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The Relationship Between Medical Record Burden and Physician Burnout: An Empirical Study Based on the JD-R Model

WANG Ningning

Doctor of Management

Supervisors:
PhD Henrique Manuel Duarte, Associate Professor with habilitation,
ISCTE University Institute of Lisbon
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BUSINESS
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Jury:

PhD Ana Patrícia Pereira Duarte Baltasar, Assistant Professor,
ISCTE University Institute of Lisbon
PhD Célia Cristina Casaca Soares, Adjunct Professor,
Polytechnic Institute of Setúbal
PhD Maria João Perdigão Velez, Assistant Professor,
ISCTE University Institute of Lisbon
PhD Henrique Manuel Caetano Duarte, Associate Professor with habilitation,
ISCTE University Institute of Lisbon
PhD Wang Dong, Professor,
SMU – Souhern Medical University

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iscte INSTITUTO UNIVERSITÁRIO DE LISBOA

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Abstract

Background: Physician burnout is a global issue impacting healthcare quality and provider mental health. The growing burden of medical record writing, driven by electronic medical record (EMR) adoption and stricter standards, has emerged as a critical stressor, yet its link to burnout remains unclear.

Objective: This study aims to systematically explore the impact mechanism of medical record burden on physician burnout, construct a theoretical model integrating mediating variables (role stress, job insecurity) and moderating variables (psychological resilience, perceived organizational support), and verify their path relationships.

Methods: Based on Job Demands-Resources (JD-R) theory and Conservation of Resources (COR) theory, data were collected via cross-sectional questionnaire survey. A sample of 776 physicians from Longgang District, Shenzhen was obtained through random stratified sampling. Core variables including medical record documentation intensity, burnout, role stress, job insecurity, psychological resilience and perceived organizational support were measured with structured questionnaires. Data were analyzed using descriptive statistics, correlation analysis, multiple linear regression and Structural equation modeling (SEM), with Bootstrap used to test mediating and moderating effects.

Results: Medical record burden directly predicted burnout, with partial mediation by role stress and job insecurity. It was also verified that psychological resilience weakened the role stress-burnout relationship, and perceived organizational support moderated the job insecurity–burnout association.

Conclusion: Medical record burden is associated with burnout and dual mediating mechanisms are verified, moderated by individual and organizational resources, offering evidence for EMR optimization and targeted burnout interventions.

Keywords: medical record; burnout; role stress; job insecurity; psychological resilience; perceived organizational support

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Resumo

Contexto: O burnout médico é um problema global que influencia a qualidade dos cuidados de saúde e a saúde mental dos profissionais. O crescente peso da escrita dos registos clínicos, impulsionado pela adopção dos registos clínicos electrónicos (RCE) e por normas mais rigorosas, surge como um factor de stress crítico, embora a sua ligação ao burnout permaneça pouco clara.

Objectivo: Este estudo visa explorar sistematicamente o mecanismo de impacto do peso dos registos clínicos no burnout médico, construir um modelo teórico que integre variáveis mediadoras (stress de papel, insegurança no trabalho) e variáveis moderadoras (resiliência psicológica, perceção de apoio organizacional), e verificar as respectivas relações.

Métodos: Com base na teoria das Exigências e Recursos no Trabalho (Job Demands-Resources – JD-R) e na teoria da Conservação dos Recursos (Conservation of Resources – COR), foram recolhidos dados através de um inquérito por questionário. Uma amostra obtida por amostragem aleatória estratificada de 776 médicos do distrito de Longgang, Shenzhen,. As variáveis principais — intensidade dos registos clínicos, burnout, stress de papel, insegurança no trabalho, resiliência psicológica e perceção de apoio organizacional — foram medidas com questionários estruturados. Os dados foram analisados através de estatísticas descritivas, análise de correlação, regressão linear múltipla e modelação de equações estruturais (SEM), tendo sido utilizado o método Bootstrap para testar os efeitos de mediação e moderação.

Resultados: O intensidade dos registos clínicos relaciona-se directamente com o burnout, com mediação parcial do stress de papel e da insegurança no trabalho. Verificou-se ainda que a resiliência psicológica atenuou a relação entre stress de papel e burnout, e que a perceção de apoio organizacional moderou a associação entre insegurança no trabalho e burnout.

Conclusão: O peso dos registos clínicos está associado ao burnout, e foram verificados mecanismos de mediação duplos, moderados por recursos individuais e organizacionais, oferecendo evidência para a optimização dos RCE e intervenções dirigidas ao combate do burnout.

Palavras-chave: preenchimento de registos médicos; esgotamento; pressão de papel/função; insegurança no trabalho; resiliência mental; apoio organizacional percebido

JEL: I11; I18

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摘　要

背景：医生职业倦怠已成为影响医疗系统效率与医生心理健康的全球性问题。随着电子病历系统的普及和病历规范化要求的提升，病历书写负担日益成为医生工作压力的重要来源。然而，关于病历书写负担如何影响职业倦怠及其作用机制的系统研究仍然缺乏。

目的：本研究旨在系统探讨病历书写负担对医生职业倦怠的影响机制，构建整合中介变量（角色压力、工作不安全感）与调节变量（心理韧性、组织支持感）的理论模型，验证其路径关系。

方法：基于工作需求-资源理论与资源保存理论，采用横断面问卷调查方法收集数据。通过随机分层抽样获得来自深圳市龙岗区的医生样本（N=776），使用结构化问卷测量病历书写强度、职业倦怠、角色压力、工作不安全感、心理韧性和组织支持感等核心变量。数据分析采用描述统计、相关分析、多元线性回归和结构方程模型（SEM），并使用 Bootstrap 法检验中介效应与调节效应。

结果：研究发现，病历书写负担显著正向预测医生职业倦怠。角色压力与工作不安全感在其中分别发挥部分中介作用，间接效应显著。同时，心理韧性显著调节角色压力与职业倦怠之间的关系，组织支持感亦调节工作不安全感对职业倦怠的影响。

结论：病历书写负担是医生职业倦怠的重要预测因素，其影响通过角色压力与工作不安全感的中介路径传递，并受到心理韧性与组织支持感的调节。本研究拓展了工作需求-资源理论在医疗环境中的应用，为医院管理优化、电子病历系统改进及医生心理健康干预提供理论依据和实践建议。

关键词：病历书写；职业倦怠；角色压力；工作不安全感；心理韧性；组织支持感

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Chapter 1: Introduction

1.1 Research background

1.1.1 Prevalence and severity of physician burnout

Physician burnout has emerged as a significant challenge for global healthcare systems. More than half of physicians worldwide experience moderate to severe burnout (West et al., 2018). In the United States, the prevalence of physician burnout has continued to rise (Shanafelt et al., 2019). Studies in multiple European countries show that the incidence of physician burnout fluctuates between 35% and 65% (Moukarzel et al., 2019). In China, the situation is more severe: a 2020 study reported that the overall prevalence of physician burnout in China reached 75.48%, with high-risk proportions in the three dimensions of burnout being 48.64% for emotional exhaustion, 54.67% for depersonalization, and 66.53% for reduced personal accomplishment (Zheng et al., 2022).

Chinese physicians commonly work long hours under high burden. A 2022 cross-sectional study showed that over 35% of physicians reported working more than 60 hours per week. Domestic research indicates that physicians working over 60 hours weekly face a significantly increased risk of burnout (Hu et al., 2016). Burnout not only affects physicians' health but also harms medical quality and patient safety. A meta-analysis involving 47 studies and 44,373 physicians revealed a significant positive correlation between physician burnout and medical errors (Panagioti et al., 2018). Burnout also impairs the quality of doctor-patient communication and physicians' empathy; highly burned-out physicians tend to adopt defensive strategies that distance them from patients (Wilkinson et al., 2017).

From an organizational perspective, physician burnout exacerbates talent loss and reduces the efficiency of medical team collaboration. U.S. research estimates that burnout causes tens of billions of dollars in annual productivity losses and replacement costs (Han et al., 2019). In China, 44.1% of physicians have considered leaving their jobs due to burnout (Zhao et al., 2021).

The COVID-19 pandemic further aggravated this issue. Surveys showed that during the pandemic, the level of emotional exhaustion among medical staff increased, and burnout became more prevalent, especially for frontline healthcare workers who faced greater

psychological load and occupational stress (Zhang et al., 2020).

1.1.2 Development of healthcare informatization and medical record writing

With the advancement of healthcare informatization, Electronic Medical Record (EMR) have been widely adopted in medical institutions globally. By 2017, 96% of hospitals in the United States had implemented basic EMR, and by 2018, 85.3% of hospitals in China had done the same (Liang et al., 2021).

EMR have evolved through multiple stages, from the electronic storage of paper medical records to intelligent decision support. However, functional expansions have increased interface complexity and operational tediousness. Research shows that physicians often need multiple clicks and frequent interface switches to complete clinical documentation tasks in EMR, significantly increasing cognitive load (Melnick et al., 2021).

In the modern medical environment, the function of medical record writing extends far beyond traditional clinical documentation: it serves as a clinical document recording the diagnosis and treatment process, a critical basis for medical insurance payment, core evidence in medical dispute resolution, and a data source for medical education, scientific research, and public health monitoring.

With strengthened medical regulation, the quality of medical records has been incorporated into the core indicators of hospital evaluation and quality control. The Basic Framework and Data Standards for Electronic Medical Records issued by the National Health Commission in 2018 and the revised Regulations on the Management of Medical Records in Medical Institutions in 2022 set higher requirements for the standardization of medical records. Quality control centers at all hospital levels regularly conduct random inspections of medical record quality, which directly affects hospital accreditation and assessment results.

Hospital management has imposed strict requirements on the completeness, accuracy, and standardization of medical records. In 2010, the state began to require hospitals at all levels to complete major medical records within 24 hours and monitor them through a quality control system. Medical record writing has transformed from a simple medical documentation task into a complex activity integrating legal defense, administrative assessment, and economic management, significantly increasing physicians' work burden and psychological pressure.

1.1.3 The realistic dilemma of medical record burden

With the popularization of EMR and stricter medical regulations, medical record burden has

increasingly become a primary stressor in physicians' work. Studies show that physicians spend approximately one-third or more of their working hours daily on medical record writing and documentation processing (Arndt et al., 2017; Sinsky et al., 2020). A large-scale U.S. study also noted that physicians spend slightly more time on EMR operations than directly interacting with patients during each working hour (Sinsky et al., 2016); this phenomenon of "screen time" exceeding "patient time" is termed the "Electronic Medical Record tax" In China, the situation is similarly severe: a survey showed that 46% of physicians spend nearly 40% of their workday writing medical records (Fei et al., 2017), leading to a trend of "less patient care, more documentation."

Physicians face numerous challenges in balancing medical record writing and clinical work. On one hand, many physicians invest substantial time in writing medical records, which seriously occupies the time originally used for clinical decision-making and patient communication (Zhang et al., 2013). On the other hand, structural issues in medical record writing include cumbersome standards, repetitive content, poor information system usability, data gaps, and a lack of interoperability between different EMR. Additionally, complex technical designs and inefficient system user experiences reduce physician productivity (Janett & Yeracaris, 2020).

Increased medical record burden negatively impacts physicians' psychological states. Excessive paperwork leads to role conflict and role stress, primarily manifesting as difficulties in balancing the roles of healer and documentation worker (Wu et al., 2020). A meta-analysis of 66,556 healthcare workers found that excessive medical record writing conflicts with their professional role expectations, and this conflict is significantly positively correlated with burnout (Wu et al., 2024). In the face of record-writing pressure, individual psychological resilience and perceived organizational support are particularly important. Physicians with high psychological resilience can more effectively cope with work stress and exhibit lower burnout levels (Mccann et al., 2013). Perceived organizational support, such as providing medical assistants for documentation tasks or optimizing EMR interfaces, can also effectively reduce the burden. U.S. research shows that physicians with dedicated medical record assistants report a 20% increase in job satisfaction and a 10% reduction in burnout levels (Mishra et al., 2018). However, dedicated documentation assistants are not yet common in China's healthcare system. Furthermore, employment instability in the medical industry has increased physicians' perceived job insecurity. With deepening healthcare reforms, some hospitals have implemented full-staff employment contracts and performance evaluations, making medical record quality a key indicator for assessment and contract renewal. In this

context, physicians have to devote more effort to ensuring the standardization of medical record writing, even if it means longer working hours and greater psychological burden (Zhang et al., 2013). Medical record writing has become a non-negligible stressor in physicians' daily work, with a burden that may exceed clinical work itself. However, current academic research lacks systematic investigation into the relationship between medical record burden and physician burnout, and their influencing mechanisms and moderating factors remain to be explored.

1.2 Research questions

Against the above background, physician burnout has become a key issue affecting medical quality and physician health, and the increasingly heavy burden of medical record writing may be one important cause of burnout. However, current research mainly focuses on traditional stressors such as clinical workload, working hours, and night shift frequency, with insufficient attention to the specific work demand of medical record writing. As previously mentioned, while the era of EMR has improved the accessibility and standardization of medical information, it has also imposed unprecedented paperwork burdens on physicians. This burden not only occupies substantial clinical time but may also lead to role conflict and role stress, ultimately affecting physicians' physical and mental health and work performance.

Numerous studies have shown a close relationship between work stress and burnout (Maslach & Leiter, 2016). According to the Job Demands-Resources Theory (JDR) (Bakker & Demerouti, 2017), excessive job demands deplete individual energy and harm health, while adequate job resources facilitate goal achievement and personal growth. As a specific job demand, does medical record burden exacerbate physician burnout? Through what psychological mechanisms does this occur? What factors may mitigate or amplify this effect? These are critical questions requiring answers. Meanwhile, the Conservation of Resources Theory (COR) (Hobfoll et al., 2018) posits that individuals tend to protect, maintain, and accumulate valuable resources, and actual or potential resource loss is a primary source of stress. For physicians, excessive medical record writing may consume their precious time and energy resources, leading to resource loss and triggering stress responses and burnout symptoms. However, individual psychological resilience and perceived organizational support may act as important protective resources to moderate the negative impacts of job demands (Britt et al., 2016). Based on the above theoretical analysis and research background, this study addresses the following core research questions:

1.2.1 Core research questions

(1) How does medical record burden affect physicians' burnout levels? Is there a significant positive correlation between the two?

(2) What is the relationship mechanism between medical record burden and burnout? Do role stress (role conflict, role ambiguity, role overload) and environmental factors (job insecurity) play a mediating role between them?

(3) How do different factors moderate the relationship between medical record burden and burnout? Do personal factors (psychological resilience) and organizational factors (perceived organizational support) play a moderating role?

By answering these questions, this study systematically reveals the mechanism underlying the relationship between medical record burden and physician burnout, providing theoretical and practical guidance for reducing burnout and optimizing healthcare workflows. The findings will help hospital managers and policymakers better understand the impact of medical record writing burden on physicians' occupational health and develop targeted interventions, such as optimizing EMR design, adjusting medical record quality assessment standards, and providing documentation support, ultimately improving physicians' work experience and medical service quality.

1.3 Research significance

1.3.1 Theoretical significance

This study focuses on the impact mechanism of medical record burden on physician burnout, offering theoretical significance in multiple aspects:

First, it enriches the application of burnout theory in the medical professional context. Burnout theory was first proposed in 1974 (Freudenberger, 1974) and later developed into a three-dimensional construct (Schaufeli et al., 2001). Research on physicians as a specific group is relatively limited, especially regarding the relationship between specific stressors like medical record writing and burnout. This study provides new empirical support for burnout theory in healthcare settings.

Second, it expands the application of the Job Demands-Resources (JD-R) theory to specific job demands. The theory posits that excessive job demands deplete energy and harm health, while job resources promote engagement and growth (Bakker & Demerouti, 2017). Existing research mostly focuses on general job demands, whereas this study analyzes the

impact mechanism of medical record burden as a unique demand for physicians, enriching the application of JD-R theory in professional contexts (Lesener et al., 2019).

Third, it deepens the theoretical understanding of role stress as a mediating mechanism. Role theory indicates that failing to meet role expectations leads to role stress (Kahn et al., 1964). Physicians face dual roles as healers and documentation workers. This study examines the mediating role of role stress in the relationship between medical record burden and burnout, offering a new perspective for integrating role theory and burnout theory (Schmidt et al., 2014).

Finally, it improves the theoretical construction of physician work experience in healthcare management. Healthcare management research has paid insufficient attention to physicians' occupational health (Wallace et al., 2009). This study systematically explores the impact mechanisms and moderating factors of medical record burden, promoting theoretical exploration for designing "physician-friendly" healthcare systems (Shanafelt & Noseworthy, 2017).

1.3.2 Practical significance

This study holds important practical significance:

First, it provides empirical evidence for hospital managers to optimize workflows and EMR design. Hospital information system design has historically lacked consideration for physicians' experiences (Melnick et al., 2020). This study will offer data support for improving EMR, with optimized designs potentially reducing physicians' paperwork time by 15%-25% (Arndt et al., 2017).

Second, it offers references for healthcare policymakers to adjust medical record writing norms. Current norms are primarily based on medical safety considerations, often neglecting the impact on physicians' work burden (Kuhn et al., 2015). Research suggests that medical record norms should balance medical safety with avoiding excessive tediousness to reduce physician burden (Sinsky et al., 2020). This study holds important practical significance:

Third, it facilitates the development of targeted interventions to alleviate physician burnout. By examining moderating variables such as psychological resilience and perceived organizational support, this study aids in designing intervention programs, which could reduce burnout levels by 10%-30% (Panagioti et al., 2017).

Finally, it provides decision support for the rational allocation of healthcare resources. Physicians' health directly impacts medical service quality (Shanafelt et al., 2017). This study

offers new ideas for optimizing healthcare resources, such as deploying dedicated medical record assistants, measures shown to enhance physician efficiency and promote human-centric and sustainable healthcare system development (Mishra et al., 2018).

1.4 Research framework and technical route

1.4.1 Research framework

This study constructs a theoretical framework based on the Job Demands-Resources theory, treating medical record burden as a unique job demand for physicians, burnout as a health impairment outcome, role stress and job insecurity as mediating variables, and psychological resilience and perceived organizational support as moderating variables. It systematically examines the internal mechanism through which medical record burden affects physician burnout. The research framework is illustrated in Figure 1.1.

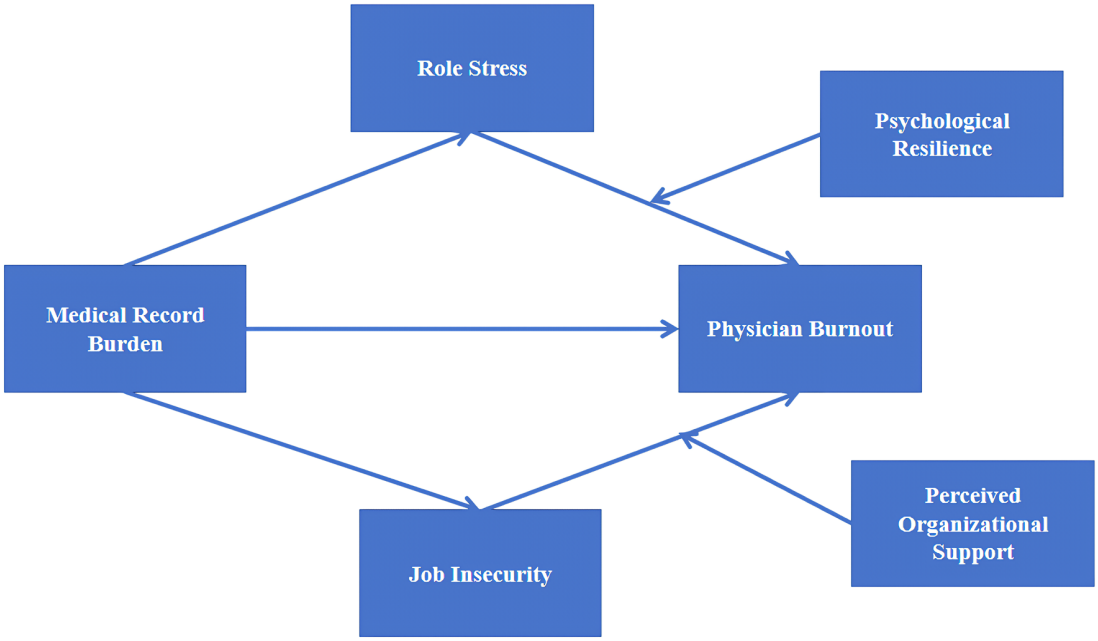

Figure 1.1 Research framework diagram

In this framework, the study first examines the direct impact of medical record burden on physician burnout. According to the JD-R theory, as a job demand, medical record writing consumes physicians' time and energy resources, potentially directly increasing burnout levels (Bakker & Demerouti, 2017). Second, it explores the mediating role of role stress (including role conflict, role ambiguity, and role overload) in the relationship between medical record burden and burnout. Excessive medical record writing may cause physicians to experience conflict between their clinical and documentation roles, leading to role ambiguity and

overload, which in turn trigger burnout (Wu et al., 2020). External environmental factors such as job insecurity may mediate the relationship between medical record burden and burnout. High-intensity medical record documentation may trigger physicians' inner sense of insecurity, which in turn exacerbates physician burnout (De Witte et al., 2016).

Additionally, the study investigates the roles of multiple moderating variables. Individual-level psychological resilience may moderate the negative impact of role conflict, such that physicians with higher resilience exhibit lower burnout when facing the role stress (Mccann et al., 2013). Organizational-level perceived organizational support may moderate the relationship between job insecurity and physician burnout, with physicians in high-support environments experiencing less job insecurity (Eisenberger et al., 1986).

The research framework integrates influencing factors at micro (individual characteristics), meso (organizational factors), and macro (external environment) levels, striving to comprehensively grasp the complex mechanisms through which medical record burden affects burnout. This framework not only focuses on direct relationships but also emphasizes mediating and moderating effects, reflecting the contextual research paradigm commonly adopted in contemporary organizational behavior studies (Johns, 2006).

1.4.2 Technical route

The technical roadmap of this study is shown below (Figure 1.2).

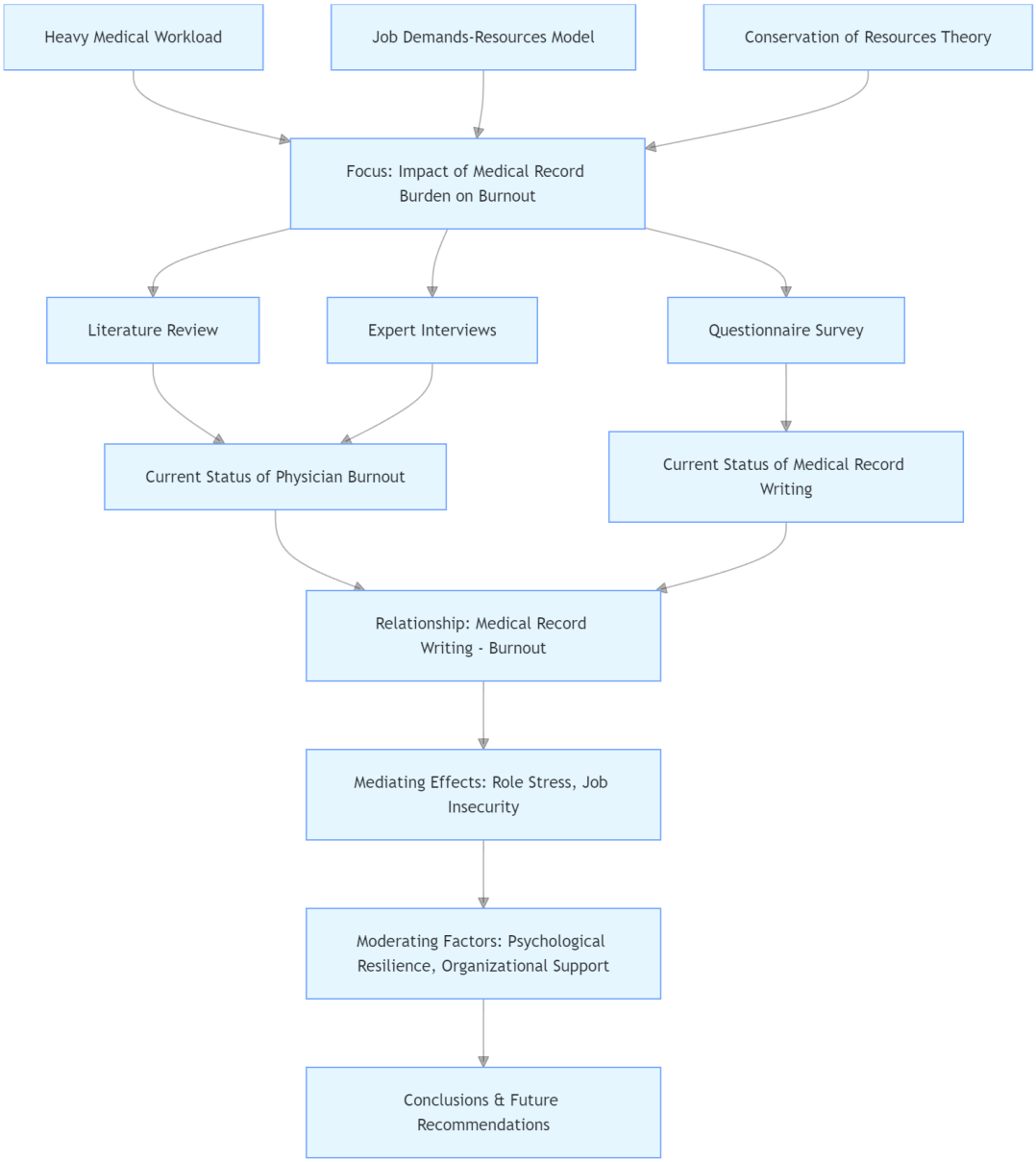

Figure 1.2 Technical roadmap

1.5 Research approach

1.5.1 Research logic

The logical framework of this study is grounded in the Job Demands-Resources theory and the Conservation of Resources theory, systematically exploring the mechanisms through

which medical record burden affects physician burnout. First, from the perspective of job demands, medical record burden is defined as a specific job demand requiring sustained cognitive effort and occupying substantial time resources. Second, it explores the psychological mechanisms through which job demands translate into burnout, focusing on role stress and job insecurity as mediating variables, following the basic framework of "stressor–stress perception–stress response." Third, it analyzes protective and risk factors, treating psychological resilience as an individual resource and perceived organizational support as a job resource to examine their moderating effects. Finally, based on contextual theory, it explores differential patterns in how medical record burden affects burnout under different conditions (individual characteristics, organizational environment, external conditions) (Johns, 2006), providing a theoretical basis for targeted interventions.

1.5.2 Research method selection

This study employs quantitative research, using complementary methods to enhance the reliability and comprehensiveness of findings. The primary data collection method is a cross-sectional survey, gathering data on core variables such as medical record burden, role stress, and burnout through structured questionnaires. This study adopts the stratified random sampling method. All public medical institutions in Longgang District, Shenzhen are taken as the basis for stratification, and samples are allocated according to the proportion of the number of physicians in each hospital to ensure the representativeness of each stratum. Within each hospital, eligible physicians are selected through simple random sampling for questionnaire surveys to ensure a reasonable sample structure and scientific and operable sampling.

Structural equation modeling (SEM) is used to test the complex relationship model. To avoid common method bias, procedural and statistical control measures will be adopted.

In addition, this study will adopt a multi-group analysis method to explore differences among different groups. By comparing model differences between physicians of different genders and different professional titles, it will gain an in-depth understanding of the group specificity of the mechanism through which medical record burden exerts its impact.

This study aims to obtain high-quality research evidence through scientific research design and analytical methods, providing a solid foundation for understanding how medical record burden affects physician burnout.

1.6 Research structure

1.6.1 Overall structure

The thesis is systematically structured across seven chapters, presenting a comprehensive exploration of the mechanisms through which medical record burden affects physician burnout. The first chapter introduces the research background and presents research questions. It describes the prevalence and severity of physician burnout, the development of healthcare informatization and medical record writing, and the realistic dilemma of the medical record writing burden. It clarifies the research questions and significance, proposes the research framework and technical route, and lays the foundation for the entire thesis. The second chapter reviews literature and forms theoretical hypotheses. It systematically introduces the core concepts of the Job Demands-Resources theory and Conservation of Resources theory, combs through the research progress of key concepts such as medical record burden, burnout, and role stress, summarizes the shortcomings of existing research, and proposes research hypotheses and constructs a theoretical model based on theoretical analysis. The third chapter details the research design and data collection. It elaborates on the questionnaire survey method, sample selection, data collection process, and variable measurement methods, and reports the reliability and validity test results of the questionnaire to provide a data foundation for subsequent empirical analysis. The fourth chapter conducts descriptive statistics and preliminary analysis. It presents the basic characteristics of the sample, analyzes the current status of physicians' medical record burden and burnout, examines the differences among physician groups with different characteristics, and conducts correlation analysis and preliminary regression analysis to test the basic relationship between medical record burden and burnout. The fifth chapter uses structural equation modeling for mechanism research. Through the structural equation modeling method, the fit of the theoretical model and path hypotheses will be tested. The mediating effects of role stress and job insecurity, as well as the moderating effects of psychological resilience and perceived organizational support, will be analyzed to comprehensively verify the research hypotheses. The sixth chapter discusses the research findings. It summarizes the main research results, explains the theoretical significance of the findings, compares and analyzes them with existing research, and elaborates on the theoretical contributions and limitations of the research. The seventh chapter systematically identifies key pathways to mitigate physician burnout. From five dimensions—optimizing medical record burden, regulating role stress, alleviating job insecurity, cultivating

psychological resilience, and enhancing perceived organizational support—it develops a strategic framework that includes measures such as upgrading electronic medical record systems and clarifying role responsibilities. The eighth chapter concludes the study and proposes recommendations. It summarizes the core conclusions of the thesis, puts forward practical suggestions for hospital managers, healthcare policymakers, and physicians, and discusses the possible directions for future research.

1.6.2 Chapter summaries

The first chapter, as the introductory part of the entire thesis, first establishes the research background through the current status of physician burnout, the development process of electronic medical records, and the burden of physicians' medical record writing; then clearly proposes the research question, that is, how medical record burden affects physician burnout and its mechanism; then elaborates on the research significance, including theoretical and practical significance; finally, it explains the research framework, technical route, research ideas, and the structure of the thesis.

The second chapter, as the theoretical foundation part, first introduces the core viewpoints and research progress of the Job Demands-Resources theory and Conservation of Resources theory; secondly, defines core concepts, including medical record burden, burnout, role stress, psychological resilience, perceived organizational support, and job insecurity; then reviews the existing research on the relationships between variables, identifies research gaps; finally, proposes research hypotheses and constructs a theoretical model based on theoretical analysis.

The third chapter details the methodological design of the research, including the design ideas of the questionnaire survey, the development process of the questionnaire, the sampling strategy, the data collection method, and ethical considerations. It also reports the measurement tools for each variable and the results of reliability and validity tests to ensure the scientificity and rigor of the research.

The fourth and fifth chapters form the core of the empirical analysis. The fourth chapter provides a foundation for in-depth analysis by presenting sample characteristics, variable distributions, and subgroup differences through descriptive statistics and preliminary analysis. The fifth chapter systematically tests the theoretical model using structural equation modeling, analyzing the mediating effect of role stress and the moderating effects of various variables to validate the research hypotheses.

The sixth, seventh, and eighth chapters correspond to the discussion, management

strategies, and conclusions sections, respectively. The sixth chapter focuses on interpreting research results and conducting theoretical discussions, situating the findings within the context of existing literature to analyze theoretical contributions and research limitations. The seventh chapter addresses the mitigation of physician burnout by systematically proposing management strategies from five dimensions: reducing medical record burden, regulating role stress, alleviating job insecurity, enhancing psychological resilience, and strengthening perceived organizational support. These strategies include upgrading electronic medical record systems and clarifying role expectations. The eighth chapter distills the research conclusions, summarizes practical implications, provides targeted recommendations for various stakeholders, and outlines future research directions.

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Chapter 2: Literature Review

2.1 Theoretical foundation

2.1.1 Job demands-resources theory

Job Demands-Resources Theory (JD-R) is one of the important theoretical frameworks widely applied in the fields of organizational behavior and occupational health psychology. Initially proposed by Dutch scholar Demerouti and her colleagues in 2001, this theory aims to provide a flexible and expandable framework to explain why employees in different occupational contexts may have significantly different psychological responses when facing similar working conditions, and to predict health and performance outcomes in the workplace (Demerouti et al., 2001). The uniqueness of JD-R Theory lies in its integration of the advantages of multiple existing stress models and its emphasis on the duality of job characteristics, thereby offering a more comprehensive and dynamic perspective for understanding occupational stress and employee well-being (Bakker & Demerouti, 2007; Bakker & Demerouti, 2017). JD-R Theory provides a strong theoretical basis for in-depth understanding of the sources of physicians' work stress and how such stress affects physician burnout, and it is particularly applicable to analyzing how medical record burden, as a specific stressor, is transformed into occupational exhaustion through psychological mechanisms (Montgomery et al., 2015).

The core view of JD-R Theory is that the job characteristics of any occupation can be divided into two basic categories of elements, namely job demands and job resources. The dynamic relationship between these two elements largely determines an individual's occupational health level and work performance. This classification method allows researchers to flexibly define and measure relevant job characteristics according to the actual situation of specific occupations. In this theoretical structure, job demands refer to work factors that require employees to continuously exert physical, emotional, or cognitive efforts and are associated with certain physiological or psychological costs. These factors are usually related to the quantity, intensity, complexity, or emotional input of work tasks, such as excessive workload, time pressure, emotional labor, role conflict, and uncertainty. While continuously consuming an individual's energy reserves, job demands are also likely to

induce a series of negative psychological responses such as chronic stress, attention fatigue, and emotional exhaustion (Bakker & Demerouti, 2017). Correspondingly, job resources refer to environmental conditions that help employees achieve work goals, moderate the adverse consequences caused by job demands, promote personal growth and development, or stimulate individual motivation. Job resources can be at the organizational level, interpersonal level, or task level. JD-R Theory points out that when job demands are high and resources are insufficient, employees are more likely to fall into the health impairment path, manifesting as decreased work motivation, emotional breakdown, and burnout. Conversely, sufficient job resources can not only effectively moderate the negative impact of high job demands but also promote employees' work engagement, satisfaction, and performance improvement through the motivational path (Bakker & Demerouti, 2007).

In the healthcare industry, physicians have long been in an occupational context characterized by high risk, high intensity, and multiple tasks, and their work itself is accompanied by enormous physical and psychological loads (Sinsky et al., 2016). As an unavoidable but highly additional task module in their positions, medical record documentation typically reflects the characteristics of high job demands in JD-R Theory. Different from the immediate feedback of direct diagnosis and treatment tasks, medical record tasks are often characterized by standardization, repetition, and proceduralization, and their value is difficult for physicians to perceive subjectively, and they are even regarded as an extra burden (Melnick et al., 2020). Physicians need to complete high-quality structured documentation tasks within limited time, covering multiple dimensions such as clinical pathways, diagnostic and treatment bases, medication instructions, and evaluation judgments, with no room for error, as any omission may lead to serious consequences. This process not only highly relies on cognitive resources but also brings significant psychological load, and there is a lack of positive rewards. Over time, it is transformed into a structural stressor and becomes an important inducement for physician burnout.

Especially in the current context where hospital management is gradually institutionalized and performance assessment is becoming more refined, medical record documentation has become one of the key supervision points in the healthcare system. It not only undertakes the responsibility of restoring the diagnosis and treatment process but also bears multiple external functions such as legal risk prevention and control, medical insurance audit compliance, and medical quality evaluation scoring. This continuous strengthening of institutional significance has actually changed physicians' cognitive framework of medical record tasks—from being a simple self-expression tool or auxiliary record for diagnosis and treatment in the early stage to

a risk and liability document with high legal binding force and performance relevance. In this context, the psychological load of physicians when handling medical records is no longer merely the complexity of the task itself but the uncertainty of the consequences caused by their documentation behavior. This uncertainty is repeatedly strengthened, making physicians not only have to cope with the cognitive load of the task itself when facing medical record documentation but also bear potential psychological pressure related to performance and liability, directly entering the health impairment path in JD-R Theory and becoming one of the core hidden channels for medical staff's mental consumption (Pozdnyakova et al., 2018).

The health impairment path in JD-R Theory clearly points out that when job demands remain high and cannot be moderated by resources, employees' psychological and physiological energy will be gradually consumed, eventually manifesting as occupational apathy, energy exhaustion, and loss of sense of work meaning (Schaufeli & Bakker, 2004). Medical record documentation exactly reflects the typical mode of this exhaustion process. On the one hand, it requires high-frequency attention focus and rigorous language organization ability to ensure the accuracy and completeness of information; on the other hand, its labor rewards are extremely delayed or even absent, and physicians often cannot obtain immediate and positive incentives or a sense of achievement from medical record tasks. Instead, they experience intrinsic burnout, resentment, and resistance (Shanafelt et al., 2017). This emotional reaction is essentially the result of a long-term imbalance between work requirements and psychological compensation, and it is a unique psychological consequence of the task type with low emotional value and high institutional punishment, which easily leads to negative emotions in physicians when completing medical record documentation, thereby affecting their overall work status.

Based on this logic, this thesis proposes that medical record documentation, as a typical high-intensity work requirement, induces burnout mainly through two paths: one is by triggering physicians' role stress; the other is by enhancing physicians' job insecurity. These two types of psychological mechanisms are typical mediating variables in the health impairment process under JD-R Theory, and they transform medical record burden, as a job demand, into the specific psychological process of physician burnout.

