak and not statistically significant, thereby not supporting Hypothesis H6. This indicates that although patient-perceived trust contributes to improved health outcomes at an overall level, this effect is not primarily transmitted through enhancements in doctors' task performance. One possible explanation is that patients have limited ability to directly influence how doctors perform or make decisions during the actual medical consultation process.

In summary, the mediation analysis reveals an asymmetry in how doctor–patient trust affects outcomes. The roles of doctors and patients in the trust dynamic differ, and so do the behavioral consequences of their perceived trust. While doctors' sense of trust may enhance

their own performance, thereby benefiting patient outcomes, patients' trust in doctors may exert its influence more through their own attitudes and behaviors. This asymmetrical mechanism of trust warrants further exploration and validation in future research.

4.3.7.5 Control variable analysis

(1) Rationale for Including Control Variables

To enhance the explanatory power of the structural model and control for individual background differences that might confound core path relationships, this study introduced two control variables based on expert consensus from the earlier Delphi consultation:

a) Patient Educational Level (PEL)

This variable reflects a patient's health literacy and capacity to understand medical information. Prior studies have shown that patients with higher educational attainment typically possess stronger health literacy, enabling them to better comprehend medical advice and adhere to treatment recommendations, thereby improving both subjective and objective health outcomes (Berkman et al., 2011). Accordingly, this study links PEL to Patient Health Outcomes (HO) to control for the influence of education-level differences on self-reported health status.

b) Duration of Medical Communication (DMC)

This variable serves as a behavioral indicator of the depth of doctor–patient interaction. Longer communication time allows doctors to more thoroughly understand the patient's condition and needs, potentially improving task execution and self-evaluated performance. Existing literature highlights the close link between communication duration and quality; effective communication enhances both diagnostic accuracy and perceived performance (Gao, 2023). Therefore, DMC was linked to Doctor Task Performance (TP) to control for communication-related variance. Neither control variable was linked to the second-order latent variables PPT or DPT, based on two considerations. Both PPT and DPT are modeled as reflective–reflective higher-order constructs, and introducing exogenous controls may disrupt their measurement consistency and construct reliability. The control variables represent background or behavioral characteristics, which theoretically do not directly affect the trust perception process, lacking a clear logical transmission pathway. Therefore, PEL and DMC were connected only to HO and TP (see Figure 4.2). Both control variables received high importance ratings in the Delphi process, with expert consensus recognizing their representative role in shaping doctor–patient interactions and medical outcomes, making them suitable for inclusion as background factors in the model.

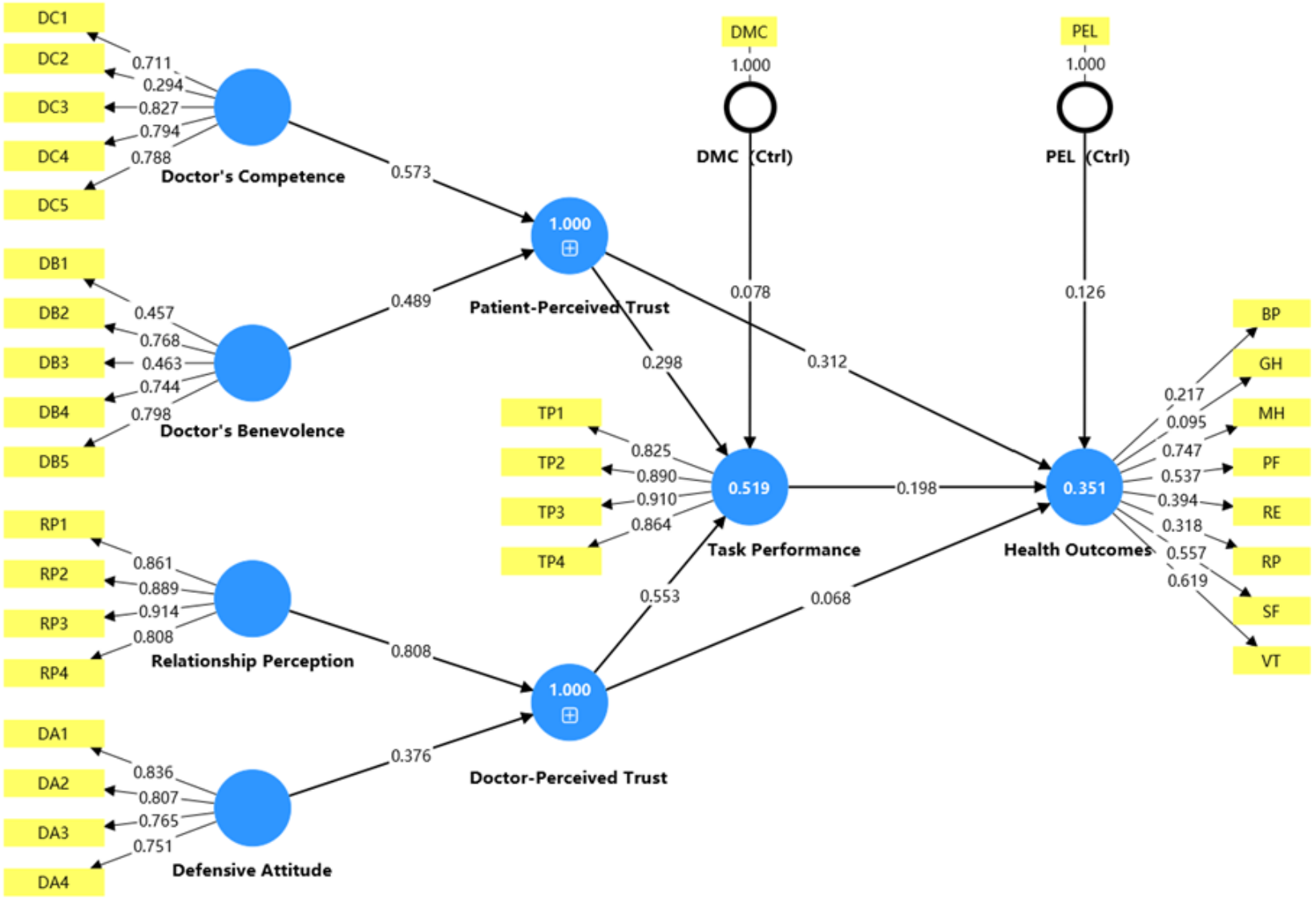

Figure 4.2 Path diagram of the structural model with control variables

(2) Control Variable Result Analysis

Table 4.22 summarizes the changes in path coefficients and explanatory power after introducing the control variables. The results show that the path coefficient for PEL → HO was β = 0.126 (t = 1.993, p = 0.046), reaching statistical significance (p < 0.05). This indicates that patient educational level (PEL) has a positive influence on patient health outcomes. The result supports the empirical value of PEL, which had received a high importance rating in the Delphi process.

Table 4.22 Control variable analysis results

Contol Variabe	Path	β	t	p	Sig	R^2 increase
PEL	PEL→HO	0.126	1.993	0.046	*	+0.041 (from 0.310 to 0.351)
DMC	DMC→TP	0.078	1.217	0.224	Not sig	+0.001 (from 0.518 to 0.519)

Note: * =p < 0.05

In contrast, the path coefficient for DMC → TP was β = 0.078 (t = 1.217, p = 0.224), which was not statistically significant, suggesting that duration of medical communication (DMC) has a relatively weak direct impact on doctor task performance. Regarding overall model fit, the R^2 value for HO increased from 0.310 to 0.351 after including PEL as a control variable, indicating a notable improvement in explanatory power. Meanwhile, the R^2 value for TP increased marginally from 0.518 to 0.519, showing almost no effect.

Importantly, the core path coefficient from TP to HO remained unchanged (β = 0.198) before and after the inclusion of control variables, indicating strong model robustness. The control paths did not interfere with the original hypothesis testing results, and the overall model structure remained consistent.

4.4 Chapter summary

This chapter systematically analyzed the relational mechanisms among doctor–patient trust, doctor task performance, and patient health outcomes using three methodological approaches: qualitative interviews, the Delphi method, and structural equation modeling (SEM).

First, in the qualitative interview phase, the study interviewed 20 medical professionals and 8 patients. The findings revealed that while the current doctor–patient relationship is generally harmonious, trust still fluctuates and is influenced by multiple factors such as the medical environment, quality of communication, and patients' cognitive abilities. Doctors tended to focus more on patients' cooperation and interaction, whereas patients based their trust on the doctor's professional competence and humanistic attitude. Many interviewees also

emphasized that doctors' task performance is shaped not only by personal expertise but also by organizational support, workflow efficiency, and patient feedback. These insights provided conceptual foundations and variable support for subsequent quantitative modeling.

Second, through two rounds of the Delphi process, the study identified two control variables—Patient Educational Level (PEL) and Duration of Medical Communication (DMC)—from an initial pool of 11 candidates. A structural equation model was then constructed and tested. The model demonstrated good overall fit, with most hypotheses supported, indicating that doctor–patient trust significantly influences both doctor performance and patient health outcomes. Specifically, patient trust primarily exerted a direct effect on health outcomes, whereas doctor trust had both direct and indirect effects through the mediation of performance. The second-order analysis revealed that patients place greater emphasis on the doctor's professional competence, while doctors rely more on positive interaction experiences with patients to build trust. This asymmetry in trust structure is one of the key findings of the study.

Regarding control variables, PEL had a significant positive effect on health outcomes, suggesting that higher education levels contribute to improved health perceptions. In contrast, DMC did not show a significant direct effect on doctor performance, indicating that it may influence outcomes through other mechanisms.

In summary, this chapter developed and validated an integrated path model combining second-order trust structures, doctor task performance, and patient health outcomes. It preliminarily revealed the heterogeneous structure of doctor–patient trust, mediating mechanisms across distinct perceptual paths, and the impact of individual background variables, thereby providing a robust empirical foundation for further theoretical development and practical application.

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Chapter 5: Discussion

This study, using a sample of doctors and patients in the Zhanjiang region, explores the trust levels between doctors and patients with varying characteristics and investigates the role of this trust in the physician-patient relationship. It further analyzes the potential impact of trust on physician task performance and patient health outcomes. The relationships between these variables were tested using Structural Equation Modeling (SEM) to provide scientific evidence for understanding and improving physician-patient trust.

In the current healthcare environment, the physician-patient trust relationship in China faces unprecedented challenges (J. Guo et al., 2019). Studies have shown that the lack of trust is one of the fundamental reasons for the deterioration of physician-patient relationships (Lee & Lin, 2011; Tucker et al., 2015; Wickramasinghe et al., 2004). This lack of trust not only hinders communication and understanding between doctors and patients but may also affect patient adherence to treatment and physician professional performance, potentially exacerbating the occurrence of medical disputes.

In fact, trust is a critical link in the physician-patient relationship, influencing not only the doctor’s diagnostic and treatment behavior but also determining the patient’s acceptance and cooperation with the treatment plan (Peng et al., 2023). The absence of trust has significant negative consequences for both parties and can lead to a range of serious outcomes. For instance, the hospital's reputation may suffer, leading to more patient skepticism, which affects the hospital's social image and operational efficiency. This may, in turn, alter the attitudes of doctors, reducing their work motivation and professional responsibility, and potentially causing burnout, which would further impact both their work performance and the patient treatment outcomes (Hall et al., 2001; Lv, 2020).

This chapter will discuss the findings of key variables and explore the factors influencing physician-patient relationships, physician task performance, and patient health outcomes. It aims to provide effective guidance and recommendations for the healthcare industry to improve physician-patient relationships, enhance healthcare service quality, and improve patient health and well-being.