The first is the role stress path. Physicians generally bear multiple roles in modern hospitals. They not only assume the core function of clinical treatment but also perform multiple responsibilities such as recorders, management implementers, educators, and doctor-patient communicators. The embedding mode of medical record tasks is institutionally mandatory—that is, it is not a task that physicians take the initiative to decide according to

their own diagnosis and treatment needs but a work content that must be completed due to institutional norms and legal requirements. The implantation of such external tasks will break physicians' original role boundaries, putting them in a state of constant switching between the identities of treaters and recorders, thereby triggering role conflict. Especially in the diagnosis and treatment scenarios with extremely tight time, physicians often need to repeatedly switch between seeing patients and supplementing records, which not only distracts attention but also disrupts work rhythm, eventually causing confusion in their role cognition and enhancing the experience of conflict. In addition, role ambiguity is also widespread (Bakker et al., 2005). Regarding the division of responsibilities for medical record content, documentation depth, and standardization standards, physicians in different departments and at different levels have different understandings, and even there are inconsistent standards within the same hospital, which further causes documentation anxiety. Physicians are often unsure whether their documentation meets all requirements and whether it can pass quality control inspections. In this context, physicians working continuously in an environment with high task pressure and low role clarity are prone to emotional tension, psychological fatigue, role avoidance, and other reactions, all of which are direct contributions of role stress to burnout (Bakker et al., 2007).

The second is the job insecurity path. With the gradual quantification and refinement of the performance assessment system, medical record quality has become an important indicator in the physician personal evaluation system. Many physicians clearly realize that records such as the number of medical record reworks, quality deduction points, and quality control sampling results not only directly affect year-end bonuses but may also affect professional title evaluation, job promotion, and even professional reputation and future career development. In this context of high performance sensitivity and high liability risk, physicians are likely to regard medical record tasks as an uncontrollable hidden threat source. Due to delayed feedback, frequent changes in evaluation standards, and sometimes a lack of transparency, physicians lack clear expectations for the results of their documentation behavior, thereby triggering systematic anxiety and a sense of powerlessness. This uncertainty makes it difficult for physicians to establish stable expectations for their own work performance, thereby exacerbating job insecurity. Over time, physicians gradually form a stress expectation that they may make mistakes no matter how they write, which not only weakens their sense of control over work but also prompts them to show emotional withdrawal, defense, numbness, and other exhaustion characteristics. Professional confidence and sense of meaning then decline, eventually leading to burnout.

It is worth noting that burnout in JD-R Theory is not only the result of emotional exhaustion but also a cognitive reconstruction driven by the process of resource loss. In physicians' daily experience, medical record tasks often lack a closed-loop logic of immediate incentives and positive feedback, making them prone to falling into a negative cycle of repeated labor, post-event quality control, and institutional punishment. In the process of accumulating such experiences, physicians will gradually adjust their cognitive structure and regard medical record tasks as low-value and high-risk burden behaviors. This cognitive reconstruction weakens physicians' positive identification with the profession itself, replacing it with withdrawal, apathy, and value questioning, which is exactly the typical manifestation path of the three-dimensional structure of burnout—emotional exhaustion, depersonalization, and reduced sense of achievement. Emotional exhaustion is manifested as physicians feeling exhausted when facing medical record tasks; depersonalization is reflected in the indifferent and negative attitude towards medical record tasks and related systems; and reduced sense of achievement stems from physicians' perception that their efforts in medical record documentation have not received due recognition or rewards.

In addition, the JD-R model also emphasizes that the formation of the health impairment path usually has the characteristics of chronic evolution and irreversible trends. That is, once job demands have been accumulated for too long and resource input has been insufficient for a long time, individuals will not be able to repair their state through short-term recovery methods. Medical record documentation tasks exactly have such characteristics: they are characterized by high frequency, strong continuity, weak sense of control, and heavy institutional binding. Physicians gradually develop experiences of being unable to improve and being gradually exhausted during daily repeated execution. Although this process may initially manifest as complaints or resistance, over time, it will evolve into psychological numbness and occupational apathy, further causing a series of chain reactions such as increased long-term turnover intention, decreased service quality, and weakened organizational identification, and ultimately having a far-reaching impact on the quality of medical services and the stability of the medical staff team.

To sum up, JD-R Theory provides a solid theoretical support for this study to construct the main effect path of "medical record burden—burnout". As a typical high-structured and high-standardized work requirement, medical record tasks may eventually trigger burnout through two key mediating variables: role stress and job insecurity, which transform medical record burden, as a job demand, into the specific psychological process of physician burnout.

In recent years, an important expansion of JD-R Theory is the inclusion of personal

resources into the model structure (Xanthopoulou et al., 2007). Personal resources refer to positive psychological traits that individuals use to effectively cope with environmental stress, achieve goals, and self-repair, such as self-efficacy, optimism, hope, and resilience. This expansion has broadened the explanatory power of the theory and also provided theoretical support for this study to introduce "psychological resilience" as a moderating variable. Studies have shown that physicians with high psychological resilience are more likely to show positive coping strategies, cognitive reappraisal, and self-motivation abilities when facing complicated and repetitive medical record tasks, thereby effectively avoiding the occurrence of occupational emotional exhaustion (Britt et al., 2016).

2.1.2 Conservation of resources theory

Conservation of Resources Theory (COR) is one of the important theoretical models for understanding work stress and physician burnout. It was first proposed by the renowned American psychologist Stephen Hobfoll in 1989 and has been continuously developed and improved in subsequent theoretical deepening and empirical studies (Hobfoll et al., 2018). Different from traditional stress models that focus on task structure or environmental characteristics, COR Theory starts from the dynamic perspective of interaction between individuals and resources, emphasizing that individuals' acquisition, maintenance, and defense of resources in the work process are the core mechanisms for understanding changes in mental health status. The theory holds that people have an inherent tendency to acquire, accumulate, and protect valuable resources; obvious stress responses may be triggered when there is an actual loss of resources, a potential threat to resources, or when individuals do not receive corresponding returns after investing resources, which may then lead to physical and mental exhaustion (Hobfoll, 1989). The core logic of the theory emphasizes that the negative impact of resource loss is often more far-reaching and lasting than the positive effect of resource gain. Therefore, the unbalanced state of resource dynamics, especially net resource loss, constitutes an important prerequisite for the occurrence of burnout.

In this theoretical framework, resources are broadly defined as any material, social, personal trait, or energy unit that individuals consider helpful for achieving their goals. These resources are not only the basic elements for survival and development but also important tools for individuals to cope with environmental challenges and achieve personal goals. Hobfoll (2001) divided resources into four categories, providing a clear classification for understanding the role of resources in the stress process. Material resources refer to tangible

resources that can be touched and can directly bring benefits or convenience, such as money, property, technical equipment, a comfortable working environment, and means of transportation. In medical scenarios, this may include advanced medical equipment, efficient EMR, and sufficient consulting room space. Conditional resources refer to specific situations or statuses that can help individuals obtain other resources or avoid resource loss, such as a stable job position, promotion opportunities, organizational commitment, social status, and marital status. For physicians, stable establishment, a fair professional title promotion mechanism, the good reputation of the hospital, and a clear career development path all belong to conditional resources. Personal resources refer to the inherent psychological traits, skills, and abilities owned by individuals, which help individuals cope with stress and promote growth, such as self-esteem level, optimistic attitude, psychological resilience, self-efficacy, and problem-solving ability. These are important internal supports for physicians to cope with high-intensity work and complex interpersonal relationships. Energy resources refer to the psychological and physical energy units that individuals continuously invest in work, such as time, attention, emotional regulation ability, cognitive processing ability, and physical strength. Physicians face massive information, high-intensity operations, and emotional labor every day, and their consumption of time, attention, and emotional energy is huge.

In the medical work scenario, the important resources that physicians rely on cover multiple levels from macro institutional guarantees to micro psychological regulation. Especially in the current context where the operation of the medical system emphasizes information traceability, quality control, and risk prevention, medical record documentation has become a highly frequent task with extremely standardized requirements, which seriously occupies physicians' time resources, emotional resources, and cognitive resources, and constitutes a huge consumption of physicians' existing resources.

In the framework of Conservation of Resources Theory, three core mechanisms form the logical main line for explaining the formation process of physician burnout, and they jointly describe how resource loss gradually accumulates and eventually leads to a state of exhaustion. The principle of resource loss primacy is the cornerstone of COR Theory. It points out that resource loss has a stronger psychological impact than resource gain, that is, the negative effect of loss is far greater than the positive effect of equivalent gain (Hobfoll, 2001). In clinical practice, physicians need to face a large number of repetitive and high-intensity medical record documentation tasks every day, which not only means the continuous loss of a lot of time but also requires a high degree of focused attention, accurate information organization and expression ability, and huge emotional investment. In contrast, the feedback

obtained after the completion of medical records is often very limited, and they may even be criticized for review, have performance deductions, or be held legally accountable due to detailed omissions. Therefore, physicians have long felt a psychological state in which resources are constantly leaking out and value feedback is scarce. The gap between this huge input and meager output will aggravate the sense of exhaustion, form continuous psychological pressure, and ultimately lead to physician burnout. The resource investment principle holds that individuals often need to invest existing resources to obtain new resources, avoid resource loss, or repair lost resources (Hobfoll et al., 2018). For physicians, in order to ensure the quality of medical records, avoid liability risks, or enhance patients' trust, they are often forced to invest more time and emotional energy in improving documentation details, standardizing formats, and even proactively reviewing and verifying patient information and other hidden work. For example, to ensure the compliance of medical records, physicians may sacrifice rest time to work overtime for documentation; to avoid medical disputes, they may record every detail excessively in medical records. This fear-driven resource reinvestment behavior has a certain defensive effect, but its cost is squeezing other working hours, sacrificing the quality of communication with patients, and even compressing personal rest and recovery cycles, thereby accelerating the overall consumption of resources, forming the accumulation of psychological load, and further exacerbating the sense of fatigue. The resource loss spiral effect emphasizes that once resource loss starts, individuals' ability to protect and restore resources will decrease simultaneously, leading to further resource loss and forming a vicious circle (Hobfoll, 2001). Under the condition that the medical record burden remains high and resource compensation is insufficient, physicians are prone to a series of negative reactions such as energy exhaustion, decreased work interest, and dulled emotional responses. For example, long hours of medical record documentation lead to fatigue, which in turn affects the accuracy of diagnosis or the quality of communication with patients, which may lead to more rework or complaints, thereby further consuming physicians' confidence and energy. Once this state is formed, it will gradually weaken individuals' initiative and ability to cope with challenges, making it more difficult for them to obtain positive motivational feedback from existing tasks, and further exacerbating occupational fatigue and psychological alienation (Hobfoll et al., 2018). Over time, it may develop the typical three-dimensional symptoms of physician burnout, namely emotional exhaustion, depersonalization, and reduced sense of achievement.

COR Theory is not only applicable to explaining how resource consumption leads to increased occupational stress and worsening exhaustion but also provides an important

perspective for identifying and constructing resource protection mechanisms (Hobfoll, 2001). On this basis, researchers further emphasize that the personal resources owned by individuals (such as psychological resilience) and the conditional resources provided by their organizational environment (such as perceived organizational support) are of key significance in moderating the stress effect and promoting resource accumulation.

Specifically, as a typical personal resource, psychological resilience reflects an individual's ability to maintain emotional stability, adapt positively, and recover effectively when encountering stressful events, adversities, or traumas. When facing multiple conflicts and psychological pulls caused by role stress, physicians with high psychological resilience are more likely to show strong coping ability and emotional regulation ability. They can calmly handle the psychological tension caused by unclear job responsibilities, unbalanced workload, or performance assessment conflicts, reducing the risk of such stress further evolving into emotional exhaustion or job burnout. For example, when facing unclear responsibility boundaries or expectation conflicts caused by medical record documentation, individuals with high resilience may be more likely to moderate emotional burdens with strategies such as positive cognitive reappraisal and self-motivation, maintain an internal sense of purpose and professional value, and thus maintain a relatively stable working state and emotional state in a high-pressure environment (Lee & Ashforth, 1996). This mechanism enables it to play a moderating role between role stress and physician burnout, that is, under the same level of role stress, those with high psychological resilience show a lower tendency to physician burnout, reflecting the resource moderating effect (Prapanjaroensin et al., 2017).

At the same time, perceived organizational support is a key conditional resource, which is the recognition, care, and assistance that individuals perceive from the organization for their work at the emotional and instrumental levels. When physicians face a high level of job insecurity, if they can feel institutional support from the organization, such as efficient EMR, reasonable human resource allocation, a fair and transparent evaluation and feedback mechanism, and timely training and guidance, it will help alleviate their sense of uncertainty and threat about their professional future (Salyers et al., 2017). As an external resource input, perceived organizational support not only helps improve individuals' sense of belonging and professional stability but also enhances their resource recovery ability by reducing the perception of resource threats, thereby blocking the negative psychological path triggered by insecurity. This support not only improves individuals' sense of work value and belonging but also enhances their resource recovery ability by reducing the perception of resource threats, thus forming a positive resource protection path. For example, if a physician obtains a clear

promotion channel and continuous career development support while encountering performance assessment pressure, his subjective sense of insecurity will be significantly reduced, thereby slowing down the risk of conversion to physician burnout. Therefore, perceived organizational support can play a moderating role between job insecurity and physician burnout, that is, under the same level of job insecurity, physicians with high perceived organizational support are less likely to experience burnout. This moderating effect indicates that the accessibility of external supportive resources is of great significance for the psychological protection mechanism under high-risk cognition (Bauer et al., 2014).

Therefore, through its core mechanisms such as resource loss primacy, resource investment, and resource loss spiral, COR Theory provides clear theoretical support for this thesis to analyze how psychological resilience and perceived organizational support regulate the relationship between "role stress, job insecurity and physician burnout". Psychological resilience, as an internal personal resource, helps physicians actively cope with and recover; perceived organizational support, as an external conditional resource, provides moderating and supplementation for physicians.

2.1.3 Theoretical integration and research model

Although the JD-R Theory and COR Theory have different origins, they are highly complementary in explaining the mechanisms of occupational stress and burnout. The JD-R Theory focuses on the structural impact paths of job demands and job resources, emphasizing that high job demands, if lacking resource support, will activate the health impairment process and trigger burnout. The COR Theory, on the other hand, focuses on the dynamic changes of individual resources, pointing out that resource loss is the fundamental source of stress responses and that resource protection is the core of coping strategies. The integration of these two theories helps to comprehensively understand the occurrence mechanism of physician burnout from two dimensions: structural characteristics and resource processes.

Under the JD-R framework, medical record burden, as a typical high-intensity work requirement, has become an important source of consumption of physicians' cognitive and emotional resources due to its high frequency, complexity, and responsibility. According to the health impairment path, such tasks, if lacking supporting resources, are very likely to induce burnout. However, this process is not a simple linear one but is often mediated by psychological mechanisms. For this reason, this thesis introduces role stress and job insecurity as mediating variables: the former reflects the tense state of physicians in role conflict and

responsibility ambiguity, while the latter reflects the sense of uncertainty and threat of physicians caused by the connection between medical record quality, performance, and practice risks.

At the same time, the COR Theory provides a key regulatory perspective for this study. It emphasizes the protective function of resources in stress coping, holding that the more individual resources one has, the more effectively one can resist the consequences of stress. As an internal personal resource, psychological resilience helps physicians cope with role conflicts more actively, maintain emotional stability and clear goals, thereby weakening its driving force on burnout; perceived organizational support, as an external conditional resource, alleviates physicians' sense of resource threat caused by insecurity by providing institutional guarantees, system support, and positive feedback, thus reducing its impact on burnout.

Based on the above theoretical logic, this thesis constructs an integrated research model including dual mediating and dual moderating paths, as shown in Figure 2.1. It aims to systematically reveal how medical record burden affects physician burnout through specific psychological paths and explore how personal and organizational resources play a moderating role in this process. This model can not only deepen the understanding of the causes of physician burnout but also provide a theoretical basis for formulating multi-level intervention strategies.

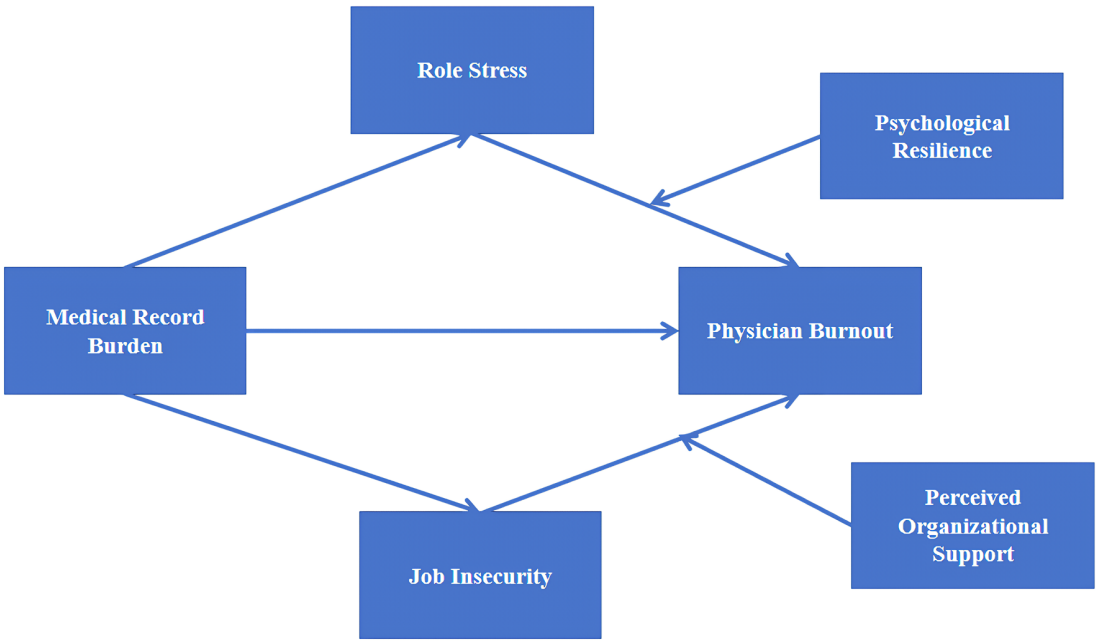

Figure 2.1 Theoretical model diagram

2.2 Definition of core concepts and research progress

2.2.1 Current situation and influencing factors of physician burnout

2.2.1.1 Concept definition

Physician burnout is a state of chronic psychological exhaustion that individuals experience under the condition of enduring high work pressure for a long time. It is not simply fatigue or stress, but a persistent and in-depth energy depletion that exerts significant negative impacts on individuals' physical and mental health as well as work performance. This concept was first proposed by Herbert Freudenberger, an American clinical psychologist, in 1974 to describe the phenomenon of energy exhaustion among workers in helping professions who are exposed to long-term high pressure (Freudenberger, 1974). Later, Maslach and her colleagues conducted systematic research and conceptualization on it in 1981, defining it as a multi-dimensional psychological syndrome (Maslach et al., 2001). According to Maslach's classic model, physician burnout is mainly manifested in the following three interrelated dimensions:

Emotional exhaustion is regarded as the core symptom of physician burnout, reflecting a state where individuals' psychological and emotional resources are depleted due to continuous emotional labor and excessive investment. It is manifested as extreme tiredness, distracted energy, low mood, boredom and powerlessness towards work, and even somatic symptoms such as insomnia and headache. In medical settings, physicians face patients' pain, families' anxiety, and separations between life and death every day, and they need to continuously put in enormous emotional labor, which makes emotional exhaustion the most common and earliest emerging burnout symptom among physicians.

Depersonalization refers to an individual's attitude of indifference, alienation, disregard, or even negative evaluation towards work objects, which stems from the psychological mechanism of self-defense. Its behavioral manifestations include emotional alienation from service objects, mechanical responses, lack of compassion, indifferent interpersonal relationships, as well as negativity and cynicism towards work. The emergence of this symptom is often intended to protect oneself from the harm of emotional overload, but it may lead to tense doctor-patient relationships and affect the quality of medical services.

Reduced personal sense of achievement refers to an individual's negative evaluation of work value and self-efficacy, which is manifested as questioning one's own abilities, losing the sense of professional meaning, increasing self-doubt, and believing that one's work cannot

bring about positive changes or contributions. Physicians may feel that no matter how hard they try, they cannot achieve the expected results, or their efforts have not been recognized as they deserve, thus generating frustration and a sense of powerlessness (Maslach & Leiter, 2016).

In the healthcare industry, physician burnout, as a special type of occupational exhaustion, has obvious industry characteristics and multi-dimensional risks. Physician burnout not only stems from external pressures such as long working hours and fast work rhythm but also includes additional loads such as high-intensity emotional labor, a high sense of responsibility for patients' health outcomes, frequent psychological impacts from exposure to scenes of death or major diseases, as well as complicated administrative paperwork, doctor-patient conflicts, and occupational uncertainty (Shanafelt et al., 2012). In addition, the occupational ecology of "high risk + high requirement + high responsibility" that physicians undertake means that once they suffer from physician burnout, it will not only seriously damage their own physical and mental health but also may cause a series of chain reactions such as the decline of medical quality, the aggravation of potential risks to patient safety, and the increase of risks of medical accidents (Panagioti et al., 2018). Therefore, physician burnout is widely regarded as an interdisciplinary research topic in the fields of medical humanities, occupational health, hospital management, and public health, and its solution is crucial to the sustainable development of the healthcare system.

2.2.1.2 Measurement methods

With the deepening of research on physician burnout, relevant measurement tools have been continuously enriched to meet the needs of different research purposes and cultural backgrounds. Currently, the most widely used tool internationally is the Maslach Burnout Inventory (Schaufeli et al., 2001). Developed by Maslach and her colleagues in 1981, the MBI was initially designed to assess the level of occupational exhaustion among professionals in helping industries (such as teachers, medical staff, and social workers). The MBI includes three subscales, which evaluate the three dimensions of emotional exhaustion (9 items), depersonalization (5 items), and personal sense of achievement (8 items) respectively, with a total of 22 items. The scale uses a 7-point Likert scale for scoring, and the individual's burnout level is judged by calculating the scores of each dimension. According to different usage scenarios and occupational groups, the MBI has developed multiple versions, among which: MBI-HSS (Human Services Survey): specifically designed for professionals engaged in interpersonal service work (including medical staff), it has been verified by a large number

of empirical studies to have good reliability and validity, and has been recommended by the international academic community as the gold standard tool for assessing physician burnout. MBI-GS (General Survey): applicable to a wider range of occupational groups. MBI-ES (Educators Survey): specifically designed for educators. In addition to the MBI, in recent years, some tools with a more concise structure or more targeted theories have emerged to meet the needs of different researchers:

Oldenburg Burnout Inventory (OLBI): developed by Demerouti and her colleagues in 2003, it focuses on two dimensions of exhaustion and disengagement. It emphasizes that exhaustion is a universal burnout mechanism in all occupations, while disengagement reflects a sense of distance and negative attitude towards work content (Demerouti et al., 2010). The OLBI has a stronger theoretical with the JD-R Theory, as it regards burnout as a direct result of the imbalance between job demands and resources.

Copenhagen Burnout Inventory (CBI): developed by Kristensen and his colleagues in 2005. Its uniqueness lies in starting from the essence of exhaustion and dividing burnout into three independent dimensions: personal-level burnout, work-related burnout, and client-related burnout (Kristensen et al., 2005). The CBI has a concise structure and is applicable to different cultural and industry backgrounds. It particularly emphasizes the core attribute of psychological exhaustion and avoids the controversy over the dimension of reduced sense of achievement in the MBI.

In the Chinese context, research on physician burnout started relatively late but has developed rapidly. The Chinese version of MBI-HSS has been widely introduced and revised, and has shown good applicability and cross-cultural reliability and validity in a number of studies (Li et al., 2003). This provides a reliable tool for measuring the physician burnout of Chinese physicians. In addition, there are studies that have developed localized scales based on the characteristics of the Chinese medical context and culture. For example, the Chinese Maslach Burnout Inventory (CMBI) developed by scholars such as Yang et al. (2009). This scale starts from three dimensions: emotional exhaustion, professional slackness, and achievement doubt, and is more in line with the subjective experience and expression of occupational exhaustion among Chinese medical staff.

After comprehensively considering the theoretical fit, measurement validity, and the current situation of domestic research, this thesis finally selects the Copenhagen Burnout Inventory (CBI). The reason for choosing the CBI is that its measurement framework is highly consistent with the JD-R Theory adopted in this study, and it can well reflect the structural exhaustion at three levels: occupational energy depletion, work loss, and pressure

from service objects. The emphasis of the CBI on exhaustion is more consistent with the core concept of the health impairment path in the JD-R Theory, which helps to more accurately explore the differences in the impact paths of medical record burden on different dimensions of burnout, thereby providing more refined empirical support for the theoretical model of this study.

2.2.1.3 Research progress and influencing factors

In recent years, research on physician burnout has shown an explosive growth trend and has become a focus of attention in the global medical community and public health field. According to bibliometric analysis (West et al., 2018), since 2016, more than one thousand English papers have been published each year with "physician burnout" as the key word, covering multiple disciplines such as psychology, social medicine, organizational behavior, health management, and medical education. This research popularity not only reflects the universality and urgency of the problem of physician burnout worldwide but also highlights its far-reaching impact on the stable operation of the healthcare system. In terms of research topics, studies on physician burnout mainly focus on the following aspects:

Epidemiological characteristics and prevalence rate: This is the earliest topic that attracted attention. A systematic review covering 182 cross-sectional studies worldwide shows that the overall prevalence rate of physician burnout varies greatly, mainly due to differences in assessment tools, scale cut-off points, sample sources, and cultural backgrounds (Rotenstein et al., 2018). For example, physicians in emergency departments, surgery departments, and internal medicine departments often report higher burnout rates. In China, a large-scale meta-analysis found that the overall detection rate of physician burnout is as high as 75.48%, among which emotional exhaustion accounts for nearly 50%, and depersonalization and reduced sense of achievement also exceed 50%, showing that Chinese physicians generally face high-exposure and high-hazard occupational health risks (Zheng et al., 2022). These data fully indicate that physician burnout has become a common problem that needs to be solved urgently in China's healthcare system.

Research on influencing factors: Studies generally believe that physician burnout is the result of the complex interaction of multiple factors, including individual-level susceptibility and structural pressure factors of work situations and organizational culture. (1) In terms of individual factors: young physicians, female physicians, and physicians in the early stage of their careers are more likely to show a higher level of burnout. This may be related to factors such as insufficient experience, immature coping ability, difficulties in adapting to

professional roles, and pressure to balance family and work. In addition, personality traits and coping strategies also significantly predict the risk of occupational exhaustion (Lee et al., 2013). High self-requirements and a sense of guilt make physicians more likely to consume themselves when facing work pressure. (2) In terms of job characteristics: excessively long working hours, frequent night shifts, excessive workload, lack of job autonomy, unclear professional roles, pressure from doctor-patient communication, high-intensity emotional labor, and frequent exposure to death and diseases are all closely related to the level of burnout. For example, long hours of EMR entry and increased administrative tasks have squeezed the time that physicians could spend on diagnosis, treatment, and rest, exacerbating their work burden. (3) In terms of organizational factors: department culture, superior-subordinate relationships, performance assessment systems, leadership styles, team cohesion, sense of organizational justice, salary and welfare, and sense of perceived organizational support have been proven to be important influencing variables (Shanafelt & Noseworthy, 2017). The lack of an effective perceived organizational support system, unreasonable performance orientation, and an unhealthy interpersonal atmosphere in departments will significantly increase the risk of physician burnout.

Research on the consequences of burnout: Studies have continuously and deeply revealed the multiple negative impacts of burnout on individual physicians, medical organizations, and even the entire healthcare system. (1) At the individual level: physician burnout is significantly related to problems such as anxiety, depression, suicidal ideation, occupational disengagement, marital conflicts, tense family relationships, sleep disorders, drug abuse, and alcohol dependence (West et al., 2018). Long-term burnout not only harms physicians' physical and mental health but also affects their quality of life and personal happiness. (2) At the organizational level: burnout can significantly predict physicians' turnover intention, lateness and absenteeism, decreased job satisfaction, and loss of work engagement (Dewa et al., 2014). A high turnover rate not only increases the human resource costs of hospitals but also affects the continuity and quality of medical services. (3) At the healthcare system level: burnout is also related to an increase in medical error rates, a decline in diagnosis and treatment quality, a decrease in patient satisfaction, and an increase in complaint rates (Panagioti et al., 2018). Burned-out physicians may have inattentiveness and poor judgment, thereby increasing the risk of misdiagnosis and missed diagnosis, posing a serious threat to patient safety, and have become a structural risk affecting medical safety.

Intervention research: It has increasingly become a key research direction, aiming to explore effective strategies to alleviate or prevent physician burnout. Intervention strategies

are usually divided into individual-oriented and organization-oriented categories, and it is generally believed that comprehensive interventions have the best effect. (1) Individual-oriented interventions: focus on improving individuals' psychological resilience, coping ability, and self-care. Methods include mindfulness training, cognitive-behavioral therapy, stress management courses, emotional regulation skills training, and peer support groups. These interventions aim to enhance physicians' internal resources for coping with stress. (2) Organization-oriented interventions: emphasize optimizing work processes, improving perceived organizational support, enhancing physicians' autonomy, and improving management culture at the system level. In practice, they include: increasing administrative support staff, optimizing EMR interfaces and processes, reforming on-duty systems, reasonably allocating workload, establishing a fair and transparent performance management system, providing career development opportunities, improving leadership, and creating a positive team culture (West et al., 2016). Previous studies have shown that comprehensive interventions usually have the most significant effect because they solve burnout problems from multiple levels at the same time.

In addition, in recent years, research on the relationship between physicians' medical record burden and physician burnout has gradually attracted attention. With the popularization of EMR, although information sharing and management efficiency have been improved, new work burdens have also been brought. Existing studies have pointed out that the reported rate of physician burnout increases significantly when the user experience of EMR systems is poor (Melnick et al., 2020). Some physicians believe that technical obstacles such as complicated system operations, rigid templates, alert fatigue, and automatic saving failures, as well as the need to spend a lot of time at home after work to complete medical record documentation, have greatly exacerbated their sense of exhaustion. A qualitative interview study shows that most physicians regard medical record documentation tasks as time-consuming and meaningless technical burdens, which seriously affect their communication time with patients and treatment rhythm, thereby weakening professional identity and job satisfaction (Gardner et al., 2019). In addition, an empirical study shows that in hospitals implementing the documentation assistant system, physicians' emotional exhaustion scores decreased by an average of 7 points, indicating that medical record support systems can effectively alleviate the level of burnout (Robertson et al., 2017). These studies have initially revealed the correlation between medical record burden and physician burnout, but most of them remain at the level of phenomenon description and technical tool dimensions.

Nevertheless, current research still lacks systematic mechanism modeling, especially

regarding the impact path of medical record documentation, as a continuous work requirement with high cognitive load, on the three dimensions of burnout, and the mechanism from the perspective of integrating JD-R and COR theories, which need to be further explored systematically. Based on this, this thesis proposes that medical record burden induces burnout reactions through role stress and job insecurity, and is regulated by psychological resilience and perceived organizational support. It expands relevant research paradigms from both theoretical and empirical dimensions, providing more targeted theoretical support and evidence basis for the design of intervention policies.

2.2.2 Psychological and behavioral impacts of medical record burden

2.2.2.1 Concept definition and connotation evolution

Medical record burden does not merely refer to the time and energy that physicians objectively invest in paperwork. At a deeper level, it includes the cognitive load, emotional pressure, and time conflicts that physicians subjectively feel (Sinsky et al., 2016). Its connotation has gradually evolved from the narrow scope of paperwork burden in the traditional sense to a multi-dimensional and systematic symbol of work pressure. In the era of traditional paper-based medical records, medical record documentation mainly served as a tool for recording and reviewing the diagnosis and treatment process, and its burden was mainly reflected in aspects such as time-consuming handwritten work and inconvenience in checking. However, with the accelerated advancement of medical informatization, especially the comprehensive application of EMR, the nature of medical record tasks has undergone fundamental changes.

Although EMR has brought significant improvements in information sharing, data integration, and management efficiency, it has also introduced new cognitive challenges and technical burdens. For example, complex system interfaces, frequent click fatigue, rigid template restrictions, redundant data entry, and duplicate records generated to meet the requirements of different departments have all expanded the medical record documentation task from a single clinical recording function to an intersection of multiple responsibilities such as medical treatment, law, management, performance, and scientific research. The superposition of these multiple functions, as well as the extremely high requirements for standardization, completeness, and accuracy, have greatly enhanced physicians' sense of psychological load, making it a pressure source that cannot be ignored in physicians' daily work. Therefore, the connotation of medical record burden has gone far beyond its literal

meaning and has become an important indicator for measuring physicians' work intensity and psychological pressure.

2.2.2.2 Burden sources and job characteristics

Medical record burden has significant multi-source characteristics, and its pressure sources penetrate into all aspects of physicians' work, involving multiple dimensions such as time, technology, management, and emotion:

Time dimension: Medical record documentation tasks have highly squeezed physicians' precious clinical time. Physicians often need to, within the limited diagnosis and treatment time, not only complete face-to-face inquiry, physical examination, diagnosis, and treatment plan formulation but also complete a large amount of medical record entry work simultaneously or quickly after the consultation. This not only directly erodes the time that physicians can spend communicating with patients, affecting the quality of doctor-patient relationships, but also compresses the time that physicians can use for clinical thinking integration, learning and further education, and necessary rest, seriously disrupting the inherent rhythm of diagnosis and treatment work (Chaiyachati et al., 2019). Many physicians even have to continue to complete unfinished medical records after work or during their personal rest time, resulting in a blurred boundary between work and life and making it difficult for their physical and mental states to fully recover.

Technology dimension: Although EMR is designed to improve efficiency, its imperfect or unfriendly technical design has instead become a new burden. Problems such as cumbersome system operation processes, unintuitive interfaces, frequent freezes, slow response speeds, rigid logic, lack of personalized settings, and alert fatigue have significantly increased physicians' operation time and cognitive fatigue. Physicians need to spend a lot of energy to adapt to and master the system instead of focusing on clinical decision-making itself, which not only reduces work efficiency but also increases the possibility of errors (Li et al., 2022).

Management dimension: In the current medical management system, medical record documentation is no longer a simple clinical record but is closely linked to management goals such as performance assessment, medical quality control, medical insurance compliance review, and legal risk prevention. This administrative logic that equates paperwork with assessment has endowed medical record documentation with additional and heavy management significance. When writing medical records, physicians not only need to consider clinical facts but also take into account various norms, indicators, and potential risks of score deductions, thereby strengthening the pressure to write for management rather than

the original intention of writing for patients. This external pressure keeps physicians in a state of high tension and worry during the process of medical record documentation (Li et al., 2022).

Emotion dimension: The repetitiveness, standardization of medical record documentation tasks, and their disconnection from the actual clinical situation are likely to cause emotional blockage and exhaustion among physicians. When physicians feel that their work focus is forced to shift from direct patient care to tedious paperwork, they may have a sense of being instrumentalized, which in turn induces doubts about the meaning of their profession and emotional alienation. This emotional consumption may even lead physicians to develop an indifferent attitude towards doctor-patient relationships, affecting their professional identity and work enthusiasm.

2.2.2.3 Psychological impacts: exhaustion and cognitive overload

A large number of studies have pointed out that medical record burden can significantly increase physicians' cognitive overload and emotional exhaustion. As a typical type of work load with high cognitive requirements, medical record documentation requires physicians to continuously mobilize their attention, memory, logical analysis ability, and judgment to ensure the accuracy, completeness, and compliance of information. This continuous and high-intensity cognitive input can easily trigger cognitive fatigue and the depletion of psychological resources. For example, a follow-up study found that when the medical record system lacks intelligent prompts and interactive support, physicians' subjective sense of exhaustion increases significantly, which is manifested as a persistent sense of work boredom, decreased attention, and psychological resistance (Melnick et al., 2020).

Physicians who are in a state of high medical record burden for a long time often experience a series of negative psychological reactions: these include task procrastination, professional doubt, emotional depression, anxiety, irritability, and may even induce somatic reactions such as insomnia, headache, and gastrointestinal discomfort. This continuous consumption of cognition and emotion makes physicians also show problems such as lack of energy, slow response, and hesitant decision-making when facing other clinical tasks. At a deeper level, this burden may lead to a kind of moral injury, that is, physicians feel forced to violate their core professional values and put their energy into administrative tasks, thus generating a strong sense of guilt, shame, or anger, which further aggravates psychological exhaustion.

2.2.2.4 Behavioral consequences: avoidant behaviors and decreased satisfaction

When dealing with high-load medical record tasks, physicians may adopt some adaptive or defensive behaviors, but these behaviors are often accompanied by negative consequences. Some physicians tend to compress the content of records or over-rely on templated strategies to meet documentation indicators, thus laying hidden safety risks such as omissions of medical information, insufficient basis for clinical decision-making, homogenization of medical record content, and even increased legal risks. Although this instrumental documentation method improves efficiency in the short term, it may sacrifice the personalization and clinical value of medical records (Hill et al., 2013).

A study shows that physicians with excessive medical record burden report a higher proportion of instrumental work experience, that is, they simplify the doctor-patient relationship into a task process of completing procedures rather than a patient-centered care relationship, which in turn affects their professional identity and initiative (Gardner et al., 2019). When physicians feel that their professional skills and time are used for tedious administrative affairs rather than core diagnosis and treatment, their intrinsic motivation and job satisfaction will decrease significantly. In addition, because medical record tasks have eroded the time for doctor-patient communication, the communication between physicians and patients has become hasty and superficial, which directly reduces patients' medical experience and satisfaction, weakens the sense of trust between doctors and patients, and may even increase the risk of medical disputes.

2.2.2.5 Relationship modeling between medical record burden and physician burnout

According to the Job Demands-Resources Theory, medical record documentation tasks have typical characteristics of high demands and low resources, and are structural risk factors that trigger physician burnout (Bakker & Demerouti, 2017). On the one hand, medical record tasks are characterized by high frequency, high complexity, high responsibility but low reward, which significantly increase physicians' emotional labor pressure and cognitive load. Completing medical records itself usually does not bring immediate sense of achievement or direct thanks from patients; on the contrary, it may bring pressure from quality control and potential legal risks. This makes physicians lack sufficient positive feedback to supplement their consumed resources after investing a lot of energy. On the other hand, the non-core attribute of medical record tasks—that is, they are not direct clinical diagnosis and treatment behaviors—makes them lack feedback of professional sense of achievement, and easily trigger burnout manifestations such as cognitive disengagement and emotional alienation

(Ehrenfeld & Wanderer, 2018). Physicians may feel that they are like data entry clerks rather than clinical doctors, thus losing their sense of professional identity and enthusiasm.

A large number of empirical studies have also confirmed the significant positive correlation between medical record burden and physician burnout. The unfriendly technical characteristics of EMR are one of the significant predictors of physicians' emotional exhaustion (Melnick et al., 2020). A national survey of physicians also shows that more than 70% of physicians believe that paperwork tasks take up too much communication time, directly weakening their professional identity and job satisfaction (Hill et al., 2013). These studies provide solid empirical evidence for the direct association between medical record burden and physician burnout.

Based on this, this thesis proposes:

Hypothesis 1 (H1): Medical record burden is significantly positively correlated with physician burnout.

At the same time, the Conservation of Resources Theory points out that individuals will stimulate resource protection motivation when they are in a situation of long-term resource loss. If there is no effective regulation mechanism, they may enter a vicious cycle of resource exhaustion—psychological imbalance—behavioral disengagement. Therefore, it is necessary to further explore the moderating role of potential resource factors such as psychological resilience and perceived organizational support in this path.

2.2.3 Mediating mechanisms of role stress and job insecurity

In the process of in-depth exploration on how medical record burden leads to physician burnout, it is not enough to merely discuss the direct relationship. Understanding the underlying psychological mechanisms, especially the two important mediating variables of role stress and job insecurity, is crucial for constructing a comprehensive and explanatory theoretical model. The following sections elaborate on the conceptual connotations of these two psychological mechanisms, how they are activated by medical record burden, and how they are further transmitted to physician burnout, thereby revealing the internal psychological chain of physicians' occupational exhaustion.

2.2.3.1 Concept definition and theoretical connotations

Role stress refers to the psychological tension and behavioral confusion that individuals experience when performing their social roles due to inconsistent role expectations, unclear role boundaries, or excessive role demands (Kahn et al., 1964). This classic theoretical

framework was proposed by Kahn and his colleagues in their research on individual behaviors in organizations, emphasizing the impact of organizational structure and role expectations on individuals' mental health. In organizational behavior, role stress is usually divided into three core dimensions, which reflect the cognitive, behavioral, and resource dilemmas that individuals face in the process of role performance from different paths:

Role conflict refers to a state in which individuals are subject to mutually exclusive expectations from different sources or with different contents when performing a certain role, resulting in psychological tension and behavioral conflicts (Rizzo et al., 1970). This conflict can manifest in various forms: intra-individual conflict, inter-individual conflict, inter-role conflict, and personal-role conflict (Katz & Kahn, 1978).

In the medical environment, physicians need to frequently switch between multiple roles such as clinical treaters, health educators, researchers, and administrative executors. Especially in the context of the promotion of EMR, more and more physicians report that their main source of conflict is the ambiguous positioning between medical practitioners and paperwork workers. They may struggle between the patient-centered clinical philosophy and the compliance-oriented medical record requirements, and this internal contradiction consumes a great deal of physicians' psychological energy.

Role ambiguity refers to the sense of decision-making uncertainty and task anxiety that individuals experience due to a lack of clear cognition in terms of responsibility boundaries, performance standards, and role positioning (Rizzo et al., 1970). It can be manifested as uncertainty about work goals, scope of responsibilities, or evaluation criteria (Kahn et al., 1964). When physicians are unclear about their specific responsibilities, expected outcomes, or evaluation standards in a particular task, they will experience role ambiguity, which will weaken their work motivation and efficiency. In the medical industry, rapid institutional reforms, the introduction of new technologies, and the iteration of information platforms are constantly reshaping the job requirements of physicians. However, the supporting role cognition and communication mechanisms often lag behind. For example, regarding the qualified standards of EMR, there may be differences among different hospitals, different departments, and even different quality control personnel, making it difficult for physicians to accurately grasp them, thus generating a sense of uncertainty and anxiety.

Role overload refers to a state in which individuals need to complete tasks that exceed their cognitive resources or physical energy within a unit time, manifested as time urgency, lack of energy, and a sense of task failure (Reilly, 1982). Among the physician group, the high density and non-compressibility of work tasks easily induce role overload. This includes both

quantitative overload and qualitative overload. This continuous high load makes physicians feel exhausted, time-pressured, and eventually physically and mentally exhausted.

As a typical structural stressor, role stress has been widely proven to have significant negative impacts on employees' mental health, work performance, and organizational identity (Bowling et al., 2015). In the high-demand and high-risk professional scenario of the medical industry, physicians are typical bearers of multiple role conflicts (Maslach & Leiter, 2016). The role stress they bear is often more complex and long-lasting, and is directly related to the lives and health of patients, so its negative impact is particularly prominent.

Job insecurity refers to individuals' negative expectations or anxiety about the future continuity of their jobs, job stability, and career security (Sverke et al., 2002). It is a kind of subjective and long-term background stressor. Even when the actual job is stable and the contract is fully guaranteed, employees may still worry about future job security based on environmental clues, their own conditions, or organizational changes (De witte, 2005). There may be a difference between this subjective perception and objective reality, but its impact on individual psychology is real. Studies usually divide it into two dimensions:

Affective job insecurity refers to individuals' emotional experiences due to the fear of job loss, such as worry, fear, anxiety, and unease (Huang et al., 2012). This kind of insecurity is more manifested as an emotional state, derived from the direct feeling of potential threats. For example, physicians may feel anxious because of the high incidence of medical disputes and frequent changes in hospital policies, worrying that their career will be negatively affected. This emotional worry is often diffuse and difficult to be completely controlled by reason.

Cognitive job insecurity refers to individuals' rational evaluation and judgment on the possibility of losing their current job or its important characteristics, which is based on a comprehensive analysis of the direction of organizational operation, personal competitiveness, and changes in the external environment (Borg & Elizur, 1992). This evaluation is based on the analysis of objective situations, relatively lacking strong emotional reactions, but it will also cause long-term psychological burdens. For example, physicians may rationally analyze the current trend of medical reform, the impact of artificial intelligence on the medical industry, and the speed of their own technical updates, so as to evaluate their competitiveness in the industry in the future. This evaluation may lead to rational worries about future career prospects.

Together, they form an overall picture of employees' perception of job stability and affect employees' mental health and work behaviors to varying degrees. In the medical environment, with the refinement of performance assessment, the frequent occurrence of medical disputes,

and the intensification of career competition, the problem of job insecurity among the physician group has become increasingly prominent. This not only includes worries about their jobs but also concerns about career development paths, professional status, and future income.

2.2.3.2 Medical record burden→role stress→physician burnout

In the medical context where multiple tasks and multiple roles coexist, physicians need to quickly switch between various roles such as patient communicators, clinical decision-makers, educators, and administrative document executors. As a highly standardized task, medical record documentation itself has technical burdens, and it often interrupts physicians' original clinical work rhythm, easily triggering functional conflicts between the roles of main business and auxiliary business. According to role theory, if an individual experiences an imbalance between role expectations, responsibility understanding, and resource matching, it will activate three typical role stress responses: role conflict, role ambiguity, and role overload (Rizzo et al., 1970). As a kind of continuous work demand, this role stress will continuously consume physicians' psychological and physical resources, eventually leading to physician burnout.

Specifically, medical record burden induces physicians' role stress in the following ways:

Medical record burden significantly intensifies the role conflict of physicians between clinical caregivers and administrative recorders (Kai et al., 2010). Physicians are endowed with the sacred responsibility of saving lives and healing the wounded, and their core value lies in direct patient diagnosis and treatment. However, the heavy medical record documentation tasks, especially the additional operations brought by EMR, force physicians to shift a lot of time and energy from patients to the computer screen. For example, during the peak period of emergency treatment, physicians must deal with critically ill patients quickly, but at the same time, they are required to complete various course records and EMR entry in a timely, complete, and standardized manner. This makes them feel a responsibility conflict between the roles of treaters and recorders (Kahn et al., 1964). This conflict not only consumes physicians' cognitive resources but also causes confusion in their professional identity. They think that their core value has not been fully reflected, and they may even feel alienated. In addition, empirical studies have shown that medical staff often fall into value conflicts when balancing clinical quality and economic benefits, and when abiding by institutional processes and meeting patient needs. This kind of "horizontal + vertical" role tension is significantly positively correlated with the level of physician burnout (Tunc &

Kutanis, 2009). In the Chinese context, due to the increasing pressure of medical commercialization, front-line physicians also face value conflicts between treating patients and pursuing income performance (Zhang et al., 2020), which intensifies the tension between personal goals and organizational goals. This continuous internal contradiction is an important source of emotional exhaustion.

The complexity of EMR and the constantly updated norms make physicians face significant role ambiguity in medical record documentation. Different levels of hospitals and different departments have different definition standards for complete records and standardized documentation, and the continuous updates and functional iterations of EMR make it difficult for physicians to clarify what constitutes sufficient or qualified medical record documentation. For example, for newly recruited resident physicians, they not only need to learn clinical skills but also quickly master complex EMR operations and various documentation norms. However, they often lack systematic training and clear guidance, resulting in an imbalance between tasks and abilities and making them more likely to feel ambiguity (Pullen & Loudon, 2006). This uncertainty makes physicians feel anxious and at a loss during the documentation process, worrying that they will be punished or their performance will be affected for failing to meet the norms. In addition, the evaluation criteria faced by physicians often lack a clear weighing mechanism, and this ambiguity in evaluation also increases their psychological pressure. Studies have found that role ambiguity can indirectly increase the risk of burnout by reducing the sense of work meaning and control (Wu et al., 2020), because it deprives physicians of the initiative and sense of achievement in their work, which may further lead to depersonalization and reduced personal sense of achievement.

The huge workload and time pressure of medical record documentation tasks can easily lead to role overload among physicians. With the popularization of EMR, although the efficiency of information sharing has been improved, the amount of data that physicians need to enter, the number of clicks, and the requirements for proficiency in system operations have also increased, resulting in the actual work burden not being reduced but may even be increased (Friedberg et al., 2014). For example, a survey in the United States shows that some physicians work more than 70 hours a week, and they need to complete a lot of documentation tasks during non-working hours (Shanafelt, Hasan, et al., 2015). This additional work during home time further erodes physicians' personal life and rest time. In recent years, scholars have proposed the concept of physicians' task load, that is, the imbalance between the total number of daily tasks of physicians and their available resources is a direct predictor of occupational exhaustion (Harry et al., 2021). This continuous high load

makes physicians feel exhausted and time-pressured, and eventually physically and mentally exhausted, which is manifested as emotional exhaustion. They may also have a reduced sense of personal achievement because they cannot effectively complete tasks.

Integrative studies have shown that role stress is not only significantly related to the emotional exhaustion dimension of physician burnout but also can indirectly cause problems such as depersonalization and reduced professional self-confidence by reducing the sense of work value and control (Lee & Ashforth, 1996). In addition, previous studies have found that role conflict can significantly explain the variance contribution of burnout dimensions such as emotional exhaustion and depersonalization, reflecting its importance as a precursor variable of burnout risk (Olivares-Faúndez et al., 2014). Therefore, as a specific work demand triggered by medical record burden, role stress will eventually lead to physician burnout by consuming physicians' psychological resources, which is an important mediating path to be verified in this study.

Based on this, the following hypothesis is proposed:

Hypothesis 2 (H2): Role stress plays a mediating role in the relationship between medical record burden and physician burnout.

2.2.3.3 Medical record burden→job insecurity→physician burnout

The Conservation of Resources Theory points out that if individuals perceive that their core resources may suffer losses during work, they will activate their psychological defense systems, which manifest as reactions such as depression and emotional exhaustion. Job insecurity is exactly the manifestation of this psychological defense state, which is an individual's negative evaluation of their own career prospects, job stability, and the predictability of perceived organizational support (Sverke et al., 2002). Although the medical industry is widely regarded as a relatively stable professional system, with the reform of performance-oriented management systems, the advancement of employment contract systems, the high incidence of medical disputes, and the increase in the evaluation weight of information systems, physicians' occupational uncertainty has significantly increased, and the problem of job insecurity has become increasingly prominent (De witte, 2005).

The weight of medical record documentation tasks in the hospital performance evaluation system is getting higher and higher. Documentation quality has been included in multiple key consideration systems such as professional title promotion, performance bonuses, year-end assessments, and even medical accident liability determination. If physicians fail to write in a standardized manner, they may, at best, have to rework and revise, and at worst, affect

performance ratings, professional title applications, or even trigger legal liabilities. Therefore, medical record work has gradually evolved into a task with high evaluation sensitivity, featuring a high degree of performance relevance and serious consequences (Meeks et al., 2014). In such an institutional environment, physicians are very likely to link medical record documentation tasks with future career risks. If coupled with problems such as unfriendly systems, heavy tasks, and unclear feedback, individuals will have a strong sense of insecurity (Borg & Elizur, 1992).

Specifically, in the medical environment, physicians' affective job insecurity may stem from the uncertainty of policy reforms, the high incidence of medical disputes, the increasing pressure of performance assessment, and anxiety about their own inability to meet new requirements (Huang et al., 2012). When physicians frequently perform poorly in medical record quality scoring, or receive quality control feedback, or face accountability for their documentation, they are very likely to have emotional associations that documentation errors are equivalent to job risks, worrying that they will lose promotion opportunities, be marginalized, or even be dismissed. Such worries and fears are directly transformed into affective job insecurity. For example, non-standard documentation of a medical record may lead to score deductions, fines, or even inclusion in bad records, which in turn affects physicians' promotion and career development. Such direct negative feedback will exacerbate physicians' anxiety. A longitudinal study pointed out that affective job insecurity can significantly predict the increase in employees' emotional exhaustion level after one year (Blom et al., 2018), indicating that its impact is long-term and cumulative. Another meta-analysis also found that there is a significant correlation of above moderate intensity between medical staff's affective job insecurity and their occupational emotional exhaustion and mental health distress (Jiang & Lavaysse, 2018).

Cognitive job insecurity: In the medical environment, physicians' cognitive job insecurity usually stems from a calm analysis of industry changes, hospital strategic adjustments, and their own career competitiveness (De Witte et al., 2016). As the medical industry becomes increasingly data-driven and intelligent, physicians have also gradually realized the potential impact of non-clinical abilities such as medical record quality and EMR operation skills on their personal career development (Rassolian et al., 2017). In the context where EMR data has gradually become the basis for ability evaluation, physicians have an increasingly strong sense of uncertainty about the prospects of institutional arrangements such as job retention, professional title promotion, and performance assessment. For example, young physicians may be more adaptable to electronic systems, while senior physicians may worry that they

cannot adapt to new work modes due to unskilled technology, thus affecting their career development. In addition, physicians may also experience anxiety due to self-cognition, such as worrying that their documentation standardization is insufficient or that they are not proficient in information systems, which may affect their promotion evaluation or lead to marginalization. The sense of uncertainty caused by such rational evaluation will consume physicians' cognitive resources and make them feel confused and powerless about the future. Studies have shown that cognitive job insecurity is not only significantly related to emotional exhaustion but also leads to problems such as decreased satisfaction and loss of work enthusiasm among physicians (Cheng & Chan, 2008). A study on Finnish physicians also confirmed that cognitive job insecurity is one of the important predictive variables of their physician burnout (Torppa et al., 2015).

From a mechanism perspective, job insecurity may play a mediating role between medical record burden and physician burnout. On the one hand, the pressure of documentation tasks easily makes physicians worry about their own career security, especially when documentation tasks become the basis for evaluation, the consequential nature of such tasks is significantly enhanced. This worry about future uncertainty is itself a chronic stressor that continuously consumes individuals' psychological resources. According to the Conservation of Resources Theory, when individuals perceive the threat of resource loss, they will invest more resources to protect existing resources, but this may instead lead to further resource exhaustion, forming a resource loss spiral. The job insecurity triggered by medical record burden is exactly this perceived threat of resource loss. On the other hand, according to the "Stress-Inhibition-Vulnerability" model, individuals who are in a state of insecurity for a long time will gradually have reduced emotional regulation ability and resource mobilization ability, which lowers their psychological resilience to cope with additional stress (Bakker & Demerouti, 2017). In this context, medical record documentation, as a continuous cognitive load, is likely to activate insecurity, trigger the exhaustion of psychological defense mechanisms, and ultimately increase the level of physician burnout, which is manifested as emotional exhaustion, depersonalization, and reduced personal sense of achievement.

Therefore, the following hypothesis is proposed:

Hypothesis 3 (H3): Job insecurity plays a mediating role in the relationship between medical record burden and physician burnout.

2.2.3.4 Summary: significance of constructing dual mediating paths

To sum up, as two key psychological mechanisms connecting medical record burden and

physician burnout, role stress and job insecurity have important theoretical and practical significance. They are not independent of each other; instead, when physicians face medical record burden, they may be activated at the same time and interact with each other, jointly leading to the occurrence of physician burnout.

2.2.4 Moderating mechanisms of psychological resilience and perceived organizational support

In exploring the complex path of how medical record burden affects physician burnout, in addition to mediating mechanisms, it is necessary to further examine the moderating variables that can moderate the negative impacts. This section will focus on psychological resilience (as an individual internal resource) and perceived organizational support (as an external environmental resource), and elaborate on how they, as key protective factors, play a moderating role between intermediate variables (role stress and job insecurity) and physician burnout, thereby maintaining physicians' mental health and career sustainability.

2.2.4.1 Definition, measurement, and construct development of psychological resilience

(1) Concept Definition

Psychological resilience refers to an individual's ability to show positive adaptation, maintain basic psychological functions, and achieve emotional recovery and growth rebound when facing pressure, adversity, traumatic events, or major changes (Luthar et al., 2000). It is not just a simple return to the original state, but more emphasizes that individuals can become stronger and more adaptable after experiencing challenges, and even achieve post-traumatic growth. In the process of coping with resource loss and situational pressure, resilience is regarded as a valuable psychological capital, with the ability to cope with, repair, and transform adverse experiences, enabling individuals to effectively manage and respond to high-pressure situations (Dunn et al., 2008). Psychological resilience is not a fixed trait but a dynamically developing process, which is jointly affected by individuals' innate tendencies, acquired learning, social support, and environmental factors (Fletcher & Sarkar, 2013).

(2) Theoretical Basis

Psychological resilience can be included in the category of personal resources under the framework of the Conservation of Resources Theory. The COR Theory holds that individuals will strive to obtain, retain, and protect their cherished resources when facing pressure. As an important personal resource, psychological resilience can help individuals build a resource protection barrier, resist the invasion of stressors, and reduce the speed and extent of resource

loss. When physicians face role stress, high psychological resilience can help them more effectively mobilize internal resources, such as positive cognitive reappraisal, problem-solving strategies, and emotional regulation abilities, thereby reducing the negative impact of stress on mental health and lowering the possibility of transforming into physician burnout.

(3) Measurement Tools and Dimension Development

At present, various measurement tools for psychological resilience have been developed, among which the most commonly used and widely recognized ones include:

Connor-Davidson Resilience Scale (CD-RISC): This scale was initially developed by Connor and Davidson in 2003, containing 25 items (CD-RISC-25), and later a more concise 10-item version (CD-RISC-10) was developed (Connor & Davidson, 2003). CD-RISC aims to evaluate multiple dimensions of individuals when facing pressure, such as tenacity, adaptability, emotional regulation ability, positive cognition, personal ability, and acceptance of changes. It has good reliability, validity, and cross-cultural applicability, and is widely used in clinical and non-clinical populations.

Brief Resilience Scale: Developed by Smith et al. in 2008, it is a shorter 6-item scale that mainly focuses on the dimension of the speed at which individuals recover from pressure (Smith et al., 2008). These scales quantify the level of psychological resilience by evaluating aspects such as individuals' persistence, adaptability, emotional regulation ability, positive cognition, self-efficacy, and optimistic attitude towards the future when facing adversity. Empirical studies at home and abroad have mostly verified the good psychometric properties of these tools.

(4) Adaptability in the Medical Group

As a typical high-pressure professional group, physicians are exposed to an environment of high intensity, high risk, and intensive emotional labor for a long time. Their psychological resilience is not only related to their job satisfaction and mental health but also closely related to their recovery ability under high task load (Robertson et al., 2016). Psychological resilience is regarded as an important protective factor for physicians to cope with physician burnout, role conflicts, and institutional pressure. Studies have shown that medical staff with high psychological resilience have stronger coping flexibility and emotional stability when facing job burnout, role conflicts, and institutional pressure (McKinley et al., 2019). For example, an interview study on 200 experienced clinical physicians found that physicians with high psychological resilience are more inclined to use coping strategies such as positive reappraisal, goal reconstruction, and social seeking, and can still maintain a good state under multiple professional challenges (Zwack & Schweitzer, 2013). In addition, they often show strong

autonomy and resilience in the boundary management between life and work, the construction of professional meaning, and the pressure conversion mechanism. Empirical studies have shown that there is a significant negative correlation between psychological resilience and physician burnout. Individuals with a higher level of resilience usually show lower tendencies of emotional exhaustion and depersonalization, and at the same time maintain a more positive self-evaluation in the dimension of personal achievement (Cooke et al., 2013). Relevant studies have pointed out that psychological resilience can effectively alleviate the negative effect of work pressure on physician burnout by enhancing cognitive regulation and coping strategies, which has been verified in high-pressure professional groups such as nurses, teachers, and police officers (Arrogante & Aparicio-Zaldivar, 2017). It is particularly worth noting that psychological resilience may play a significant moderating role in the relationship between "work pressure and physician burnout". A cross-sectional study found that in the group with high psychological resilience, the predictive effect of work pressure on emotional exhaustion was significantly weakened (Johnson et al., 2017). This provides a theoretical and empirical basis for psychological resilience to moderate the relationship between stressors and physician burnout.

2.2.4.2 Perceived organizational support: Perceived organizational support theory and structural dimensions

(1) Theoretical Basis of Perceived Organizational Support

Perceived organizational support refers to employees' overall perception that the organization values their contributions and cares about their well-being (Eisenberger et al., 1986). This concept originates from social exchange theory and the norm of reciprocity, holding that when employees feel supported by the organization, they will develop a sense of obligation to repay the organization, thereby showing more positive work attitudes and behaviors. Perceived organizational support is a typical job resource in the JD-R Theory, which helps to stimulate individual work motivation and enhance the sense of belonging and loyalty. In the medical environment, physicians are highly sensitive to perceived organizational support because they bear high-intensity task loads, high-risk professional decisions, and complex doctor-patient relationships. Perceived organizational support has become an important variable affecting physicians' job satisfaction, mental health status, and professional behaviors (Shanafelt, Hasan, et al., 2015).

(2) Core Structural Dimensions of Perceived Organizational Support

Perceived organizational support takes various forms and can be summarized into the

following core aspects:

Emotional support refers to the organization's care for employees' mental health and well-being by providing emotional comfort, understanding, and trust. For example, when physicians feel frustrated or stressed due to medical record documentation issues, managers can listen to them, express understanding, and provide psychological counseling services.

Instrumental support refers to the organization's provision of practical and tangible resources and conveniences to help employees complete their work better. This includes reasonable resource allocation, documentation assistance, convenience of information systems, and necessary training.

Institutional support refers to the organization's protection of employees' rights and development through the establishment of fair, transparent, and sound systems and policies. This includes fair promotion channels, reasonable performance assessment mechanisms, sound quality control systems, clear reward and punishment systems, and planning for employees' career development.

Feedback and recognition refer to the organization's recognition of employees' contributions and efforts through positive feedback mechanisms, timely praise, and rewards. This includes effective communication between medical management and physicians, public recognition of excellent performance, and affirmation of physicians' efforts in medical record documentation.

(3) Application Scenarios in Hospital Systems

In medical organizations, high perceived organizational support can significantly reduce physicians' turnover intention and improve their work engagement and psychological security. Studies have shown that there is a significant negative correlation between perceived organizational support and physician burnout. If physicians can perceive understanding and protection from the organization, they are more likely to develop a sense of belonging and responsibility, which in turn stimulates their intrinsic professional motivation. A longitudinal study found that perceived organizational support can significantly predict the changing trend of individuals' physician burnout levels in the next six months, that is, the higher the perceived organizational support, the lower the subsequent emotional exhaustion level of physicians (Walters & Raybould, 2007). In the medical field, studies have also shown that perceived organizational support can explain about 20% of the variation in medical staff's physician burnout, reflecting its important value in intervention strategies (Hamama et al., 2019).

Some studies have pointed out that the institutional guarantees provided by hospitals in

terms of reducing the burden of medical record tasks, optimizing documentation processes, and providing technical support help to moderate physicians' job insecurity and energy exhaustion (Shanafelt, Hasan, et al., 2015). Hospitals can express support for physicians through multiple levels, including providing reasonable on-duty arrangements, scientific human resource allocation, open and transparent promotion mechanisms, constructive performance feedback, and necessary psychological support mechanisms. In terms of paperwork, hospital support may be reflected in specific measures such as optimizing the functions of EMR, simplifying documentation processes, assigning documentation assistants, and reducing redundant recording requirements (Linzer et al., 2015). Behind these seemingly technical management behaviors is actually the organization's response to physicians' perception of burden, and it is also a core signal from the hospital that "you are not fighting alone".

Perceived organizational support can alleviate physician burnout through multiple mechanisms. First, according to the Conservation of Resources Theory, perceived organizational support itself is an important external resource, which can help employees supplement and maintain their personal resources and avoid health impairment caused by continuous resource loss (Hobfoll et al., 2018). The organization's recognition, care, and instrumental help can stimulate employees' energy recovery mechanisms and alleviate the sense of exhaustion caused by long-term work pressure (Rhoades & Eisenberger, 2002). Second, from the perspective of social exchange theory, after employees feel supported, they often take the initiative to fulfill higher work responsibilities, creating a positive work feedback cycle (Rhoades & Eisenberger, 2002). This reciprocal relationship makes employees no longer isolated when facing work pressure, thereby reducing the risk of occupational exhaustion. In addition, perceived organizational support may also enhance employees' sense of control and self-efficacy, enabling them to have stronger active adjustment and problem-solving abilities when facing work challenges (Rhoades & Eisenberger, 2002).

2.2.4.3 Moderating effects of psychological resilience and perceived organizational support: mechanisms and empirical studies

(1) Construction of Moderating Path Logic

Under the resource protection model, psychological resilience, as a defensive resource at the individual level, can enhance physicians' psychological adaptability when they face existing role stress (such as conflict, ambiguity, and overload), weaken the activation of negative emotions, and thus reduce the intensity of the conversion from role stress to

physician burnout. It is an internal immune system of individuals, which can change their cognitive evaluation and coping styles towards stressors.

Perceived organizational support, as a structural external resource, can moderate the resource loss effect caused by existing job insecurity through system optimization and emotional support, and enhance physicians' confidence in organizational fairness and prospects, thereby reducing the intensity of the conversion from job insecurity to physician burnout. It is equivalent to an external protective shield, providing individuals with additional resources and protection to reduce the direct impact of stressors (Mor Barak et al., 2001).

(2) Moderating Mechanisms and Empirical Evidence

Psychological Resilience×Role Stress→physician burnout: Psychological resilience plays a moderating role between high-load tasks and physician burnout. Individuals with high psychological resilience often have more positive cognitive reappraisal abilities, stronger problem-solving orientations, and more effective emotional recovery mechanisms, which enable them to maintain functional thinking and behavioral responses in stressful situations (Fletcher & Sarkar, 2013). When physicians already feel role stress, high psychological resilience allows them to better digest and cope with such stress. For example, they may regard role conflicts as challenges that need to be coordinated rather than unsolvable problems, or take the initiative to seek resources to clarify ambiguous points. This positive coping style weakens the negative impact of role stress on physician burnout dimensions such as emotional exhaustion and depersonalization. A cross-sectional study found that in the group with high psychological resilience, the predictive effect of work stress on emotional exhaustion was significantly weakened (Johnson et al., 2017). This indicates that even in the face of significant role stress, physicians with high resilience can effectively block or slow down the transmission of such stress to physician burnout through cognitive restructuring and emotional management.

Perceived Organizational Support×Job Insecurity→Physician burnout: Perceived organizational support can effectively moderate the negative effect of job insecurity on physician burnout. When physicians already feel job insecurity, perceived support from the organization can provide an important psychological moderate. In an environment with a strong perception of organizational support, physicians are more likely to view uncertain situations as challenges rather than threats, thereby reducing anxiety and exhaustion responses. Perceived organizational support reflects employees' overall subjective evaluation of whether their organization values their own value and cares about their work status and well-being (Eisenberger et al., 1986). For physicians, perceived organizational support is both a resource

guarantee in reality and a psychological safety signal. Physicians with high perceived organizational support may benefit from practical support, which enhances their sense of belonging, sense of control, and autonomy (Portoghese et al., 2014). When physicians feel strong support from the organization, their worries about future career prospects will be reduced because they believe that the organization will provide protection and help in difficult times, thereby reducing emotional exhaustion and depersonalization caused by job insecurity (Jawahar et al., 2007). Empirical studies have also shown that perceived organizational support can effectively moderate the impact of high work pressure on physicians' occupational exhaustion, especially when the organization provides institutional support and emotional support in a coordinated manner, its moderating effect is more significant (Adil & Baig, 2018).

Hypothesis Basis of This Study

Therefore, this study intends to test the moderating effects of psychological resilience and perceived organizational support in the path of medical record burden affecting physician burnout respectively:

Hypothesis 4 (H4): Psychological resilience moderates the positive relationship between role stress and physician burnout, that is, when the level of psychological resilience is high, the positive relationship between role stress and burnout is weakened.

Hypothesis 5 (H5): Perceived Organizational Support moderates the relationship between job insecurity and physician burnout, that is, when the level of perceived organizational support is high, the positive relationship between job insecurity and burnout is weakened.

2.2.4.4 Summary: theoretical contribution of resource moderation path

By deeply exploring the moderating effects of psychological resilience and perceived organizational support, this section constructs a more complete transmission path model of "stressor—mediating variable—psychological exhaustion". It organically integrates the concept of resource protection barriers in the COR Theory with the resource-demand matching mechanism in the JD-R Theory, emphasizing the key role of personal resources and organizational resources in moderating work pressure and maintaining occupational health.

From a theoretical perspective, this study not only verifies the moderating effect of psychological resilience as an individual internal resource on physician burnout but also clarifies the importance of perceived organizational support as an external resource. More importantly, by incorporating both into the moderating mechanism, this study reveals how these resources help individuals cope with these psychological burdens when physicians

already feel role stress or job insecurity, avoiding resource depletion and ultimately preventing them from falling into physician burnout. This integrated perspective enriches the understanding of the occurrence mechanism of physician burnout, especially for the special high-pressure group of physicians. It also provides empirical evidence for the further development of the JD-R Theory, emphasizing the indispensability of job resources in resisting the negative impact of job demands and refining the specific links where resources play a role.

From a practical perspective, the findings of this study provide a solid theoretical support and specific directions for exploring systematic intervention measures. In order to effectively address the problem of physician burnout, it is not enough to merely focus on reducing the medical record burden itself; more efforts should be made to improve physicians' psychological resilience and strengthen perceived organizational support. For example, hospitals can regularly carry out psychological resilience training camps to help physicians develop positive coping strategies and emotional regulation abilities, enabling them to better self-repair when facing role stress; at the same time, enhance physicians' perceived support for the organization by improving the EMR, increasing support staff, providing a transparent promotion mechanism, and giving timely positive feedback, thereby alleviating the negative impact of job insecurity on physician burnout. These intervention measures can build a strong protection network at both individual and organizational levels, helping physicians better cope with the pressure caused by medical record documentation, as well as the role stress and job insecurity arising therefrom, ultimately reducing the incidence of physician burnout and indirectly improving the quality of medical services.

To sum up, the theoretical model constructed in this study not only systematically examines the direct path of medical record burden on physician burnout but also further reveals the mediating mechanism through variables such as job insecurity and role stress. At the same time, it explores the moderating effects of resource factors such as psychological resilience and perceived organizational support, forming a three-in-one analytical framework of "direct effect—mediating mechanism—moderating condition". Starting from the two key questions of "why" and "when", the model deeply analyzes the internal logic and boundary conditions of how medical record burden affects physician burnout. It not only enriches the application scenarios of existing physician burnout theories but also provides theoretical basis and practical guidance for the formulation and implementation of subsequent intervention measures, thus having strong theoretical innovation and practical application value.

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Chapter 3: Participants and Methods

3.1 Research participants

This study adopts the stratified random sampling method. Practicing physicians from public hospitals in Longgang District, Shenzhen were selected as the research subjects from March to May 2024. All public medical institutions in Longgang District, Shenzhen served as the basis for stratification, and samples were allocated in proportion to the number of physicians in each hospital to ensure the representativeness of each stratum. Within each hospital, eligible physicians were selected through simple random sampling for questionnaire surveys, so as to ensure a reasonable sample structure and that the sampling process is scientific and operable. Public hospitals were selected as the research sites because they have standardized electronic medical record systems and uniform medical documentation requirements, providing a typical environment for studying medical record burden. Inclusion criteria were: (1) holding a physician license; (2) having more than 1 year of clinical experience; (3) voluntarily participating in the study and signing the informed consent form; (4) having no mental illness or consciousness disorders. Exclusion criteria were: (1) physicians on leave, maternity leave, or further training; (2) non-clinical physicians (e.g., purely administrative positions); (3) incomplete questionnaire responses or obvious regular answering pattern. A total of 800 questionnaires were distributed, and 780 were returned, resulting in a response rate of 97.5%. After data screening to exclude incomplete or irregular responses, valid samples were obtained. The sample included residents, attending physicians, associate chief physicians, and chief physicians, covering physicians at different career stages to provide a diverse and representative sample for the study.

3.2 Research instruments

(1) Demographic Information: Variables included gender, age, education level, marital status, professional title, work experience, department, EMR level and hospital level.

(2) Medical Record Burden Survey: To determine whether physicians engaged in medical record writing, participants were asked, "Do you engage in medical record writing?"

Responses were recorded as "Yes" or "No." The burden of medical record writing was primarily assessed based on the time physicians spent on it. Physicians were asked to report the time spent on medical record writing during workdays, weekends, and holidays, with these three time indicators serving as observed variables. Structural equation modeling was used to construct the medical record burden construct, where longer time spent indicated a higher burden.

(3) Copenhagen Burnout Inventory (CBI): This study uses the Copenhagen Burnout Inventory (CBI) (Kristensen et al., 2005) to assess the level of physician burnout. This scale is widely used in the field of healthcare, especially suitable for professional groups with high stress intensity and significant emotional labor requirements, and has good reliability, validity, and cross-cultural adaptability. The CBI consists of 19 items, divided into three dimensions: Personal Burnout, Work-Related Burnout, and Client-Related Burnout. Each dimension is scored using a 5-point Likert scale (1 = Never, 5 = Always), with higher scores indicating higher levels of burnout.

The Personal Burnout dimension is used to assess the overall physical and mental exhaustion of individuals, emphasizing energy depletion caused by non-work factors or life stress. In actual measurement, physicians are asked to evaluate whether they have the following experiences: ① Do you feel tired? ② Do you feel physically and mentally exhausted? ③ Do you feel emotionally drained after work? ④ When you get up in the morning, do you feel that you don’t have enough energy to start a new day? ⑤ Do you feel that daily life makes you emotionally exhausted? ⑥ Do you feel that you need a long time to recover to feel energetic? These items cover subjective feelings of exhaustion at the physical, emotional, and recovery levels, and are important psychological indicators for measuring the overall health level of medical staff.

The Work-Related Burnout dimension mainly measures the energy and emotional exhaustion that physicians experience in the process of performing their duties, including: ① Does work make you feel emotionally exhausted? ② Do you feel physically exhausted at work? ③ Do you feel tired after work? ④ Do you feel that you have lost enthusiasm for work? ⑤ Do you have difficulty concentrating on completing work tasks? ⑥ Do you feel that you have too much workload? ⑦ Do you feel that you can’t cope with your work? These items comprehensively capture physicians’ true feelings about daily work content and intensity, especially in situations of excessive work saturation or lack of resource support, such experiences of exhaustion are more likely to occur.

The Client-Related Burnout dimension focuses on the exhaustion experiences caused by interactions between physicians and service recipients (i.e., patients). The items include: ① Do you feel that contact with service recipients makes you exhausted? ② Are you tired of interacting with service recipients? ③ Do you feel that you over-consume emotional resources when dealing with service recipients? ④ Do you find it difficult to be patient with service recipients? ⑤ Do you feel that your service recipients make you mentally and physically exhausted? ⑥ Overall, do you feel that dealing with service recipients is a tiring task? In the work context of frequent and intensive doctor-patient communication, the continuous output of emotional investment may cause service fatigue, and this dimension can effectively reflect the emotional bearing limit of physicians in the process of patient care.

In this study, the CBI showed good reliability and validity. The Cronbach's α coefficient was 0.934. Factor analysis results showed that the KMO value was 0.966, and the P value of Bartlett's Test of Sphericity was less than 0.001, indicating that the scale has strong structural validity and internal consistency, and can accurately assess the physician burnout status of physicians in different dimensions. As an assessment tool with clear structure and solid theory, the CBI provides a solid measurement basis for this study to further construct the structural model among medical record burden, role stress, and physician burnout.