5.1 Study overview

5.1.1 Current status of physician trust

The results of this study show that physicians' trust in patients is at a relatively high level and significantly higher than patients' trust in doctors. However, previous studies have often found that physicians' trust in patients is generally at a moderate to low level. Many studies have stated that the physician-patient trust level from the physician's perspective in China is low and has not yet reached the desired level (J. J. Sun et al., 2018; X. J. Wang & Wang, 2016).

However, it is worth noting that some studies suggest physicians' trust in patients is relatively good. W. J. Li (2018), using the ITS scale to survey 452 healthcare professionals, found the average trust score to be 79.46±7.35, indicating a good level of trust. Ye et al. (2011), using a self-designed questionnaire to survey 220 healthcare professionals, found that 60% of medical staff reported "trusting the majority" of their patients. The discrepancy in findings could be attributed to the limited number of measurement tools available for assessing physicians' trust in patients in China (X. S. X. S. Yang et al., 2021).

This variation in results highlights the complexity of measuring and interpreting trust in medical settings and points to the need for more robust tools to assess physician-patient trust from the perspective of medical professionals.

This study evaluates physicians' trust in patients from two dimensions: relational perception and defensive mindset. According to the statistical results, within the higher levels of physicians' trust in patients, both the relational perception dimension and defensive mindset dimension scored relatively high.

In terms of relational perception, when the physician group perceives a higher risk of potential adverse outcomes that could disrupt the harmonious relationship between doctors and patients, they tend to take actions to avoid such risks (Y. F. Gao, 2023). With the rapid development of the internet, physicians are under increasing social pressure from public opinion. The speed and breadth of information dissemination have greatly amplified the social impact of physician-patient conflicts (X. Z. Wang, 2019). Particularly, some one-sided reports of incidents involving physician harm and medical disputes often lead to negative public evaluations of doctors (C. Gao & Yu, 2019). Certain media outlets, in reporting incidents of harm to doctors, overlook the complexity of the facts, and one-sided media portrayals exacerbate the negative emotions of society toward the medical profession. This, in turn, increases physicians' perceived risks. In facing such a highly socialized media environment,

doctors often feel under intense public pressure, which may trigger a defensive mindset. As a result, the trust level a doctor has in a patient may be affected, especially when the doctor is concerned about potential negative behaviors from the patient (e.g., spreading unfavorable statements or exaggerating medical conditions). This distrust can worsen, leading the doctor to feel that the patient does not respect them or follow medical advice, which could lead to negative consequences. Therefore, when physicians have a higher risk perception, they tend to adopt a more conservative and cautious treatment approach, trusting that the patient will follow their advice, thus increasing their trust level.

In terms of defensive mindset, the results show that although the defensive mindset dimension scores are relatively high, they are still lower than the relational perception dimension and the overall physician trust scores. From the perspective of social identity theory, doctors and patients typically identify themselves as belonging to either the "physician group" or the "patient group" due to the differences in their identities. Because of their unique roles, members of these groups often have a strong sense of identification, belonging, and pride in their respective groups, and they also tend to demonstrate higher levels of tolerance and support for one another (L. Y. Li et al., 2021).

This analysis highlights the complex interaction between physicians' relational perception, defensive mindset, and trust in patients. It emphasizes how external social factors, such as public opinion and media portrayal, can impact physicians' professional behavior and attitudes towards patients, shaping their trust in the physician-patient relationship.

However, when physician-patient conflicts or medical disputes occur, due to the professional characteristics of doctors, the stronger the sense of identity within the physician group, the more likely members are to develop antagonistic emotions towards the patient group, thereby strengthening their defensive mindset and reducing their trust in patients. In addition, with the increasing involvement of the media, the frequent outbreak of conflicts amplifies the physician group's resistance towards patients.

The results of the Structural Equation Model (SEM) analysis further indicate that the "physician’s self-perceived trust in patients" is constructed as a second-order latent variable, and the contributions of its two dimensions to the overall trust level show significant differences. Specifically, the standardized path coefficient for the “relational perception” dimension is 0.884, which is much higher than the 0.326 for the “defensive mindset” dimension. This difference suggests that, when forming trust in patients, physicians rely more on positive social interactions and a sense of identity rather than on passive defensive evaluations. In other words, positive communication experiences and emotional acceptance

are fundamental to building physicians' trust in patients. While defensive mentality exists, its explanatory power in the structure is relatively weak and is more likely to be a coping mechanism under stress, rather than a core mechanism for the formation of physician-patient trust. Defensive mindset often originates from the pressure and anxiety doctors feel when facing patients, particularly in high-pressure environments, where doctors may become excessively concerned about patients' feedback and evaluations. When doctors feel their judgment is being questioned or when they face high professional risks, they may adopt a more conservative approach, avoiding decisions that could lead to patient dissatisfaction or treatment failure (X. J. Liu et al., 2018). This excessive caution and avoidance may reduce potential risks in the short term, but in the long run, it may impact doctors' decision-making efficiency and professional capabilities. For instance, doctors may overly rely on standardized processes or expert advice out of fear of making mistakes, rather than making quick and decisive decisions based on the patient's condition and personal experience. This, to some extent, may reduce work efficiency.

However, the impact of defensive mindset on physician task performance is relatively weak, which suggests that the quality of physician-patient relationships and the establishment of trust are more important in improving task performance. A physician’s perception of the physician-patient relationship often plays a more crucial role in determining their work performance. Therefore, physicians and healthcare management decision-makers should focus on reducing physicians' defensive mindset and, at the same time, place greater emphasis on enhancing trust to improve physicians' performance.

In conclusion, the research results support the idea that physician-patient trust is primarily built around the quality of interactions. Additionally, the findings suggest that healthcare managers should focus on optimizing communication processes, enhancing emotional support for physicians, and improving their sense of professional security, ultimately fostering a positive cycle of trust in the physician-patient relationship.

5.1.2 Current status of patient trust

In this study, patients' trust in doctors was generally lower than the trust that doctors perceive from their patients, which is consistent with previous research (Hall et al., 2001). In healthcare interactions, doctors typically have more confidence in the medical system and in their own abilities, believing that patients are more likely to follow their medical advice and trust their judgments, thereby overestimating the level of trust patients have in them. In

contrast, patients often feel skeptical, especially when facing high-risk or complex treatments. Their trust is influenced by various factors, including past medical experiences, the doctor's communication style, and the transparency of the treatment (Saha et al., 2008). Moreover, media coverage of physician-patient disputes has further exacerbated patients' mistrust.

Among the two dimensions of trust in physicians from the patient perspective, trust in the physician's technical ability scored the highest, reaching 4.4 (SD = 0.6), while trust in the physician's benevolence was relatively lower.

In the healthcare environment, a physician's technical ability is often regarded as the most crucial factor in the diagnosis and treatment process, and it is considered a core element that influences the physician-patient relationship (C. M. Gao et al., 2016). Patients tend to directly link doctors' professional skills to the treatment outcomes, and their trust in doctors is largely derived from recognition of their expertise, diagnostic abilities, and treatment plans. Research by Hao et al. (2020) found that after receiving support from higher-level hospitals in areas like point-to-point assistance, telemedicine consultations, and expert consultations, patients' trust in doctors was enhanced in grassroots medical institutions in Hangzhou. When making healthcare choices, patients typically prioritize the medical technology of the hospital first, followed by the doctor's service attitude (Lv, 2020). This suggests that patients, when faced with health problems, are more inclined to seek help from doctors and hospitals with higher technical capabilities. Therefore, the higher the doctor's technical ability, the more likely it is to build patient trust.

This highlights the importance of a physician's technical proficiency in establishing trust with patients, emphasizing the need for doctors to continuously improve their skills and technical capabilities to foster greater trust in the physician-patient relationship.

The score for the "benevolence" dimension is slightly lower than that for the "technical ability" dimension, indicating that patients have relatively lower trust in aspects of physicians' humanistic care, such as their service attitude and communication skills. It is evident that, while patients trust doctors' technical abilities, a lack of trust in doctors often stems from dissatisfaction with the quality of medical services. This deficiency in service, particularly when there is a lack of effective communication and sufficient attention and patience between doctors and patients, may lead patients to feel neglected or disrespected (C. M. Gao et al., 2016), which in turn affects their trust in both the doctor and the hospital. In such cases, patients may project their frustration onto the entire healthcare system, resulting in decreased trust in healthcare professionals. Although advances in medical technology can effectively improve treatment outcomes, if patients do not receive a positive service experience during

the healthcare process, the physician-patient trust relationship is still vulnerable to challenges.

The Structural Equation Model (SEM) further reveals the differences in contributions of the two dimensions to the overall patient trust level. The results show that "physician's technical ability" has a standardized path coefficient of 0.573, higher than "physician's benevolence" at 0.489, indicating that patients place more emphasis on whether a doctor possesses professional competence when forming trust judgments, rather than solely relying on attitudes and emotional expression. However, the importance of the "benevolence" dimension should not be overlooked, as its role may be more aligned with the emotional support aspect of trust formation. This finding suggests that in the construction of patient trust, a physician's "ability" remains the primary prerequisite, while "attitude" serves as an important supplementary factor that provides emotional comfort and psychological security. In clinical practice, if physicians can simultaneously demonstrate high technical ability and a warm, caring attitude, they are more likely to foster a stable perception of trust and encourage positive health behavior responses from patients.

Therefore, establishing a more patient-centered healthcare system, strengthening communication and interaction between doctors and patients, is an essential approach to resolving the physician-patient trust crisis.

5.1.3 Current status of physician task performance

The overall mean score for physician task performance is 4.6, which is close to the maximum possible score, indicating that physicians' overall performance in healthcare services is excellent and has received consistently high evaluations from the physician group. This result not only reflects physicians' outstanding performance in professional skills, diagnostic efficiency, and communication abilities, but also implies a strong sense of responsibility and sensitivity to patients' needs demonstrated by physicians in their task execution. Furthermore, the standard deviation of only 0.58 suggests a low level of dispersion, indicating that patients' evaluations of physicians' task performance are highly consistent. This further reflects the stability and reliability of physicians in executing medical tasks.

Research has shown that physicians' trust in patients plays an important role in the medical process and treatment outcomes. Trust influences physicians' attitudes and behaviors, which in turn affects the quality of task execution. Specifically, when physicians have high trust in patients, they are more willing to provide personalized and comprehensive treatment plans, listen to patients' opinions and needs, actively communicate with patients, and establish

a good doctor-patient relationship. This trust helps physicians maintain a high level of focus and engagement during the treatment process, ensuring the precise execution of each medical task. Additionally, physicians' trust in patients helps reduce barriers and misunderstandings in communication. When doctors trust their patients, they are more proactive in sharing information, ensuring that patients understand the treatment plan and goals, which in turn enhances patients' adherence to treatment and motivation for recovery. A high-trust physician-patient relationship promotes better cooperation, which leads to improved physician task performance.

Patients, upon perceiving physicians' trust, tend to demonstrate greater cooperation and proactive communication. This facilitates physicians in adjusting treatment strategies in a timely manner and optimizing medical plans, thereby improving overall treatment outcomes. Moreover, the relatively high physician task performance scores and low standard deviation reflect the consistency and high level of professionalism in medical services. This high performance and stability are likely closely related to the establishment of trust between doctors and patients. The establishment of trust encourages physicians to focus more on task execution, continuously optimize diagnostic and treatment behaviors, and ensure that each patient receives consistent and high-quality medical services. This stability is not only evident in the physicians' professional abilities but also in the quality of doctor-patient interactions and patients' treatment experiences.

Overall, the results suggest that trust between physicians and patients plays a crucial role in enhancing physician task performance and promoting better treatment outcomes. Trust leads to improved communication, collaboration, and overall medical service quality, ultimately benefiting both the physician and the patient.