(4) Role Stress Scale (RSS): This study uses the Chinese version of the Role Stress Scale compiled by Li Chaoping and Zhang Yi (Li & Zhang, 2009) to measure the level of role stress of physicians. Based on the theory of clarity and consistency of role expectations in organizational contexts, the scale includes three dimensions: role conflict, role ambiguity, and role overload, with a total of 13 items. All items are scored using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), among which items in the role ambiguity dimension are reverse-scored. The sum of scores in each dimension is the score of that dimension, and the total score of all items represents the overall role stress level. A higher score indicates greater role stress.

In the role conflict dimension, physicians need to cope with multiple inconsistent task requirements. Relevant items include: ① I often encounter conflicting requirements; ② I receive contradictory requirements from two or more people; ③ I have to face different situations and deal with them in different ways. This dimension reveals the inconsistency between role expectations within the organization for physicians, reflecting the institutional tension they may face when performing tasks.

The role ambiguity dimension focuses on the clarity of physicians' cognition of their own

responsibilities and task boundaries. Specific items are: ④ My work has clear and planned goals and objectives (reverse scoring); ⑤ I am very clear about others' expectations of me (reverse scoring); ⑥ I know clearly what my responsibilities are (reverse scoring); ⑦ I am very clear about the scope of my responsibilities (reverse scoring); ⑧ My responsibilities are clearly defined (reverse scoring). This dimension reflects the troubles caused by issues such as vague role definition and unclear task standards for physicians in the organization, which are key factors affecting work confidence and autonomy.

The role overload dimension assesses the matching status between the number of tasks faced by physicians and their personal resources. Main items include: ⑨ I often feel unable to coordinate between different roles; ⑩ I feel overburdened at work; ⑪ I have taken on too many responsibilities; ⑫ The responsibilities or tasks I have taken on exceed my processing ability; ⑬ My workload is so heavy that I cannot guarantee the quality of work. This dimension focuses on revealing the sense of pressure and the imbalance of coping resources brought to physicians by task overload, which easily leads to difficulties in time management and emotional exhaustion for individuals.

In this study, the RSS showed good reliability. The Cronbach's α coefficients of its sub-dimensions were 0.862 (role conflict), 0.885 (role ambiguity), and 0.869 (role overload) respectively, and the overall structural validity was relatively ideal.

(5) Job Insecurity Scale (JIS): This study uses the Job Insecurity Scale compiled by Hellgren to measure physicians' perception of job stability (Hellgren et al., 1999). Focusing on individuals' subjective sense of security in the context of organizational changes or occupational environmental uncertainty, the scale includes two dimensions with a total of 7 items: cognitive job insecurity and affective job insecurity. All items are scored using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), with higher scores indicating a higher level of subjectively perceived job insecurity.

In terms of affective job insecurity, physicians' anxiety about potential job loss is presented through the following three items: ① I worry about being fired in the future; ② I am at risk of losing my current job in the future; ③ I feel anxious about the possibility of losing my job in the future. These items reflect individuals' unease about career stability and emotional distress. Especially in the context of frequent organizational reforms in the medical industry and prominent pressure from staffing adjustments, affective insecurity has a particularly significant impact on physicians' psychological state.

In the cognitive job insecurity dimension, physicians' objective judgment of their future

career development space is reflected through the following four items: ④ I believe the hospital will provide me with good development opportunities in the future (reverse scoring); ⑤ I expect the hospital to provide me with a challenging job in the near future (reverse scoring); ⑥ I think the hospital will need employees with skills like mine in the future (reverse scoring); ⑦ It is very likely that the hospital will increase my salary in the future (reverse scoring). The scale showed good reliability in this study, with Cronbach's α coefficients of 0.848 and 0.865 for the cognitive dimension and affective dimension respectively.

(6) Survey of Perceived Organizational Support (SPOS): This study uses the Perceived Organizational Support Scale compiled by Ling Wenquan et al. (Ling et al., 2006) to measure the degree of perceived organizational support among physicians. The scale includes three dimensions: work support, value recognition, and interest concern, with a total of 24 positively scored items. It uses a 6-point Likert scale (1 = Strongly Disagree, 6 = Strongly Agree), and a higher total score indicates a higher level of perceived organizational support.

In the work support dimension, physicians' attitudes towards whether the hospital pays attention to their work performance and difficulties are reflected in item ① "If I perform well at work, the hospital will notice me" and item ⑤ "If I encounter problems at work, the hospital will provide me with help"; whether the hospital assigns physicians to appropriate positions and provides development opportunities is reflected in item ⑥ "The hospital will let me take on the most suitable work" and item ⑦ "The hospital will provide me with promotion opportunities"; in addition, items such as ⑧ "The hospital will make me full of interest in my work", ⑨ "The hospital will help me develop my work potential" and ⑩ "The hospital will value my opinions on work" further reveal the organization's performance in motivation and recognition.

In the value recognition dimension, items such as ④ "The hospital attaches great importance to my work goals and values", ⑪ "The hospital will believe that retaining me is of great significance to the hospital", ⑬ "The hospital will believe that firing me is a great loss" and ⑯ "The hospital will be proud of my achievements" reflect whether physicians believe that their own value is recognized by the organization; at the same time, items ⑫ "When I ask to resign, the hospital will retain me" and ⑰ "If I resign, the hospital will rehire me instead of a new person when the time is right" reflect the organization's emotional investment in personnel flow management.

In the interest concern dimension, physicians' perception of whether the hospital provides

practical guarantees in material and non-material aspects is reflected in items such as ② "At work, the hospital will not take advantage of me whenever there is a chance", ③ "If I put forward reasonable requirements to improve working conditions, the hospital will agree", ⑭ "The hospital will not fire me easily" and ⑮ "If my job is abolished, the hospital will transfer me to another position instead of firing me"; items such as ⑱ "The hospital will reward me for my extra work", ㉒ "When the hospital makes more profits, it will give me a salary increase", ㉓ "The hospital will consider how much salary I deserve", ㉔ "The hospital will consider my interests when making decisions" reflect the organization's tendency towards employees' economic incentives and rights protection. In addition, the hospital's concern for physicians' living conditions is also included in the assessment, such as ⑲ "If I am absent from work occasionally for personal reasons, the hospital will understand", ⑳ "When I need special help, the hospital will be willing to help" and ㉑ "The hospital will care about my living conditions", reflecting the organization's warm care in informal support.

In this study, the overall Cronbach's α coefficient of SPOS is 0.961, the KMO value of each item is 0.974, and the P value of Bartlett's Test of Sphericity is <0.001, indicating that the scale has good internal consistency and structural validity.

(7) Connor-Davidson Resilience Scale (CD-RISC): This study uses the psychological resilience scale developed by Connor and Davidson (2003) (Connor & Davidson, 2003) to assess the level of psychological resilience of physicians. The scale consists of 25 items, using a 5-point scoring system (0 = Never, 5 = Always). A higher total score indicates that individuals have stronger psychological flexibility and resilience when facing pressure, difficulties, and uncertainties. The scale covers multiple psychological dimensions of individuals in coping with pressure, regulating emotions, and recovery ability. For example, an individual's flexible adaptability in the face of environmental changes is reflected in item ① "I can adapt flexibly to changes", and their ability to solve problems when encountering difficulties is reflected in item ② "I can handle difficulties" and item ⑥ "Even in the face of obstacles, I can achieve my goals".

Whether one can stay calm and focus on problem-solving when facing stressful events is an important indicator of psychological resilience, corresponding to items such as ⑦ "Under pressure, I can focus on solving problems". In addition, psychological resilience is also reflected in emotional regulation and cognitive reconstruction, such as item ⑩ "I can manage unpleasant emotions such as anger" and item ⑧ "I will not be discouraged by failure",

showing an individual's emotional stability in frustrating situations. Whether an individual can draw strength from past illnesses or adversities is reflected in item ④ "Accumulated experience makes me stronger" and item ⑤ "After experiencing illness or adversity, I have strong resilience".

Whether one has a tenacious self-cognition can be evaluated by item ⑨ "When facing challenges in life, I think I am a resilient person", and item ③ "I respond to problems with humor" reveals an individual's positive coping style in the face of difficulties (Connor & Davidson, 2003). In this study, CD-RISC shows good reliability and structural validity, with a Cronbach's α coefficient of 0.922, a KMO value of 0.974, and a P value of Bartlett's Test of Sphericity <0.001, proving that it is suitable for measuring the physician group.

3.3 Quality control measures

Comprehensive quality control measures were implemented to ensure the scientific integrity of data collection and the reliability of results:

3.3.1 Questionnaire design quality control

(1) Systematic Design Approach: Core variables were identified based on the theoretical frameworks of the Job Demands-Resources and Conservation of Resources theories. Appropriate measurement tools were selected through literature review, specialized items for medical record burden were designed, and necessary control variables were included.

(2) Structured Design Principles: The questionnaire was organized logically from basic information to complex evaluations, with a completion time controlled within 15 to 20 minutes to enhance response quality and completion rates among physicians.

(3) Rigorous Design Process: The questionnaire development involved four stages: initial design, expert review, pretesting, and revision, to ensure scientific validity and applicability.

(4) Expert Review Mechanism: Three experts in organizational behavior and three in hospital management reviewed the questionnaire for content validity, language clarity, and structural coherence.

(5) Pretest Optimization: Twenty physicians from different departments participated in pretesting, and feedback was collected through cognitive interviews, with special attention to the applicability of medical record burden measurement.

3.3.2 Questionnaire distribution quality control

(1) Scientific Distribution Principles: Five principles were followed: comprehensive coverage, randomness, voluntary participation, anonymity, and convenience, to ensure scientific sample collection.

(2) Electronic Distribution Platform: The questionnaire was created on the Wenjuanxing platform and distributed via hospital work WeChat groups and email, with unique links to track responses.

(3) Organizational Coordination: Hospital administrative departments and department heads were contacted in advance to obtain approval and help notify physicians, and smooth communication channels were established.

(4) Reasonable Timing: The data collection period from March to May 2024 included three reminder messages to balance response rates and minimize disruption.

(5) Special Case Handling: Offline physicians during the survey period received follow-up links after returning to work to minimize sample loss.

3.3.3 Sample representativeness control

(1) Comprehensive Coverage: Efforts were made to ensure balanced representation of physicians across departments and professional titles to enhance sample representativeness.

(2) Random Selection: Participants were randomly selected within stratified groups (by department and title) to avoid selection bias.

(3) Diversity Assurance: Particular attention was paid to balancing participation from different specialties to reflect diverse clinical environments.

(4) Anonymity and Confidentiality: Anonymous surveys were used to protect privacy and encourage honest responses, with no personally identifiable information collected.

3.3.4 Potential bias control

(1) Social Desirability Bias: Anonymity and confidentiality were emphasized to reduce tendencies to respond in socially desirable ways.

(2) Self-Selection Bias: Multi-channel recruitment and appropriate incentives were used to minimize overrepresentation of specific physician groups.

(3) Common Method Bias: Procedural controls (e.g., diverse item wording) and Harman's single-factor test were used to assess and mitigate common method variance.

(4) Nonresponse Bias: Nonresponse rates were recorded, and basic characteristics of nonrespondents were analyzed to evaluate potential impacts.

(5) Memory Bias: For retrospective questions like medical record writing time, clear time frames (e.g., "during the past week") were used to facilitate accurate recall.

(6) Measurement Bias: Pretesting and expert review were used to refine question phrasing for clarity and precision.

3.4 Ethical review

This study strictly adheres to the ethical guidelines for human research and has been reviewed and approved by the hospital ethics committee. The research protocol detailed the study purpose, procedures, potential risks, and benefits for comprehensive ethical evaluation. Before data collection, all potential participants received an electronic information sheet explaining the study purpose, questionnaire content, estimated completion time, data confidentiality, and their rights to participate. Participation was voluntary, with the right to withdraw at any time without adverse consequences. Informed consent was electronically signed before accessing the questionnaire. To protect privacy, all data were anonymized, with no personally identifiable information collected. Data were stored on encrypted servers accessible only to core research team members, and results were reported in aggregated forms to ensure participant confidentiality.

3.5 Statistical analysis methods

This study uses SPSS 26.0 and Mplus 8.3 software for data analysis, and comprehensively applies univariate analysis, regression analysis, and structural equation modeling (SEM) to verify research hypotheses in a multi-level manner. The overall analysis process is divided into five stages, which are detailed as follows:

3.5.1 Descriptive statistics and reliability and validity tests

Means, standard deviations, minimum values, and maximum values of all variables are calculated to describe sample characteristics, and the reliability (Cronbach’s α) and structural validity of the scales are evaluated. To control for common method bias, Harman’s single-factor test is used to assess whether the principal component explanation rate exceeds 40%.

3.5.2 Univariate analysis

Demographic differences are explored. To investigate the impact of different demographic

characteristics on physician burnout levels and other key variables, univariate analysis is conducted. Independent-samples t-test is used for binary variables, and one-way analysis of variance (ANOVA) is used for multi-category variables. This analysis helps identify control variables that need to be included in subsequent regression and SEM models, and also provides a basis for population classification in policy interventions.

3.5.3 Pearson correlation analysis: preliminary verification of relationships between variables

The linear correlations between main variables are tested through Pearson correlation coefficients, providing a basic judgment for subsequent path relationship modeling and eliminating obvious multicollinearity issues.

3.5.4 Multiple linear regression analysis: verification of main effects and mediating paths

A stepwise regression method is used to construct a multiple linear model to verify the main effect of medical record burden on physician burnout, as well as the mediating roles of role stress and job insecurity. Demographic variables are controlled in each step, and mediating variables are introduced layer by layer to ensure clear paths. This part serves as a robustness verification before structural equation modeling and also helps clarify the direction and significance of direct and indirect effects.

3.5.5 Structural equation modeling analysis: comprehensive test of the overall model

Mplus 8.3 is used to construct an integrated path model containing dual mediation (role stress, job insecurity) and dual moderation (psychological resilience, perceived organizational support). The mediating effects are estimated with 95% confidence intervals using the Bootstrap method (5,000 resamples). The moderating effects are modeled through latent variable interaction terms, and moderation diagrams are drawn through simple slope analysis to intuitively present the direction of moderation. Model fit is evaluated using indicators such as χ^2/df, CFI, TLI, RMSEA, and SRMR. This statistical analysis plan comprehensively uses multiple techniques to ensure the reliability and validity of research results. The statistical significance level is set at $P<0.05$, with a two-tailed test.

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Chapter 4: Descriptive Analysis of Medical Record Burden and Physician Burnout

4.1 Basic characteristics of participants

A total of 800 questionnaires were distributed in this study, with 780 returned, resulting in a response rate of 97.5%. After data cleaning, 776 valid questionnaires were obtained, with a validity rate of 97.0%. Among the 776 participants, 420 (54.1%) were male and 356 (45.9%) were female, showing a relatively balanced gender distribution with a slight male predominance. The age distribution was broad, with the largest group being physicians aged 31–40 years (326, 42.0%), followed by those aged 41–50 years (225, 29.0%). Young physicians aged 30 years or younger accounted for 19.6% (152), and those aged 51 years or older accounted for 9.4% (73). This structure reflects that the majority of frontline clinical staff are between 30 and 50 years old.

In terms of education level, the largest proportion had below associate degree or associate degree (421, 54.2%), with associate degree graduates accounting for 53.2% and only 8 (1.0%) having secondary or high school education. Bachelor's degree graduates accounted for 43.4%, while those with master’s degrees or higher were only 18 (2.3%). Most physicians were married (598, 77.1%), with single individuals accounting for 20.5% (159), divorced 2.2% (17), and widowed 0.3% (2). Regarding professional titles, attending physicians made up the highest proportion (45.1%, 350), followed by associate chief physicians and above (30.4%, 236), with interns or residents accounting for 24.5% (190).

Participants came from diverse hospital settings: 411 (53.0%) from tertiary A hospitals, 125 (16.1%) from tertiary hospitals, and 240 (30.9%) from other types of hospitals. In terms of EMR levels, level 4 systems were most common (357, 46.0%), followed by level 5 (301, 38.8%), with level 3 systems the least common (118, 15.2%), indicating widespread adoption of high-level EMR but also technical disparities. Details are shown in Table 4.1.

Table 4.1 Demographic descriptive analysis

Variable	Group	Frequency	Percentage (%)
Gender	Male	420	54.1
	Female	356	45.9
Age	≤30	152	19.6
	31-40	326	42.0

	41-50	225	29.0
	≥51	73	9.4
Education Level	Below Associate Degree	8	1.0
	Associate Degree	413	53.2
	Bachelor's Degree	337	43.4
	Master's Degree	18	2.3
Marital Status	Married	598	77.1
	Single	159	20.5
	Divorced	17	2.2
	Widowed	2	0.3
Professional Title	Intern or Resident	190	24.5
	Attending Physician	350	45.1
	Associate Chief Physician and Above	236	30.4
Hospital Grade	Tertiary A Hospitals	411	53.0
	Tertiary Hospitals	125	16.1
	Other	240	30.9
EMR Level	Level 3	118	15.2
	Level 4	357	46.0
	Level 5	301	38.8

4.2 Descriptive statistical analysis of variables

4.2.1 Status analysis of medical record burden

The average time spent on medical record writing during workdays was 2.71 hours, with significant differences across gender, age and professional title. Specifically, male physicians spent more time (2.80±1.38 hours) than female physicians (2.60±1.45 hours), with a statistically significant difference (t=1.974, P<0.05). In terms of age, the ≤30 years group spent the longest time (3.08±1.17 hours), followed by 31–40 years (2.81±1.37 hours), 41–50 years (2.42±1.51 hours), and ≥51 years (2.36±1.52 hours), with significant differences (F=8.877, P<0.001). Significant differences in workday writing time were observed across professional titles (F=8.779, P<0.001). Interns or residents spent 2.87±1.39 hours, attending physicians 2.83±1.34 hours, and associate chief physicians and above 2.39±1.48 hours..

The overall mean time spent on medical record writing during weekends was approximately 2.14 hours. The ≤30 years group spent the most time (2.53±1.16 hours), while the ≥51 years group spent the least (1.60±1.47 hours), with significant differences (F=9.447, P<0.001). By professional title, interns or residents (2.43±1.16 hours) spent more time than attending physicians (2.23±1.29 hours) and associate chief physicians and above (1.77±1.38 hours), with significant differences (F=15.210, P<0.001).

The overall mean time spent on medical record writing during holidays was 1.78 hours. The ≤30 years group spent the longest time (2.05±1.16 hours), while the ≥51 years group

spent the shortest (1.41±1.34 hours), with significant differences (F=7.662, P<0.001). In terms of professional title, interns or residents spent 2.05±1.13 hours, significantly more than associate chief physicians and above (1.44±1.25 hours, F=15.429, P<0.001). Additionally, level 5 EMR users spent the most time on holidays (1.90±1.24 hours), while level 3 users spent the least (1.59±1.20 hours), with significant differences (F=3.132, P<0.05). Details are shown in Table 4.2.

Table 4.2 Medical record burden and demographic differences

Variable	Group	Sample Size	Workdays (hours)	*t*/*F*	Weekends (hours)	*t*/*F*	Holidays (hours)	*t*/*F*
Gender	Male	420	2.80±1.38	1.974*	2.19±1.33	1.209	1.81±1.22	0.65
	Female	356	2.60±1.45		2.08±1.29		1.75±1.20	
Age	≤30	152	3.08±1.17	8.877***	2.53±1.16	9.447***	2.05±1.16	7.662***
	31-40	326	2.81±1.37		2.16±1.26		1.88±1.16	
	41-50	225	2.42±1.51		2.01±1.35		1.59±1.21	
	≥5	73	2.36±1.52		1.60±1.47		1.41±1.34	
Education Level	Below Associate Degree & Associate Degree	421	2.64±1.43	2.22	2.10±1.30	2.276	1.75±1.22	2.485
	Bachelor's Degree	337	2.76±1.40		2.15±1.33		1.80±1.18	
	Master's Degree	18	3.28±1.01		2.78±1.11		2.39±1.19	
Marital Status	Married	598	2.76±1.39	2.072	2.17±1.31	2.178	1.83±1.21	3.481*
	Single	159	2.54±1.45		2.09±1.33		1.67±1.16	
	Divorced	17	2.18±1.74		1.41±1.17		1.00±1.11	
	Widowed	2	3.50±0.70		3.00±0.01		2.50±0.70	
Professional Title	Intern or Resident	190	2.87±1.39	8.779***	2.43±1.16	15.210***	2.05±1.13	15.429***
	Attending Physician	350	2.83±1.34		2.23±1.29		1.87±1.17	
	Associate Chief Physician and Above	236	2.39±1.48		1.77±1.38		1.44±1.25	
Hospital Level	Tertiary A Hospitals	411	2.81±1.41	2.644	2.23±1.28	2.205	1.87±1.19	2.612
	Tertiary Hospitals	125	2.70±1.38		2.02±1.38		1.78±1.18	
	Other	240	2.54±1.42		2.04±1.32		1.64±1.23	
EMR Level	Level 3	118	2.49±1.40	1.687	2.03±1.32	0.775	1.59±1.20	3.132*
	Level 4	357	2.73±1.41		2.12±1.30		1.75±1.17	
	Level 5	301	2.77±1.41		2.20±1.32		1.90±1.24	

Note: *P<0.05, **P<0.01, ***P<0.001

4.2.2 Status analysis of physician burnout

The overall average burnout score was 3.04±0.67. No significant gender difference was found (t = -0.200, P > 0.05). Age groups differed significantly (F = 83.618, P < 0.001), with the <=30 years group scoring highest (3.48±0.48) and >=51 years group lowest (2.54±0.54). Education level had no significant effect (F = 1.327, P > 0.05), but marital status did (F = 2.655, P < 0.05), with married physicians scoring higher (3.08±0.67). Professional title had a significant impact (F = 146.453, P < 0.001), with interns or residents scoring highest (3.55±0.54) and senior physicians lowest (2.58±0.52). Hospital level and EMR level showed no significant differences. Details are shown in Table 4.3.

Table 4.3 Physician burnout and demographic differences

Variable	Group	Sample Size	Physician Burnout Scores	*t/F*
Gender	Male	420	3.04±0.65	-0.2
	Female	356	3.05±0.70	
Age	≤30	152	3.48±0.48	83.618***
	31-40	326	3.20±0.67	
	41-50	225	2.67±0.53	
	≥51	73	2.54±0.54	
Education Level	Below Associate Degree & Associate Degree	421	3.04±0.64	1.327
	Bachelor's Degree	337	3.02±0.71	
	Master's Degree	18	3.29±0.72	
Marital Status	Married	598	3.08±0.67	2.655*
	Single	159	2.93±0.67	
	Divorced	17	2.81±0.79	
	Widowed	2	2.73±1.19	
Professional Title	Intern or Resident	190	3.55±0.54	146.453***
	Attending Physician	350	3.07±0.62	
	Associate Chief Physician and Above	236	2.58±0.52	
Hospital Grade	Tertiary A Hospitals	411	3.09±0.67	2.391
	Tertiary Hospitals	125	3.01±0.61	
	Other	240	2.97±0.71	
EMR Level	Level 3	118	2.95±0.66	1.447
	Level 4	357	3.04±0.68	
	Level 5	301	3.07±0.67	

Note: *P<0.05, **P<0.01, ***P<0.001.

4.2.3 Status of physician role stress

The overall average score for physician role stress was 3.02±0.73. In terms of gender, male

physicians scored 3.01±0.719, and female physicians scored 3.03±0.749; the difference was not statistically significant (t = -0.440, P > 0.05). Age groups showed statistically significant differences in role stress scores (F = 3.311, P < 0.05): the ≤30 years group had the highest score (3.16±0.750), followed by the 31–40 years group (3.03±0.711), the 41–50 years group (2.94±0.740), and the ≥51 years group with the lowest score (2.92±0.731). No significant differences in role stress scores were found across education levels (F = 1.624, P > 0.05). Physicians with junior college or below education scored 3.06±3.061, those with a university degree scored 2.96±2.964, and those with a master's degree or higher scored 3.02±3.018. Regarding marital status, married physicians scored 3.04±0.730, unmarried physicians 2.97±0.749, divorced physicians 2.66±0.576, and widowed physicians the lowest at 2.46±0.764; however, the overall difference did not reach statistical significance (F = 2.191, P > 0.05). Professional title had a significant impact on role stress scores (F = 17.143, P < 0.001). Interns or residents scored 3.15±0.706, attending physicians 3.10±0.710, and associate chief physicians and above had the lowest score (2.79±0.739). Significant differences were also observed across hospital levels (F = 25.482, P < 0.001): physicians in tertiary grade A hospitals had the highest score (3.19±0.749), followed by those in other tertiary hospitals (2.79±0.560) and physicians in other hospitals (2.84±0.712). No statistically significant differences in role stress scores were found across EMR levels (F = 1.999, P > 0.05), with level 3 systems scoring 2.84±0.670, level 4 systems 3.08±0.742, and level 5 systems 3.04±0.741. Details are shown in Table 4.4.

Table 4.4 Differential analysis of role stress

Variable	Group	Sample Size	Role Stress (Mean ± SD)	t/F
Gender	Male	420	3.01±0.719	-0.440
	Female	356	3.03±0.749	
Age	≤30	152	3.16±0.750	3.311*
	31-40	326	3.03±0.711	
	41-50	225	2.94±0.740	
	≥51	73	2.92±0.731	
Education Level	Associate Degree or Below	421	3.06±3.061	1.624
	Bachelor's Degree	337	2.96±2.964	
	Master's Degree or Above	18	3.02±3.018	
Marital Status	Married	598	3.04±0.730	2.191
	Single	159	2.97±0.749	
	Divorced	17	2.66±0.576	
	Widowed	2	2.46±0.764	
Professional Title	Intern or	190	3.15±0.706	17.143***

	Resident Attending Physician	350	3.10±0.710	
	Associate Chief Physician or Above	236	2.79±0.739	
Hospital Level	Tertiary A Hospital	411	3.19±0.749	25.482***
	Tertiary Hospital	125	2.79±0.560	
	Others	240	2.84±0.712	
EMR Level	Level 3	118	2.84±0.670	1.999
	Level 4	357	3.08±0.742	
	Level 5	301	3.04±0.741	

Notes: *P<0.05, **P<0.01, ***P<0.001。

4.2.4 Status and difference analysis of job insecurity

The overall average score for job insecurity was 3.15±0.848. In terms of gender, male physicians scored 3.16±0.849, and female physicians scored 3.14±0.847; the difference was not statistically significant (t = 0.387, P = 0.699). Age groups showed significant differences in job insecurity scores (F = 15.017, P < 0.001): the ≤30 years group had the highest score (3.47±0.836), followed by the 31–40 years group (3.19±0.843), the 41–50 years group (3.01±0.836), and the ≥51 years group with the lowest score (2.77±0.681). Education level differences were statistically significant (F = 3.086, P = 0.046). Physicians with junior college or below education scored 3.06±3.061, those with a university degree scored 2.96±2.964, and those with a master's degree or higher scored 3.02±3.018. Regarding marital status, married physicians scored 3.19±0.852, unmarried physicians 3.07±0.829, divorced physicians 2.82±0.841, and widowed physicians 2.86±0.403; however, the difference was not statistically significant (F = 1.813, P = 0.143). Professional title had a significant impact on job insecurity scores (F = 18.169, P < 0.001). Interns or residents scored highest (3.40±0.788), followed by attending physicians (3.18±0.864), with associate chief physicians and above scoring lowest (2.91±0.810). Hospital level also showed significant differences (F = 13.245, P < 0.001): physicians in tertiary grade A hospitals scored 3.28±0.861, those in other tertiary hospitals scored 2.86±0.707, and those in other hospitals scored 3.09±0.849. No significant differences were found across EMR levels (F = 1.692, P = 0.134), with level 3 systems scoring 2.98±0.805, level 4 systems 3.19±0.835, and level 5 systems 3.16±0.873. Details are shown in Table 4.5.

Table 4.5 Differential analysis of work insecurity

Variable	Group	Sample Size	Work Insecurity (Mean ± SD)	*t*/*F*
Gender	Male	420	3.16±0.849	0.387
	Female	356	3.14±0.847	
Age	≤30	152	3.47±0.836	15.017***
	31-40	326	3.19±0.843	
	41-50	225	3.01±0.836	
	≥51	73	2.77±0.681	
Education Level	Associate Degree or Below	421	3.06±3.061	3.086*
	Bachelor's Degree	337	2.96±2.964	
	Master's Degree or Above	18	3.02±3.018	
Marital Status	Married	598	3.19±0.852	1.813
	Single	159	3.07±0.829	
	Divorced	17	2.82±0.841	
	Widowed	2	2.86±0.403	
Professional Title	Intern or Resident	190	3.40±0.788	18.169***
	Attending Physician	350	3.18±0.864	
	Associate Chief Physician or Above	236	2.91±0.810	
Hospital Level	Tertiary A Hospital	411	3.28±0.861	13.245***
	Tertiary Hospital	125	2.86±0.707	
	Others	240	3.09±0.849	
EMR Level	Level 3	118	2.98±0.805	1.692
	Level 4	357	3.19±0.835	
	Level 5	301	3.16±0.873	

Notes: *P<0.05, **P<0.01, ***P<0.001。

4.2.5 Status and difference analysis of psychological resilience

The overall average score for psychological resilience was 2.60±0.790. In terms of gender, male physicians scored 2.61±0.797, and female physicians scored 2.59±0.782; the difference was not statistically significant (t = 0.393, P = 0.695). Age groups showed no significant differences in psychological resilience scores (F = 1.475, P = 0.220): the 41–50 years group had the highest score (2.69±0.763), followed by the ≤30 years group (2.60±0.808), the 31–40 years group (2.56±0.803), and the ≥51 years group with the lowest score (2.53±0.764). No significant differences were observed across education levels (F = 2.162, P = 0.116). University graduates scored 2.66±2.659, physicians with junior college or below education

scored 2.57±2.569, and those with a master's degree or higher scored 2.35±2.35. Marital status also showed no significant differences (F = 1.656, P = 0.175): widowed physicians had the highest score (3.35±0.495), followed by divorced physicians (2.89±0.725), married physicians (2.61±0.797), and unmarried physicians (2.54±0.764). Professional title had a significant impact on psychological resilience scores (F = 5.041, P = 0.007). Associate chief physicians and above scored highest (2.74±0.747), followed by attending physicians (2.55±0.786), with interns or residents scoring lowest (2.54±0.831). Hospital level also showed significant differences (F = 8.321, P < 0.001): physicians in tertiary hospitals scored highest (2.79±0.808), followed by those in other hospitals (2.68±0.751), with tertiary grade A hospital physicians scoring lowest (2.50±0.793). No statistically significant differences were found across EMR levels (F = 0.879, P = 0.495), with level 3 systems scoring 2.73±0.782, level 4 systems 2.59±0.792, and level 5 systems 2.58±0.797. Details are shown in Table 4.6.

Table 4.6 Differential analysis of psychological resilience

Variable	Group	Sample Size	Psychological Resilience (Mean ± SD)	*t*/*F*
Gender	Male	420	2.61±0.797	0.393
	Female	356	2.59±0.782	
Age	≤30	152	2.60±0.808	1.475
	31-40	326	2.56±0.803	
	41-50	225	2.69±0.763	
	≥51	73	2.53±0.764	
Education Level	Associate Degree or Below	421	2.57±2.569	2.162
	Bachelor's Degree	337	2.66±2.659	
	Master's Degree or Above	18	2.35±2.35	
Marital Status	Married	598	2.61±0.797	1.656
	Single	159	2.54±0.764	
	Divorced	17	2.89±0.725	
	Widowed	2	3.35±0.495	
Professional Title	Intern or Resident	190	2.54±0.831	5.041**
	Attending Physician	350	2.55±0.786	
	Associate Chief Physician or Above	236	2.74±0.747	
Hospital Level	Tertiary A Hospital	411	2.50±0.793	8.321***
	Tertiary Hospital	125	2.79±0.808	
	Others	240	2.68±0.751	
EMR Level	Level 3	118	2.73±0.782	0.879

	Level 4	357	2.59±0.792
	Level 5	301	2.58±0.797

Notes: *P<0.05, **P<0.01, ***P<0.001。

4.2.6 Status of participants' perceived organizational support

The overall average score for perceived organizational support was 3.37±0.91. In terms of gender, male physicians scored 3.39±0.90, and female physicians scored 3.34±0.91; the difference was not statistically significant (t = 0.722, P > 0.05). Age groups showed statistically significant differences in perceived organizational support scores (F = 2.911, P < 0.05): the ≥51 years group had the highest score (3.62±0.93), followed by the 41–50 years group (3.41±0.82), the 31–40 years group (3.34±0.96), and the ≤30 years group with the lowest score (3.26±0.88). No significant differences were observed across education levels (F = 0.194, P > 0.05). Physicians with junior college or below education scored 3.38±0.89, those with a university degree scored 3.36±0.91, and those with a master's degree or higher scored 3.24±1.00. Marital status also showed no significant differences in scores (F = 1.448, P > 0.05): widowed physicians had the highest score (4.58±0.23), followed by divorced physicians (3.51±0.95), married physicians (3.37±0.91), and unmarried physicians (3.32±0.88). Professional title differences were not statistically significant (F = 2.063, P > 0.05), with attending physicians scoring highest (3.54±0.88), followed by associate chief physicians and above (3.41±0.90), and interns or residents scoring lowest (3.29±0.95). Hospital level differences reached statistical significance (F = 3.722, P < 0.05): physicians in tertiary hospitals scored highest (3.54±0.89), followed by those in other hospitals (3.41±0.87), with tertiary grade A hospital physicians scoring lowest (3.29±0.92). No significant differences were found across EMR levels (F = 0.832, P > 0.05), with level 5 systems scoring 3.41±0.90, level 3 systems 3.38±0.94, and level 4 systems 3.32±0.89. Details are shown in Table 4.7.

Table 4.7 Perceived organizational support and demographic differences

Variable	Group	Sample Size	Perceived Organizational Support (Mean ± SD)	*t/F*
Gender	Male	420	3.39±0.90	0.722
	Female	356	3.34±0.91	
Age	≤30	152	3.26±0.88	2.911*
	31-40	326	3.34±0.96	
	41-50	225	3.41±0.82	
	≥51	73	3.62±0.93	
Education Level	Associate Degree or Below	421	3.38±0.89	0.194
	Bachelor's Degree	337	3.36±0.91	

	Master's Degree or Above	18	3.24±1.00	
Marital Status	Married	598	3.37±0.91	1.448
	Single	159	3.32±0.88	
	Divorced	17	3.51±0.95	
	Widowed	2	4.58±0.23	
Professional Title	Intern or Resident	190	3.29±0.95	2.063
	Attending Physician	350	3.54±0.88	
	Associate Chief Physician or Above	236	3.41±0.90	
Hospital Level	Tertiary A Hospital	411	3.29±0.92	3.722*
	Tertiary Hospital	125	3.54±0.89	
	Others	240	3.41±0.87	
EMR Level	Level 3	118	3.38±0.94	0.832
	Level 4	357	3.32±0.89	
	Level 5	301	3.41±0.90	

Note: *P<0.05, **P<0.01, ***P<0.001.

4.3 Correlation analysis of variables

4.3.1 Correlation between medical record burden and physician burnout

Pearson correlation analysis showed significant positive correlations between medical record writing time across all periods and burnout scores (all $P < 0.001$). Workday writing time correlated at $r = 0.275$, weekend at $r = 0.306$, and holiday at $r = 0.305$. Writing times across periods also correlated significantly ($P < 0.001$), with workday-weekend $r = 0.704$, workday-holiday $r = 0.578$, and weekend-holiday $r = 0.694$ (Table 4.8).

Table 4.8 Correlation between medical record burden and physician burnout

Variable	Weekday Medical Record Writing	Weekend Medical Record Writing	Holiday Medical Record Writing	Physician Burnout
Weekday Medical Record Writing	1			
Weekend Medical Record Writing	0.704***	1		
Holiday Medical Record Writing	0.578***	0.694***	1	
Physician Burnout	0.275***	0.306***	0.305***	1

Note: *P<0.05, **P<0.01, ***P<0.001.

4.3.2 Correlation matrix of variables

This study analyzed the correlations among key research variables, revealing significant statistical associations involving medical record burden. Specifically, medical record burden exhibited a significant positive correlation with role stress ($r = 0.179$, $P < 0.01$) and job insecurity ($r = 0.154$, $P < 0.01$), while showing a negative correlation with psychological

resilience (r = -0.080, P < 0.05). Additionally, no significant correlation was found between medical record burden and perceived organizational support (r = -0.028, P > 0.05), but a strong positive correlation existed with physician burnout (r = 0.335, P < 0.01). Role stress also demonstrated strong correlations with other variables. It was significantly positively correlated with job insecurity (r = 0.443, P < 0.01), indicating a certain synergistic effect in the psychological stress structure of physicians. Meanwhile, role stress was significantly negatively correlated with psychological resilience (r = -0.497, P < 0.01) and perceived organizational support (r = -0.236, P < 0.01), and significantly positively correlated with physician burnout (r = 0.349, P < 0.01). For job insecurity, significant negative correlations were observed with psychological resilience (r = -0.238, P < 0.01) and perceived organizational support (r = -0.418, P < 0.01), along with a significant positive correlation with physician burnout (r = 0.380, P < 0.01). Psychological resilience was significantly positively correlated with perceived organizational support (r = 0.146, P < 0.01) and significantly negatively correlated with physician burnout (r = -0.117, P < 0.01). Perceived organizational support itself had a negative correlation with physician burnout (r = -0.137, P < 0.01), suggesting that at the individual resource level, both perceived organizational support and psychological resilience exhibit an inverse association with burnout. Details are shown in Table 4.9.

Table 4.9 Correlation analysis

Variable	Medical Record Burden	Role Stress	Job Insecurity	Psychological Resilience	Perceived Organizational Support	Physician Burnout
Medical Record Burden	1.000					
Role Stress	0.179**	1.000				
Job Insecurity	0.154**	0.443**	1.000			
Psychological Resilience	-0.080*	-0.497**	-0.238**	1.000		
Perceived Organizational Support	-0.028	-0.236**	-0.418**	0.146**	1.000	
Physician Burnout	0.335**	0.349**	0.380**	-0.117**	-0.137**	1.000

Note: *$P < 0.05$, **$P < 0.01$.

4.4 Direct impact of medical record burden on physician burnout

4.4.1 Construction of regression models

To further test the direct impact of medical record burden on physician burnout, this study constructed three hierarchical multiple linear regression models, progressively incorporating variables to explore the explanatory power of various factors on burnout. Model 1 included only control variables: gender, age, education level, professional title, and hospital level, to eliminate the baseline influence of demographic characteristics on burnout. Model 2 introduced the main independent variables: medical record burden, role stress, and job insecurity, aiming to examine the independent explanatory effects of high work load and psychological structure variables on burnout. Model 3 further added personal and organizational resource variables—psychological resilience and perceived organizational support—to evaluate their moderating or moderating roles in the formation of burnout.

4.4.2 Results of regression analysis

To clarify the direct effect of medical record burden on physician burnout, stepwise multiple linear regression analysis was conducted with "physician burnout" as the dependent variable, constructing three hierarchical regression models. The results showed that all models had good fitting effects, and the progressively introduced variables improved the explanatory power for burnout levels. In Model 1, which included only control variables (age, professional title, gender, education level, hospital level), age (β = -0.366, t = -12.576, $P < 0.001$) and professional title (β = -0.420, t = -14.404, $P < 0.001$) exhibited significant negative effects on burnout, indicating that burnout levels decreased with increasing age and professional seniority. Gender, education level, and hospital level were not statistically significant in this model. The R^2 of Model 1 was 0.399, meaning control variables explained 39.9% of the variance in burnout. Model 2 added three core independent variables—medical record burden, role stress, and job insecurity—to the control variables. All three demonstrated significant positive predictive effects on burnout. medical record burden (β = 0.157, t = 5.830, $P < 0.001$), role stress (β = 0.165, t = 5.583, $P < 0.001$), and job insecurity (β = 0.143, t = 4.822, $P < 0.001$) all significantly increased physician burnout. Among control variables, age (β = -0.301, $P < 0.001$) and professional title (β = -0.353, $P < 0.001$) remained significant. The R^2 of Model 2 rose to 0.492, with ΔR^2 = 0.093, indicating that newly added work stress-related

variables explained an additional 9.3% of burnout variance. Model 3 further incorporated two resource variables: psychological resilience and perceived organizational support. Psychological resilience had a significant negative predictive effect on burnout (β = -0.063, t = 2.123, P = 0.034), while perceived organizational support was not statistically significant (β = 0.022, P = 0.444). The effects of medical record burden, role stress, and job insecurity remained significant (β = 0.156, 0.198, and 0.153, respectively, all P < 0.001). Control variables age (β = -0.299) and professional title (β = -0.353) remained significant. The R^2 of Model 3 was 0.496, with ΔR^2 = 0.003, indicating that psychological resilience and perceived organizational support slightly improved model explanatory power but with limited incremental effect. Overall, the three models progressively enhanced explanatory power, with R^2 increasing from 0.399 in the basic demographic model to 0.496 in the complete mechanism model. All F-values were statistically significant (P < 0.001), indicating good model fit. Details are shown in Table 4.10.

Table 4.10 Regression analysis of physician burnout

Variable	Model 1			Model 2			Model 3		
	β	t	P	β	t	P	β	t	P
Constant		34.619	<0.001		17.722	<0.001		11.877	<0.001
Age (years)	-0.366	-12.576	<0.001	-0.301	-10.923	<0.001	-0.299	-10.838	<0.001
Professional Title	-0.420	-14.404	<0.001	-0.353	-12.839	<0.001	-0.353	-12.874	<0.001
Gender	-0.006	-0.204	0.838	0.010	0.392	0.695	0.011	0.434	0.664
Education Level	-0.002	-0.080	0.936	0.020	0.775	0.439	0.022	0.821	0.412
Hospital Level	-0.044	-1.515	0.130	0.024	0.894	0.371	0.025	0.912	0.362
Medical Record Burden				0.157	5.830	<0.001	0.156	5.788	<0.001
Role Stress				0.165	5.583	<0.001	0.198	6.002	<0.001
Job Insecurity				0.143	4.822	<0.001	0.153	4.846	<0.001
Psychological Resilience							0.063	2.123	0.034
Perceived Organizational Support							0.022	0.766	0.444
R^2		0.399			0.492			0.496	
ΔR^2		0.399			0.093			0.003	
F		102.36			92.982			75.213	
P		<0.001			<0.001			<0.001	

4.4.3 Analysis of the impact of control variables

During the gradual construction of the regression models, control variables—including age,

professional title, gender, education level, and hospital level—exhibited varying degrees of influence in predicting physician burnout. Across the three regression models, age and professional title consistently showed significant negative effects with stability. In Model 1, the standardized regression coefficient for age was β = -0.366 (t = -12.576, $P < 0.001$), and for professional title was β = -0.420 (t = -14.404, $P < 0.001$), both reaching highly significant levels. With the introduction of core predictive variables in Models 2 and 3, the effects of age and professional title slightly decreased but remained significant (age β = -0.299, professional title β = -0.353, both $P < 0.001$ in Model 3), indicating that these two variables have strong explanatory power in predicting physician burnout levels. In contrast, gender, education level, and hospital level did not show statistical significance in the three models, with all P-values greater than 0.05. Specifically, in Model 1, the coefficient for gender was β = 0.011 (P = 0.649), for education level β = 0.029 (P = 0.279), and for hospital level β = -0.021 (P = 0.426). Even in Models 2 and 3 after introducing the main research variables, the regression coefficients for these three variables never reached significant levels. Overall, among the control variables, age and professional title are important demographic factors affecting physician burnout, while the predictive effects of gender, education level, and hospital level are relatively limited.

Chapter 5: Mechanism of Medical Record Burden Affecting Physician Burnout

5.1 Reliability and validity analysis of the questionnaire

5.1.1 Reliability analysis of the questionnaire

Questionnaire reliability is crucial to ensure consistent and trustworthy data collection. This study used Cronbach's α coefficients to assess reliability, with coefficients of 0.7 or higher indicating high reliability. Results showed that all scales had Cronbach's α coefficients exceeding 0.8, demonstrating high reliability: medical record burden (0.851); the three dimensions of role stress (0.862-0.885); the two dimensions of job insecurity (0.848 and 0.865); psychological resilience (0.922); perceived organizational support (0.961); and physician burnout (0.934). These coefficients indicate good internal consistency reliability for the scales used. Details are shown in Table 5.1.

Table 5.1 Reliability Analysis

Scale	Dimension	Number of Items	Reliability
Medical Record Burden	Medical Record Burden	3	0.851
Role Stress	Role Conflict	3	0.862
	Role Ambiguity	5	0.885
	Role Overload	5	0.869
Work Insecurity	Emotional Insecurity	3	0.848
	Cognitive Insecurity	4	0.865
Psychological Resilience		10	0.922
Perceived Organizational Support		24	0.961
Physician Burnout		19	0.934

5.1.2 Validity analysis of the questionnaire

5.1.2.1 Exploratory factor analysis of the overall questionnaire

Factor analysis was used for validity analysis. The overall Kaiser-Meyer-Olkin (KMO) value of the questionnaire was 0.955, far exceeding the 0.7 threshold, indicating suitability for factor analysis. Bartlett's test of sphericity was significant ($P < 0.001$), confirming factor analysis appropriateness. Ten factors extracted from the questionnaire accounted for 60.608%

of the total variance, indicating high explanatory power. The first factor explained 21.684% of the variance, less than 40%, suggesting no significant common method bias in the data (see Appendix G, Tables g.1 and g.1).

5.1.2.2 Validity analysis of subscales

(1) Validity analysis of role stress

1) Exploratory factor analysis

First, Cronbach's alpha was used to analyze the reliability of the role stress subscale. The Cronbach's alpha coefficients for all dimensions exceed 0.7, indicating high reliability. Further analysis was conducted through factor extraction using principal component analysis with varimax rotation. The results show that each item loads onto its respective dimension, demonstrating good structural validity of the subscale. The three extracted factors account for 69.832% of the total variance, reflecting a strong explanatory power and effectively preserving the original data information. Overall, the subscale exhibits high reliability and validity, making it both dependable and effective for research analysis (Annex E Table g.3).

2) Confirmatory factor analysis of role stress

Confirmatory factor analysis (CFA) was conducted on the role stress data to assess the relationships between the observed variables and their corresponding dimensions: role conflict (three dimensions), role ambiguity (five dimensions), and decision overload (five dimensions). For CFA, it is generally required that standardized factor loadings exceed 0.6, composite reliability (CR) exceeds 0.7, and average variance extracted (AVE) is greater than 0.5 to indicate good validity and reliability of the questionnaire. As shown in Table 5.2, all fit indices for the CFA model meet the ideal values, indicating a good model fit. CMIN/DF≤3.00, RMR≤0.10, IFI≥0.90, TLI≥0.90, CFI≥0.90, and RMSEA≤0.10.

Table 5.2 Model Fit Indices for Role Stress

Index	Ideal Value	Role Stress Model
CMIN/DF	≤3.00	1.970
RMR	≤0.10	0.039
IFI	≥0.90	0.988
TLI	≥0.90	0.985
CFI	≥0.90	0.988
RMSEA	≤0.10	0.035

Annex E Table g.4 demonstrates that the standardized factor loadings for each dimension exceed 0.6, suggesting high reliability of the dimensions.

Table 5.3 compares the square roots of the AVE with the inter-dimensional correlations. The results show that all dimensions meet the standards for CR and AVE, confirming that the data possesses strong composite reliability and construct validity. The intra-dimensional

correlations are greater than the inter-dimensional correlations, indicating good discriminant validity. In summary, the data exhibits good validity and reliability, making it suitable for further analysis.

Table 5.3 Correlations, CR, and AVE Results for Role Stress

	Role Conflict	Role Ambiguity	Role Overload	CR	AVE
Role Conflict	0.823			0.863	0.678
Role Ambiguity	0.370	0.778		0.885	0.606
Role Overload	0.248	0.291	0.756	0.869	0.571

Note: The diagonal values are the square roots of the AVE, and the lower triangle represents Pearson correlations between dimensions.

(2) Validity analysis of job insecurity

1) Exploratory factor analysis

First, Cronbach's Alpha was used to analyze the reliability of job insecurity. All Cronbach's Alpha coefficients were greater than 0.7, indicating high dimension reliability. Further, a uniform analysis was conducted. After factor extraction using a principal component analysis - maximum variance method, all items were found to fall within their corresponding dimensions, suggesting good structural validity of the questionnaire. The total variance explained by the extracted two factors was 73.660%, indicating good factor explanatory power and the ability to retain the original data information in a comprehensive manner. Overall, the questionnaire exhibits a high level of reliability and validity, ensuring its reliability and effectiveness for research analysis (Annex E Table g.5).

2) Confirmatory factor analysis

A confirmatory factor analysis was conducted on job insecurity based on the data, focusing on the relationships between the two dimensions and their corresponding observed variables. Generally, in confirmatory factor analysis, standardized factor loadings should exceed 0.6, composite reliability (CR) should be greater than 0.7, and average variance extracted (AVE) should be above 0.5 to indicate good reliability and validity of the questionnaire. As shown in Table 5.4, all fit indices in the confirmatory factor analysis meet the ideal values, indicating a good model fit.

Table 5.4 Model fit indices for job insecurity

Measure	CMIN/DF	RMR	IFI	TLI	CFI	RMSEA
Ideal Value	≤3.00	≤0.10	≥0.90	≥0.90	≥0.90	≤0.10
Model Fit	1.324	0.032	0.998	0.997	0.998	0.020

Table 5.5 demonstrates that the standardized factor loadings for each dimension are all greater than 0.6, suggesting good reliability for each dimension.

Table 5.5 Confirmatory factor analysis of job insecurity

Item Path	Parameter Estimate	Standardized Estimate	SMC
Emotional Insecurity			
Emotional Insecurity 1 ← Emotional Insecurity	1	0.795	0.632
Emotional Insecurity 2 ← Emotional Insecurity	1.007	0.823	0.677
Emotional Insecurity 2 ← Emotional Insecurity	0.976	0.803	0.645
Cognitive Insecurity			
Cognitive Insecurity 1 ← Cognitive Insecurity	1	0.831	0.691
Cognitive Insecurity 2 ← Cognitive Insecurity	0.945	0.766	0.587
Cognitive Insecurity 3 ← Cognitive Insecurity	0.976	0.8	0.64
Cognitive Insecurity 4 ← Cognitive Insecurity	0.893	0.745	0.555

Table 5.6 compares the square roots of the AVE with the correlations between dimensions. The comparison reveals that all dimensions' CR and AVE meet the standards, indicating strong composite reliability and structural validity of the data. Moreover, the within-dimension correlations exceed the correlations between dimensions, demonstrating good discriminant validity. In summary, the data exhibits good reliability and validity, making it suitable for further analysis.

Table 5.6 Confirmatory factor analysis

	Emotional Insecurity	Cognitive Insecurity	CR	AVE
Emotional Insecurity	0.807		0.849	0.651
Qualitative Insecurity	0.327	0.786	0.866	0.618

Note: The diagonal values represent the square root of the Average Variance Extracted (AVE). The lower triangle values indicate the Pearson correlations between dimensions.

(3) Validity analysis of medical record burden, psychological resilience, perceived organizational support, and accumulated physician burnout

1) Exploratory factor analysis

Initially, Cronbach's Alpha was used to assess the reliability of medical record burden, psychological resilience, perceived organizational support, and accumulated physician burnout. All Cronbach's Alpha coefficients exceeded 0.7, indicating high reliability for each dimension. Subsequently, a uniform analysis was conducted. Using principal component analysis with the maximum variance method for factor extraction, all items were found to align with their respective dimensions, indicating good structural validity of the questionnaire. The four extracted factors explained a total variance of 73.660%, demonstrating strong factor explanatory power and the ability to retain the original data information comprehensively. Overall, the questionnaire exhibits high reliability and validity, rendering it suitable for

research analysis (Annex E Table g.6).

2) Confirmatory factor analysis

Confirmatory factor analysis was performed on the medical record burden, psychological resilience, perceived organizational support, and accumulated physician burnout scales. Generally, in confirmatory factor analysis, standardized factor loadings should exceed 0.6, composite reliability (CR) should be greater than 0.7, and average variance extracted (AVE) should be above 0.5 to indicate good reliability and validity of the questionnaire. As shown in Table 5.7, all fit indices in the confirmatory factor analysis meet the ideal values, indicating a good model fit.

Table 5.7 Goodness-of-fit statistics

Measure	CMIN/DF	RMR	IFI	TLI	CFI	RMSEA
Ideal Value	≤3.00	≤0.10	≥0.90	≥0.90	≥0.90	≤0.10
Observed Value	1.710	0.037	0.960	0.958	0.960	0.030

Note: CMIN/DF refers to the chi-square value divided by the degrees of freedom. RMR stands for the root mean square residual. IFI denotes the incremental fit index. TLI is the Tucker-Lewis index. CFI represents the comparative fit index. RMSEA indicates the root mean square error of approximation.

Table 5.8 shows that the standardized factor loadings for each dimension are all above 0.6, suggesting strong reliability for each dimension. The *P*-values for each dimension are less than 0.01, reaching statistical significance.

Table 5.8 Confirmatory factor analysis

Item Path	Parameter Estimate	Standardized Estimate	SMC
Medical Record Burden			
Workday Medical Record Burden ← Medical Record Burden	1.180	0.771	0.594
Weekend Medical Record Burden ← Medical Record Burden	1.294	0.909	0.826
Holiday Medical Record Burden ← Medical Record Burden	1.000	0.763	0.582
Psychological Resilience			
Psychological Resilience 1 ← Psychological Resilience	1.000	0.719	0.517
Psychological Resilience 2 ← Psychological Resilience	0.985	0.718	0.516
Psychological Resilience 3 ← Psychological Resilience	1.080	0.780	0.608
Psychological Resilience 4 ← Psychological Resilience	1.035	0.727	0.529
Psychological Resilience 5 ← Psychological Resilience	1.023	0.719	0.517
Psychological Resilience 6 ← Psychological Resilience	1.090	0.780	0.608
Psychological Resilience 7 ← Psychological Resilience	0.984	0.712	0.507
Psychological Resilience 8 ← Psychological Resilience	1.050	0.749	0.561

Item Path	Parameter Estimate	Standardized Estimate	SMC
Psychological Resilience 9 ← Psychological Resilience	1.073	0.740	0.548
Psychological Resilience 10 ← Psychological Resilience	0.996	0.718	0.516
Perceived Organizational Support			
Perceived Organizational Support 1 ← Perceived Organizational Support	1.000	0.679	0.461
Perceived Organizational Support 2 ← Perceived Organizational Support	0.935	0.669	0.448
Perceived Organizational Support 3 ← Perceived Organizational Support	0.967	0.663	0.440
Perceived Organizational Support 4 ← Perceived Organizational Support	0.949	0.689	0.475
Perceived Organizational Support 5 ← Perceived Organizational Support	0.910	0.642	0.412
Perceived Organizational Support 6 ← Perceived Organizational Support	1.141	0.797	0.635
Perceived Organizational Support 7 ← Perceived Organizational Support	1.022	0.705	0.497
Perceived Organizational Support 8 ← Perceived Organizational Support	0.988	0.671	0.450
Perceived Organizational Support 9 ← Perceived Organizational Support	1.039	0.713	0.508
Perceived Organizational Support 10 ← Perceived Organizational Support	1.243	0.832	0.692
Perceived Organizational Support 11 ← Perceived Organizational Support	0.987	0.672	0.452
Perceived Organizational Support 12 ← Perceived Organizational Support	1.028	0.694	0.482
Perceived Organizational Support 13 ← Perceived Organizational Support	0.981	0.668	0.446
Perceived Organizational Support 14 ← Perceived Organizational Support	1.004	0.673	0.453
Perceived Organizational Support 15 ← Perceived Organizational Support	0.953	0.654	0.428
Perceived Organizational Support 16 ← Perceived Organizational Support	0.909	0.633	0.401
Perceived Organizational Support 17 ← Perceived Organizational Support	1.222	0.842	0.709
Perceived Organizational Support 18 ← Perceived Organizational Support	1.134	0.768	0.590
Perceived Organizational Support 19 ← Perceived Organizational Support	1.207	0.850	0.723
Perceived Organizational Support 20 ← Perceived Organizational Support	1.078	0.752	0.566
Perceived Organizational Support 21 ← Perceived Organizational Support	0.908	0.650	0.423
Perceived Organizational Support 22 ← Perceived Organizational Support	1.033	0.688	0.473
Perceived Organizational Support 23 ← Perceived Organizational Support	0.915	0.665	0.442
Perceived Organizational Support 24 ← Perceived Organizational Support	1.144	0.810	0.656

Item Path	Parameter Estimate	Standardized Estimate	SMC
Physician Burnout Status			
Physician Burnout Status 1 ← Physician Burnout	1.000	0.673	0.453
Physician Burnout Status 2 ← Physician Burnout	0.920	0.648	0.420
Physician Burnout Status 3 ← Physician Burnout	0.887	0.636	0.405
Physician Burnout Status 4 ← Physician Burnout	1.143	0.742	0.551
Physician Burnout Status 5 ← Physician Burnout	1.016	0.728	0.530
Physician Burnout Status 6 ← Physician Burnout	1.064	0.730	0.533
Physician Burnout Status 7 ← Physician Burnout	1.101	0.754	0.569
Physician Burnout Status 8 ← Physician Burnout	1.089	0.756	0.572
Physician Burnout Status 9 ← Physician Burnout	1.080	0.735	0.540
Physician Burnout Status 10 ← Physician Burnout	1.043	0.719	0.517
Physician Burnout Status 11 ← Physician Burnout	1.170	0.773	0.598
Physician Burnout Status 12 ← Physician Burnout	1.188	0.786	0.618
Physician Burnout Status 13 ← Physician Burnout	-0.933	-0.760	0.578
Physician Burnout Status 14 ← Physician Burnout	1.054	0.701	0.491
Physician Burnout Status 15 ← Physician Burnout	1.095	0.706	0.498
Physician Burnout Status 16 ← Physician Burnout	1.123	0.748	0.560
Physician Burnout Status 17 ← Physician Burnout	1.022	0.676	0.457
Physician Burnout Status 18 ← Physician Burnout	1.178	0.753	0.567
Physician Burnout Status 19 ← Physician Burnout	1.155	0.728	0.530

Note: Parameter Estimate represents the estimated parameter values from the confirmatory factor analysis. Standardized Estimate indicates the standardized values for each parameter. SMC stands for Squared Multiple Correlation, reflecting the proportion of variance in each observed variable explained by the latent factor.

Table 5.9 compares the square roots of the AVE with the correlations between dimensions. The comparison reveals that all dimensions' CR and AVE meet the standards, indicating strong composite reliability and structural validity of the data. Furthermore, the within-dimension correlations are greater than the correlations between dimensions, demonstrating good discriminant validity. In summary, the data exhibits good reliability and validity, making it suitable for further analysis.

Table 5.9 Correlation between variables, CR and AVE results

Medical Record Burden	Psychological Resilience	Perceived Organizational Support	Physician Burnout	CR	AVE	
Medical Record Burden	0.817				0.857	0.668
Psychological Resilience	-0.075	0.737			0.922	0.543
Perceived Organizational Support	-0.043	0.150	0.715		0.961	0.511
Physician Burnout	0.362	-0.131	-0.152	0.725	0.943	0.525

Note: The diagonal values represent the square root of AVE, while the lower triangle shows the Pearson correlations among the dimensions.

5.2 Structural equation modeling (SEM) results

5.2.1 Model fit

To comprehensively test the mechanism of medical record burden affecting physician burnout, SEM was used to estimate path relationships based on theoretical hypotheses. SEM is suitable for handling complex causal relationships among latent variables, testing direct, mediating, and moderating effects while accounting for measurement error. Model fit indices are shown in Table 5.10.

Table 5.10 Fit indices for structural equation modeling

Fit Index	CMIN/DF	TLI	IFI	PCFI	RMSEA
Ideal Value	≤3.00	≥0.90	≥0.90	≥0.90	≤0.10
Fit Value	1.645	0.944	0.946	0.914	0.029

All indicators fell within the ideal range: the Chi-square to degrees of freedom ratio (CMIN/DF) was 1.645, less than 3.00; the Tucker-Lewis Index (TLI) was 0.944, the Incremental Fit Index (IFI) was 0.946, and the Parsimony Comparative Fit Index (PCFI) was 0.914, all exceeding the recommended standard of 0.90; the Root Mean Square Error of Approximation (RMSEA) was 0.029, significantly below the threshold of 0.10. These results indicate that the constructed structural equation model (SEM) has good overall fit, meets statistical analysis requirements, and can be used for further path estimation and hypothesis testing. Within this model framework, this study will sequentially present the direct impact of medical record burden, the mediating pathways through role stress and job insecurity, and the moderating effects of psychological resilience and perceived organizational support, as shown in Figure 5.1.

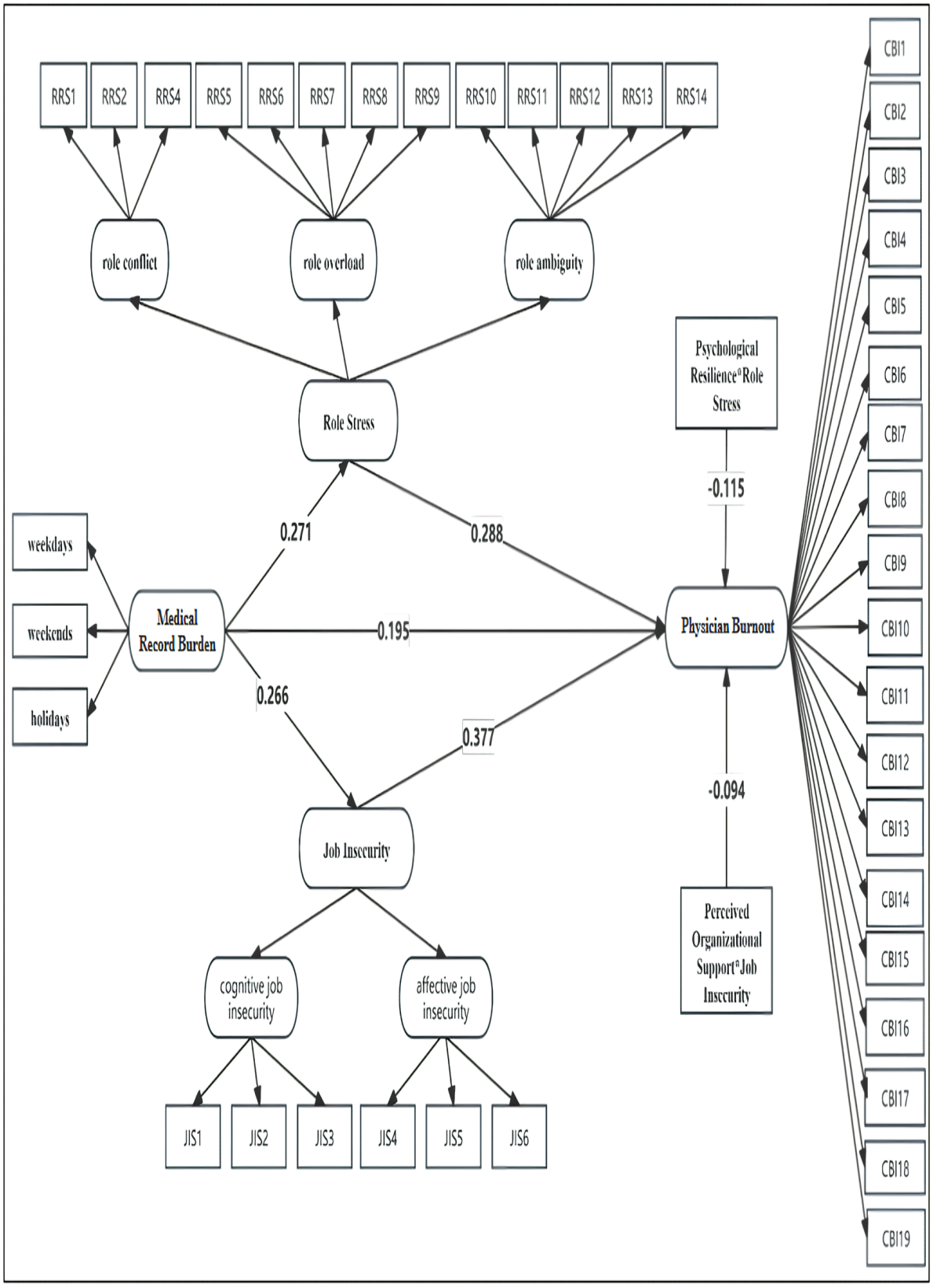

Figure 5.1 Structural equation model

5.2.2 Main effect path analysis

Based on the good overall model fit, this study further estimated and tested the significance of the main pathways in the SEM, evaluating the direct impact of medical record burden on physician burnout, as well as the indirect pathways through role stress and job insecurity. Path coefficients, standard errors, critical ratios (CR), and significance levels (*P*-values) are presented in Table 5.11.

First, the direct pathway from medical record burden to physician burnout was significantly established. The standardized path coefficient was 0.195 (*SE* = 0.037, C.R. = 4.407, $P < 0.001$), indicating that after controlling for other variables, medical record burden positively predicts physician burnout. Specifically, the more time physicians spend on medical record tasks, the stronger their experience of burnout.

Second, medical record burden exhibited significant positive effects on both latent mediating variables. The path coefficient to role stress was 0.271 (*SE* = 0.029, C.R. = 4.564, $P < 0.001$), and to job insecurity was 0.266 (*SE* = 0.034, CR = 3.999, $P < 0.001$). This suggests that medical record burden not only constitutes a quantitative workload but also significantly disrupts physicians' psychological role expectations and occupational stability perceptions.

Further analysis showed that both mediating variables had significant predictive effects on physician burnout. The standardized path coefficient of role stress to burnout was 0.288 (*SE* = 0.098, CR = 5.011, $P < 0.001$), and that of job insecurity was 0.377 (*SE* = 0.110, CR = 5.562, $P < 0.001$), both representing moderate-to-strong positive relationships. This indicates that role conflict and psychological instability significantly exacerbate physicians' burnout experiences.

Additionally, the study tested the direct effects of individual and organizational resources on physician burnout. Results showed that the path coefficient of psychological resilience to burnout was -0.065, which was negative but not statistically significant ($P = 0.057$). The path coefficient of perceived organizational support was 0.017 ($P = 0.612$), also nonsignificant. This suggests that in this study's sample, psychological resilience and perceived organizational support do not directly predict physician burnout but may exert moderating effects through interactions in specific contexts, with related results presented in subsequent chapters.

In summary, medical record burden has a significant direct impact on physician burnout and indirectly influences burnout through role stress and job insecurity, preliminarily validating the effectiveness of the proposed main effect pathways and theoretical model.

Table 5.11 Path analysis

Path	*B*	*Estimate*	*SE*	CR	*P*	Hypothesis
Medical Record Burden → Job Insecurity	0.266	0.135	0.034	3.999	***	Supported
Medical Record Burden → Role Stress	0.271	0.131	0.029	4.564	***	Supported
Role Stress → Physician Burnout	0.288	0.493	0.098	5.011	***	Supported
Job Insecurity → Physician Burnout	0.377	0.613	0.110	5.562	***	Supported
Medical Record Burden → Physician Burnout	0.195	0.162	0.037	4.407	***	Supported
Perceived Organizational Support → Physician Burnout	0.017	0.015	0.029	0.507	0.612	Not Supported
Psychological Resilience → Physician Burnout	0.065	0.068	0.035	1.906	0.057	Not Supported
Role stress × psychological resilience → Physician Burnout	-0.115	-0.118	0.033	-3.538	***	Supported
Job insecurity × perceived organizational support → Physician Burnout	-0.094	-0.098	0.034	-2.918	0.004	Supported

5.2.3 Mediation effect analysis

To further validate the mechanism through which medical record burden influences physician burnout, this study used the bias-corrected Bootstrap method to test mediating effects, with 5,000 resampling iterations and 95% confidence intervals (CIs) calculated to assess the statistical significance of indirect effects. Mediating effect pathways, estimated values, standard errors, significance levels, and confidence intervals are shown in Table 5.12.

The results indicate that the total effect of medical record burden on physician burnout was 0.374 (*SE* = 0.033, *P* = 0.012, *95% CI* = [0.298, 0.430]), with a direct effect of 0.195 (*SE* = 0.042, *P* = 0.016, *95% CI* = [0.096, 0.269]). This suggests that without considering any mediating variables, medical record burden itself can significantly and positively predict physician burnout.

In the mediating pathway analysis, role stress partially mediated the relationship between medical record burden and physician burnout. The estimated value of the indirect pathway (medical record burden → role stress → physician burnout) was 0.078 (*SE* = 0.023, *P* = 0.004), with a *95% CI* of [0.042, 0.132] (excluding 0), indicating a statistically significant mediating effect. This suggests that medical record burden indirectly increases physician burnout by enhancing role stress.

Meanwhile, job insecurity also exerted a significant mediating effect. The estimated value

of its pathway (medical record burden → job insecurity → physician burnout) was 0.100 (*SE* = 0.030, *P* = 0.005), with a *95% CI* of [0.053, 0.178], also statistically significant. This indicates that physicians facing high medical record burdens may experience stronger job instability perceptions, thereby triggering higher burnout levels.

These two mediating pathways form a dual psychological mechanism through which medical record burden influences physician burnout: on one hand, by triggering role conflict and ambiguity (role stress), and on the other hand, by activating concerns about job stability (job insecurity), both of which jointly exacerbate psychological exhaustion. The effect values of the two indirect pathways were 0.078 and 0.100, respectively, with a total indirect effect of 0.178 (*SE* = 0.040, *P* = 0.005, *95% CI* = [0.106, 0.276]). The magnitude of this total indirect effect is close to that of the direct effect, further validating the stability and theoretical rationale of the proposed mediating model.

Table 5.12 Mediation effect testing

Path Effect	*Estimates*	*SE*	*P*	*95%CI*	
				LB	*UB*
Total Effect	0.374	0.033	0.012	0.298	0.430
Direct Effect	0.195	0.042	0.016	0.096	0.269
Medical Record Burden→Role Stress→Physician Burnout	0.078	0.023	0.004	0.042	0.132
Medical Record Burden→Job Insecurity→Physician Burnout	0.100	0.030	0.005	0.053	0.178
Indirect Effect	0.178	0.040	0.005	0.106	0.276

5.2.4 Moderating effect analysis

Building on the mediation mechanism tests, this study further explored the moderating roles of resource variables in the process through which medical record burden influences physician burnout, specifically examining whether psychological resilience and perceived perceived organizational support can moderate the effects of role stress and job insecurity on burnout. To this end, multiple-group moderation models incorporating interaction terms were constructed, estimated using the product indicator method, and statistically tested for interaction effects via the Bootstrap approach.

5.2.4.1 Moderating effect of psychological resilience

First, psychological resilience has a significant negative moderating effect on the "role stress → physician burnout" path. The estimated value of the interaction term for the moderating path was -0.115 (*SE* = 0.031, *P* = 0.005), indicating that psychological resilience statistically significantly alleviates the impact of role stress on physician burnout. The further drawn

moderating effect Figure 5.2 shows that among physicians with a high level of psychological resilience, the marginal effect of role stress on physician burnout is significantly weakened; while among individuals with low psychological resilience, the slope of this path is significantly steeper. This suggests that psychological resources have a moderating function in high-pressure situations. Details are shown in Table 5.13.

Table 5.13 Moderating effect test

Path	Effect	*Estimates*	*SE*	*P*	*95%CI*	
					LB	*UB*
Medical Record Burden→Role Stress→Physician Burnout	Role Stress→Physician Burnout	0.288	0.060	0.008	0.172	0.419
	Role Stress*Psychological Resilience	-0.115	0.031	0.005	-0.179	-0.052

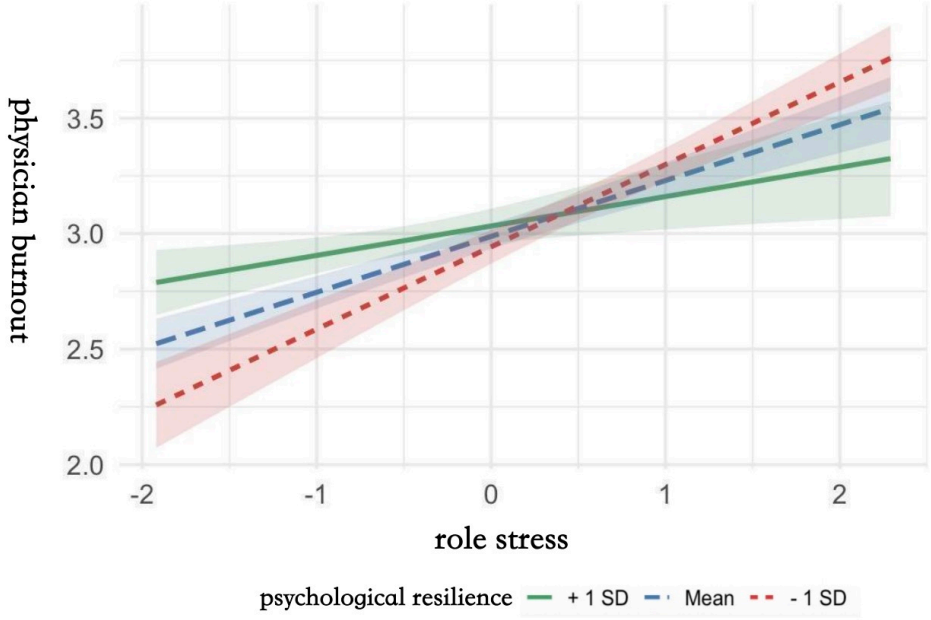

Figure 5.2 The moderating effect of psychological resilience on the influence of role stress on physician burnout

5.2.4.2 Moderating effect of Perceived Organizational Support

Second, in the "job insecurity → physician burnout" path, the moderating effect of perceived organizational support also reaches statistical significance. The interaction term had an estimated value of -0.094 (*SE* = 0.036, *P* = 0.012), indicating that perceived organizational support has a significant negative moderating effect on the relationship between job insecurity and physician burnout. The further drawn moderating effect Figure 5.3 shows that in a context with high perceived organizational support, even if physicians feel a certain degree of job insecurity, their level of physician burnout is relatively low; on the contrary, when perceived organizational support is low, the negative impact of job insecurity on physician burnout is

more significant. See Table 5.14 for details.