The Structural Equation Modeling (SEM) analysis further revealed that physician task performance occupies a crucial intermediary position in the overall model, with significant bidirectional relationships. In the path analysis, the impact of physician self-perceived trust on their task performance was the most significant ($\beta = 0.553$), while the impact of patient self-perceived trust on physician task performance, although positive ($\beta = 0.298$), was relatively weaker. This suggests that when it comes to stimulating physicians' subjective performance perceptions, their own perception of trust plays a more decisive role. This asymmetrical relationship reflects the reality that, in medical settings, a physician's work performance is often influenced more by their subjective judgment and experience of the physician-patient relationship rather than by trust expectations coming solely from the patient.

Furthermore, the study verified this differential effect mechanism by analyzing the

mediation effect of physician task performance. Physician-perceived physician-patient trust can indirectly improve patient health outcomes (HO) through enhancing task performance. The indirect path was significant ($\beta = 0.109$, $p = 0.041$), explaining 32.1% of the total effect, and is categorized as a moderate partial mediation. On the other hand, the path from patient trust to health outcomes through physician task performance, though showing a consistent direction, did not reach significance ($\beta = 0.059$, $p = 0.214$). This suggests that trust from patients has a relatively weak motivational effect on physician performance and may not significantly improve their health evaluations through this path. This finding likely reflects the limited involvement of patients in the medical process, making it difficult for their trust to influence physician behavior and, consequently, treatment outcomes.

The inclusion of control variables further confirmed the robustness of the structural model. After introducing the control variable "communication time during medical visits," the R^2 value for physician task performance remained almost unchanged (from 0.518 to 0.519), and the core path coefficients remained stable. This indicates that the primary determinant of physician task performance is still their own perception of physician-patient relationship trust, rather than external background variables. This result highlights the intrinsic stability of the main path: "physician trust → physician task performance → health outcomes."

Overall, physician task performance is not only a core indicator of healthcare quality but also a highly directional mediator within the trust structure. A positive physician-patient relationship, as perceived by the doctor, not only contributes to improved performance but also indirectly enhances patient health perceptions. This finding has important implications for the construction of physician-patient relationships and hospital management practices, providing valuable insights for improving healthcare outcomes.

5.1.4 Current status of patient health outcomes

The results of this study reveal that patients' self-assessment of health outcomes varies significantly across different health dimensions, reflecting the complexity of their health status, particularly when faced with chronic diseases or the multifaceted influences during the treatment process.

First, the bodily pain dimension scored the highest, with a mean of 84.5 (SD = 18.1), significantly higher than the other dimensions. This indicates that the majority of patients perceive their pain management quite positively. Bodily pain, as a common clinical symptom, has become the third largest health issue after cardiovascular diseases and cancer. Patients not

only endure physical pain but also often experience significant psychological impact, frequently accompanied by anxiety and depression, which severely affect their quality of life (Q. Tong et al., 2024). Therefore, the effectiveness of pain management directly influences the quality of life for patients. The relatively high score for bodily pain in the study may reflect patients' positive evaluation of pain relief measures, such as medication, physical therapy, and psychological counseling. In recent years, various integrated treatments for pain and a focus on individual needs have enabled many patients to effectively control or alleviate pain, thereby improving their physiological comfort and quality of life. This has significantly enhanced patients' satisfaction with healthcare services (Geng et al., 2024), contributing positively to the improvement of the physician-patient relationship.

However, despite good pain management, the scores for other health dimensions were relatively low, indicating a noticeable imbalance in patients' overall health status. Particularly, the vitality dimension scored the lowest, with a mean of only 64.1 (SD = 18.5), reflecting patients' low self-assessment of their energy levels and daily vitality. A decline in vitality is likely associated with various factors, such as prolonged illness, accumulated physical fatigue, side effects of medications, or psychological health issues (Imai et al., 2023). The lack of vitality not only limits patients' daily activities but also may lead to a reduced overall satisfaction with their health, further impacting their mental health and emotional well-being.

These findings underscore the complex and multifaceted nature of patient health outcomes, highlighting that while pain management may be well-addressed, other dimensions, particularly vitality, remain areas of concern. Addressing these imbalances is crucial for improving patients' overall health perceptions and enhancing their quality of life.

The Physical Functioning (77.9) and Health Change (73.7) scores were relatively high, indicating that patients generally had a positive self-assessment of their physical functions. This could be because many patients perceive some degree of recovery or maintenance of their physical function after undergoing treatment or disease management, particularly in terms of strength and endurance. However, despite having good physical function, patients may still face challenges in adapting to lifestyle changes and adjustments. The Health Change dimension score suggests that while patients have adapted to bodily changes, their expectations for future health may not be very optimistic, possibly due to the long duration of the disease, uncertainty about the treatment plan, or the impact of complications.

The Emotional Functioning (69.2) and Social Functioning (68.4) scores were lower, reflecting deficiencies in emotional support and social interactions for patients. Emotional and social challenges are common among patients with chronic diseases (D. Guo et al., 2024).

Long-term disease burdens, physical discomfort, and the inconveniences caused by treatment may make patients feel uncomfortable in social settings, leading to feelings of isolation. The low Emotional Functioning score may also indicate that patients are struggling with emotional regulation, potentially experiencing mood fluctuations, depression, or increased anxiety. The low score for Social Functioning further suggests that patients may be restricted in participating in daily social activities, which not only affects their quality of life but could also result in psychological loneliness and self-isolation.

The Mental Health dimension score (65.4) was at a moderate level, indicating that patients may experience some distress in terms of emotional stability and psychological coping. While pain may have been managed, the prolonged experience of illness and the accompanying psychological stress likely contribute to feelings of fatigue in terms of mental health, with mood swings, anxiety, and insomnia being common issues (Q. Tong et al., 2024). The relatively low mental health score may also be linked to the decline in social functioning, with a lack of social support exacerbating the psychological burden on patients and leading to emotional instability (Dai et al., 2024).

The Overall Health (73.7) and Physiological Functioning (67.1) scores were moderate, reflecting a somewhat cautious and less optimistic overall health assessment from the patients. While patients may not have completely lost their basic physiological functions, their perception of overall health may be influenced by several factors, such as the chronic nature of their condition, the uncertainty of treatment effectiveness, and a decline in quality of life. This moderate scoring likely represents a conservative assessment of their health status, suggesting that patients are not very optimistic about their future health and may harbor some anxiety and uncertainty about disease control and treatment outcomes.

Through Structural Equation Modeling (SEM), this study also derived the factor loading structure of health outcomes. The factor loadings for the eight dimensions ranged from 0.134 (General Health, GH) to 0.780 (Role-Physical, RP). Among them, Role-Physical (0.780), Role-Emotional (0.760), and Social Functioning (0.324) contributed more significantly to the overall health outcomes, highlighting the particularly significant impact of physician-patient trust on patients' daily functional recovery and emotional well-being. When patients trust their doctors and actively cooperate with treatment, they are more likely to restore their life roles and emotional stability, leading to more positive health evaluations.

It is worth noting that the factor loading for the Vitality dimension was the lowest (0.223) among the eight dimensions. This aligns with existing research (Zrinyi & Horvath, 2003) and may reflect the negative perception some patients have, even when they experience physical

recovery through medical treatment. If psychological support and emotional communication are lacking, patients may feel that although their bodies are treated, their emotional and mental well-being is neglected, which diminishes their overall assessment of vitality and quality of life.

Moreover, high trust levels can also alleviate patients' perception and response to pain. Previous studies have pointed out that trust enhances psychological resilience and pain tolerance in patients (Ashton-James et al., 2022), while low trust can lead to greater anxiety and stress responses, intensifying subjective pain experiences (Anderson et al., 2023). In this study, the higher factor loading for the Bodily Pain dimension (0.583) partially corroborates this notion, indicating that trust not only influences emotional well-being but also plays a role in reducing patients' pain perception and enhancing their overall health outcomes.

These findings underscore the critical role of physician-patient trust in improving both the physical and emotional dimensions of health, illustrating how trust can facilitate recovery and foster a more positive patient experience.

5.2 Physician-patient trust and physician task performance

This study explores how the differences in trust perception between doctors and patients regarding the physician-patient relationship affect physician task performance. The Structural Equation Modeling (SEM) results indicate that both doctors' and patients' trust perceptions positively influence physician task performance, but the degree and mechanism of influence are not the same, showing significant asymmetry.

5.2.1 The impact of physician's self-perceived trust in patients on task performance

The results show a significant positive correlation between physicians' self-perceived trust in patients and their personal task performance ($\beta = 0.553$, $p < 0.001$). This suggests that when physicians perceive a good relationship with their patients and positive interactions, they tend to demonstrate greater responsibility and engagement, thus completing medical tasks more effectively. The physician's self-perceived trust in patients is composed of two dimensions: relational perception and defensive mindset, with relational perception contributing more (standardized coefficient = 0.808). This indicates that when physicians perceive patients as understanding, respectful, and cooperative, their perceived trust in the physician-patient relationship increases, which in turn improves their task execution efficiency and quality.

When doctors interact with patients, if they feel trusted by the patient, they experience

greater responsibility and pride. These positive emotional experiences can significantly enhance their motivation at work (L. W. Zhang et al., 2023). This motivation, in turn, makes it easier for doctors to make accurate judgments and efficient decisions in practice, improving their task performance. Trust, in essence, is a form of social capital, and physician-patient trust is a special form of interpersonal activity (W. M. Li, 2005). In the diagnostic and treatment process, good trust encourages patients to fully explain their conditions, enabling doctors to gain a comprehensive understanding of the patient and make efficient diagnostic strategies (Song, 2001). This efficient interpersonal interaction between doctors and patients naturally improves the physician's work performance.

Moreover, physicians perceiving trust from patients also helps reduce their own stress and anxiety. In medical work, doctors face enormous pressure and challenges, including high workloads, significant stress, high-risk decisions, and patient expectations (Y. J. Yang et al., 2021). Research shows that 70.2% of doctors report feeling high work pressure, believing that they not only need to provide medical services but also offer emotional support to patients and their families (S. S. Liu et al., 2019). In a high-trust physician-patient relationship, doctors' psychological burdens are often alleviated because trust establishes a relatively safe environment. Doctors can more calmly address patient needs and unexpected situations. When doctors perceive an increase in trust, they can communicate and make decisions more relaxedly, without excessive concern about patients questioning or being dissatisfied with their abilities. This stress-relief effect not only improves doctors' work efficiency but also helps them make calm and precise judgments in complex situations, thus improving task performance.

Furthermore, the mediation effect also verified the indirect effect of physician trust on health outcomes, i.e., by enhancing task performance, it indirectly influences patients' health perceptions (indirect effect $\beta = 0.109$, $p = 0.041$), supporting Hypothesis 7. This finding highlights the key role of physicians' subjective trust in driving work motivation.

This section of the study emphasizes the significant role of doctors' self-perceived trust in patients in improving task performance and the indirect impact of this trust on patients' health outcomes, underlining the importance of trust in fostering better healthcare delivery and improved patient care.

5.2.2 The impact of patient's self-perceived physician-patient trust on physician task performance

In contrast, patient self-perceived trust in physicians also has a positive impact on physician task performance, but the effect is smaller ($\beta = 0.298$, $p = 0.045$). This suggests that while patient trust in physicians may stimulate doctors' enthusiasm for providing services, its impact is relatively indirect, possibly more through feedback mechanisms or service expectations influencing physician behavior.

Although patient self-perceived trust in physicians positively influences physician performance, the mediation analysis reveals that its indirect effect on health outcomes via task performance is not significant (indirect effect $\beta = 0.059$, $p = 0.214$), which does not support Hypothesis H6. This result indicates that patient trust in physicians is more likely to directly affect their health outcomes by enhancing their healthcare engagement, adherence, and subjective health perception, rather than indirectly through changes in physicians' performance levels.

In practical situations, when patients perceive doctors as professionally reliable and friendly, they are more likely to cooperate with the treatment process, adhere to prescribed medications, follow medical advice, and actively communicate changes in their condition with the doctor. These behaviors not only improve the effectiveness of treatment but also make patients more likely to feel that their health is improving. Additionally, a high level of trust can reduce patients' anxiety and uncertainty about the medical process, improving their overall healthcare experience and thus enhancing their health evaluations. This "trust → behavior → perception" pathway is particularly significant in the patient population, reflected in improvements in emotional state, functional recovery, and self-evaluation of health outcomes (Georgopoulou et al., 2020).

In contrast, physician behavior during treatment is constrained by institutional norms, time limitations, and professional judgment. While patient trust does have a certain motivating effect, its influence is mainly reflected in emotional feedback or the interactive atmosphere rather than directly promoting physician task performance. In other words, although patient trust is important in physician-patient interactions, its impact on enhancing physician performance remains limited. The value of patient trust is more evident in improving their proactive behaviors and psychological perceptions rather than directly influencing physician behavior.

Therefore, relying solely on patient trust to drive physician performance is not an

effective way to improve health outcomes. Instead, improvements in physician performance are likely to depend more on internal motivators such as organizational incentives, professional identity, and support mechanisms.

5.3 Physician-patient trust and patient health outcomes

5.3.1 The impact of patient's self-perceived physician-patient trust on health outcomes

This study found that patient self-perceived physician-patient trust has a significant positive impact on health outcomes ($\beta = 0.312$, $p < 0.001$), validating Hypothesis H1. This result suggests that trust, as a positive psychological resource, can effectively improve patients' health perceptions. Patients with high levels of trust are generally more willing to cooperate with the doctor’s treatment plans, enhance medication adherence, and exhibit better self-discipline in their behaviors, which in turn leads to greater improvements in their health status.

From a second-order structural perspective, patient self-perceived physician-patient trust consists of two dimensions: physician’s technical ability and physician's benevolence, with the factor weight of physician's technical ability being 0.573, higher than the factor weight of physician's benevolence at 0.489. This indicates that in the formation of trust, patients rely more on the physician's professional competence. This finding is consistent with the views of scholars such as Lv (2020), who argue that technical ability is a crucial prerequisite for patients when selecting healthcare providers and trusting physicians. Particularly in the management of complex diseases or chronic conditions, patients are more likely to trust doctors who are perceived as technically competent.

However, trust is not entirely based on technical competence alone. Patients' trust in doctors' humanistic care and communication attitudes is also crucial. In practice, poor service attitude remains one of the primary sources of patient complaints (S. Y. Wang et al., 2014). Some doctors, due to clinical pressures or reliance on standardized processes, may lack emotional response and patience in their communication, leading patients to feel ignored or disrespected (J. J. Sun et al., 2018), which in turn affects the establishment of trust and health perceptions. This suggests that even if physicians perform excellently in terms of technical ability, a lack of good interpersonal interaction may still limit the overall health experience for patients.

Overall, patient self-perceived physician-patient trust not only directly improves health

outcomes but also plays a role through multiple pathways, including functional recovery, emotional regulation, and social participation. Among these, "technical trust" carries more weight, but the absence of "emotional trust" may weaken the effect of trust. Therefore, the key to improving patient health outcomes lies in achieving an organic integration of "professionalism" and "humanism," creating a trustworthy and communicative physician-patient relationship.

5.3.2 Physician's self-perceived physician-patient trust and health outcomes

Unlike patient self-perceived trust, the impact of physicians' trust in patients on health outcomes is not directly observed; instead, it is mediated through the physicians' own task performance. The Structural Equation Modeling (SEM) results indicate that the effect of physician self-perceived physician-patient trust on health outcomes did not reach statistical significance, and Hypothesis H2 was not supported. In other words, the trust that doctors have in the physician-patient relationship does not necessarily translate directly into improvements in patient health outcomes and may be influenced by external factors such as patient cooperation, disease severity, and other situational variables.

However, physician self-perceived physician-patient trust had a significant positive impact on physician task performance ($\beta = 0.553$, $p < 0.001$), and physician task performance, in turn, positively influenced patient health outcomes ($\beta = 0.198$, $p = 0.027$). This formed a significant indirect pathway (indirect effect $\beta = 0.109$, $p = 0.041$), supporting Hypothesis H7.

This finding has important practical implications. Physicians' trust in patients helps to stimulate higher professional engagement and service quality, which in turn indirectly promotes better health outcomes for patients. When doctors feel trusted, they are more likely to listen, respect, and understand patients, which enhances the effectiveness of doctor-patient communication, enables the formulation of more reasonable treatment plans, and results in greater responsibility and professional precision during execution. These behaviors ultimately improve patients' health experiences and evaluations.

It is worth noting that the trust physicians perceive in patients alone does not directly improve patient health outcomes; its effectiveness depends on whether this trust is transformed into high-quality medical services (i.e., task performance). Therefore, in improving patient health outcomes, the mere perception of trust from doctors is not sufficient. The key lies in encouraging physicians to internalize this trust into visible service behaviors and professional performance, which can then translate into tangible health benefits for

patients.

5.4 Comparison of path differences between physician trust and patient trust

This study constructs and validates a bidirectional path model of physician-patient trust from both perspectives, revealing significant differences in the mechanisms through which trust affects physician task performance and patient health outcomes, demonstrating clear asymmetry.

From the path structure, physician self-perceived trust primarily influences task performance, which then indirectly affects patient health outcomes, forming a progressive chain of "trust → performance → health." In contrast, patient self-perceived trust mainly impacts health outcomes directly through increasing their adherence, healthcare engagement, and subjective health perception, without being mediated by physician task performance. The "trust → behavior → health" pathway emphasizes changes in the patient's behavior and cognition rather than reshaping physician performance.

The differences in the paths of physician and patient trust not only reflect the functional distinctions between the roles of physicians and patients in the relationship but also offer differentiated management recommendations for physician-patient communication strategies, service model optimization, and trust restoration mechanisms. Physician trust should be transformed into work motivation and service quality, whereas patient trust requires emotional support and health education to guide them toward making positive behavioral responses. Only when both forms of trust are nurtured can they collaboratively contribute to achieving improved health outcomes.

This distinction emphasizes the importance of addressing both the physician's professional competence and the patient's emotional and behavioral aspects in fostering a healthier physician-patient relationship, ultimately leading to better overall health outcomes.

5.5 Control variable discussion

This study incorporated two control variables, patient education level and communication time during medical visits, based on the Delphi method expert scoring results, to enhance the explanatory power of the model and control for individual differences affecting the core

pathways.

The results show that the higher the patient's education level, the better their self-reported health outcomes ($\beta = 0.126$, $p < 0.05$). This highlights the importance of patient education. A significant portion of physician-patient conflicts arises from patients' lack of medical knowledge and poor adherence, leading to irrational thinking (S. Y. Wang et al., 2014). Higher-educated patients typically demonstrate better health literacy, higher adherence, and a greater tendency to accept medical advice, thereby improving their health outcomes. Furthermore, patients with higher education levels are better equipped with health knowledge, information retrieval skills, and understanding of medical advice, which enhances their ability to execute health behaviors and their subjective health perception.

In contrast, communication time during medical visits did not have a significant impact on physician task performance. This may be because the length of communication does not fully represent the quality of communication. Physician task performance is more influenced by intrinsic motivations, organizational support, and professional judgment, rather than solely determined by the length of communication. Future studies could consider incorporating variables that better reflect the quality of communication, information symmetry, and other interaction-specific factors as controls or mediators to more comprehensively reveal the mechanisms by which physician-patient interactions influence physician behavior and patient perceptions.

This analysis underscores the importance of patient education in improving health outcomes and suggests that while communication time may play a role, the quality of communication and the underlying factors affecting physician performance warrant further exploration in future research.

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Chapter 6: Conclusions

6.1 Research conclusions

This study systematically explored the impact mechanisms of physician and patient self-perceived physician-patient trust on physician task performance and patient health outcomes from a bidirectional trust perspective. The main conclusions drawn are as follows:

(1) The socio-demographic characteristics of patients, particularly education level, have a significant impact on physician-patient trust and health outcomes.

The study indicates that patient education level, as a control variable, has explanatory power regarding health outcomes. Patients with higher education levels are more likely to possess better health literacy and self-management capabilities, which in turn affect their health perceptions and treatment adherence. Therefore, socio-demographic characteristics should be included in the model to gain a more comprehensive understanding of the relationship between physician-patient interactions and health outcomes. This answers Research Question 1: Does socio-demographic characteristics affect physician-patient trust and health outcomes?

(2) Physician’s perception of patient trust significantly enhances task performance.

The research found that when physicians perceive their relationship with patients as good and communication as smooth, their service enthusiasm and professional engagement increase, which improves diagnostic efficiency and responsibility. This positive attitude promotes higher-quality healthcare services, indirectly leading to better health outcomes. Trust in the physician-patient relationship is a key driver of physician task performance. This answers Research Question 2: How does physician-patient trust affect physician task performance?

(3) Patient-perceived trust directly promotes improvements in health outcomes.

The study indicates that patients' trust in physicians directly influences their health perceptions and behaviors. When patients trust their doctors, they are more likely to follow medical advice, actively cooperate with treatment, and show positive changes in functional recovery, emotional regulation, and health perception. Compared to physician performance, patient-perceived trust has a more direct and significant impact on health outcomes. This

answers Research Question 3: How does physician-patient trust affect patient health outcomes?

(4) There is an asymmetrical path relationship between physician-patient trust, physician performance, and patient health outcomes, and individual differences may moderate this path.

The results reveal that physician trust in patients indirectly affects health outcomes by improving task performance, while patient trust directly influences health outcomes. The control variable analysis shows that individual differences (such as patient education level) may play a moderating role in these paths, suggesting that individual background factors should be considered when studying physician-patient interactions and their impact on trust and health outcomes. This answers Research Question 4: Are there mediating or moderating paths between physician-patient trust, physician performance, and patient health outcomes?

These conclusions highlight the distinct and sometimes asymmetric mechanisms through which physician-patient trust, physician task performance, and patient health outcomes are interconnected, and the important role individual differences play in shaping these relationships.

6.2 Managerial recommendations

Physician-patient trust plays a significant role in improving medical performance and health perceptions, but its enhancement requires a foundation based on mutual understanding of roles and mechanisms. Physician trust needs to be translated into higher-quality service behaviors, while patient trust should be activated through proactive behaviors and emotional regulation. Future management practices should focus on two aspects: enhancing physician motivation mechanisms and improving patient relational experiences. This will promote deeper mutual trust between physicians and patients, ultimately achieving a dual enhancement of healthcare service outcomes and humanistic experience.

6.2.1 Management recommendations for decision-makers

This study provides empirical support for improving the current healthcare system by exploring the interrelationships between physician-patient trust, physician task performance, and patient health outcomes. The rapid economic development has significantly improved living standards, increasing public attention to health issues. However, this has also resulted in an imbalance between economic growth and healthcare services. The government plays a crucial role in this process, not only by promoting the optimal allocation of healthcare

resources but also by actively addressing physician-patient conflicts, becoming a key force in mitigating medical disputes.

Firstly, the government should strengthen the construction of physician-patient trust through policy development, provide psychological support services to help doctors manage workplace stress, and enhance physician-patient communication skills, particularly in fostering emotional empathy and benevolent attitudes. This can reduce conflicts and mistrust between doctors and patients. Furthermore, media regulation and moderate public opinion guidance can play a positive role in promoting positive physician-patient interactions and increasing societal trust in the healthcare industry.

Secondly, the work environment for doctors should be optimized by improving infrastructure, reducing unnecessary workloads, and enhancing cooperation across professional teams to improve overall medical efficiency. Additionally, providing career psychological support to doctors can help them better manage stress and emotions, ensuring they perform efficiently in their tasks.