Table 5.14 Test of moderating effect of perceived organizational support

Path	Effect	*Estimates*	*SE*	*P*	*95%CI*	
					LB	*UB*
Medical Record Burden→Job Insecurity→Physician Burnout	Job Insecurity→Physician Burnout	0.377	0.060	0.009	0.267	0.489
	Job Insecurity* Perceived Organizational Support	-0.094	0.036	0.012	-0.162	-0.016

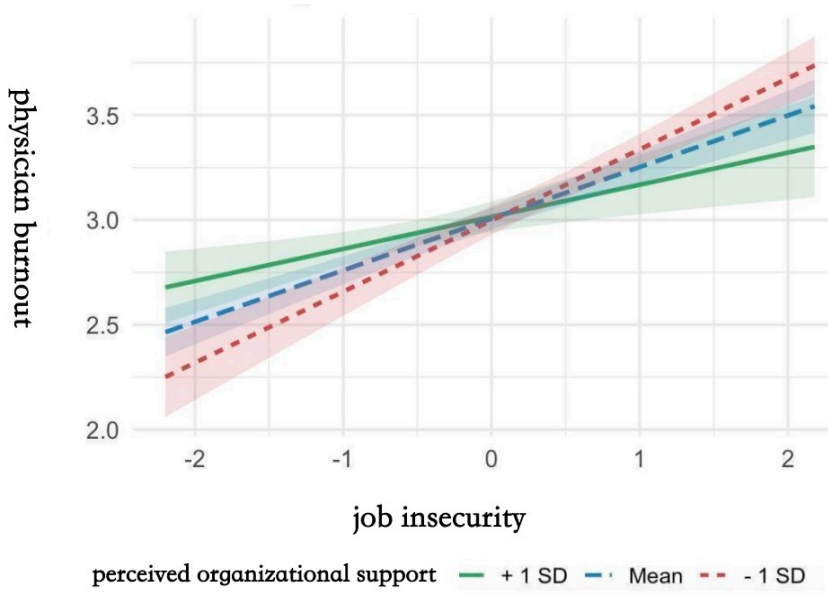

Figure 5.3 The moderating effect of perceived organizational support on the influence of job insecurity on physicial burnout

In summary, both types of resource variables exerted moderating effects in their respective pathways: psychological resilience moderated the impact of role stress on physician burnout, while perceived organizational support weakened the effect of job insecurity on burnout. This result further validates the core proposition of the Job Demands-Resources theory, which posits that individual and organizational resources can effectively counteract the psychological exhaustion caused by high job demands.

5.3 Integration of model pathways and summary of hypothesis testing

This study systematically examined the mechanism linking medical record burden to physician burnout through role stress and job insecurity using SEM. Psychological resilience and perceived organizational support were introduced as moderators to construct a comprehensive path model incorporating direct, mediating, and moderating effects. The

results indicate good overall model fit and empirical support for the main hypothesized pathways.

First, medical record burden had a significant direct positive effect on physician burnout, supporting Hypothesis H1. Specifically, the more time physicians spent on medical records during weekdays, weekends, and holidays, the higher their reported burnout levels.

Second, both role stress and job insecurity played significant mediating roles between medical record burden and burnout, supporting Hypotheses H2 and H3, respectively. This suggests that high documentation burdens simultaneously induce role ambiguity/conflict (role stress) and heighten concerns about job stability (job insecurity), each serving as distinct psychological mechanisms driving burnout.

Third, psychological resilience significantly moderated the "role stress → burnout" pathway (supporting H4), weakening the effect of role stress on burnout among physicians with higher resilience. Similarly, perceived organizational support significantly moderated the "job insecurity → burnout" pathway (supporting H5), reducing the sensitivity to job uncertainty and subsequent burnout when physicians perceived stronger institutional and emotional support from their organizations.

Across all main pathways, psychological resilience and perceived organizational support did not directly predict burnout but played critical moderating roles in moderating negative effects, as validated in the interaction analyses.

In summary, this study constructed and validated a comprehensive model of the mechanisms through which medical record burden influences physician burnout. The model not only reveals the direct threat of high documentation workloads to physician mental health but also clarifies the indirect pathways via "role stress → burnout" and "job insecurity → burnout." Additionally, it emphasizes the moderating roles of individual and organizational resources in moderating these effects, aligning with the theoretical frameworks of the Job Demands-Resources model and Conservation of Resources theory. These findings provide theoretical and empirical foundations for understanding the genesis of physician burnout.

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Chapter 6: Discussion

6.1 Discussion on variable scores and difference analysis

6.1.1 Discussion on scores and distribution characteristics of medical record burden

This study found that physicians' medical record burden during workdays, weekends, and holidays was moderately high, with the highest score during workdays, reflecting the administrative workload physicians face amid hospital informatization. A previous survey of 91 tertiary medical institutions nationwide showed that interviewed medical staff wrote 1–8 admission records and 3–21 progress notes per workday, with over half completing 7–15 records daily; 82.8% of respondents reported taking 20–60 minutes to complete one admission record, and 75.7% took 10–30 minutes for one progress note, consistent with this study's results (Fu et al., 2013). Although weekend and holiday medical record burden was relatively lower, it still indicated that physicians handle medical records during non-work hours, blurring the boundary between work and non-work time.

It is worth noting that there are significant differences in medical record burden among physicians of different ages, with younger physicians reporting significantly higher medical record burden than senior physicians. This may be related to the relatively insufficient clinical experience of younger physicians and their stronger dependence on medical record norms and quality control requirements. At the same time, the stricter medical record quality control standards and more complex case management in tertiary hospitals further increase the documentation pressure on younger physicians (Tan & He, 2004). In addition, physicians with lower professional titles also bear significantly heavier medical record burden. Physicians with primary and intermediate professional titles usually take on more basic diagnosis and treatment as well as documentation tasks. Moreover, although high-level electronic medical record systems have improved information integration, their operational complexity also makes physicians with lower professional titles face greater burdens during use, thereby increasing the workload of medical record documentation (Xu & Shu, 2022).

6.1.2 Overall status and distribution characteristics of physician burnout scores

In this study, the overall level of physician burnout is moderately high. The score of the

emotional exhaustion dimension is the highest, followed by the reduction in personal sense of achievement, and the score of depersonalization is the lowest. This result is similar to the results of the national survey on physician burnout in 2020, indicating that the current physician group generally suffers from work fatigue and physician burnout (Zheng et al., 2022). In terms of distribution characteristics, more than 30% of physicians are in a state of moderate to high burnout. This proportion is slightly higher than the 32.51% reported in the Meta-analysis of the detection rate of burnout among Chinese medical staff in 2021, indicating that the current problem of physician burnout cannot be ignored (Li et al., 2021).

Further analysis shows that there are significant differences in physician burnout among groups with different demographic characteristics. Specifically, the burnout level of young physicians is significantly higher than that of senior physicians, which may be related to young physicians' lack of clinical experience, greater work adaptation pressure, and occupational uncertainty. At the same time, the burnout degree of physicians with primary professional titles is significantly higher than that of physicians with senior professional titles. This may be because primary physicians take on more basic clinical and documentation work and face more pressure in career development and promotion. The above findings on the differences in physician burnout among different demographic characteristics are consistent with the results of a 2020 study (Goldberg et al., 2020; Liu & Liu, 2020).

6.1.3 Discussion on physician role stress and job insecurity levels

The study results showed that the role stress of physicians was at a moderate level, with the role overload dimension scoring the highest, followed by role conflict, and role ambiguity scoring the lowest. This indicates that physicians are primarily faced with the problem of excessive workload, while their cognition of job responsibilities is relatively clear. This finding is consistent with the results of a 2020 study on physician workload, which showed that most physicians believe their current work tasks exceed their reasonable capacity (Chen et al., 2020).

Regarding job insecurity, physicians' cognitive insecurity scores were higher than their emotional insecurity scores, indicating that the negative feelings from their rational assessment of occupational stability were stronger than the emotional unease at the affective level. In particular, young doctors have the highest level of job insecurity, which reflects that doctors at this stage are more aware of career uncertainty under the dual pressure of career development and family responsibilities. The above results are similar to previous studies (Wu et al., 2024).

6.1.4 Analysis of psychological resilience and perceived organizational support

The results of this study showed that physicians' psychological resilience was generally at a moderate level, indicating that they possess a certain ability for psychological adaptation and regulation, enabling them to maintain a relatively stable psychological state under high-intensity work pressure. Further comparison of different age groups found that psychological resilience was positively correlated with professional title, and senior doctors' psychological resilience was significantly higher than that of junior doctors, indicating that with the accumulation of professional experience, doctors gradually enhanced their ability to deal with stress and regulate emotions. This result was similar to previous studies (McKinley et al., 2019).

In terms of perceived organizational support, physicians' overall perception level was relatively low, especially with scores in the emotional support dimension lower than those in the instrumental support dimension. This indicates that most physicians generally lack humanistic care and emotional recognition from their organizations. Existing research has pointed out that low perceived organizational support not only affects physicians' job satisfaction and professional identity but may also weaken their ability to cope with work pressure. Conversely, enhancing perceived organizational support helps improve physicians' psychological resilience and overall well-being (Qiu et al., 2020; Zhou et al., 2020).

Overall, the analysis of variable scores and distribution characteristics indicates that in the current medical environment, physicians face high levels of medical record burden and role stress, with moderate-to-high levels of job insecurity and burnout. As potential protective factors, psychological resilience and perceived organizational support are not ideal in their current states. This comprehensive situation reflects the challenges to physicians' occupational health, which require attention and intervention at multiple levels.

6.2 Discussion on demographic differences

6.2.1 Impact of age on variable differences

The research results show that physicians of different age groups have significant differences in variables such as medical record burden, physician burnout, role stress, and job insecurity. Younger physicians report significantly higher medical record burden than senior physicians, and this finding is consistent with existing research results, that is, younger physicians tend to invest more time and energy in patient documentation (Goldberg et al., 2020). On the one

hand, due to their lack of experience, younger physicians often need to repeatedly check medical records to avoid mistakes; on the other hand, they may also invest more energy in recording to avoid potential risks out of high sensitivity to evaluation and accountability mechanisms.

At the same time, the level of physician burnout among younger physicians is also significantly higher than that among senior physicians. This difference supports the existing research conclusions on the relationship between age differences and physician burnout. The reasons for this difference may include insufficient clinical experience, weak sense of work control, poor adaptability to work requirements, as well as uncertainty and expectation gaps in the early stage of career development (Goldberg et al., 2020; Lyubarova et al., 2023; McMurray et al., 2000).

In addition, physicians of different age groups also show significant differences in terms of role stress and job insecurity. The study found that younger physicians report significantly higher role stress and job insecurity than senior physicians. This result is consistent with relevant research, indicating that younger physicians are more sensitive to career stability when facing multiple challenges such as career development bottlenecks, job promotion pressure, and family responsibility burdens (Dyrbye et al., 2014). At the same time, structural reforms in the medical industry, increased job mobility, and intensified performance appraisal mechanisms may also exacerbate younger physicians' worries about role ambiguity and job continuity, thereby increasing their level of subjective insecurity.

6.2.2 Discussion on professional title differences

This study found significant correlations between educational background, professional title, role stress, and physician burnout. Physicians with doctoral degrees reported significantly higher role stress than those with master’s or bachelor’s degrees, which may be related to the higher career expectations faced by highly educated physicians (Shanafelt et al., 2016). In terms of professional titles, physicians with intermediate and junior titles had significantly higher medical record burden than those with deputy senior or higher titles, consistent with previous studies showing that junior physicians often handle basic clinical work and extensive paperwork, while senior physicians focus on complex case management and quality supervision, with their documentation primarily involving key diagnostic and treatment decision records (Hersh et al., 2014).

This study found that there is a significant correlation between physicians' professional titles and their medical record burden, physician burnout, role stress, and job insecurity. Physicians

with intermediate and primary professional titles have significantly higher medical record burden than those with associate senior titles or above. This result is consistent with existing research, that is, junior physicians usually take on more basic diagnosis and treatment tasks and a large number of documentation work, while senior physicians focus more on the handling of complex cases and the control of medical quality, and their documentation work mainly revolves around key diagnosis and treatment decisions (Hersh et al., 2014).

It is worth noting that while physicians with primary professional titles bear a higher medical record burden, their levels of physician burnout, role stress, and job insecurity are all significantly higher than those of other professional title groups. This finding supports the view that physicians in the early stage of their careers are more likely to perceive uncertainty in future career development (Patel et al., 2018), suggesting that the career development stage may be a key factor in understanding the differences in physicians' work experience.

In addition, the study also observed a trend that physicians' psychological resilience levels gradually increase with the improvement of their professional titles. This result is consistent with the relevant research conclusions that there is a positive correlation between physicians' professional maturity and psychological adaptability (West et al., 2020). This indicates that with the promotion of professional titles and the accumulation of clinical experience, physicians have stronger psychological adjustment and recovery abilities when facing work pressure and challenges.

6.2.3 Significance of hospital level and EMR level differences

The analysis of hospital levels shows that physicians in Grade III Level A hospitals report significantly higher job insecurity than those in other hospitals. This result may be related to factors such as fierce internal competition in high-level hospitals, high performance appraisal pressure, and relatively crowded career promotion channels, which lead to physicians having a stronger sense of uncertainty about their job stability and career development prospects (Adler-Milstein et al., 2020). At the same time, physicians in Grade III Level A hospitals also have relatively higher role stress, reflecting that the complex organizational structure and strict management system of high-level hospitals may lead to physicians facing more role conflicts and ambiguity, thereby increasing their role stress levels (Shanafelt et al., 2019).

Analysis of electronic medical record (EMR) system levels indicated that physicians in hospitals using higher-level EMRs had significantly higher medical record burden than those in hospitals using lower-level systems. This finding is consistent with related research: although complex EMRs improve information integration, they simultaneously increase

physicians' operational burden and time investment. This discovery is crucial for understanding the relationship between hospital informatization and physicians' work experiences (Babbott et al., 2014). In addition, this phenomenon is also related to the number of patients in hospitals. The scale of inpatients in grade A hospitals is significantly higher than that in lower-level hospitals, and the burden of medical record writing is heavier per unit time.

6.3 Discussion on variable correlations

6.3.1 Correlation between medical record burden and role stress

Results of the correlation analysis showed a significant overall positive correlation between medical record burden and role stress. Among the three dimensions of role stress, the correlation with role overload was the strongest, followed by role conflict, and the correlation with role ambiguity was relatively weaker. This indicates that medical record tasks affect physicians' role stress primarily by increasing workload and triggering role conflicts, a result consistent with previous research on the impact of electronic medical record work on physicians' work-life balance (Sinsky et al., 2016). That research found that physicians spend nearly two hours on documentation for every hour of clinical work, with this "work within work" significantly increasing role burden.

Since paperwork often overlaps with clinical tasks, it easily causes distraction and task interruption, thereby amplifying the role stress that physicians face in actual work. These studies suggest that against the backdrop of increasingly strengthened medical informatization and performance orientation, reasonable allocation of medical record burden, optimization of processes and division of labor can help alleviate physicians' role stress and occupational exhaustion (Arndt et al., 2017).

6.3.2 Association between medical record burden and job insecurity

The study found that there is a moderate positive correlation between medical record burden and job insecurity, and the correlation with cognitive insecurity is stronger than that with affective insecurity. This indicates that a large number of medical record documentation tasks have a greater impact on physicians' rational evaluation of career stability rather than directly triggering emotional reactions. This result is consistent with previous studies, that is, physicians regard excessive paperwork as a threat to their core professional identity, believing that it weakens the core value of clinical practice, thereby triggering rational worries about

career continuity (Friedberg et al., 2014). In addition, studies have suggested that when medical record documentation tasks intrude into personal time, especially during periods that should originally belong to rest and family life, they may further blur the boundary between work and life, thereby strengthening physicians' perception of conflict between their professional role and life role (Shanafelt, Hasan, et al., 2015). The cognitive evaluation caused by such boundary ambiguity may become an important psychological mechanism that increases physicians' job insecurity.

6.3.3 Correlation patterns among role stress, job insecurity, and burnout

The correlation analysis showed that both role stress and job insecurity had moderate to strong positive correlations with physician burnout. Among the three dimensions of role stress, role overload had the strongest correlation with burnout, consistent with classic research identifying excessive workload as a primary predictor of burnout (Maslach & Leiter, 2016). Among the two dimensions of job insecurity, cognitive job insecurity had a stronger correlation with burnout than emotional job insecurity, supporting the prior view that threats to professional identity influence physician burnout (Linzer et al., 2016).

Notably, a significant positive correlation also existed between role stress and job insecurity, suggesting that the two may reinforce each other and jointly influence burnout, forming a complex impact network. This finding is consistent with previous research on the interaction among occupational stress factors for physicians (West et al., 2018).

6.3.4 Correlation characteristics of psychological resilience, perceived organizational support, and other variables

Psychological resilience had significant negative correlations with physician burnout, role stress, and job insecurity, but no significant correlation with medical record burden. This indicates that psychological resilience acts primarily by regulating stress responses rather than directly affecting workload, supporting prior research concluding that resilience serves as a coping mechanism for physicians (Zwack & Schweitzer, 2013). Perceived organizational support also had a significant negative correlation with physician burnout, particularly the strongest correlation with the emotional exhaustion dimension. This is consistent with classic research on the moderating effect of perceived organizational support on employees' stress responses (Eisenberger et al., 2002). The negative correlation between perceived organizational support and job insecurity was stronger than that with role stress, suggesting

that perceived organizational support may primarily function by enhancing career security, supporting prior views that organizational factors influence physicians' professional identity (Salvatore et al., 2018).

6.4 Discussion on the direct impact of medical record burden on physician burnout

6.4.1 Mechanism of the medical record burden-physician burnout relationship

The study results indicated a significant direct positive effect of medical record burden on physician burnout: the higher the medical record burden, the higher the level of physician burnout. This effect remained stable after controlling for demographic variables, indicating that medical record tasks have become an important work characteristic affecting physicians' occupational health. Further analysis revealed differences in the impact of medical record burden on burnout across different time periods: the effect of workday medical record burden was lower than that of non-worktime burden, suggesting that disruption of time boundaries may be a key factor exacerbating burnout.

This relationship mechanism can be explained by the Conservation of Resources Theory (Hobfoll, 1989), which posits that sustained depletion of individual resources without adequate recovery leads to energy exhaustion and burnout. Physicians handling medical records during non-work hours find it difficult to recover from work stress, creating a state of continuous resource loss. In particular, documentation work on rest days deprives physicians of time intended for resource recovery, forming a resource loss spiral, consistent with previous research on the dynamic balance between work and recovery (Demerouti et al., 2001).

6.4.2 Comparison with existing research

Findings on the relationship between medical record burden and burnout in this study are generally consistent with relevant domestic and foreign research, though some differences exist. Compared with a foreign study reporting a correlation coefficient (Shanafelt et al., 2016), the correlation in this study was slightly higher, possibly related to the characteristics of EMR usage in the Chinese medical context. Additionally, a study based on physicians' actual EMR usage time found that each extra hour of daily EMR processing increased burnout risk by 5.2%, a conclusion consistent in direction with the quantitative results of this study

(Gardner et al., 2019).

When compared with domestic research, the results of this study also support survey conclusions on the causes of physician burnout, indicating that documentation workload is one of the primary sources of physician burnout. Especially in contexts of tight medical resources and insufficient staffing, documentation tasks often intensify physicians' work pressure, further affecting their physical and mental health as well as job satisfaction (Li et al., 2022).

6.4.3 Association between time investment and psychological exhaustion

Data analysis showed that medical record burden had differential effects on the three dimensions of burnout: the impact on emotional exhaustion was the strongest, followed by depersonalization, and the effect on reduced personal accomplishment was relatively smaller. This indicates that medical record tasks induce burnout primarily by depleting physicians' psychological energy and causing emotional exhaustion, consistent with prior views that work load mainly affects the emotional exhaustion dimension of burnout (Maslach & Leiter, 2016).

Further path analysis revealed a significant positive correlation between the average weekly time physicians spent on medical record writing and emotional exhaustion. When weekly documentation time exceeded 15 hours, emotional exhaustion scores increased significantly, similar to a study finding that U.S. primary care physicians spent nearly two hours on EMR work for each hour of patient contact, with such unbalanced time allocation significantly increasing burnout risk (Arndt et al., 2017). Notably, survey data showed that physicians spent an average of 42.3% of total medical record writing time on documentation during non-clinical hours, a shadow work phenomenon consistent with research indicating that medical record writing severely invades physicians' personal time and serves as a critical mediating variable linking work-family conflict to burnout (Singh Ospina et al., 2019).

6.5 Discussion on the mediating role of role stress

6.5.1 How medical record burden induces role stress

Mediating effect analysis revealed that role stress plays a significant mediating role in the relationship between medical record burden and physician burnout. Medical record burden positively predicts role stress, which in turn positively predicts physician burnout, indicating that medical record tasks affect burnout partially by increasing physicians' role stress.

In-depth analysis shows that medical record writing induces role stress through multiple mechanisms. Heavy documentation tasks directly increase physicians' workload, causing role overload. Physicians spend an average of 15–25 minutes completing electronic medical record entries per patient, which is disproportionate to actual consultation time, leading to workload imbalance. This phenomenon aligns with previous research on "work within work" for physicians (Sinsky et al., 2016). Frequent updates and complex operation processes of EMRs create uncertainty about work requirements, leading to role ambiguity. Some interviewed physicians reported being "unsure" or "unfamiliar" with EMR operations, reflecting technical maladaptation, consistent with prior findings that EMRs contribute to role ambiguity among physicians (Babbott et al., 2014).

6.5.2 Different manifestations of role conflict, role ambiguity, and role overload

Research data indicate that the three dimensions of role stress exhibit distinct characteristics in the mediating path between medical record burden and burnout. Role overload has the strongest mediating effect, followed by role conflict, with role ambiguity having a relatively weaker mediating effect. Role overload primarily manifests as excessive tasks and time scarcity: some physicians believed medical record writing "occupied excessive time," and others reported being "unable to complete tasks within scheduled work hours," consistent with a study identifying documentation as the primary time-consuming factor in physicians' work (Wetterneck et al., 2012). Role conflict manifests as tension between different roles: some physicians reported that medical record writing "reduced patient communication time," while others indicated frequently needing to "choose between patient care and completing medical records," reflecting conflicts between professional roles and administrative demands, consistent with research on challenges to physician professional autonomy (Rao et al., 2017). Role ambiguity is mainly manifested as uncertainty about medical record documentation standards and requirements, with "unclear specific standards for medical record quality control" and "frequent changes in the interface and functions of electronic medical record systems" as its main characteristics. This kind of uncertainty is similar to previous research results on the opacity of electronic medical record workflows (Kroth et al., 2019).

6.5.3 Analysis of role stress transmission mechanisms

Role stress transmits the impact of medical record burden to burnout through the following mechanisms: First, role stress—especially role overload—directly depletes physicians' time

and energy resources, leading to energy exhaustion. Second, role conflict creates psychological tension from opposing role expectations. Third, role ambiguity increases cognitive burden and decision-making pressure by making work requirements uncertain. These three stress mechanisms align with the JD-R model model (Bakker & Demerouti, 2017), where work demands (e.g., medical record tasks) lead to burnout by depleting individual resources (e.g., time, energy, attention) and intensifying stress responses. Notably, role overload, role conflict, and role ambiguity are not independent but form a complex network of interactions. For example, role overload may exacerbate role conflict, and role ambiguity may further intensify role conflict. This compound effect of role stress is consistent with previous research on the interaction of multiple stress factors in physicians' work environments (Linzer et al., 2016).

6.6 Discussion on the mediating role of job insecurity

6.6.1 Medical record burden and perceptions of work stability

Results of the mediating effect analysis indicated that job insecurity plays a significant mediating role in the relationship between medical record burden and physician burnout. Medical record burden positively predicts job insecurity, which in turn positively predicts physician burnout. This suggests that heavy medical record tasks not only directly affect physicians' burnout but also indirectly exacerbate burnout by increasing their perception of career instability.

In-depth analysis reveals that medical record tasks influence physicians' work stability perceptions through two main mechanisms. On one hand, physicians spend substantial extra time refining medical records to meet quality control requirements. This non-clinical burden causes doubt about the core value of their professional capabilities, leading to concerns about career development and increased job insecurity (Wang et al., 2005). On the other hand, survey data show that physicians worry more about medical record quality control assessment results than clinical skill evaluations, indicating that medical record writing has become a key factor affecting their professional evaluation and promotion (Wallace et al., 2009).

6.6.2 Distinctions between emotional and cognitive insecurity

Further analysis showed that medical record burden had a significantly stronger effect on cognitive insecurity than on emotional insecurity, indicating that medical record tasks increase

job insecurity primarily through influencing physicians' rational assessment of career prospects and stability rather than directly triggering emotional reactions. Cognitive insecurity is characterized by rational concerns about career prospects, which aligns with the previously proposed framework for assessing the responsibilities and risks of medical documentation work (Greenhalgh et al., 2014). Emotional insecurity, in contrast, manifests as emotional reactions. The lower incidence of emotional reactions compared to cognitive concerns suggests that physicians' insecurity stems more from rational analysis than emotional responses, consistent with research on the cognitive and emotional dimensions of job insecurity (Probst, 2003). Mediating effect analysis showed that the mediating effect of cognitive insecurity was stronger than that of emotional insecurity, indicating that medical record burden affects burnout primarily through influencing physicians' cognitive evaluations rather than emotional responses. This finding supports the importance of cognitive mediation in the relationship between work characteristics and health outcomes (Huang et al., 2012).

6.6.3 Mechanisms of job insecurity-induced burnout

The impact mechanism of job insecurity on physician burnout is mainly manifested in the following aspects: First, job insecurity causes physicians to remain in a state of alert, consuming cognitive resources and emotional energy. This resource consumption process supports previous conclusions that job insecurity affects burnout through the path of emotional exhaustion (De Witte et al., 2016). Second, long-term insecurity reduces physicians' intrinsic motivation and sense of professional meaning, which is consistent with previous views on the relationship between loss of professional meaning and burnout (Maslach & Leiter, 2016). Finally, job insecurity may also trigger physicians' defensive behaviors. Such behaviors not only consume additional resources but may also conflict with physicians' professional values, further exacerbating physician burnout. This phenomenon is consistent with previous research results on the relationship between defensive medical behaviors and physician burnout (Linzer et al., 2016).

6.7 Discussion on the moderating effect of psychological resilience

6.7.1 Moderating mechanism of psychological resilience

The analysis of moderating effects in this study shows that psychological resilience plays a significant moderating role in the relationship between role stress and physician burnout.

Specifically, when physicians face high role stress, their levels of physician burnout are significantly affected by their psychological resilience: for physicians with high psychological resilience, the negative impact of role stress on burnout is significantly weakened, while those with low psychological resilience are more vulnerable to such negative impact. This finding verifies Research Hypothesis H4, that is, psychological resilience, as an individual psychological resource, can moderate the intensity of the impact of role stress on physician burnout.

Role stress stems from conflicts and ambiguities when physicians perform multiple roles (Tugade & Fredrickson, 2004). In medical record documentation tasks, role stress manifests as multiple troubles such as unclear task definition, obvious responsibility conflicts, and limited time resources (Smith et al., 2008). However, not all physicians will show the same degree of physician burnout when facing similar role stress. Differences between individuals mainly come from differences in psychological resources, and psychological resilience is one of the key variables (Sonnentag & Fritz, 2007).

6.7.2 Impact of individual differences on stress responses

The results show that under similar levels of role stress, the physician burnout scores of physicians with high resilience are significantly lower than those with low resilience. For example, in situations of role ambiguity such as unclear medical record requirements and frequent changes in recording rules, physicians with low resilience often show significant emotional exhaustion and lack of personal sense of achievement, while those with high resilience are more able to maintain emotional stability and professional engagement. This indicates that psychological resilience can reduce the negative impact on physician burnout by alleviating the pressure perception caused by role cognitive dissonance (Connor & Davidson, 2003). The moderating effect varies among different groups. The analysis shows that the moderating effect of psychological resilience is stronger for young physicians. This may be because young physicians are not yet mature in role cognition and organizational experience, and they rely more on their own psychological adaptability rather than institutional or experiential resources when facing role conflicts. In contrast, senior physicians may have already possessed stronger task coping skills and perceived organizational support, so the fluctuations in their stress perception and burnout are relatively less dependent on psychological resilience. This age difference is highly consistent with the view proposed by Luthans et al. that psychological capital is more decisive in the early stages of a career (Luthans et al., 2007).

6.7.3 Theoretical explanations for the protective role of psychological resources

According to the Conservation of Resources Theory, psychological resilience is an important individual resource that can help physicians resist resource loss caused by role stress. When physicians face role stress such as unclear responsibilities and time conflicts, psychological resilience can improve their perception of resources, thereby reducing the risk of emotional exhaustion and maintaining psychological balance. The results of this study show that under high role stress, the burnout level of physicians with high psychological resilience is still significantly lower than that of those with low resilience, reflecting the protective moderating effect of psychological resources. The JD-R Model points out that individual psychological resources can mitigate the negative impact of job demands on physician burnout through moderating effects (Bakker & Demerouti, 2017). In this study, role stress, as an extended job demand, poses continuous challenges to physicians. Physicians with high resilience can effectively cope with role ambiguity and conflicts through more positive stress cognition and strategic coping, achieving control and recovery of resource consumption, thereby reducing the occurrence of physician burnout (Bakker & Demerouti, 2017). Psychological resilience can also function by changing the path of individuals' subjective evaluation of role stress (MacNair & Elliott, 1992). Physicians with high resilience tend to understand multiple role tasks as professional challenges rather than burdens, and this cognitive reappraisal mechanism effectively enhances their coping confidence and adaptability. Survey data shows that 42.7% of physicians with high resilience regard administrative recording work as part of their professional responsibilities, while only 21.8% of those with low resilience hold the same view. Such differences in evaluation methods significantly affect the intensity and direction of the conversion from role stress to burnout (Sonnentag & Fritz, 2007).

6.8 Discussion on the moderating effect of perceived organizational support

6.8.1 The moderating effect of perceived organizational support on job insecurity

The results of the moderating effect analysis show that perceived organizational support plays a significant moderating role in the relationship between job insecurity and physician burnout. Specifically, when the level of perceived organizational support is low, the positive relationship between job insecurity and physician burnout is stronger; when the level of perceived organizational support is high, this relationship is significantly weakened. This indicates that perceived organizational support can alleviate the negative impact of job

insecurity on physician burnout. Further analysis reveals that perceived organizational support mitigates job insecurity through multiple mechanisms: First, perceived organizational support enhances physicians' sense of resource availability and sense of control. Physicians in a high-organizational-support environment report a significantly higher sense of work control than those in a low-organizational-support environment. This is consistent with previous research findings that perceived organizational support enhances employees' sense of control (Eisenberger et al., 2002). Second, perceived organizational support reduces the actual medical record burden by providing information and tool support. In hospitals with high perceived organizational support, some physicians report that they have assistance in handling part of the medical record work. These practical support measures are negatively correlated with both paperwork burden and job insecurity. This supports the research conclusion on the importance of workflow optimization and team support in reducing physicians' paperwork burden (Colligan et al., 2016). Third, perceived organizational support strengthens physicians' sense of belonging and social identity, thereby alleviating the psychological pressure caused by career uncertainty. This is consistent with previous research results on the satisfaction of employees' need for belonging through perceived organizational support (Rhoades & Eisenberger, 2002).

6.8.2 The role of organizational factors in physician occupational health

The research results emphasize the core position of organizational factors in maintaining physicians' occupational health. Compared with individual psychological traits (such as psychological resilience), perceived organizational support plays an equally important role in alleviating physician burnout caused by job insecurity. This indicates that physician burnout is not only a problem of insufficient individual coping but also a product of organizational environmental factors. Hospital organizational culture and management practices have a significant impact on physicians' professional experience. In hospitals with higher organizational justice, physicians report significantly lower job insecurity than those in hospitals with lower organizational justice. Hospital management transparency is negatively correlated with physician burnout, indicating that sound organizational governance can reduce physicians' psychological pressure. These findings are consistent with previous research results on the key impact of organizational leadership and culture on physicians' job satisfaction (Shanafelt, Gorringe, et al., 2015). It is worth noting that the hospital's organizational policies on medical record documentation directly affect physicians' work experience. This indicates that organizations can significantly reduce physicians' role stress

by establishing clear work norms and expectations, which supports previous research findings on the impact of work environment improvement on physicians' occupational health (Linzer et al., 2015).

6.8.3 Regulatory mechanisms of support systems on burnout

The study found that perceived organizational support systems regulate the formation process of physician burnout through multiple paths. Instrumental support (such as sharing workload and providing technical assistance) can directly reduce physicians' work demands and is significantly negatively correlated with emotional exhaustion. This indicates that in a high-pressure work environment, the input of actual work resources helps moderate work pressure, which is consistent with previous research results (Halbesleben, 2006). Affective support can enhance physicians' sense of professional value and self-efficacy and is significantly negatively correlated with the dimension of reduced personal sense of achievement. This shows that affective support helps maintain physicians' sense of professional identity, thereby reducing physician burnout, which is consistent with a study on the role of professional identity in physician burnout (Qu et al., 2023).

Multi-level analysis shows that the moderating effect of perceived organizational support exists at both the hospital level and the department level, but support at the department level has a greater impact on physician burnout than that at the overall hospital level. This indicates that the direct work environment is particularly important for physicians' occupational health, which is consistent with previous research results on the core role of department leaders in physicians' professional well-being (Swensen et al., 2016). This finding is also consistent with previous studies on the relationship between career stages and support needs (Tarcan et al., 2017).

Chapter 7: Management Strategies to Alleviate Physician Burnout

7.1 Strategies for managing medical record burden

7.1.1 Rational allocation of documentation time and workload

Based on the study's findings that medical record burden is significantly correlated with physician burnout, rationally allocating documentation time and workload emerges as the primary strategy to reduce physician burden. Hospital management should reassess physicians' workload, establish scientific workload standards, and integrate medical record writing time into physicians' workload calculation systems. Specific measures include:

First, develop a scheduling system based on actual workload to reserve dedicated time for medical record documentation. For example, implement documentation slots during daily clinical work, allowing physicians to complete medical records in an undisturbed environment and avoiding efficiency loss and increased psychological burden caused by fragmented work.

Second, set reasonable patient admission quotas to ensure physicians have sufficient time for high-quality documentation. Survey data show that when a physician's daily patient intake exceeds 10, the quality of medical record completion declines significantly, and the delayed completion rate rises. Hospitals should set differentiated admission caps according to department characteristics and case complexity to balance time allocation between clinical service and documentation.

Third, implement a workload credit system for medical record writing, integrating it into performance evaluation and workload calculation. For instance, assign workload credits based on record complexity, completion time, and quality standards to ensure fair recognition and reasonable compensation for documentation work, alleviating physicians' psychological burden.

Finally, strictly regulate non-worktime documentation to prevent excessive infringement on physicians' rest time. Hospital management should clearly define documentation requirements outside work hours and use intelligent reminders in EMR to prompt breaks during prolonged non-worktime usage, protecting physicians' recovery time.

7.1.2 Optimization and simplification of electronic medical record

The design and user experience of EMR directly impact physicians' work efficiency and psychological burden. Addressing the identified system complexity, improvements should focus on the following aspects:

First, optimize user interfaces and workflows to reduce unnecessary operational steps. Current data show that completing an average outpatient record requires 40–60 clicks, and an inpatient record requires 80–120 clicks. Redesigning interface layouts, streamlining navigation, and enhancing accessibility of common functions can reduce operational steps by over 30%, significantly improving work efficiency.

Second, develop smart templates and personalized settings to accommodate department-specific and individual preferences. Allowing physicians to customize recording templates, shortcut keys, and frequently used phrases, while creating standardized templates for common diseases, can significantly reduce documentation time.

Third, optimize system interaction logic to improve response speed and stability. System lag and crashes are major pain points for physicians; upgrading hardware, optimizing database structures, and improving network architecture can ensure smooth system operation and eliminate time waste and stress caused by technical issues.

Fourth, establish a user feedback mechanism for continuous system improvement. Hospitals should form an EMR optimization team comprising clinicians, IT experts, and user experience designers to regularly collect feedback, identify system pain points, and drive iterative updates. User-centered design has been proven to significantly enhance physicians' satisfaction and efficiency with EMR.

7.1.3 Application of assistive technologies and artificial intelligence

Emerging assistive technologies and artificial intelligence (AI) solutions offer new pathways to reduce physicians' medical record burden. Research indicates that appropriate technical assistance can effectively improve documentation efficiency, with specific measures including:

First, promote the application of speech recognition technology in clinical documentation. Tested medical speech recognition systems can increase documentation speed by 2–3 times, especially for lengthy medical histories and operative reports. Hospitals should introduce specialized medical speech recognition systems optimized for department-specific terminology libraries to enhance recognition accuracy.

Second, develop intelligent auxiliary diagnosis and automatic coding technologies.

Leveraging AI to assist with diagnostic coding, medical insurance coding, and common clinical pathway selection can reduce manual query and input time. For example, systems that automatically recommend ICD-10 codes based on record content can shorten coding time by over 50%.

Third, use natural language processing to assist with record structuring and quality control. Such technologies can automatically identify key information in medical records, flag missing items, and assist with structured and standardized documentation, reducing physicians' review and revision burdens.

Fourth, explore mobile documentation and remote access solutions. Through mobile devices and secure remote access technologies, physicians can manage records more flexibly, avoiding work backlogs caused by location constraints. Mobile design based on user needs can effectively enhance the convenience and timeliness of medical record documentation and optimize physicians' work process experience.

7.1.4 Redesign of medical record documentation processes

Beyond technical improvements, systematic redesign of documentation processes is a critical approach to burden reduction:

First, promote a team-based documentation model with clear role differentiation among physicians, nurses, and physician assistants. Adopting collaborative recording methods—such as assigning nurses to collect basic information and vital signs, physician assistants to organize initial medical histories, and physicians to focus on diagnostic analysis and treatment decisions—forms a multi-level documentation team.

Second, simplify record content requirements to avoid over-documentation. Research reveals that physicians often over-document to meet inspection and legal risks, increasing unnecessary workload. Hospitals should collaborate with quality control departments to define minimal requirements for different record types, streamlining content while ensuring medical quality and legal compliance.