Regarding patients' health needs, healthcare institutions should implement personalized medical services, focusing on comprehensive health management, particularly for patients with lower vitality and emotional functioning. By employing multidimensional interventions, the overall health levels of these patients can be improved. The government should also increase investment to bridge the urban-rural healthcare gap, enhancing accessibility to medical services in rural and township areas, especially in health education and chronic disease management.

In data analysis and decision-making support, the government should promote the collection and analysis of health big data, formulate precise medical policies, and establish a scientific performance evaluation mechanism, using physician-patient trust and physician performance as the core basis for resource allocation and physician motivation.

Another key point is that physician technical competence and humanistic care should be equally emphasized, avoiding the sole reliance on technical treatments while neglecting the emotional support and psychological health needs of patients. Furthermore, innovating healthcare models, especially in areas such as telemedicine and integrated health management services, will improve the accessibility and efficiency of healthcare services, particularly in resource-constrained regions.

By implementing these measures, trust between physicians and patients, physician task performance, and patient health outcomes can be enhanced at multiple levels. Ultimately, this will contribute to a more harmonious and efficient healthcare system, establishing a more

humanized and scientifically-based medical service environment.

6.2.2 Management recommendations for hospital administrators

A harmonious physician-patient relationship is the result of multiple factors working together, and the management level of hospitals is a particularly critical component in building such relationships. Hospital administrators should approach this from multiple dimensions to improve physician-patient relationships, enhance physician performance, optimize patient health outcomes, and improve overall hospital operations.

Firstly, hospitals should strengthen the construction of physician-patient trust by improving physicians' communication skills, increasing diagnostic and treatment transparency, and enhancing the benevolence dimension. This will foster greater trust between doctors and patients. Hospitals can implement regular communication skills training, emphasize empathy, and encourage transparent discussions about diagnosis and treatment plans to build and maintain trust.

Secondly, optimizing the work environment for doctors is crucial. Reducing their workload, providing psychological support, and offering career development opportunities will ensure that physicians can work efficiently in a supportive environment. This not only boosts their morale and job satisfaction but also improves their professional engagement and task performance. Hospitals should also consider implementing mental health resources and stress management programs for healthcare staff to alleviate job-related pressure.

Additionally, hospitals should pay attention to the overall health needs of patients. Beyond merely treating diseases, hospitals should implement multidimensional health interventions, improve chronic disease management, and provide psychological counseling. A holistic approach to patient care, which addresses both physical and emotional health, can significantly enhance patients' overall health outcomes.

Cultivating and motivating physicians' professional competence is also critical. Regular training and the establishment of clear career development pathways can boost doctors' confidence and task performance. Hospitals should invest in professional development programs that align with physicians' needs and the latest medical advancements.

Moreover, hospitals should explore the impact of physician-patient trust on health outcomes more deeply. Encouraging patient participation in decision-making and addressing their psychological needs can improve treatment outcomes. By actively involving patients in their care, hospitals can foster stronger trust, enhance cooperation, and improve patient

compliance, leading to better overall health outcomes.

Finally, considering the urban-rural disparities in health outcomes, hospitals should develop differentiated intervention measures for different patient groups and improve primary healthcare services. This will ensure that patients in underserved areas receive quality care and support, ultimately helping to elevate overall patient health across diverse populations. By implementing these strategies, hospitals can not only improve physician-patient trust and doctor performance but also create a more comprehensive and patient-centered healthcare environment that fosters better health outcomes and enhances the overall efficiency and effectiveness of the healthcare system.

6.2.3 Recommendations for physicians

As key responsible parties in the physician-patient relationship, physicians' behaviors directly impact the quality of this relationship. To improve physician-patient relationships and enhance trust, physicians should continually improve themselves and strive for progress.

Firstly, physicians need to enhance their emotional communication and empathy skills, listen to patients' concerns, and understand their worries and needs. Building a trusting relationship with patients not only helps alleviate their anxiety but also improves treatment adherence, making patients more willing to cooperate with treatment, thereby enhancing treatment outcomes. Physicians must realize that the physician-patient relationship is not only a technical interaction but also an emotional exchange.

Secondly, paying attention to patients' psychological health and emotional needs is crucial for improving the physician-patient relationship. Physicians should identify patients' emotional fluctuations and psychological states during treatment and provide timely psychological support. Especially when treating patients with major illnesses or those undergoing long-term treatment, comfort and care can effectively alleviate their stress, strengthen their confidence, and increase their motivation for treatment. Tailored treatment plans are also essential. Physicians should design treatment plans based on each patient’s unique situation, respecting their individual needs and preferences, thereby enhancing their sense of involvement and trust in the treatment.

Improving communication skills is also a critical component. Physicians should ensure they explain the diagnosis, treatment plan, and its potential effects in simple, understandable language, avoiding excessive medical jargon. This helps patients fully understand their health status and reduces misunderstandings and mistrust caused by information asymmetry.

Additionally, when communicating with patients, physicians should demonstrate sufficient patience and empathy, avoiding impatience or indifference, and thus establishing a positive and healthy interaction.

Furthermore, physicians should continuously improve their professional competence and humanistic care abilities. By continually learning the latest medical knowledge and techniques, they can enhance the quality of care and avoid patient dissatisfaction caused by outdated technical skills. Physicians should also focus on interpersonal communication skills, learning how to establish good relationships with patients and their families, and balance professionalism with warmth. Additionally, in clinical practice, physicians should strengthen their sense of teamwork, collaborating closely with nurses, pharmacists, and other healthcare team members to provide comprehensive care for patients, thereby reducing dissatisfaction and anxiety due to inefficiencies in the healthcare service process.

In summary, improving the physician-patient relationship requires physicians to find a balance between professional skills, emotional care, and communication techniques. By focusing on the physical and mental health of patients, minimizing misunderstandings and conflicts, and continuously learning, enhancing emotional support, and optimizing the healthcare environment, physicians can not only improve job satisfaction but also create a more harmonious physician-patient relationship, ultimately leading to better treatment outcomes and patient experiences.

In conclusion, physician-patient trust plays a significant role in improving medical performance and health perceptions. However, its enhancement must be based on mutual understanding of roles and mechanisms. Physician trust needs to be translated into higher-quality service behaviors, while patient trust should be activated through proactive behaviors and emotional regulation. Future management practices should focus on both physician motivation mechanisms and patient relational experiences, advancing mutual trust in the physician-patient relationship and truly achieving a dual improvement in healthcare service outcomes and humanistic experiences.

6.3 Theoretical contributions

This study provides profound theoretical explanations and new perspectives on the relationship between physician-patient trust, physician task performance, and patient health outcomes by incorporating three representative management theories: Social Exchange Theory (SET), Self-Perception Theory (SPT), and Conservation of Resources Theory (COR).

The specific contributions are as follows:

(1) Social Exchange Theory (SET)

This study utilizes Social Exchange Theory to explain how physician-patient trust influences physician task performance and patient health outcomes through exchange relationships. Social Exchange Theory emphasizes the mutual dependence and interaction between physicians and patients based on trust. In this study, it is evident that physicians improve their task performance through the trust of patients, while patients enhance their treatment adherence and health perceptions through their trust in physicians. This perspective provides theoretical support for the asymmetry in physician-patient relationships, revealing the different focal points of doctors and patients in the trust-building process, thereby deepening our understanding of physician-patient interactions.

(2) Self-Perception Theory (SPT)

Under the framework of Self-Perception Theory, this study explores how self-perceived trust in physicians by both parties influences behavior and health perceptions. Specifically, the study shows that patient-perceived trust directly influences health outcomes, rather than indirectly through physician performance. This offers new evidence for the application of Self-Perception Theory in the healthcare field. The study shows that when patients trust their doctors, they are more likely to engage actively in their treatment and exhibit positive changes in emotional regulation and health behaviors. This further validates the effectiveness of Self-Perception Theory in medical behavioral science.

(3) Conservation of Resources Theory (COR)

This study uses Conservation of Resources Theory to explain the relationship between physician-patient trust and physician task performance, particularly how trust acts as a psychological resource to enhance physician performance in high-pressure clinical tasks. Trust is considered an important resource. When physicians perceive trust from patients, it enhances their psychological capital, increases their work engagement, and boosts their sense of responsibility, which in turn improves diagnostic efficiency. This expands the application of Conservation of Resources Theory in the healthcare domain, revealing the profound impact of dynamic resource changes on healthcare workers' behaviors and performance.

These theoretical contributions provide new insights into the dynamics of physician-patient interactions, enhancing the understanding of how trust influences both physician task performance and patient health outcomes through psychological and behavioral mechanisms.

6.4 Limitations and future directions

(1) Limitations of Data Aggregation and Modeling Strategy

To meet the requirements of Structural Equation Modeling (SEM), this study employed a "patient aggregation to doctor" strategy by averaging patient-level data and merging it at the doctor level. Although this approach simplifies the analysis technically, it compresses individual-level variation at the patient level, potentially masking some heterogeneity effects. Future research could consider multilevel modeling to retain the true characteristics of the cross-level structure and fully explore individual differences.

(2) Risk of Subjective Bias in Self-Reported Data

The study primarily relies on self-reports from both doctors and patients, which may be subject to social desirability bias and self-evaluation bias, potentially leading to systematic overestimation. This is particularly relevant for subjective measures such as trust, performance, and health perceptions, where respondents may tend to present a more positive image of themselves. Future studies could incorporate objective medical data (e.g., clinical records, follow-up rates) and third-party evaluations to improve the credibility and diversity of the conclusions.

(3) Simplification of Trust Dimensions and Lack of Exploration of Differential Effects

In this study, the construction of physician-patient trust was simplified into dimensions such as "physician’s technical ability" and "physician's benevolence" (from the patient’s perspective), and "relational perception" and "defensive mindset" (from the physician’s perspective), which were modeled using second-order latent variables. This approach emphasizes the overall perception of trust’s impact on performance and health outcomes. However, trust is a highly complex, multidimensional construct that includes not only technical evaluation but also cognitive judgments, emotional attitudes, and behavioral intentions. While this approach offers advantages in theoretical consistency and model operability, it also limits the depth of analysis. Additionally, for reasons of model robustness and focus on paths, this study did not conduct separate path analyses for each trust dimension, limiting a more refined understanding of the internal structure of trust. Future research could consider using multi-group models, latent variable interaction modeling, or configuration analysis to explore the independent effects of different trust dimensions and their interaction mechanisms. Furthermore, integrating perspectives from psychology, organizational behavior, and other theories could provide insights into which types of physician-patient trust stimulate which performance behaviors or promote which health outcomes.

(4) Insufficient Control Variables

For reasons of model complexity and robustness, this study only included two control variables—"patient education level" and "communication time during medical visits"—which were derived from the Delphi method. Although these variables have theoretical foundations and data support, they do not cover all the important background factors identified by the Delphi method, such as department collaboration and healthcare environment. Future research could expand the range of control variables to improve the model's explanatory power and stability.

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Annex A: Interview Outline

1. Interview background

Doctor-patient relationship in China is becoming increasingly tense, with incidents of violence and even murder against medical staff occurring from time to time. Disharmonious doctor-patient relationship has become a stumbling block to the development of China's healthcare industry. The mutual distrust between doctors and patients is the underlying cause of the deterioration of the relationship. In the process of medical services, mutual distrust between doctors and patients will lead to a series of negative effects such as exorbitant medical service prices, increased burden on patients, and the inability to ensure the safety of medical staff. And these negative effects will ultimately lead to a decline in the quality of medical services and seriously affect the task performance and work performance of medical staff. Even worse, it may cause hospitals to decline and fall into a vicious cycle of further deterioration in the doctor-patient relationship.

Therefore, to address the series of problems caused by doctor-patient conflicts, this study will delve into the root causes of mutual distrust between doctors and patients in China. It will utilize theories from management and behavioral psychology, combined with qualitative interviews and empirical research, to focus on answering questions such as "How to build doctor-patient trust?", "What factors influence medical staff task performance?", and "The impact of doctor-patient trust on hospital task performance". This research aims to fill the current research gap regarding the factors influencing doctor-patient trust and task performance. Simultaneously, by exploring the relationship between doctor-patient trust and task performance, the study ultimately seeks to provide scientific references for developing strategies to improve hospital task performance and determine future development directions.

2. Interview purpose

The purpose of our research is to conduct in-depth interviews with stakeholders and hospital leaders at Zhanjiang Maternity and Child Health Care Hospital. We aim to identify factors influencing doctor-patient trust and task performance, enrich the definition and evaluation

elements of task performance, and gather stakeholders' views on the relationship between doctor-patient trust and task performance. The ultimate goal is to provide references for enriching theoretical frameworks and conducting empirical research on the relationship between the two.

3. Interview outline

3.1. Basic information collection

Table a-1 Questionnaire about baseline characteristics of medical staff

Baseline characteristics information of medical staff (collected on-site by interviewers)
1. Name:
2. Gender: ①Male ②Female
3. Date of birth: _____
4. Occupation: ①doctor ②Nurse ③Administrative Staff ④Hospital Leadership
5. Job title: ①No Title ②Primary Title ③ Intermediate Title ④Vice Senior Title ⑤Senior title ⑨Not Available
6. Ethnicity: ①the Han nationality ②Not the Han nationality ⑨Not Available
7. Education level: ①Graduate ②Undergraduate ③Junior college ④Technical secondary school ⑤High school and below ⑨Not available
8. Years of service: ①＜1 year ②1-5 years ③5-10 years ④≥10 yeas ⑨Not Available
9. Department: _____
10. Job Responsibilities: _____

3.2. Semi-structured interview outline

1. What do you think of the current doctor-patient relationship in our hospital? (Please provide examples whether you think it is good or not)

(Follow-up question:) What do you think are the reasons for this result? (If unsure how to answer, you can give reasons at the hospital, medical staff, and patient levels)

2. Do you think doctors in our hospital trust patients?

(If the answer is "yes", follow up:) What are the reasons that allow you to trust patients? **(Further follow up:)** Can you provide some examples of doctors trusting patients based on your working experience?

(If the answer is "no", follow up:) What are the reasons that make you unable to trust

patients? **(Further follow up:)** Can you provide some examples of doctors not trusting patients based on your working experience?

3. Do you think patients who come to see a doctor in our hospital trust doctors?

(If the answer is "yes", follow up:) What are the reasons that allow patients to trust you? **(Further follow up:)** Can you provide some examples of patients trusting doctors based on your working experience?

(If the answer is "no", follow up:) What are the reasons that make patients unable to trust you? **(Further follow up:)** Can you provide some examples of patients not trusting doctors based on your working experience?

4. What do you think are the impacts of a good trust relationship between doctors and patients on medical staff, patients, and the hospital? (Please elaborate)

5. Currently, we define the task performance of hospitals as "the performance and effectiveness of hospitals or medical institutions in achieving specific goals or executing specific tasks. These goals may involve patient treatment, quality of medical services, hospital management efficiency, financial targets, and others." To understand hospital task performance, you can imagine a hospital as a team, and their performance and achievements represent the team's performance. For example, a high success rate of treatment and high patient satisfaction show good task performance in medical treatment. However, leading to resource waste and declining service quality caused by disordered hospital management may show poor task performance.

Now, based on your working experience and personal feelings, what is your idea about this concept? Can you provide some examples from your working practice to enrich this definition?

6. Based on your working experience and personal feelings, what indicators do you think can be used to evaluate the task performance of medical staff? **(Open-ended question, if unable to answer, you can start from patient treatment outcomes, quality of medical services, hospital management efficiency, resource allocation and others, and talk about how to measure these indicators)**

How do you evaluate your own task performance? (Need to evaluate based on the points they raised)

7. Based on your working experience and personal feelings, what do you think should be the impact of doctor-patient trust on the task performance of medical staff? (Talk from both the doctor's trust in patients and the patient's trust in doctors perspectives. Is it a positive or negative impact? What are the reasons?)

8.1 At work, what factors do you think affect patients' trust in doctors? (This is an open-ended question, please answer based on your working experience and explain why)

8.2 At work, what factors do you think affect doctors' trust in patients? (This is an open-ended question, please answer based on your working experience and explain why)

8.3 At work, what factors do you think affect the task performance of medical staff? (This is an open-ended question, please answer based on your working experience and explain why)

8.4 Based on the list below, please talk about whether these factors affect (patients' trust in doctors/doctors' trust in patients/task performance of medical staff) one by one and why?

Table a-2 List of potential influencing factors

Constituent elements	Question template
External factors	
Patient needs and resources	Do you think our hospital accurately knows patients' causes of disease and offers their expected medical treatment? If our hospital can accurately knows patients' causes of disease and offers their expected medical treatment, will this affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
External collaboration	What do you think about our hospital's cooperation with other hospitals? If our hospital cooperates closely with other hospitals, will this affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
Peer pressure	Do you think our hospital competes with other hospitals? Does the competition affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
External policies and incentives	Which medical treatment in our hospital receives financial subsidies? Assuming our hospital receives financial subsidies for each treatment provided for patients, will this affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
Internal factors	
Characteristics of organizational structure	What do you think of our hospital's administrative management level, communication fluency with administrative departments, hospital history, scale, and treatment levels? Do these factors affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
Collaboration and communication	What do you think about the cooperation among departments in our hospital? If our hospital departments cooperate well and consultations are efficient and orderly, will this affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
Culture	How well do you think our hospital is performing in terms of consultation processes, protecting patients' rights and privacy, medical staff's professional ethics and conduct guidelines, and quality control? What are our hospital's values? Do you think these factors will affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
Individual characteristics	
Knowledge and belief about intervention	Do you think doctors in our hospital take patients' treatment plans seriously and are familiar with them? If our hospital's doctors take patients' treatment plans seriously and are

plans	familiar with them, will this affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
Self-efficacy	Do you think doctors in our hospital have the ability to cure patients? If our hospital's doctors have sufficient ability to cure patients, will this affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
Individual's identification with the organization	What do you think about Zhanjiang Maternity and Child Health Care Hospital? (Open-ended question, you can talk about anything. If unsure where to start, you can be prompted to consider work environment, welfare system, resource allocation and others.) Do you have a sense of belonging in this hospital? Do you think your view of this hospital affects (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?
Other personal characteristics	How do you perceive your work motivation, work ability, and learning ability? Are you competent in your work? Do your values align with the hospital's values? Do you think medical staff's work motivation, work ability, values, job competence, and learning ability affect (patients' trust in doctors/doctors' trust in patients/the task performance of medical personnel) and why?

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Annex B: First-Round Delphi Method Questionnaire

Dear Expert,

You are invited to participate in a study conducted by a doctoral student, Sun Zheng, from the School of Health Management at Southern Medical University in collaboration with the University of Lisbon in Portugal. This study aims to explore the relationship between doctor-patient trust and doctors' task performance, thus providing scientific references for strategies to improve hospital task performance and determining the direction of hospital development and reform. The study will last for one year.

You are invited to join this study as you are an expert in this field. Attachment is the Expert Informed Consent Form, which will provide you with detailed information about the purpose, steps, benefits, and risks of the study. You can download and read it carefully before making a decision about whether to participate in this expert consultation. Your participation in this study is entirely voluntary. If you have any questions about the details of the Informed Consent Form, please feel free to contact the project team member Liu Siyuan (Phone Number: 15519169792). If you agree to participate in this study after reading the following introduction, please click the "Participate" button at the end of this document and electronically sign your name. The signature only indicates that our interview has your permission and does not affect your legal rights. After that, please follow the prompts to fill out this expert consultation form. It is worth mentioning that the influencing factors listed in the consultation form were obtained through preliminary literature review and in-depth personal interviews.

Attachment: Expert Informed Consent Form.Doc

I have read this informed consent form and understand my rights, obligations, risks, and benefits in this study.	○ I agree to participate in this study. ○ I do not agree to participate in this study.

If you agree to participate in this Delphi method, please provide your electronic signature. This signature only indicates that we have your permission for this interview and does not affect your legal rights.

Your gender:	○ Male ○ Female
Your age (years of age) :	○ 20-29 ○ 30-39

	○ 40-49 ○ 50-59 ○ 60 and above
Your educational background:	○ Below bachelor's degree ○ Bachelor's degree ○ Master's degree ○ Doctoral degree
Your job title:	○ Professor (senior) ○ Associate professor (associate senior) ○ Lecturer (intermediate) ○ Others
Your position:	
Your workplace:	
Your years of service:	○ Within 5 years ○ 5-10 years ○ 11-20 years ○ Over 20 years
Your main job fields:	○ Hospital management ○ Disease prevention and control ○ Health service ○ Health policy ○ Health management ○ Clinical medicine ○ Sociology ○ Others
Please fill in your work field:	
Years of working in this field	○ Within 10 years ○ 11-15 years ○ 16-20 years ○ Over 20 years
Your research direction:	
Your mobile number (mainly for anonymous numbering in the Delphi method)	

Please assess the extent to which the following factors affect doctor-patient trust and doctors' task performance, and provide opinions and suggestions on the feasibility and measurement methods for each factor.

In this consultation, "doctor-patient trust" includes both doctors trusting patients and patients trusting doctors. Doctors trusting patients refers to doctors' confidence and

expectation in patients' honesty, transparency, and willingness to cooperate in the medical relationship. This trust is based on doctors believing that patients will honestly provide personal health information, accurately describe symptoms, follow medical advice, participate in treatment decision-making processes, and actively cooperate during treatment.

Patients trusting doctors refers to patients' confidence and reliance on doctors' professional competence, integrity, and concern for patients' welfare. This trust is demonstrated by patients believing that doctors will provide the best available medical advice based on evidence, honestly communicate the benefits and risks of treatment, and consider patients' best interests in medical decisions.

In addition, "doctors' task performance" in this consultation refers to the performance and effectiveness of doctors in hospitals or other medical institutions in achieving specific goals or executing specific tasks. These goals may involve patient treatment, quality of medical services, hospital management efficiency, financial targets, and more.