Third, optimize the record review process to reduce repeated revisions. The current multi-level review system with multiple rework cycles increases physician workload. Implementing early-warning review mechanisms to provide real-time prompts for non-compliant content during documentation can minimize post-hoc revisions. Additionally, streamlining review steps and clarifying review standards—focusing on objective criteria rather than individual preferences—can eliminate unnecessary revisions.

Finally, establish a documentation support center to provide professional assistance.

Hospitals can form dedicated support teams to handle common inquiries, template creation, technical training, and complex record assistance, offering timely and effective support to reduce physicians' stress in handling complicated documentation alone.

7.2 Strategies for managing role stress

7.2.1 Measures to clarify role expectations

The study identified role ambiguity as a significant contributor to physicians' role stress. To alleviate stress caused by unclear roles, hospitals should adopt the following measures to clarify role expectations:

First, develop detailed job descriptions that explicitly list physicians' specific responsibilities and work standards in areas such as clinical service, teaching/research, administrative tasks, and medical record documentation. These descriptions should be tailored to physicians' professional titles, specializations, and job characteristics to avoid "one-size-fits-all" requirements that increase role conflict.

Second, establish clear medical record documentation norms and quality standards. Some physicians reported ambiguous understanding of medical record quality control requirements. Hospitals need to develop refined guidelines for medical record documentation, specifying the basic frameworks, core content, and evaluation criteria for different types of medical records. This will reduce uncertainty and anxiety during the documentation process and enhance the consistency and standardization of medical record quality.

Third, improve the performance evaluation index system to clarify work priorities and expected outcomes for physicians. Evaluation indicators should cover multiple dimensions such as medical quality, patient satisfaction, team collaboration, and documentation work, with balanced weightings to avoid role confusion caused by overemphasizing one aspect at the expense of others.

Finally, establish regular communication and feedback mechanisms to ensure physicians stay informed of evolving work expectations. Department directors should conduct one-on-one meetings with physicians to understand challenges, clarify requirements, and provide guidance. Through such regular communication, physicians can significantly reduce the level of role ambiguity.

7.2.2 Management of work role boundaries

Role conflict is closely linked to blurred work boundaries; strengthening boundary management can alleviate physicians' role stress:

First, clearly define the responsibilities of physicians and other healthcare team members. Develop detailed guidelines for work division, specifying the boundaries and collaboration points among physicians, nurses, technicians, and administrative staff to avoid role confusion from overlapping or missing responsibilities. For example, designate nurses to record vital signs and collect basic information, reducing physicians' time spent on non-core tasks.

Second, set reasonable work-time boundaries to protect physicians' rest and recovery time. Hospitals should establish clear policies on working hours, limiting non-worktime demands to prevent unbounded work expansion. For instance, restrict routine documentation requests during nights and holidays except in special cases, respecting physicians' personal time boundaries.

Third, implement a task classification and handling mechanism to allocate physician resources rationally. Categorize clinical and documentation tasks by urgency and complexity into different levels with corresponding processing workflows and time limits, avoiding role conflict from equally prioritizing all tasks.

Fourth, cultivate physicians' boundary management skills. Through training and guidance, help physicians learn to set work boundaries, manage time, and prioritize tasks, enhancing their ability to handle multiple role demands. Physicians who received boundary management training showed a significant reduction in perceived role conflict.

7.2.3 Optimization of physician-nurse collaboration

Enhancing physician-nurse collaboration is an effective way to reduce role stress, particularly role overload:

First, promote a Team-Based Care model by forming core medical teams comprising physicians, nurses, and physician assistants to share responsibilities and optimize resource allocation. In this model, nurses can take on more patient education, basic information collection, and follow-up tasks, while physician assistants assist with routine orders and initial documentation, allowing physicians to focus on complex decisions and critical clinical work.

Second, establish a collaborative documentation mechanism. Nurses can record vital signs, nursing measures, and patient responses; technicians can directly input examination results into the EMR; and pharmacists can review medication records.

Third, optimize communication processes and tools for healthcare teams. Develop structured handover tools, collaborative platforms, and instant messaging systems to reduce communication costs and duplicate record-keeping. For example, adopting the Situation-Background-Assessment-Recommendation (SBAR) structured communication model improves efficiency and minimizes role confusion from poor communication.

Fourth, adjust human resource allocation to ensure reasonable physician-nurse ratios. Sufficient nursing and auxiliary staff are fundamental to effective collaboration. When the ratio of medical staff to nurses is unreasonable, physicians' sense of role overload significantly increases. Hospitals should allocate human resources reasonably based on department characteristics and workload assessments to avoid ineffective workload sharing due to staffing shortages.

7.2.4 Role training and adaptability enhancement

Enhancing physicians’ ability to cope with role stress is a critical component of management strategies:

First, provide role adaptation training for newly hired physicians. Research shows that young physicians with less than five years of experience perceive higher role stress, especially in role ambiguity. Hospitals should offer comprehensive onboarding training covering job responsibilities, workflows, documentation norms, and quality control requirements to facilitate rapid role adaptation.

Second, conduct specialized training for EMRs. Unfamiliarity with EMR operations is a major source of role stress. Regular training on system functions, template usage, shortcuts, and troubleshooting can improve efficiency and reduce stress from technical barriers.

Third, provide training on role conflict management and time management skills. Through case analysis, role-playing, and experience sharing, help physicians learn how to balance multiple role demands, schedule work time reasonably, set task priorities, and improve their ability to manage role conflicts.

Finally, establish an experience inheritance and mentoring system. Assign senior physicians as mentors to new physicians, providing personalized guidance and support, and sharing experiences and techniques for coping with role stress. New physicians with fixed mentor guidance adapt to their roles more quickly and exhibit significantly lower levels of role stress.

7.3 Strategies for managing job insecurity

7.3.1 Mechanisms for stable employment security

The study identified job insecurity as a critical mediating variable linking medical record burden to physician burnout. Establishing stable employment security mechanisms helps alleviate physicians' job insecurity:

First, improve the physician employment contract system to provide long-term employment guarantees. Hospitals should develop differentiated contract systems based on physicians' career stages, such as offering long-term or open-ended contracts to senior physicians and clear renewal conditions and career paths to young physicians, enhancing expectations of employment stability.

Second, establish a reasonable performance evaluation system and reduce the proportion of medical record documentation in assessments. When the quality of medical record documentation accounts for an excessively high percentage in performance evaluations, physicians' job insecurity significantly increases. Hospitals should construct a multi-dimensional evaluation system that balances indicators such as clinical competence, medical quality, patient satisfaction, and teaching-research contributions, avoiding over-reliance on single factors that may undermine career stability.

Third, implement moderate mechanisms to mitigate the impact of short-term performance fluctuations on physicians' job security. For example, use quarterly or annual average performance evaluations instead of monthly assessments as the key evaluation basis; establish appeal and adjustment mechanisms for performance evaluations, allowing physicians to explain special circumstances and appeal unfair evaluations, thereby preventing insecurity from isolated incidents.

Finally, provide transparent occupational security policies to reduce uncertainty. Hospitals should clearly define standards and procedures for promotion, contract renewal, job transfer, and dismissal, regularly communicate physicians' career status and prospects, and avoid excessive anxiety from opaque information.

7.3.2 Development of career advancement pathways

Sound career development pathways are essential for reducing physicians' job insecurity:

First, construct diversified career development paths. In addition to traditional administrative and academic promotion tracks, establish directions such as clinical experts,

teaching experts, and research experts, enabling physicians with different strengths and preferences to find suitable trajectories.

Second, set clear promotion criteria and timelines. Hospitals should define explicit promotion requirements for different physician levels and types, including specific indicators for work experience, clinical competence, academic achievements, and management contributions, with reasonable promotion cycle expectations to avoid career uncertainty from vague or changing standards.

Third, offer targeted career development support. Provide differentiated measures based on physicians' career stages and goals, such as clinical skill training and research guidance for young physicians, management capability development and subspecialty opportunities for mid-career physicians, and mentorship roles for senior physicians, forming a comprehensive support system.

Finally, establish regular career development evaluation and guidance mechanisms. Department directors or human resources departments should conduct annual career development interviews with physicians to assess goal progress, clarify next-stage directions and objectives, and provide necessary resources and guidance.

7.3.3 Transparent and fair evaluation systems

The transparency and fairness of evaluation systems directly impact physicians' job security:

First, develop objective and quantifiable performance evaluation indicators. Hospitals should formulate scientific indicators according to department and job characteristics, ensuring alignment with medical work rules and objective reflection of work quality and contributions. For medical record documentation evaluation, adopt methods like random sampling review, multi-expert assessment, and result feedback to enhance objectivity and reliability.

Second, implement open and transparent evaluation processes. Disclose evaluation criteria, procedures, and result applications to physicians, regularly publish statistical analyses of evaluation data, and help them understand their relative position and improvement areas.

Third, establish multi-stakeholder evaluation mechanisms. Medical record evaluation should involve not only quality control departments but also clinical experts, medical insurance personnel, and legal staff to assess quality from multiple perspectives, avoiding one-sided evaluations and enhancing trust in the system.

Finally, provide timely and detailed evaluation feedback and improvement support. Hospitals should offer specific results and actionable suggestions rather than simple pass/fail

judgments, along with training and resources for improvement.

7.3.4 Enhancement of patient-physician risk management systems

Risks in patient-physician relationships are a major source of job insecurity for physicians; improving risk management is crucial:

First, establish legal risk prevention mechanisms for medical records. Hospitals should convene legal and clinical experts to develop guidelines on legal risks in documentation, clarify potential risk points and preventive measures, and provide legal consultation services to address physicians' concerns, alleviating legal risk anxieties.

Second, improve medical dispute prevention and resolution processes. Strengthen risk communication and standardized informed consent during treatment, establish mediation institutions for patient-physician disputes, and define clear procedures and liability standards to reduce uncertainty.

Third, establish medical risk-sharing mechanisms. Improve medical liability insurance systems to provide comprehensive practice risk coverage, set up compensation funds for unforeseeable medical risks, and clarify the boundaries between institutional and individual liability to avoid excessive individual blame, significantly reducing risk-related insecurity.

Finally, strengthen the supportive functions of medical record quality management. Quality control should serve as a preventive and supportive tool rather than just a punitive measure. Implement pre-documentation review, intelligent prompts, and expert guidance to help physicians avoid risks during recording, reducing disputes and legal risks at the source and enhancing job security.

7.4 Strategies to enhance physicians' psychological resilience

7.4.1 Psychological resilience training programs

Research indicates that psychological resilience can significantly moderate the negative impact of medical record burden on burnout. Targeted resilience training programs are effective in enhancing physicians' stress resistance:

First, develop physician-specific psychological resilience training curricula. Design content tailored to the unique stressors of physicians' work, including core modules such as cognitive restructuring, emotion regulation, proactive coping, and meaning-making. Adopt a mix of workshops, group discussions, and online courses to improve engagement and

practicality.

Second, implement tiered and sustained training plans. Physicians at different resilience levels and career stages require different focuses. For example, new hires may need foundational resilience building and basic stress coping, mid-career physicians may focus on work-life balance and career meaning reconstruction, and managers may prioritize leadership resilience and team support skills. Training should be gradual and include regular reinforcement to ensure long-term effects.

Third, integrate real-workscene application exercises. Link training content to daily challenges like EMR quality control pressure, time conflicts, and patient communication. Use role-playing, case analysis, and on-site guidance to help physicians apply resilience skills in practice.

Finally, establish evaluation and feedback mechanisms. Use standardized tools to measure resilience changes, collect data on stress perception and coping strategies, and adjust content accordingly.

7.4.2 Dissemination of stress management techniques

Beyond resilience training, specific stress management techniques help physicians cope effectively:

First, promote practical relaxation and meditation methods. Hospitals can offer brief stress management courses teaching deep breathing, progressive muscle relaxation, and mindfulness meditation—techniques that take 5–10 minutes and fit into work breaks.

Second, introduce cognitive-behavioral techniques to help physicians identify and adjust irrational beliefs. Many physicians exhibit cognitive patterns such as perfectionism, excessive responsibility, and catastrophizing thinking, which exacerbate their perception of work stress. Through cognitive-behavioral training, physicians can learn to recognize these thought patterns and adopt more flexible and rational ways of thinking, thereby reducing psychological stress.

Third, provide training on time management and work boundary setting techniques. Many physicians face time pressure and blurred work-life boundaries. Targeted teaching of time management strategies and boundary setting techniques can help physicians manage their time and work rhythm more effectively, thereby reducing the risk of physician burnout.

Finally, establish a stress early-warning and intervention mechanism. Hospitals can regularly assess physicians' stress levels and provide timely interventions for high-risk individuals. For example, a self-assessment stress application can be developed, where the

system automatically recommends corresponding support resources or refers to professional counseling when physicians continuously report high stress levels.

7.4.3 Construction of occupational meaning

Occupational meaning is a key component of psychological resilience and a powerful moderate against burnout:

First, conduct career value exploration activities. Use workshops, reflection journals, and value cards to help physicians clarify core professional values and link daily tasks to higher professional missions. When physicians connect routine work to broader values, tolerance for tedious tasks increases significantly.

Second, foster a work atmosphere that creates meaningful connections. Hospital and department managers should emphasize the intrinsic link between medical record documentation and patient safety, medical quality, and professional development. Through case sharing and experience exchange, physicians can be helped to understand the clinical value and legal significance of paperwork, enabling them to view daily tasks from a broader perspective.

Third, establish an achievement reinforcement mechanism. Regularly hold excellent record competitions, complex case discussions, and clinical experience sharing to showcase professional capabilities and foster peer recognition, transforming documentation from a bureaucratic task into a medium for professional expression.

Fourth, promote a mission-driven team culture. Regularly discuss team values and their direct impact on patient care, cultivating collective pride and responsibility. Strong team mission enhances individual identity and meaning, serving as a critical resource against burnout.

7.4.4 Methods to boost self-efficacy

Self-efficacy, a core element of resilience, significantly influences burnout mitigation:

First, design progressive skill-mastery pathways for documentation and EMR operations. Break down complex tasks into sub-tasks with clear milestones, allowing physicians to build confidence through incremental success. For example, segment medical record writing into stages with defined criteria to enhance self-efficacy.

Second, establish professional skill certification and recognition systems. Offer EMR proficiency certifications and public awards for high-quality documentation, affirming

physicians' efforts and boosting confidence in facing challenges.

Third, provide a platform for sharing successful experiences. Experienced physicians should be organized to share efficient medical record documentation skills, tips for using electronic systems, and time management experiences, allowing other physicians to gain vicarious experience through observational learning and enhance their self-efficacy.

Finally, provide timely, specific, and constructive feedback. Medical record review and quality control feedback should focus on affirming strengths, specifically pointing out directions for improvement, and avoiding general negative evaluations. Positive feedback can strengthen physicians' sense of success, while specific improvement suggestions provide clear action steps, jointly promoting the enhancement of self-efficacy.

7.5 Strategies to strengthen perceived organizational support

7.5.1 Managerial support and leadership care

Research shows that perceived organizational support can significantly mitigate the impact of job insecurity on burnout. Enhancing managerial support and leadership care is a key strategy to improve perceived organizational support:

First, cultivate a supportive leadership style. Hospitals should provide training in supportive leadership skills for managers at all levels, emphasizing management approaches centered on care, listening, and empowerment. Supportive leaders pay attention to physicians' work difficulties and stress levels, provide necessary resources and support, and maintain a balance between work requirements and employee well-being.

Second, establish open communication channels and feedback mechanisms. Hospital executives and department managers should regularly engage in open dialogue with frontline physicians to understand their difficulties and needs in EMR documentation and daily work, responding promptly to concerns. Mechanisms such as regular president's mailboxes, director open days, and physician forums can ensure physicians' voices are heard and addressed by management.

Third, implement care action plans. Hospital management should demonstrate care through concrete actions, such as optimizing work environments, providing convenient facilities, and addressing physical and mental health needs. For example, set up rest rooms in busy departments with healthy food and drinks; offer meal and transportation support for physicians working overtime on documentation; and organize comfort activities during high-

pressure periods. These tangible actions enhance physicians' sense of being supported more than verbal commitments.

Finally, establish a physician hardship assistance mechanism. For physicians facing special difficulties, provide work adjustments, task relief, and specialized support to demonstrate the organization's willingness to assist when physicians are in need.

7.5.2 Construction of peer support networks

Peer support is a vital component of perceived organizational support, helping alleviate occupational stress and burnout:

First, establish structured peer support groups. Hospitals can form physician support teams based on the principles of similar specialties and complementary experience, regularly organizing activities for experience sharing, problem discussion, and emotional support. These groups can not only address specific work issues but also provide emotional support and a sense of belonging.

Second, develop a medical record documentation buddy system. Encourage physicians to form mutual assistance pairs to provide each other with consultation, review, and feedback on medical record documentation, jointly coping with quality control pressures. This one-on-one support model offers timely and targeted assistance, reducing the stress of facing problems alone.

Third, establish an experience inheritance mechanism. Encourage senior physicians to serve as mentors to guide junior physicians in improving clinical skills and medical record documentation capabilities. This mentor-apprentice relationship not only transmits professional knowledge but also conveys professional values and coping strategies, helping new physicians adapt more quickly to work environments and requirements.

Finally, create informal social opportunities. Hospitals and departments can regularly organize team-building activities, interest groups, and casual gatherings to provide physicians with opportunities to build connections outside of work. These activities help construct supportive interpersonal networks, enhance team cohesion, and provide emotional moderates and practical support when facing work stress.

7.5.3 Cultivation of organizational culture and climate

A supportive organizational culture has a profound impact on physicians' occupational health:

First, nurture people-centered organizational values. Hospitals should prioritize the health

and well-being of healthcare staff as core values, reflecting respect and care in policy-making and management. For example, assess the impact on physicians' workload when introducing new processes; balance efficiency and well-being indicators in performance evaluations to avoid overemphasizing quantity over human factors.

Second, build a fair and transparent organizational environment. Research shows that a sense of organizational justice is a key prerequisite for perceived organizational support. Hospitals should ensure fairness in rules and regulations, promotion opportunities, and resource allocation; work tasks should be assigned based on reasonable criteria to avoid arbitrary standards; decision-making processes should be as transparent as possible, and frontline physicians should be fully consulted on major changes.

Third, foster a psychologically safe work atmosphere. Hospitals and departments should encourage honest communication and constructive feedback, enabling physicians to freely express difficulties, seek help, and propose suggestions without fear of negative evaluation or punishment. For example, "documentation challenge sharing sessions" can be established to encourage physicians to discuss common issues and solutions, jointly improving work methods.

Finally, set positive organizational role models. Hospital management and department leaders should lead by example, demonstrating healthy work habits and proactive coping strategies—such as reasonable work scheduling, work-life balance, and actively seeking support. These model behaviors shape organizational norms and guide physicians to adopt healthier work practices.

7.5.4 Work-life balance policies

Supporting physicians in achieving work-life balance is a key manifestation of perceived organizational support:

First, formulate flexible work arrangement policies. Hospitals should provide flexible scheduling options to the greatest extent possible under the premise of ensuring medical service quality, such as flexible work hours, compressed workweeks, or partial remote work options. These arrangements enable physicians to better balance work and personal life needs, reducing role conflict and stress.

Second, establish a workload management and monitoring mechanism. Hospitals should regularly assess physicians' workloads, including clinical work, medical record documentation, and administrative tasks, setting reasonable upper limits to avoid long-term overload. When physicians are found to be continuously under high workload, timely

interventions should be implemented, such as temporary work reallocation or additional support.

Third, provide family-friendly support policies. Hospitals may consider offering policies such as childcare support, family emergency leave, and elderly care leave to help physicians cope with family responsibilities. For example, establishing on-site childcare facilities to facilitate physicians with childcare needs; allowing temporary work arrangement adjustments due to family emergencies to reduce work-family conflict.

Finally, promote a healthy lifestyle and self-care culture. Hospitals can organize health promotion activities, such as specialized programs like meditation stress-relief workshops, mindfulness training courses, and sleep quality optimization guidance, providing customized health plans based on individual health data; upgrading infrastructure with smart health monitoring rest pods, private psychological counseling spaces, and traditional Chinese medicine physiotherapy service points; implementing flexible vacation and recharge mechanisms to encourage physicians to regulate their physical and mental states, and establishing interest communities to guide physicians in building diverse life anchors beyond professional work. Such initiatives deliver organizational care through differentiated health services, helping physicians establish sustainable physical and mental regulation models and fundamentally enhancing stress resilience.

In summary, alleviating physician burnout requires constructing a multi-layered strategy system. At workload level, burdens of medical record documentation can be reduced at source by optimizing electronic medical record system functions and establishing task-level processing mechanisms; to address role stress, clear responsibility boundaries and regular communication feedback mechanisms are needed to reduce work stress caused by role ambiguity; in terms of career security, transparent career security policies and clear promotion and re-employment standards should be provided to reduce physicians' job insecurity; meanwhile, psychological resilience can be enhanced through mental health training and psychological support services, and professional belonging can be strengthened by building perceived organizational support systems. The comprehensive implementation of these strategies will help improve physicians' occupational health, enhance the quality of medical services, and promote the sustainable development of the healthcare system.

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Chapter 8: Research Conclusions

8.1 Major research conclusions

8.1.1 Overview of research findings

Through data analysis of 776 physicians, this research systematically examined the relationship between medical record burden and physician burnout, as well as its underlying mechanisms. The results show that physicians face a high level of medical record burden, particularly during workdays and holidays, which significantly exceeds the levels reported by international peers. Physician burnout is generally moderate to high, with the emotional exhaustion dimension scoring the highest.

The study found a significant positive correlation between medical record burden and burnout: the heavier the documentation workload, the higher the burnout level. This association was evident in workday, weekend, and holiday documentation, with non-worktime documentation having a more pronounced impact on burnout.

Additionally, role stress and job insecurity were identified as significant mediating variables in the relationship between medical record burden and burnout. Psychological resilience and perceived organizational support acted as key moderating variables, respectively moderating the direct effect of role stress and job insecurity on physician burnout. This indicates that individual and organizational resources play crucial protective roles in resisting burnout.

8.1.2 Results of theoretical model validation

The integrated theoretical model proposed in this research received strong support from the data. Structural equation modeling showed good fit indices, indicating the model effectively explains the mechanisms through which medical record burden influences burnout. Specifically, the impact of medical record burden on burnout occurs through the following pathways:

Direct Effect Pathway: Medical record burden directly increases physician burnout.

Mediation Pathway 1: Medical record burden→role stress→burnout.

Mediation Pathway 2: Medical record burden→job insecurity→burnout.

Moderation effect analysis confirmed that psychological resilience moderates the relationship between role stress and physician burnout (high resilience weakens their positive association), and perceived organizational support moderates the relationship between job insecurity and burnout (high support weakens their positive association). These results support the "dual-pathway-dual-moderation" integrated model based on the Job Demands-Resources theory, demonstrating that medical record burden, as a work demand, affects burnout through two pathways—health impairment and motivation weakening—and that individual and organizational resources mitigate these negative effects.

8.1.3 Summary of key pathways and mechanisms

The analysis reveals four key mechanisms through which medical record burden influences physician burnout:

First, the mechanism of time and energy consumption. Medical record tasks directly consume substantial time and energy, reducing direct patient care time and recovery opportunities, leading to sustained resource depletion and subsequent emotional exhaustion and burnout. Non-worktime documentation particularly invades recovery time, exacerbating this mechanism.

Second, the mechanism of role stress transmission. Documentation tasks increase workload, trigger conflicts between professional and administrative roles, and create uncertainty about documentation standards, forming role stress that elevates burnout risk. Role overload has the strongest mediating effect, indicating excessive workload is the primary stressor.

Third, the mechanism of job insecurity activation. Medical record tasks reduce perceived career stability and development expectations by increasing medical risk awareness, affecting professional evaluation/promotion, and altering time allocation, thereby triggering job insecurity that intensifies burnout. The mediating effect of cognitive job insecurity is stronger than emotional job insecurity, highlighting the primacy of rational assessment.

Fourth, resource protection moderate mechanism. As an internal individual resource, psychological resilience weakens the direct impact of role stress on burnout through positive cognitive appraisal, effective stress management, and rapid recovery capabilities. As an external environmental resource, perceived organizational support mitigates the effect of job insecurity on burnout by enhancing a sense of control, providing practical assistance, and strengthening professional belonging. The combined effect of these resources forms a multi-level protective network against burnout.

8.2 Theoretical contributions

8.2.1 Expansion of the theory

This study makes the following theoretical expansions to the JD-R theory:

First, it validates and refines the applicability of the JD-R theory in medical professional settings, particularly by identifying medical record burden as a unique work demand for physicians, thus expanding the conceptual connotation of work demands. Unlike traditional research focusing on general demands such as workload and time pressure, medical record burden integrates complex dimensions like workload, time boundaries, and professional identity, reflecting the specificity of work demands in healthcare. This provides a new perspective for applying the JD-R theory to professional groups.

Second, the study refines the mediating mechanisms through which work demands influence burnout in the JD-R framework, specifically by identifying that role stress and job insecurity correspond to the health impairment and motivation depletion processes in JD-R theory, respectively. This elaboration of intermediate processes enhances the explanatory power of the JD-R theory, transforming it from a simple "black-box" model into a theoretical framework with clear internal mechanisms.

Third, the study confirms the differential moderating effects of individual resources (psychological resilience) and organizational resources (perceived organizational support) across different pathways, indicating that the protective effects of resources are pathway-specific. This finding supplements the JD-R theory’s explanation of resource roles, revealing how different types of resources act at specific stages of the stress-burnout process and providing a more granular theoretical framework for resource protection effects.

Finally, the study introduces modern work tools like electronic medical record (EMR) systems into the JD-R theoretical framework, exploring how technological changes influence occupational health by altering work demand characteristics. This expands the JD-R theory’s explanatory power for technological environment changes, making it more suitable for addressing occupational health issues in the context of digital transformation and enhancing its timeliness and breadth of application.

The theoretical extensions of this study to the Conservation of Resources Theory (COR) are primarily reflected in:

The study defines the burden of medical record documentation as a typical continuous resource consumption event in medical settings, verifying the applicability of COR theory in

analyzing physician burnout. Specifically, by identifying the multidimensional depletion of physicians' time resources, cognitive resources, and emotional resources caused by medical record documentation, it refines the specific manifestations of "resource loss" in COR theory. In particular, combining with the "resource loss primacy principle," it reveals that the resource depletion effect of high-frequency paperwork far exceeds the positive feedback from task completion, strengthening COR theory's explanatory power for the uniqueness of medical occupational stress.

The study further deepens the empirical connotation of the "resource loss spiral" mechanism, finding that when the burden of medical record documentation persists long-term, physicians' ability to protect and restore resources declines, easily forming a vicious cycle of "resource exhaustion—exacerbated burnout." This provides new evidence for the gradual characteristics of exhaustion development in COR theory. Additionally, by integrating role stress with COR theory, the study confirms its role as a pathway of "indirect resource loss," expanding the explanatory boundaries of COR theory for the transmission mechanisms of occupational stress.

The study also supplements the application scenarios of resource protective factors in COR theory, discovering that psychological resilience and perceived organizational support effectively inhibit the formation of resource loss spirals through dual mechanisms of "resource replenishment" and "depletion moderating." This provides a more targeted theoretical basis for COR theory in designing resource intervention strategies and highlights the importance of collaborative resource protection at the individual and organizational levels in medical environments.

8.2.2 Theoretical deepening of burnout research

This study contributes to burnout theory research in the following ways:

First, it proposes and validates an integrated burnout formation model that incorporates work characteristics (medical record burden), personal perceptions (role stress and job insecurity), individual differences (psychological resilience), and organizational factors (perceived organizational support) within a single theoretical framework, offering a comprehensive explanation of burnout mechanisms. This multi-level, multi-pathway integrative perspective transcends the limitations of single-factor or single-pathway studies, providing a more systematic theoretical approach to burnout research.

Second, the study refines the role of job insecurity in burnout formation, particularly by distinguishing the divergent pathways of cognitive and emotional job insecurity, thereby

enriching burnout theory. The finding that cognitive job insecurity has a more significant impact on burnout suggests that rational assessments of career prospects may be more critical than emotional reactions in shaping burnout among professionals, offering a new cognitive perspective for burnout theory.

Third, the study reveals the temporal boundary dimension of burnout, particularly that non-worktime occupational activities (e.g., holiday medical record writing) have a more pronounced impact on burnout. This expands the temporal perspective of traditional burnout theory, emphasizing the importance of work-life boundaries and recovery opportunities in burnout formation and adding a temporal ecological dimension to burnout theory.

Finally, the study revisits the professional identity dimension of burnout, identifying the imbalance between professional activities (e.g., clinical practice) and supportive activities (e.g., medical record writing) as a key burnout mechanism. By integrating professional identity and practice into the burnout theoretical framework. It emphasizes the uniqueness of professional burnout and promotes the deepening application of physician burnout theory in professional groups.

8.2.3 Contributions to research on physician mental health in the Chinese healthcare context

This study makes the following unique contributions to research on physician mental health in China:

First, it systematically investigates the issue of medical record burden specific to China's healthcare system and its impacts, filling a gap in existing research on this critical work characteristic. By measuring and analyzing burden differences across workdays, weekends, and holidays, the study reveals the unique workload patterns faced by Chinese physicians, providing a localized perspective for understanding occupational stress in China's healthcare environment.

Second, the study explores the formation mechanisms and impacts of physician job insecurity against the backdrop of China's healthcare system reforms, reflecting the occupational psychological changes of physicians during this transitional period. The identified link between medical record burden and job insecurity illuminates how hospital informatization, medical legalization, and performance management reforms influence physician job security through documentation work, offering new evidence on the impact of China's healthcare reforms on physician mental health.

Third, the study examines the effects of China-specific contextual factors such as hospital

hierarchy, EMR levels, and physician professional titles on research variables, revealing how the hierarchical structure of China's healthcare system and professional development stages shape physicians' occupational experiences. These findings enrich the context-specific understanding of physician mental health research and provide a foundation for developing healthcare occupational health theories with Chinese characteristics.

Finally, the study integrates the Chinese cultural concept of resilience with modern perceived organizational support theory to explore the protective roles of psychological resilience and perceived organizational support in China's healthcare context. It finds that these two resources both mitigate physician burnout but differ in their mechanisms and effects, suggesting that personal adaptation and perceived organizational support need balanced development in China's healthcare environment. This provides localized theoretical support for healthcare organization management in China.

8.2.4 Contributions of the integrated model of multiple mediating and moderating effects

Through constructing a "dual-pathway-dual-moderation" integrated model, this study makes the following contributions to theoretical integration:

First, it integrates role theory and job insecurity theory into the JD-R framework to build a multi-theoretical integrative model. This integration is not a simple superposition but an organic fusion based on theoretical interconnections, deepening the understanding of burnout mechanisms and providing a paradigm for cross-theoretical integration research.

Second, the study validates both parallel multiple mediating effects and targeted moderating effects, forming a more complex but realistic theoretical model. Empirical analysis shows that role stress and job insecurity act as parallel mediators, while psychological resilience and perceived organizational support exert pathway-specific moderating effects. This complex network of interactions more accurately reflects the real mechanisms of occupational health formation.

Third, the integrated model embodies a multi-level analytical approach, simultaneously considering the impacts of work characteristics (macro level), psychological processes (meso level), and individual differences (micro level) on burnout, thus achieving organic integration across analytical levels. This multi-level integration transcends the limitations of traditional single-level research and provides a more comprehensive framework for explaining complex psychological phenomena.

Finally, the integrated model theoretically establishes a coherent logic of "problem-

mechanism-moderation-intervention," closely linking theoretical explanations with practical applications. By revealing the multiple mechanisms through which medical record burden induces burnout and identifying key moderating variables, the model not only explains the phenomenon but also provides theoretical guidance for designing interventions, enhancing the theory's practical value and application potential.

8.3 Practical contributions

8.3.1 Practical implications for hospital management

This study offers multi-faceted insights and guidance for hospital management practices:

First, the results emphasize that hospital management needs to re-evaluate the positioning and proportion of medical record tasks in physicians' work. Data show physicians spend a significant amount of time on medical record writing weekly. Hospital management should formally incorporate medical record writing into physicians' workload calculation systems rather than treating it as "additional work," rationally allocating time between direct medical services and documentation to ensure physicians have adequate time for high-quality record-keeping.

Second, the study reveals that role stress is a critical mediating variable linking medical record burden to burnout, requiring hospital managers to define physicians' role expectations and work boundaries more clearly. Hospitals should develop explicit job descriptions detailing specific standards and requirements for medical record writing, while optimizing workflows and clarifying division of labor in documentation among physicians, nurses, and physician assistants to reduce role confusion and conflict.

Third, the finding that perceived organizational support is key to mitigating the impact of job insecurity on burnout indicates the need for more supportive organizational environments. Hospital management should cultivate a supportive leadership style, establish open communication channels, implement care action plans, and foster peer support networks—measures proven to significantly enhance perceived organizational support and reduce job insecurity and burnout risks.

Finally, the results suggest hospital practices should balance efficiency with humanistic care by integrating physician occupational health into performance evaluation systems. Hospitals can regularly assess burnout levels, job satisfaction, and mental health, using these indicators as key evaluation dimensions for departmental and institutional management to

foster a people-centered culture.

8.3.2 Guidance for electronic medical record design

This study provides specific guidance for EMR design and optimization:

First, the complexity and usability of EMR directly influence physicians' documentation burden and role stress. System design must prioritize user experience by simplifying workflows, optimizing interface layouts, and reducing unnecessary clicks and inputs. For example, intelligent navigation, quick access to frequently used functions, and context-sensitive menus can reduce operational complexity.

Second, physicians' sense of control and personalization over EMR affect job satisfaction and burnout risk, emphasizing the need for user autonomy and customization. Systems should offer personalized template settings, customizable shortcuts, commonly used vocabulary libraries, and preference-saving features, allowing physicians to adapt the system to professional and personal needs.

Third, the significant impact of non-worktime documentation burden on burnout suggests EMR should include time management and boundary-protecting functions, such as work-time reminders, rest suggestions, usage duration statistics, intelligent scheduling tools, and non-urgent function restrictions during off-hours to protect rest time and work-life balance.

Finally, current EMR lack sufficient decision support and intelligent assistance, increasing cognitive load. Designers should enhance AI and smart tools like speech recognition, automatic coding recommendations, diagnostic decision support, and intelligent template generation to reduce manual input, improve efficiency, and shift focus from documentation to clinical decision-making.

8.3.3 Policy recommendations for physician occupational health protection

This study proposes the following policy recommendations for physician occupational health:

First, the close link between physician burnout and medical record burden calls for regulatory standards on workload and working hours. Healthcare authorities should develop work-hour guidelines based on international experience and China's healthcare reality, specifying reasonable patient admission quotas, documentation ratios, and work-hour caps (e.g., ≤60 hours/week, direct care-to-documentation ratio ≥2:1) to prevent health risks from overwork.

Second, the significant role of psychological resilience in mitigating burnout highlights

the need to integrate mental health services into physician support systems. Health administrations and institutions should establish professional mental health support systems, including regular psychological assessments, stress management training, counseling services, and crisis intervention—provided proactively as routine safeguards rather than reactive measures.

Third, job insecurity as a key burnout factor necessitates improved occupational protection regulations. Relevant departments should strengthen legislation for physician rights, clarify risk-sharing mechanisms, refine dispute resolution procedures, and establish stable, transparent career development systems to reduce uncertainty and legal risk anxieties.

Finally, the protective role of perceived organizational support underscores the importance of healthcare culture and management capacity-building. Health authorities should incorporate humanistic care and employee support into hospital accreditation criteria, provide leadership training on supportive styles, and promote best practices in perceived organizational support to elevate industry standards.

8.3.4 Reference value for healthcare system reform

This study offers broad reference for China’s healthcare system reforms:

First, the impact of hospital hierarchy and EMR levels on documentation burden and burnout indicates that healthcare informatization should prioritize humanistic dimensions. Current evaluations focusing on technical capabilities should expand to include "user-friendliness" and "impact on physician workload" to balance technological advancement with practicality and avoid exacerbating staff burden.

Second, the negative correlation between medical record burden and patient-physician communication suggests quality evaluation systems need to rebalance process documentation and clinical outcomes. Reforms should reduce excessive emphasis on record completeness, shift resources toward enhancing service quality over documentation, and refocus on the essence of healthcare.

Third, the effectiveness of team-based care models in reducing documentation burden calls for further innovation in service delivery. Reforms should promote Team-Based Care, clarify role responsibilities, develop physician assistant roles, optimize staffing, and build more collaborative and efficient care systems.

Finally, physician burnout as a risk to healthcare quality and safety highlights the need to integrate provider health into reform objectives. Reforms must prioritize not only patient experience and cost control but also physician job satisfaction and well-being, making

"building a healthy healthcare workforce" a core reform goal to ensure sustainable quality improvement.

8.4 Research limitations

8.4.1 Limitations in research design and methods

The study has the following limitations in design and methodology:

First, this research adopted a cross-sectional study design, collecting data on all variables at a single time point, which prevents determining the temporal sequence and causal direction between variables. Although theoretical inference was used to propose the impact pathway of medical record burden on burnout, it cannot rule out the reverse influence of burnout on physicians' perception of medical record burden or bidirectional relationships among other variables. This cross-sectional design limits the study's ability to infer causality.

Second, the study primarily used self-report scales for data collection, which may introduce common method bias. Despite measures such as anonymous surveys, balanced positive/negative item wording, and statistical tests to mitigate this issue, physicians' subjective evaluations of medical record burden and burnout may be affected by personal cognitive biases, failing to fully reflect objective realities. In particular, estimates of medical record writing time may lack precision, impacting measurement accuracy.