1. Patients' treatment effect					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "patients' treatment effect" is to use a 1-5 minute Likert scale question. The question is set as: "After seeing the doctor, I feel my condition has significantly improved." Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

2. Patients' occupation					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible

4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "patients' occupation" is to use traditional single-choice questions for measurement. The question is set as: "What is your occupation category?" Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

3. Patients' educational level					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "patients' education level" is to use traditional single-choice questions for measurement. The question is set as: "What is your education level?" Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

4. Patients' household income per capita					
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "patients' household income per capita" is to use traditional single-choice questions for measurement. The question is set as: "What is your patient's household income per capita?" Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

5. Perceived income insufficiency of patients					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○

2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "perceived income insufficiency of patients" is to use a 1-5 minute Likert scale question for measurement. The question is set as: "In the city I live in, it is difficult to maintain a living with my income. Do you agree with this statement?" Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

6. Average monthly income of doctors					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "average monthly income of doctors" is to use traditional single-choice questions for measurement. The question is set as: "What is your average monthly income currently?" Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

7. Doctors' job title					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "doctors' job title" is to use traditional single-choice questions for measurement. The question is set as: "What is your job title?" Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

8. Number of complaints against doctors					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "number of complaints against doctors" is to obtain it through the statistics of the medical department Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

9. Average weekly number of doctors' consultations					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "average weekly number of doctors' consultations" is to obtain it through hospital backend data. Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

10. Duration of doctor-patient communication					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "duration of doctor-patient communication" is to collect it proactively by investigators. Do you agree?				○ Yes	○ No

6) If not, please provide suggestions on the measurement method and question setting:

11. Medical environment					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "medical environment" is to use traditional yes/no questions for measurement. The question is set as: "Do you think the medical environment is good?" Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

12. Collaboration between hospital departments					
	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○
	1. Very Infeasible	2. Infeasible	3. Average	4. Feasible	5. Very Feasible
4) Feasibility of measurement	○	○	○	○	○
5) The preliminary determined measurement method for "collaboration between hospital departments" is to use a 1-5 minute Likert scale question for measurement. The question is set as: "Do you think the current working situation between departments is close?" Do you agree?				○ Yes	○ No
6) If not, please provide suggestions on the measurement method and question setting:					

Please answer the following questions based on your feelings and experiences from filling out the expert consultation form in the previous round:

1.1 In this inquiry, we invited you to evaluate the impact and feasibility of measuring each factor. Now, please evaluate your familiarity with the inquiry content based on the actual situation:

○ Very unfamiliar ○ Unfamiliar ○ Average ○ Familiar ○ Very familiar

1.2 What are your criteria for assessing the impact and feasibility of measurement each factor on doctor-patient trust and task performance? How much do different criteria influence your

assessment?			
	1. Small impact	2. Moderate impact	3. Large impact
Assessment criteria -- Theoretical basis	○	○	○
Assessment criteria -- Practical experience	○	○	○
Assessment criteria -- Peer understanding	○	○	○
Assessment criteria -- Subjective judgment	○	○	○

Annex C: Second Round Delphi Method Questionnaire

Dear Expert,

In the previous round of expert consultation, you have already made assessments on the impact of various factors on doctor-patient trust and doctors' task performance, and provided opinions on the feasibility and methods of measurement. However, consensus has not yet been reached among experts on the influence of certain factors. Therefore, based on the results of the first round of consultation, we have revised and prepared the second round of the expert consultation form, and we invite you to once again assess the impact of the following factors. Your opinion will greatly help us improve our research.

If you agree to participate in this study, please click the "Participate" button at the end of the document and electronically sign your name. The signature merely indicates that our survey has received your permission and does not affect your legal rights. Then, please follow the prompts to fill out the expert consultation form. If you have any questions during the filling process, please feel free to contact project team member Sun Zheng (Phone Number: 15519169792).

I have read this informed consent form and understand my rights, obligations, risks, and benefits in this study.	○ I agree to participate in this study ○ I do not agree to participate in this study

If you agree to participate in this Delphi method, please provide your electronic signature. This signature only indicates that our interview has your permission and does not affect your legal rights.

Filling date:

Your name:

Please reevaluate the influence of the following factors on doctor-patient trust and/or doctors' task performance.

In this consultation, "doctor-patient trust" includes both doctors trusting patients and patients trusting doctors. Doctors trusting patients refers to doctors' confidence and expectation in patients' honesty, transparency, and willingness to cooperate in the medical relationship. This trust is based on doctors believing that patients will honestly provide personal health information, accurately describe symptoms, follow medical advice, participate in treatment decision-making processes, and actively cooperate during treatment.

Patients trusting doctors refers to patients' confidence and reliance on doctors' professional competence, integrity, and concern for patients' welfare. This trust is demonstrated by patients

believing that doctors will provide the best available medical advice based on evidence, honestly communicate the benefits and risks of treatment, and consider patients' best interests in medical decisions.

In addition, "doctors' task performance" in this consultation refers to the performance and effectiveness of doctors in hospitals or other medical institutions in achieving specific goals or executing specific tasks. These goals may involve patient treatment, quality of medical services, hospital management efficiency, financial targets, and more.

1. Patients' occupation

	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors' task performance	○	○	○	○	○

2. Patients' educational level

	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors' task performance	○	○	○	○	○

3. Patients' gousehold income per capita

	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○
3) Impact on doctors' task performance	○	○	○	○	○

4. Perceived income insufficiency of patients

	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○

5. Average monthly income of doctors

	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○
2) Impact on patients trusting doctors	○	○	○	○	○

6. Doctor's job title

	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○

7. Average weekly number of doctors' consultations

	None	Slight	Moderate	Significant	Very significant
1) Impact on doctors trusting patients	○	○	○	○	○

Please answer the following questions based on your feelings and experiences from filling out the expert consultation form in this round:

In this inquiry, we invited you to evaluate the impact and feasibility of measuring each factor.

Now, please evaluate your familiarity with the inquiry content based on the actual situation:

○ Very unfamiliar	○ Unfamiliar	○ Average	○ Familiar	○ Very familiar

What are your criteria for assessing the impact and feasibility of measurement each factor on doctor-patient trust and task performance? How much do different criteria influence your assessment?

	1.Small impact	2.Moderate impact	3.Large impact
Assessment criteria – Theoretical basis	○	○	○
Assessment criteria – Practical experience	○	○	○
Assessment criteria – Peer understanding	○	○	○
Assessment criteria – Subjective judgment	○	○	○

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Annex D: Doctor-Patient Trust and Doctor Task Performance Questionnaire for Doctors

Dear Respondents,

We would like to invite you to participate in an online survey that will take approximately 20 minutes. The attached informed consent form will provide you with information about the purpose of the study, inclusion criteria, benefits, risks, and other details. Please read it carefully and decide whether to participate in this survey. If you have any questions, please contact the researchers. If you agree to participate in this study after reading the following introduction, please click the "Participate" button at the end of the document and follow the instructions to complete the electronic questionnaire. All personal information involved in this survey will be used for research purposes only and will be uniformly destroyed after the study is completed.

Your participation in this survey is completely voluntary.

Attachment: Informed Consent Form for Questionnaire Survey.doc

I have read this informed consent form and understand my rights, obligations, risks, and benefits in this study.	○ I agree to participate in this study. ○ I do not agree to participate in this study.
Your identity is: (If the patient is under 18 years old, please select "Accompanying person")	○ Clinician ○ Patient ○ Accompanying person
Survey date:	_____
Below is the basic personal information, please fill in:	
1.Your name:	_____
2.Your gender:	○ Male ○ Female
3.Your age (years of age) :	_____
4.Your current marital status:·	○ Married ○ Unmarried ○ Divorced ○ Widowed
5.Your highest level of education:	○ Doctoral degree ○ Master's degree ○ Bachelor's degree ○ College degree and below
6. How many years have you been working?	_____

	_____
7.Type of professional certificate you currently hold:	○ Certificate of Licensed Practising doctor ○ Certificate of Licensed Practising Associate doctor ○ None
8.Your current job title:	○ None ○ Junior title ○ Intermediate title ○ Associate senior title ○ Senior title
9.Your average annual income (ten thousand yuan) :	_____
10.Type of institution you currently working at：	○ General hospital ○ Traditional Chinese medicine hospital ○ Maternity and child health care hospital ○ Others
11.Level and grade of your current workplace:	○ First-class ○ Second-class ○ Tertiary-class
12.How many patients do you estimate you receive/treat on average per week	_____

Below is the Doctors' Task Performance Scale, please fill in:
Note: Here, doctors' task performance refers to the performance and effectiveness of doctors in hospitals or other medical institutions in achieving specific goals or performing specific tasks. These goals may involve patient treatment, quality of medical services, hospital management efficiency, financial targets, and more.

1. I can accurately achieve my work goals	○ Strongly agree ○ Somewhat agree ○ Neutral ○ Somewhat disagree ○ Strongly disagree
2. I always complete the tasks assigned to me on time	○ Strongly agree ○ Somewhat agree ○ Neutral ○ Somewhat disagree ○ Strongly disagree
3. I can complete my work with high quality	○ Strongly agree ○ Somewhat agree ○ Neutral ○ Somewhat disagree ○ Strongly disagree
4. I have high efficiency in utilizing my work hours	○ Strongly agree ○ Somewhat agree ○ Neutral ○ Somewhat disagree

	○ Strongly disagree
Below is the Doctors Trusting Patients Scale, please fill it out: Note: Here, doctors trusting patients refers to doctors' confidence and expectation regarding patients' honesty, transparency, and willingness to cooperate in the medical relationship. This trust is based on the belief that patients will honestly provide personal health information, accurately describe symptoms, follow medical advice, participate in treatment decisions, and actively cooperate during treatment.	
1. I communicate well with patients	○ Strongly agree ○ Somewhat agree ○ Generally agree ○ Somewhat disagree ○ Strongly disagree
2. Patients recognize me	○ Strongly agree ○ Somewhat agree ○ Generally agree ○ Somewhat disagree ○ Strongly disagree
3. I have a good relationship with my patients	○ Strongly agree ○ Somewhat agree ○ Generally agree ○ Somewhat disagree ○ Strongly disagree
4.I am confident that patients can cooperate with the treatment	○ Strongly agree ○ Somewhat agree ○ Generally agree ○ Somewhat disagree ○ Strongly disagree
5.Some patients or their families always struggle to correctly face the risks of disease treatment	○ Strongly agree ○ Somewhat agree ○ Generally agree ○ Somewhat disagree ○ Strongly disagree
6.May encounter difficult patients if one doesn't act cautiously	○ Strongly agree ○ Somewhat agree ○ Generally agree ○ Somewhat disagree ○ Strongly disagree
7.There is concern about being attacked by patients or their families during work	○ Strongly agree ○ Somewhat agree ○ Generally agree ○ Somewhat disagree ○ Strongly disagree
8.It is necessary to take some measures to avoid medical risks with patients	○ Strongly agree ○ Somewhat agree ○ Generally agree ○ Somewhat disagree ○ Strongly disagree

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Annex E: Patient-Doctor Trust and Patient Health Outcomes Questionnaire for Patients

Dear Respondents,

We would like to invite you to participate in an online survey that will take approximately 20 minutes. The attached informed consent form will provide you with information about the purpose of the study, inclusion criteria, benefits, risks, and other details. Please read it carefully and decide whether to participate in this survey. If you have any questions, please contact the researchers. If you agree to participate in this study after reading the following introduction, please click the "Participate" button at the end of the document and follow the instructions to complete the electronic questionnaire. All personal information involved in this survey will be used for research purposes only and will be destroyed after the study is completed.

Your participation in this survey is completely voluntary.

Attachment: Informed Consent Form for Questionnaire Survey.doc

I have read this informed consent form and understand my rights, obligations, risks, and benefits in this study.	○ I agree to participate in this study. ○ I do not agree to participate in this study.
Your identity is: (If the patient is under 18 years old, please select "Accompanying Person")	○ Clinician ○ Patient ○ Accompanying Person
Survey date:	_____
Below is the basic personal information, please fill in:	
1. Your age (years of age) :	_____
1.1 The age of the patient you accompanied (years of age) :	_____
2. Your gender:	○ Male ○ Female
2.1 The gender of the patient you accompanied:	○ Male ○ Female
3. Your educational level:	○ Master's degree and above ○ Bachelor's/ Junior college degree ○ Technical secondary school/ Technical school/Vocational school ○ High school ○ Middle school

	○ Primary school and below
4. Your occupation category:	○ Government and public institution staff ○ State-owned enterprise staff ○ Private enterprise staff ○ Farmer ○ Freelancer ○ Retired staff ○ Unemployed ○ Student ○ Others
5. Your family's annual income (ten thousand yuan) :	_____
6. Your permanent residence:	○ Urban ○ Town ○ Rural area
7. The type of your medical insurance：	○ Free medical care (Medical insurance for staffed employees of government agencies and public institutions) ○ Urban employee Medical insurance ○ Urban resident medical insurance ○ New rural cooperative medical insurance ○ Commercial insurance ○ Medical assistance ○ No Insurance
8. The type of medical insurance for the patient you accompanied:	○ Free medical care (Medical insurance for staffed employees of government agencies and public institutions) ○ Urban employee Medical insurance ○ Urban resident medical insurance ○ New rural cooperative medical insurance ○ Commercial insurance ○ Medical assistance ○ No Insurance
9. The name of the hospital you visited this time:	○ Zhanjiang Maternity and Child Health Care Hospital ○ Zhanjiang First Hospital of Traditional Chinese Medicine ○ Central People's Hospital of

	Zhanjiang
10. The department you visited:	_____
11. The name of the doctor you visited: (Please provide the doctor's full name)	
12. The gender of the doctor you visited:	○ Male ○ Female
13. Approximately how many minutes did you spend communicating with the doctor during your visit:	_____
14. Do you agree that there is close cooperation between various departments in our hospital?	○ Strongly agree ○ Somewhat agree ○ Neutral ○ Somewhat disagree ○ Strongly disagree
15. Do you agree with the statement "In the city where I live, it is difficult to make ends meet on my income"?	○ Strongly agree ○ Somewhat agree ○ Neutral ○ Somewhat disagree ○ Strongly disagree
16. Are you satisfied with the overall hygiene conditions of the hospital?	○ Very satisfied ○ Somewhat satisfied ○ Neutral ○ Somewhat dissatisfied ○ Very dissatisfied
17. Are you satisfied with the seating arrangement and placement in the hospital's waiting area?	○ Very satisfied ○ Somewhat satisfied ○ Neutral ○ Somewhat dissatisfied ○ Very dissatisfied
18. Are you satisfied with the convenience of the hospital's spatial layout (triage, registration, departments, consultation rooms, examinations, payment departments, and others, and the distances between them)	○ Very satisfied ○ Somewhat satisfied ○ Neutral ○ Somewhat dissatisfied ○ Very dissatisfied
19. Are you satisfied with the clarity and precision of the hospital's signage?	○ Very satisfied ○ Somewhat satisfied ○ Neutral ○ Somewhat dissatisfied ○ Very dissatisfied
20. Are you satisfied with the clarity and precision of the medical equipment?	○ Very satisfied ○ Somewhat satisfied ○ Neutral ○ Somewhat dissatisfied ○ Very dissatisfied
21. Are you satisfied with the hospital's convenience	○ Very satisfied

facilities (e.g., shared wheelchairs, cars, self-service registration and payment machines and others) ?	○ Somewhat satisfied ○ Neutral ○ Somewhat dissatisfied ○ Very dissatisfied
22. Are you satisfied with the transportation convenience in the hospital?	○ Very satisfied ○ Somewhat satisfied ○ Neutral ○ Somewhat dissatisfied ○ Very dissatisfied
Below is the Wake Forest doctor Trust Scale. Please complete it after your clinic visit, or have the accompanying person do so. Note: Here, patients trusting doctors refers to the patient's confidence and reliance on the doctor's professional competence, integrity, and concern for the patient's welfare. This trust is reflected in the patient's belief that the doctor will provide medical advice based on the best available evidence, honestly communicate the pros and cons of the treatment, and consider the patient's best interests in medical decision-making.	
1. To ensure my health, my doctor will do everything possible.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt ○ Hard to agree
2. My doctor always bases treatment choices on what is convenient for them rather than on whether those treatments are appropriate for my condition.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt ○ Hard to agree
3. The doctor's level did not meet the standard I expected a doctor to have.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt ○ Hard to agree
4. My doctor is very meticulous and considerate.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt ○ Hard to agree
5. I believe the treatment plan selected by my doctor is appropriate for me.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt ○ Hard to agree
6. My doctor will explain the differences between all possible treatment options to me.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt

	○ Hard to agree
7. I feel that the doctor did not seriously listen to my reflecting the situation.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt ○ Hard to agree
8. My doctor prioritizes my interests over their own or the hospital's interests.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt ○ Hard to agree
9. I can entrust my life and safety to my doctor without hesitation.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt ○ Hard to agree
10. Overall, I trust my doctor.	○ Strongly agree ○ Somewhat agree ○ I do not know ○ Somewhat doubt ○ Hard to agree
Below is the Health Status Questionnaire. Please complete it after your clinic visit, or have the accompanying person do so. Note: The accompanying person should fill in the patient's health status, not their own.	
1. Overall, your health status is:	○ Excellent ○ Very good ○ Good ○ Not so good ○ Bad
1.1 Overall, the health status of the patient you accompanied for the visit is:	○ Excellent ○ Very good ○ Good ○ Not so good ○ Bad
2. Compared to one year ago, how do you feel about your current health status?	○ Excellent ○ Very good ○ Good ○ Normal ○ Bad
2.1 Compared to one year ago, how do you feel about the health status of the patient you accompanied for the visit?	○ Excellent ○ Very good ○ Good ○ Not so good ○ Bad
3. The following questions are all related to daily life activities. Please think about whether your health status limits these activities. If there are limitations, to what extent?	

	Greatly limited	Somewhat limited	Not limited at all
1) Strenuous physical activities, such as running, weightlifting, and participating in vigorous activities:	○	○	○
2) Moderate activities, such as moving a table, sweeping the floor, practicing Tai Chi, doing simple exercises, and others:	○	○	
3) Carrying daily items, such as buying vegetables and shopping:	○	○	○
4) Climbing several flights of stairs:	○	○	○
5) Climbing one flight of stairs:	○	○	○
6) Bending, kneeling, or stooping:	○	○	○
7) Walking more than 1500 meters:	○	○	○
8) Walking 1000 meters:	○	○	○
9) Walking 100 meters:	○	○	○
10) Bathing and dressing yourself:	○	○	○

4. The following questions are all related to daily life activities. Please think about whether the health status of the patient you accompanied for the visit limits these activities. If there are limitations, to what extent?

	Greatly limited	Somewhat limited	Not limited at all
1) Strenuous physical activities, such as running, weightlifting, and participating in vigorous activities:	○	○	○
2) Moderate activities, such as moving a table, sweeping the floor, practicing Tai Chi, doing simple exercises, and others:	○	○	○
3) Carrying daily items, such as buying vegetables and shopping:	○	○	○
4）Climbing several flights of stairs:	○	○	○
5) Climbing one flight of stairs:	○	○	○
6）Bending, kneeling, or stooping:	○	○	○
7）Walking more than 1500 meters:	○	○	○
8）Walking 1000 meters:	○	○	○
9) Walking 100 meters:	○	○	○
10) Bathing and dressing yourself:	○	○	○

5. In the past 4 weeks, have there been any problems in your work and daily life activities due to your health status?

	Yes	No
1) Reduced time spent on work or other activities:	○	○
2) Could only complete part of what was intended:	○	○
3) Limited types of work or activities that could be done:	○	○
4) Increased difficulty in completing work or other activities (e.g., requiring extra effort)	○	○

6. In the past 4 weeks, have there been any problems in the studies and daily life activities of the patient you accompanied for the visit due to their health status?

	Yes	No
1) Reduced time spent on work or other activities:	○	○
2) Could only complete part of what was intended:	○	○
3) Limited types of work or activities that could be done:	○	○
4) Increased difficulty in completing work or other activities(e.g.,	○	○

requiring extra effort)

7. In the past 4 weeks, have there been any problems in your work and daily life activities due to emotional reasons (such as depression or anxiety) ?		
	Yes	No
1）Reduced time spent on work or activities:	○	○
2) Could only complete part of what was intended:	○	○
3) Not as attentive to tasks as usual:	○	○
8. In the past 4 weeks, to what extent have your health or emotional problems affected your normal social interactions with family, friends, neighbors, or groups?		
	○ Not affected at all	
	○ Slightly affected	
	○ Moderately affected	
	○ Greatly affected	
	○ Very greatly affected	
9. In the past 4 weeks, to what extent have the health or emotional problems of the patient you accompanied for the visit affected his/her normal social interactions with family, friends, neighbors, or groups?		
	○ Not affected at all	
	○ Slightly affected	
	○ Moderately affected	
	○ Greatly affected	
	○ Very greatly affected	
10. In the past 4 weeks, have you experienced any physical pain?		
	○ Not at all	
	○ Slightly	
	○ Mildly	
	○ Moderately	
	○ Severely	
	○ Very severely	
11. In the past 4 weeks, has the patient you accompanied for the visit experienced any physical pain?		
	○ Not at all	
	○ Slightly	
	○ Mildly	
	○ Moderately	
	○ Severely	
	○ Very severely	
12. In the past 4 weeks, has your physical pain affected your work and household chores?		
	○ Not affected at all	
	○ Slightly affected	
	○ Moderately affected	
	○ Greatly affected	
	○ Very greatly affected	
13. In the past 4 weeks, has the physical pain of the patient you accompanied for the visit affected his/her studies and activities?		

○ Not affected at all
○ Slightly affected
○ Moderately affected
○ Greatly affected
○ Very greatly affected

14. The following questions are about your own feelings over the past month. For each question, what has your situation been like?

	All the time	Most of the time	Much of the time	Some of the time	A little of the time	None of the time
1）Do you feel that your life is fulfilling?	○	○	○	○	○	○
2 ） Are you a sensitive person?	○	○	○	○	○	○
3）Have you ever felt very down, and nothing could cheer you up?	○	○	○	○	○	○
4）Is your mind at peace?	○	○	○	○	○	○
5）Do you have energy when doing things?	○	○	○	○	○	○
6）Have you ever felt low in spirits?	○	○	○	○	○	○
7 ） Have you ever felt exhausted?	○	○	○	○	○	○
8) Are you a happy person?	○	○	○	○	○	○
9) Do you feel bored?	○	○	○	○	○	○

15. The following questions are about your feelings regarding the patient you accompanied over the past month. For each question, what has his/her situation been like?

	All the time	Most of the time	Much of the time	Some of the time	A little of the time	None of the time
1) Do you feel that his/her life is fulfilling?	○	○	○	○	○	○
2) Is he/she a sensitive person?	○	○	○	○	○	○
3) Has he/she ever felt very down, and nothing could cheer him/her up?	○	○	○	○	○	○
4) Is his/her mind at peace?	○	○	○	○	○	○
5) Does he/she have energy when doing things?	○	○	○	○	○	○
6) Has he/she ever felt low in spirits?	○	○	○	○	○	○
7) Has he/she ever felt exhausted?	○	○	○	○	○	○
8) Is he/she a happy person?	○	○	○	○	○	○
9) Does he/she feel bored?	○	○	○	○	○	○

16. Have your health or emotional problems affected your social activities (such as visiting relatives and friends) in the past month?

○ All the time
○ Most of the time
○ Much of the time
○ Some of the time
○ A little of the time
○ None of the time

17. Have the health or emotional problems of the patient you accompanied for the visit affected their social activities (such as school extracurricular activities) ?	○ All the time ○ Most of the time ○ Much of the time ○ Some of the time ○ A little of the time ○ None of the time

18. Please review the following questions and select the answer that best matches your situation:

	Absolutely true	Mostly true	Not sure	Mostly false	Absolutely false
1) I seem to get sick more easily than others:	○	○	○	○	○
2) I am as healthy as people around:	○	○	○	○	○
3) I think my health is getting worse:	○	○	○	○	○
4) I am in excellent physical condition:	○	○	○	○	○

19. Please review the following questions and select the answer that best matches the situation of the patient you accompanied for the visit:

	Absolutely true	Mostly true	Not sure	Mostly false	Absolutely false
1) He/She seems to get sick more easily than others:	○	○	○	○	○
2) He/She is as healthy as people around:	○	○	○	○	○
3) He/She thinks his/her health is getting worse:	○	○	○	○	○
4) He/She is in excellent physical condition:	○	○	○	○	○