Third, while the study employed multi-mediation and moderation effect analyses, it did not examine potential cyclical effects or feedback mechanisms. For example, burnout may reduce physicians' work efficiency, thereby increasing record completion time and forming a vicious cycle; or role stress and job insecurity may influence each other. These complex cyclical relationships are difficult to capture and validate in the current design.

Finally, the study relied primarily on quantitative methods, with limited qualitative interviews as supplementation. The lack of in-depth qualitative analysis makes it difficult to fully reveal physicians' subjective experiences and meaning-making processes regarding medical record writing. This limits the study's ability to deeply understand complex psychological phenomena, especially abstract concepts like work meaning and professional identity.

8.4.2 Sample representativeness issues

The study has the following limitations in sample representativeness:

First, the sample was primarily from hospitals in the Shenzhen region, with limited geographical distribution. Significant differences in medical conditions, EMR development levels, and work culture across regions may affect the generalizability of the findings.

Second, the sample included a high proportion of physicians from tertiary hospitals, with relatively fewer from primary healthcare institutions. Given the multi-tiered structure of China's healthcare system, physicians in primary settings may face different work demands and organizational environments, meaning the results may better describe physicians in large and medium hospitals rather than primary care.

Third, the sample had an unbalanced departmental distribution, with high representation from internal and surgical departments but insufficient samples from specialized departments in tertiary hospitals. Work content and documentation requirements vary significantly across specialties, and this imbalance may lead to results that do not fully reflect all medical specialties.

Finally, the sample focused on clinical physicians, with inadequate representation of hospital managers, researchers, and teaching physicians. These roles differ significantly in work content and stressors, limiting the results' applicability to describe the diverse occupational experiences of all physician groups.

8.4.3 Limitations in variable measurement

The study has the following limitations in variable measurement:

First, medical record burden was measured primarily through subjective assessment, lacking support from objective behavioral data. Ideal measurement should integrate objective indicators like actual time spent in EMRs, record quantity, and quality evaluations, whereas this study relied on self-reported time estimates and subjective perceptions, potentially introducing memory bias and cognitive differences.

Second, burnout was measured using the Copenhagen Burnout Inventory (CBI). While widely validated, this scale may not fully capture the unique manifestations of burnout in physicians, such as reduced alienation from patients or excessive adherence to work standards—specialized traits not adequately reflected in standard scales.

Third, psychological resilience and perceived organizational support were measured using general scales not fully adapted to the healthcare context. Physicians' unique stressors and support needs mean general scales may not accurately capture context-specific resilience or perceived organizational support, affecting measurement validity.

Finally, the study did not measure potential confounding variables like personality traits,

hospital culture types, or patient complexity. These variables may simultaneously influence documentation experiences and burnout, introducing uncontrolled confounding effects on the results.

8.4.4 Constraints on causal inference

The study faces the following constraints on causal inference:

First, while the theoretical model of medical record burden influencing burnout was built based on the Job Demands-Resources theory, it lacks experimental design or longitudinal data to establish causality. Without time-series data, it is impossible to confirm whether changes in medical record burden lead to corresponding changes in burnout or rule out reverse causality.

Second, mediating variables (role stress, job insecurity) and the outcome variable (burnout) were measured simultaneously, precluding confirmation of the temporal order of mediating processes. Theoretically, mediating variables should form a temporal bridge between work demands and outcomes, but the study's design cannot validate this sequence, limiting causal interpretations of mediating mechanisms.

Third, the study cannot rule out the impact of self-selection bias. For example, physicians already in a state of high physician burnout may be more inclined to perceive heavy medical record burden, or physicians with low psychological resilience may choose an environment with clear role stress. These self-selection factors may affect the observed relationships between variables, leading to biases in causal inference.

Finally, the study cannot fully control external environmental factors. The survey coincided with medical reform policy adjustments and EMR upgrades in some regions, which may have influenced physicians' work experiences and mental states. These dynamic factors are difficult to identify and control in a cross-sectional design, complicating result interpretation.

8.5 Future research prospects

8.5.1 Recommendations for longitudinal research design

To address the limitations of this study's cross-sectional design, future research could adopt the following longitudinal strategies:

First, a 2–3 years longitudinal follow-up study is recommended, measuring physicians' medical record burden, role stress, job insecurity, and burnout every 3–6 months to capture

temporal change patterns and causal relationships. This design would validate whether changes in medical record burden predict subsequent changes in burnout and whether mediating variables operate in the theoretically expected temporal sequence.

Second, quasi-natural experimental research could be conducted around critical time points, such as tracking physician metrics before and after hospital EMR upgrades, changes in medical record quality control standards, or adjustments to workload policies. Such "quasi-experimental" designs would better identify the impact of specific changes on physician occupational health and provide stronger evidence for causal inference.

Third, diary study methods could be used to collect short-term intensive data, such as daily records of physicians' documentation time, work stress perceptions, and emotional states over 2–4 consecutive weeks. This micro-longitudinal design would capture dynamic variable relationships and short-term fluctuations, ideal for studying the immediate and cumulative effects of work characteristics on psychological states.

Finally, intervention experimental research could be designed, testing specific interventions targeting medical record burden, role stress, or perceived organizational support, and comparing pre-post intervention differences and control group variations. Experimental designs directly test whether altering specific factors leads to corresponding changes in outcome variables, providing the most direct evidence for causal relationships.

8.5.2 Directions for variable expansion and theoretical integration

Future research could expand variable scope and theoretical integration in the following areas:

First, multidimensional measurement of physicians' work demands should be expanded to include not only medical record burden but also clinical workload, patient-physician communication stress, and teaching/research requirements, forming a comprehensive work demand profile. Additionally, differentiating between challenging and hindering demands could clarify their divergent impacts on occupational health.

Second, in-depth research on the multilevel structure of work resources—integrating individual resources, interpersonal resources, organizational resources, and social resources—could explore the complementary roles and relative importance of resources at different levels.

Third, integrating professional identity theory with the JD-R framework could investigate how physicians' professional identity influences their interpretation of and coping with work demands like medical record writing. Professional identity may serve as a key mediating variable linking work characteristics to psychological responses, helping explain why similar demands affect physicians differently.

Finally, integrating work-family balance theory could examine how medical record writing influences work-family conflict by encroaching on non-work time, thereby affecting overall life satisfaction and career decisions. This theoretical integration would expand occupational health research into broader life domains, providing a comprehensive framework for understanding physician well-being.

8.5.3 Cross-professional and cross-cultural comparative research

Future research could expand comparative perspectives through the following cross-group studies:

First, comparative studies between physicians and other professionals could explore commonalities and differences in the relationship between documentation burden and burnout across professional groups. Such comparisons would identify universal occupational health patterns among knowledge workers and the uniqueness of healthcare, informing health management for broader professional groups.

Second, comparative studies between physicians and other healthcare workers could analyze differences in stressors and coping resources across roles within the same healthcare environment, offering a systems perspective for holistic healthcare team health management.

Third, cross-cultural comparative research on physician occupational health across countries (e.g., China, U.S., Europe, Japan) could contrast medical record burden, perceived organizational support, and burnout levels, illuminating how healthcare systems, cultural values, and social environments shape physician experiences and identifying universal vs. culture-specific factors.

Finally, comparative studies of physician occupational health under different healthcare systems could assess the impact of systemic factors on work experiences, evaluating the strengths and weaknesses of organizational models to inform healthcare system reforms.

8.5.4 Directions for intervention research

Future research should strengthen practical intervention orientations through the following:

First, designing and evaluating medical record burden management interventions—such as reserved documentation time policies, intelligent documentation aids, EMR interface optimization, or team-based documentation models—and comparing pre-post changes in record completion time, quality, and subjective experiences to assess intervention effectiveness and guide practice.

Second, conducting efficacy studies of physician psychological resilience training programs, including modules on cognitive restructuring, stress management, meaning-making, and recovery skills, using randomized controlled trials to evaluate impacts on resilience and burnout and identify optimal training content/forms.

Third, implementing and evaluating perceived organizational support enhancement programs—such as leadership training, peer support networks, and policy optimization—to determine which support types most effectively reduce burnout, providing empirical guidance for hospital management.

Finally, investigating integrated occupational health promotion programs that combine individual-level, task-level, and organizational-level interventions, assessing comprehensive impacts on physician health to provide holistic management solutions and bridge empirical research with practice.

In summary, this study reveals the mediating roles of role stress and job insecurity, as well as the moderating roles of psychological resilience and perceived organizational support, in the impact of medical record burden on physician burnout, providing theoretical and practical guidance for improving physician occupational health in China. Future research should deepen theoretical and practical insights through longitudinal designs, variable expansion, cross-group comparisons, and intervention evaluations, contributing to the development of healthier healthcare workforces and high-quality healthcare systems.

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Annex A: Questionnaire on Medical Record Writing Standards and Mental Health Status of Medical Staff

Dear Medical Staff,

First of all, thank you very much for taking your precious time out of your busy medical work to complete this questionnaire. This questionnaire aims to understand medical record documentation standards and the mental health status of medical staff, and to provide a reference for the hospital to carry out group psychological capital building for employees, reduce physician burnout, cultivate positive psychological qualities among medical staff, and improve their sense of happiness through group counseling.

This questionnaire is anonymous, and there are no right or wrong answers. Please feel free to select the most authentic answers from your heart, and do not leave any questions unanswered. Thank you again for your support and assistance. We wish you all the best and a happy family!

*Special emphasis: To ensure the validity of your questionnaire, please complete all questions and do not leave any blank! ! !

I. Overview of the hospital

1. Hospital level ( )

a. Tertiary grade A hospital b. Tertiary hospital c. Secondary grade A hospital

d. Secondary hospital e. Primary Hospital f. Community Healthcare Centers g. Others

2. Characteristics of the hospital ( )

a. Public hospitals b. Private hospitals c. Military hospitals d. Others

3. Type of hospital ( )

a. General Hospital b. Specialist Hospital c. Other

4. Actual number of beds in hospitals ( )

a. Less than 500 sheets b. 500-1000 sheets c. 1001-1500 sheets

d. 1501-2000 sheets e. 2001-2500 sheets

f. 2501-3000 sheets g. More than 3000 sheets

5. The number of patients discharged from the hospital where you are working last year ( )

a. Less than 1,000 b. 1,000-10,000 c. 10,000-30,000

d. 30,000 - 50,000 visits e. 50,000 - 100,000 visits f. Over 100,000 visits

II. Personal and job characteristics about medical record doctors

1. Gender: ( )

a. Male b. Female

2. Age: _____ years

3. Literacy: ( )

a. Below Specialist b. Specialist c. Bachelor d. Master e. Doctor

4. Marital status: ( )

a. Married b. Unmarried c. Divorced d. Widowed

5. Your section office: ( )

a. Surgical departments b. Non-surgical departments

6. Your years of service: _____

7. Your technical title: ( )

a. One-year resident b. Two to three-year resident c. Three-year or more resident

d. Less than three-year attending e. Three-year or more attending

f. Associate chief physician and above g. Trainee physician or intern

8. Your average number of beds: ( )

a. 0-3 sheets b. 4-6 sheets c. 7-10 sheets d. 10 or more sheets

9. The average number of new patients you admit per day in general: ( )

a. Up to 2 people b. 3-5 people c. More than 5 people

10. During the past year, you have worked an average of ( ) hours per week

a. <40 hours b. 40-50 hours c. 51-60 hours d. >60 hours

11. Do you need to write medical records in your normal work: ( )

a. Yes b. No (skip to Part 3)

12. How long do you work on average every day?

a. <8-hour b. 8hour c.8-9hour d.9-10hour e. ≥ 10 hours

13. Taking in consideration your average day working hours, how many hours you need to writing your medical records?

a. ≤ 1 hour b. 1 to 2 hours c. 2 to 3 hours d. 3 to 4 hours e. ≥ 4 hours

14. The average time it takes you to write an admission record is: ( )

a. ≤ 30 minutes b. 30 to 60 minutes c. ≥ 60 minutes

III. Suggested changes to the content of the Basic Specifications for Medical Record Writing

(1) The contents of the *Basic Norms for Medical Record Writing* are recommended:

1. In order to better develop the clinical thinking of physicians, are 1-year residents required to write inpatient medical records (major medical records):

a. Yes b. No

2. Do you think there is a duplication between the admission record and the initial disease course record and you can delete some of the content: ( )

a. Yes, part of the admission record may be deleted

b. Yes, part of the initial disease course records may be deleted

c. No, there is no deletion required

d. The admission record and the initial disease course record can be combined

3. *"Other conditions not closely related to the present illness but still requiring treatment"*, do you think they should be recorded in the present history or in the past history? ( )

a. Should be recorded in the current history, in a separate paragraph

b. Should be recorded in the past history

c. Other recommendations

4. In cases where the diagnosis is clear and well-founded, can the differential diagnosis be left out: ( )

a. Yes b. No

5. For patients who are stable but require prolonged hospitalization (e.g. psychiatric hospitals, rehabilitation hospitals, family wards .....), the duration of the disease course records can be amended as follows: ( )

a. Document the course of illness at least once every 5 days

b. Document the course of illness at least once every 7 days

(2) The time limit of the *Basic Norms for Medical Record Writing* is recommended:

6. The first disease course record should be completed within 8 hours of the patient's admission: ( )

a. No opinion b. Too long c. Too short

7. The attending physician's first ward round should be documented within 48 hours of the patient's admission to the hospital: ( )

a. No opinion b. Too long c. Too short

8. The surgical record should be completed within 24 hours after the procedure: ( )

a. No opinion b. Too long c. Too short

9. The discharge record should be completed within 24 hours of the patient's discharge from

the hospital: ( )

a. No opinion b. Too long c. Too short

d. Completed before the patient is discharged

10. The death record should be completed within 24 hours of the patient's death: ( )

a. No opinion b. Too long c. Too short

11. Death case discussion records should be completed within one week of the patient's death: ( )

a. No opinion b. Too long c. Too short

IV. Overwork accumulation status

(1) Working status, please tick the appropriate number to indicate your level of agreement or disagreement.

1. The total time you spend travelling to and from work each day is:

a. Below 30min b. 30-60min c. 90-120min d. 120min and above

2. Overtime during the week (including attendance at training or meetings arranged by the unit outside of working hours):

a. Below 10h b. 10h-20h c. Above 20h

3. Proportion of your total weekly working time taken up by overtime or some unexpected work:

a. Below 15% b. 15%-40% c. 40% and above

4. Frequency and duration of official travel:

a. hardly travels

b. travels infrequently or for no more than 5 days at a time

c. travels frequently or for more than 5 days at a time

5. If you are still working late at night until the following day:

a. never b. sometimes c. often

Annex B: Copenhagen Burnout Inventory (CBI)

Hello! Welcome to participate in the assessment of the Copenhagen Burnout Inventory (CBI). This measurement scale is an assessment tool for physician burnout developed by Kristensen et al. in 2005. It is widely used in high-pressure professional groups such as medical care, education, and social work, with good reliability, validity, and cross-cultural adaptability.

The scale consists of three parts, with a total of 19 questions, including 6 questions on personal burnout, 7 questions on work-related burnout, and 6 questions on patient-related burnout. Each option in the scale is "Never", "Rarely", "Sometimes", "Frequently", and "Always", which are assigned 1-5 points respectively. Please make your choice based on your feelings and experiences, and judge the frequency of their occurrence in your unit or on yourself.

Your assessment information and relevant personal information will be kept confidential throughout the process and will only be used for related research. Thank you for your participation!

	Never	Rarely	Sometimes	Frequently	Always
1.Are you worn out?	1	2	3	4	5
2.Do you feel mentally and physically exhausted?	1	2	3	4	5
3.Do you feel drained after work?	1	2	3	4	5
4.When you wake up in the morning, do you feel you lack the energy to start the day?	1	2	3	4	5
5.Does daily life leave you emotionally exhausted?	1	2	3	4	5
6.Do you feel you need a long time to recover and feel energetic again?	1	2	3	4	5
7.Does work leave you emotionally drained?	1	2	3	4	5
8.Do you feel physically exhausted from work?	1	2	3	4	5
9.Do you feel tired after work?	1	2	3	4	5
10.Do you feel you have lost enthusiasm for work?	1	2	3	4	5
11.Is it difficult to concentrate on completing work tasks?	1	2	3	4	5

12.Do you think you have too much work?	1	2	3	4	5
13.Do you feel overwhelmed by work?	1	2	3	4	5
14.Do interactions with clients leave you mentally exhausted?	1	2	3	4	5
15.Are you tired of interacting with clients?	1	2	3	4	5
16.Do you feel you excessively deplete emotional resources when dealing with clients?	1	2	3	4	5
17.Is it hard to remain patient with clients?	1	2	3	4	5
18.Do your clients leave you feeling mentally drained?	1	2	3	4	5
19.Overall, do you find dealing with clients a tiring task?	1	2	3	4	5

Annex C: Role Stress Scale

Hello! Welcome to participate in the assessment of the Role Stress Scale. This measurement scale is a role stress assessment tool developed by Li Chaoping and Zhang Yi in 2009. It consists of three dimensions with a total of 13 questions, including 3 questions on role conflict, 5 questions on role ambiguity, and 5 questions on role overload.

Each option in the scale is "Strongly Disagree", "Disagree", "Neutral", "Agree", and "Strongly Agree", which are assigned 1-5 points respectively. Among them, the items in the role ambiguity dimension are reverse-scored items. Please make your choice based on your own feelings and experiences, and judge the frequency of their occurrence in your unit or on yourself.

Your assessment information and relevant personal information will be kept confidential throughout the process and will only be used for related research. Thank you for your participation!

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.I often face situations where the requirements conflict with each other.	1	2	3	4	5
2.I receive contradictory demands from two or more people.	1	2	3	4	5
3.I have to face different situations and handle them in different ways.	1	2	3	4	5
4.My work has clear and planned goals and objectives. ®	1	2	3	4	5
5.I know exactly what others expect from me. ®	1	2	3	4	5
6.I know what my responsibilities are. ®	1	2	3	4	5
7.I am very clear about the extent of my responsibilities. ®	1	2	3	4	5
8.My responsibilities are clearly defined. ®	1	2	3	4	5
9.I often feel overwhelmed juggling between different roles.	1	2	3	4	5
10.I feel overburdened in my work.	1	2	3	4	5
11.I have taken on too many responsibilities	1	2	3	4	5
12.The responsibilities or tasks I carry have exceeded my ability to handle	1	2	3	4	5
13.The workload I bear is so heavy	1	2	3	4	5

	that I cannot guarantee the quality of my work.

Note: ® indicates reverse scoring for role ambiguity items.

Annex D: Job Insecurity Scale

Hello! Welcome to participate in the assessment of the Job Insecurity Scale. This measurement scale is a job insecurity assessment tool developed by Hellgren, Sverke, and Isaksson in 1999. It includes two dimensions with seven items, among which there are 3 items in the quantitative dimension and 4 items in the qualitative dimension.

Each option in the scale is "Strongly Disagree", "Disagree", "Neutral", "Agree", and "Strongly Agree", which are assigned 1-5 points respectively. Among them, the items in the qualitative dimension are reverse-scored items. Please make your choice based on your own feelings and experiences, and judge the frequency of their occurrence in your unit or on yourself.

Your assessment information and relevant personal information will be kept confidential throughout the process and will only be used for related research. Thank you for your participation!

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.I am worried about being dismissed in the future.	1	2	3	4	5
2.I face a risk of losing my current job in the future.	1	2	3	4	5
3.I feel anxious about potentially losing my job in the future.	1	2	3	4	5
4.I believe there will be good development opportunities for me at the hospital in the future. ®	1	2	3	4	5
5.I expect that the hospital will offer me a challenging job in the near future. ®	1	2	3	4	5
6.I think that the hospital will need employees with my skills in the future. ®	1	2	3	4	5
7.It is likely that the hospital will increase my salary in the future. ®	1	2	3	4	5

Note: ® indicates reverse scoring for qualitative job insecurity items.

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Annex E: Connor-Davidson Resilience Scale (10-item version, CD-RISC-10)

Hello! Welcome to participate in the assessment of the Connor-Davidson Resilience Scale (CD-RISC). This measurement scale was developed by Connor and Davidson in 2003 to measure an individual's ability to recover from adverse experiences and adapt to changes in the external environment. It consists of five dimensions, specifically divided into competence, tolerance of negative emotions, acceptance of change, control, and psychological impact, with a total of 25 items. Here, we use the short version adapted into 10 items. Each option in the scale includes "Never", "Rarely", "Sometimes", "Frequently", and "Always", which are assigned 1-5 points respectively. Please make your choice based on your own feelings and experiences, judging the frequency of their occurrence in your unit or on yourself. Your assessment information and relevant personal information will be kept confidential throughout the process and will only be used for related research. Thank you for your participation!

	Never	Rarely	Sometimes	Frequently	Always
1.I can adapt flexibly to changes.	1	2	3	4	5
2.I am capable of handling difficulties.	1	2	3	4	5
3.I respond to problems with humor.	1	2	3	4	5
4.Accumulated experiences have made me stronger.	1	2	3	4	5
5.My resilience is strong after experiencing illness or adversity.	1	2	3	4	5
6.I can achieve my goals even in the face of obstacles.	1	2	3	4	5
7.I can concentrate on problem-solving under pressure.	1	2	3	4	5
8.I do not become discouraged by failure.	1	2	3	4	5
9.I consider myself a resilient person when facing life's challenges.	1	2	3	4	5
10.I am capable of managing unpleasant feelings, such as anger.	1	2	3	4	5

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Annex F: The Sense of Perceived Organizational Support Scale

Hello! Welcome to participate in the assessment of the Perceived Organizational Support Scale. This measurement scale is a perceived organizational support assessment tool developed by Ling Wenquan et al. in 2006. It includes three dimensions: work support (10 items), value recognition (7 items), and interest care (7 items).

Each option in the scale is "Strongly Disagree", "Basically Disagree", "Slightly Disagree", "Slightly Agree", "Basically Agree", and "Strongly Agree", which are assigned 1-6 points respectively. Please make your choice based on your own feelings and experiences, and judge the frequency of their occurrence in your unit or on yourself.

Your assessment information and relevant personal information will be kept confidential throughout the process and will only be used for related research. Thank you for your participation!

	Strongly disagree	Basically disagree	Slightly disagree	Slightly agree	Basically agree	Strongly agree
1. If I perform well at work, the hospital will notice me	1	2	3	4	5	6
2. At work, the hospital will not take advantage of me whenever possible	1	2	3	4	5	6
3. If I put forward reasonable requests to improve working conditions, the hospital will approve them	1	2	3	4	5	6
4. The hospital attaches great importance to my work goals and values	1	2	3	4	5	6
5. If I encounter problems at work, the hospital will provide me with help	1	2	3	4	5	6
6. The hospital will assign me to the most suitable job	1	2	3	4	5	6
7. The hospital will provide me with opportunities for promotion	1	2	3	4	5	6
8. The hospital will make me full of interest in my work	1	2	3	4	5	6
9. The hospital will help	1	2	3	4	5	6

me develop my work potential						
10. The hospital will value my opinions on work	1	2	3	4	5	6
11. The hospital will consider that retaining me is quite important for the hospital	1	2	3	4	5	6
12. When I request to resign, the hospital will try to retain me	1	2	3	4	5	6
13. The hospital will consider that dismissing me would be a considerable loss	1	2	3	4	5	6
14. The hospital will not dismiss me easily	1	2	3	4	5	6
15. If my current job is eliminated, the hospital will transfer me to another position instead of dismissing me	1	2	3	4	5	6
16. The hospital will be proud of my achievements	1	2	3	4	5	6
17. If I resign, the hospital will rehire me when appropriate instead of recruiting a new person	1	2	3	4	5	6
18. The hospital will reward me for my extra work	1	2	3	4	5	6
19. If I am absent from work occasionally due to personal reasons, the hospital will understand	1	2	3	4	5	6
20. When I need special help, the hospital will be willing to help	1	2	3	4	5	6
21. The hospital will care about my living conditions	1	2	3	4	5	6
22. When the hospital makes more profits, it will give me a salary increase	1	2	3	4	5	6
23. The hospital will consider the issue of how much salary I deserve	1	2	3	4	5	6
24. The hospital will consider my interests when making decisions	1	2	3	4	5	6

Annex G: Relevant Table

Table g.1 Total Variance Explained

Component	Initial Eigenvalues			Extracted Sum of Squares Loadings			Rotated Sum of Squares Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	16.480	21.684	21.684	16.480	21.684	21.684	13.099	17.235	17.235
2	10.142	13.345	35.029	10.142	13.345	35.029	10.968	14.432	31.667
3	6.624	8.716	43.744	6.624	8.716	43.744	6.204	8.163	39.830
4	2.905	3.823	47.567	2.905	3.823	47.567	3.401	4.475	44.305
5	2.451	3.225	50.792	2.451	3.225	50.792	3.217	4.232	48.537
6	2.007	2.641	53.433	2.007	2.641	53.433	2.536	3.337	51.875
7	1.914	2.518	55.951	1.914	2.518	55.951	2.219	2.920	54.795
8	1.836	2.416	58.367	1.836	2.416	58.367	2.217	2.917	57.712
9	1.703	2.241	60.608	1.703	2.241	60.608	2.202	2.897	60.608
10	.993	1.307	61.916						
11	.926	1.219	63.135						
12	.827	1.088	64.222						
13	.783	1.030	65.252						
14	.740	.974	66.226						
15	.726	.956	67.182						
16	.710	.934	68.116						
17	.678	.892	69.008						
18	.658	.866	69.873						
19	.638	.839	70.713						
20	.629	.828	71.541						
21	.615	.809	72.349						
22	.602	.792	73.141						
23	.583	.768	73.909						
24	.573	.754	74.663						
25	.566	.745	75.408						
26	.563	.741	76.149						
27	.557	.732	76.881						
28	.543	.714	77.595						
29	.535	.704	78.299						
30	.522	.687	78.986						
31	.514	.676	79.662						
32	.500	.659	80.320						
33	.492	.648	80.968						
34	.483	.636	81.604						
35	.478	.629	82.233						
36	.468	.616	82.849						
37	.462	.608	83.457						
38	.454	.598	84.055						
39	.448	.590	84.645						
40	.443	.583	85.228						
41	.436	.574	85.802						
42	.428	.563	86.365						

Component	Initial Eigenvalues			Extracted Sum of Squares Loadings			Rotated Sum of Squares Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
43	.419	.552	86.916						
44	.413	.544	87.460						
45	.407	.535	87.995						
46	.393	.517	88.512						
47	.386	.507	89.019						
48	.380	.500	89.519						
49	.379	.499	90.018						
50	.376	.495	90.513						
51	.367	.483	90.997						
52	.360	.474	91.471						
53	.356	.468	91.939						
54	.344	.453	92.392						
55	.335	.441	92.833						
56	.327	.431	93.264						
57	.321	.423	93.687						
58	.319	.420	94.107						
59	.310	.408	94.515						
60	.308	.405	94.920						
61	.299	.394	95.313						
62	.290	.382	95.695						
63	.280	.368	96.063						
64	.272	.358	96.421						
65	.268	.353	96.774						
66	.261	.344	97.118						
67	.253	.333	97.451						
68	.252	.331	97.782						
69	.242	.318	98.100						
70	.234	.308	98.409						
71	.227	.299	98.707						
72	.220	.290	98.997						
73	.219	.288	99.285						
74	.205	.270	99.555						
75	.187	.246	99.801						
76	.151	.199	100.000						

Table g.2 Rotated Component Matrix

Item	Component								
	1	2	3	4	5	6	7	8	9
Medical Record Burden (Weekdays)								0.836	
Medical Record Burden (Weekends)								0.873	
Medical Record Burden (Holidays)								0.809	
Role Conflict 1							0.826		
Role Conflict 2							0.84		

Item	Component								
	1	2	3	4	5	6	7	8	9
Role Conflict 3							0.782		
Role Ambiguity 1				0.782					
Role Ambiguity 2				0.76					
Role Ambiguity 3				0.77					
Role Ambiguity 4				0.78					
Role Ambiguity 5				0.785					
Role Overload 1					0.766				
Role Overload 2					0.761				
Role Overload 3					0.774				
Role Overload 4					0.766				
Role Overload 5					0.762				
Emotional Insecurity 1									0.809
Emotional Insecurity 2									0.827
Emotional Insecurity 3									0.828
Cognitive Insecurity 1						0.773			
Cognitive Insecurity 2						0.739			
Cognitive Insecurity 3						0.75			
Cognitive Insecurity 4						0.746			
Psychological Resilience 1			0.735						
Psychological Resilience 2			0.738						
Psychological Resilience 3			0.774						
Psychological Resilience 4			0.747						
Psychological Resilience 5			0.723						
Psychological Resilience 6			0.779						
Psychological Resilience 7			0.729						
Psychological Resilience 8			0.774						
Psychological Resilience 9			0.761						
Psychological Resilience 10			0.728						
Perceived Organizational Support 1	0.698								
Perceived Organizational Support 2	0.691								
Perceived Organizational	0.680								

Item	Component								
	1	2	3	4	5	6	7	8	9
Support 3 Perceived Organizational	0.704								
Support 4 Perceived Organizational	0.658								
Support 5 Perceived Organizational	0.790								
Support 6 Perceived Organizational	0.716								
Support 7 Perceived Organizational	0.688								
Support 8 Perceived Organizational	0.724								
Support 9 Perceived Organizational	0.826								
Support 10 Perceived Organizational	0.694								
Support 11 Perceived Organizational	0.704								
Support 12 Perceived Organizational	0.690								
Support 13 Perceived Organizational	0.689								
Support 14 Perceived Organizational	0.679								
Support 15 Perceived Organizational	0.655								
Support 16 Perceived Organizational	0.827								
Support 17 Perceived Organizational	0.767								
Support 18 Perceived Organizational	0.837								
Support 19 Perceived Organizational	0.748								
Support 20 Perceived	0.669								

Item	Component								
	1	2	3	4	5	6	7	8	9
Organizational Support 21 Perceived									
Organizational Support 22 Perceived	0.691								
Organizational Support 23 Perceived	0.677								
Organizational Support 24	0.804								
Physician Burnout Condition 1		0.686							
Physician Burnout Condition 2		0.663							
Physician Burnout Condition 3		0.644							
Physician Burnout Condition 4		0.742							
Physician Burnout Condition 5		0.729							
Physician Burnout Condition 6		0.736							
Physician Burnout Condition 7		0.764							
Physician Burnout Condition 8		0.753							
Physician Burnout Condition 9		0.746							
Physician Burnout Condition 10		0.722							
Physician Burnout Condition 11		0.778							
Physician Burnout Condition 12		0.785							
Physician Burnout Condition 13		-0.758							
Physician Burnout Condition 14		0.72							
Physician Burnout Condition 15		0.724							
Physician Burnout Condition 16		0.754							
Physician Burnout Condition 17		0.686							
Physician Burnout Condition 18		0.763							
Physician Burnout Condition 19		0.736							

Table g.3 Exploratory Factor Analysis of Role Stress

Item	Factor	Eigenvalue	Variance Explained (%)	Modified Item-to-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Role Conflict		1.808	13.910			0.862
Role Conflict 1	0.881			0.758	0.789	
Role Conflict 2	0.878			0.751	0.795	
Role Conflict 3	0.840			0.708	0.835	
Role Ambiguity		4.719	36.301			0.885
Role Ambiguity 1	0.814			0.715	0.862	
Role Ambiguity 2	0.798			0.712	0.863	
Role Ambiguity 3	0.817			0.716	0.862	
Role Ambiguity 4	0.817			0.743	0.856	
Role Ambiguity 5	0.817			0.726	0.859	
Role Overload		2.551	19.621			0.869
Role Overload 1	0.804			0.701	0.840	
Role Overload 2	0.793			0.694	0.841	
Role Overload 3	0.816			0.705	0.839	
Role Overload 4	0.799			0.699	0.840	
Role Overload 5	0.793			0.669	0.848	

Table g.4 Confirmatory Factor Analysis of Role Stress

Path	Parameter Estimate	Standardized Parameter Estimate	SMC
Role Conflict			
Role Conflict 1 ← Role Conflict	1	0.849	0.61
Role Conflict 2 ← Role Conflict	0.988	0.839	0.704
Role Conflict 3 ← Role Conflict	0.934	0.781	0.721
Role Ambiguity			
Role Ambiguity 1 ← Role Ambiguity	1	0.766	0.587
Role Ambiguity 2 ← Role Ambiguity	0.989	0.769	0.591
Role Ambiguity 3 ← Role Ambiguity	1.005	0.768	0.590
Role Ambiguity 4 ← Role Ambiguity	1.084	0.807	0.651
Role Ambiguity 5 ← Role Ambiguity	1.027	0.783	0.613
Role Overload			
Role Overload 1 ← Role Overload	1	0.764	0.584
Role Overload 2 ← Role Overload	0.958	0.759	0.576
Role Overload 3 ← Role Overload	0.932	0.766	0.587
Role Overload 4 ← Role Overload	1.007	0.766	0.587
Role Overload 5 ← Role Overload	0.887	0.723	0.523

Note: ***$P < 0.01$.

Table g.5 Exploratory Factor Analysis of Job Insecurity

Item	Factor	Eigenvalue	Variance Explained (%)	Correlation with Total After Item Deletion	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Job Insecurity Quantity		1.798	25.685			0.848
Emotional Insecurity 1	0.853			0.706	0.799	
Emotional Insecurity 2	0.875			0.727	0.778	
Emotional Insecurity 3	0.872			0.716	0.789	
Job Insecurity Quality		3.358	47.975			0.865
Cognitive Insecurity 1	0.862			0.751	0.813	
Cognitive Insecurity 2	0.817			0.697	0.835	
Cognitive Insecurity 3	0.853			0.729	0.822	
Cognitive Insecurity 4	0.806			0.680	0.841	

Table g.6 Exploratory Factor Analysis for Case Writing Intensity, Psychological Resilience, Perceived Organizational Support, and Overwork

Item	Factor	Eigenvalue	Variance Explained (%)	Correlation with Total after Modification	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Medical Record Burden		2.016	3.601			0.851
Medical Record Burden (Weekdays)	0.836			0.699	0.817	
Medical Record Burden (Weekends)	0.877			0.786	0.727	
Medical Record Burden (Holidays)	0.817			0.687	0.825	
Psychological Resilience		5.594	9.989			0.922
Psychological Resilience 1	0.75			0.688	0.915	
Psychological Resilience 2	0.748			0.688	0.915	
Psychological Resilience 3	0.795			0.743	0.912	
Psychological Resilience 4	0.757			0.696	0.915	
Psychological Resilience 5	0.752			0.69	0.915	
Psychological Resilience 6	0.793			0.741	0.912	
Psychological Resilience 7	0.744			0.682	0.915	
Psychological Resilience 8	0.773			0.716	0.913	
Psychological Resilience 9	0.765			0.707	0.914	
Psychological Resilience 10	0.742			0.688	0.915	
Perceived Organizational Support		14.043	25.077			0.961
Perceived Organizational Support 1	0.702			0.677	0.96	
Perceived Organizational Support 2	0.692			0.662	0.96	
Perceived Organizational Support 3	0.689			0.661	0.96	
Perceived Organizational Support 4	0.706			0.677	0.96	
Perceived Organizational Support 5	0.66			0.639	0.96	

Item	Factor	Eigenvalue	Variance Explained (%)	Correlation with Total after Modification	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Perceived Organizational Support 6	0.792			0.764	0.959	
Perceived Organizational Support 7	0.72			0.691	0.96	
Perceived Organizational Support 8	0.689			0.666	0.96	
Perceived Organizational Support 9	0.727			0.705	0.96	
Perceived Organizational Support 10	0.825			0.8	0.959	
Perceived Organizational Support 11	0.697			0.672	0.96	
Perceived Organizational Support 12	0.709			0.685	0.96	
Perceived Organizational Support 13	0.694			0.67	0.96	
Perceived Organizational Support 14	0.689			0.664	0.96	
Perceived Organizational Support 15	0.685			0.656	0.96	
Perceived Organizational Support 16	0.657			0.629	0.96	
Perceived Organizational Support 17	0.83			0.807	0.959	
Perceived Organizational Support 18	0.768			0.747	0.959	
Perceived Organizational Support 19	0.84			0.817	0.959	
Perceived Organizational Support 20	0.754			0.731	0.959	
Perceived Organizational Support 21	0.671			0.642	0.96	
Perceived Organizational Support 22	0.697			0.671	0.96	
Perceived Organizational Support 23	0.685			0.661	0.96	
Perceived Organizational Support 24	0.803			0.778	0.959	
Physician Burnout		9.861	17.609			0.934
Physician Burnout 1	0.691			0.651	0.93	
Physician Burnout 2	0.671			0.626	0.93	
Physician Burnout 3	0.657			0.612	0.931	
Physician Burnout 4	0.757			0.722	0.928	
Physician Burnout 5	0.737			0.707	0.929	
Physician Burnout 6	0.737			0.708	0.929	
Physician Burnout 7	0.765			0.733	0.928	
Physician Burnout 8	0.765			0.733	0.928	
Physician Burnout 9	0.745			0.712	0.929	
Physician Burnout 10	0.732			0.699	0.929	
Physician Burnout 11	0.781			0.747	0.928	

Item	Factor	Eigenvalue	Variance Explained (%)	Correlation with Total after Modification	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Physician Burnout 12	0.791			0.762	0.927	
Physician Burnout 13	-0.765			-0.742	0.951	
Physician Burnout 14	0.72			0.686	0.929	
Physician Burnout 15	0.723			0.687	0.929	
Physician Burnout 16	0.756			0.727	0.928	
Physician Burnout 17	0.691			0.652	0.93	
Physician Burnout 18	0.765			0.735	0.928	
Physician Burnout 19	0.737			0.709	0.929	