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The Relationship between Job Demands, Compassion Fatigue, and Provider-Patient Relationship among Chinese Healthcare Workers

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October, 2023

Department of Human Resources and Organizational Behavior

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Abstract

Tensions and conflicts within provider-patient relationships in China have noticeably escalated in recent years, with an increasing incidence of medical disputes and instances of violence becoming a significant concern. This study, rooted in the Job Demands-Resources (JD-R) theory, aimed to explore the intricate dynamics within the healthcare sector, specifically focusing on the relationships between job demands, compassion fatigue (CF), and the provider-patient relationship (PPR). In addition, we were interested in knowing whether compassion fatigue mediates the relationship between job demands and provider-patient relationship.

Through a nationwide survey, we garnered responses from healthcare professionals, resulting in 204 valid questionnaires. Regression analysis was employed to scrutinize the proposed theoretical model and assess the research hypotheses. The key findings are summarized as follows: (1) threat and violence are negatively related to provider-patient relationship, and positively related to compassion fatigue; (2) workload is positively related to compassion fatigue; (3) compassion fatigue is negatively related to provider-patient relationship; (4) compassion fatigue partially mediates the relationship between threat and violence and provider-patient relationship, and fully mediates The relationship between workload and provider-patient relationship.

This finding offers valuable insights for the government and hospital administrators, guiding them to develop and implement strategies that effectively balance the interplay between job demands, compassion fatigue, and the provider-patient relationship among healthcare workers. By doing so, they can foster a more positive and supportive medical work environment.

Keywords: job demands, compassion fatigue, provider-patient relationship

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Resumo

As tensões e conflitos nas relações entre os prestadores de cuidados de saúde e os doentes na China têm-se agravado notavelmente nos últimos anos. O número de disputas médicas aumentou e os casos de violência tornaram-se uma preocupação significativa. Este estudo, baseado na teoria *Job Demands-Resources* (JD-R), visou explorar as dinâmicas intrincadas no setor de saúde, focando especificamente nas relações entre as demandas do trabalho (*job demands*), a fadiga por compaixão (*compassion fatigue*, CF) e a relação prestador-doente (*provider-patient relationship*, PPR). Além disso, tivemos interesse em saber se a fadiga por compaixão media a relação entre as demandas do trabalho e a relação prestador-doente.

Através de uma pesquisa nacional, obtivemos respostas de profissionais de saúde, resultando em 204 questionários válidos. A análise de regressão foi utilizada para examinar o modelo teórico proposto e avaliar as hipóteses. Os resultados principais são: 1) a ameaça e a violência estão negativamente relacionadas com a relação prestador-doente e positivamente relacionadas com a fadiga por compaixão; 2) a carga de trabalho está positivamente relacionada com a fadiga por compaixão; 3) a fadiga por compaixão está negativamente relacionada com a relação prestador-doente; 4) a fadiga por compaixão media parcialmente a relação entre ameaça e violência e a relação prestador-doente, e media completamente a relação entre a carga de trabalho e a relação prestador-doente.

Os resultados oferecem visões valiosas para o governo e os administradores de hospitais, orientando-os a desenvolver e implementar estratégias que equilibrem eficazmente a interação entre as demandas do trabalho, a fadiga por compaixão e a relação prestador-doente para os profissionais de saúde e, ao fazer isso, promover um ambiente de trabalho médico mais positivo e de apoio.

Palavras-chave: demandas do trabalho; fadiga por compaixão; relação prestador-doente

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摘要

近年来，中国医患关系的紧张和冲突明显升级，医疗纠纷和暴力事件的发生率不断上升，这逐渐成为一个令人担忧的问题。本研究基于工作需求-资源（JD-R）理论，旨在探索医疗保健行业内错综复杂的动态，主要关注工作需求、同情疲劳（CF）和医患关系（PPR）之间的关系。此外，我们还有兴趣了解同情疲劳在工作需求和医患关系之间是否存在中介作用。

通过在全国范围内收集医务人员的在线问卷调查，最终产生了 204 份有效问卷。本研究采用回归分析来检验所提出的理论模型并验证研究假设。主要发现总结如下：

（1）威胁和暴力与医患关系呈负相关，与同情疲劳呈正相关；（2）工作量与同情疲劳呈正相关；（3）同情疲劳与医患关系呈负相关；（4）同情疲劳在威胁和暴力与医患关系之间起部分中介作用，在工作量与医患关系之间起完全中介作用。

这一发现为政府政策制定者和医院管理人员提供了有价值的视角，协助他们制定和实施有效平衡医护人员的工作需求、同情疲劳和医患关系之间相互作用的策略。通过这些措施，政府和医院可以营造一个更加积极的和能够为医务工作者提供支持的医疗工作环境。

关键词：工作需求、同情疲劳、医患关系

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Chapter 1: Introduction

1.1 Background

Tensions and conflicts within provider-patient relationship in China have noticeably escalated in recent years, with an increasing incidence of medical disputes and instances of violence becoming a significant concern (S. Ma et al., 2017; Zeng et al., 2023). China is amidst a transformative period of medical system reform. Concurrently, the year-over-year rise in medical disputes has led to a more strained and contentious atmosphere between healthcare providers and patients, with a notable depletion in mutual trust and integrity (Xinhua News Agency, 2023).

In 2021, the Chinese Social Survey and Research Center of Tsinghua University (2021), together with the Humanistic Medicine Professional Committee of the Chinese Medical Doctor Association, released the "2021 Chinese Physician Survey Report." This report provides a nuanced view of the doctor-patient relationship during Covid-19, highlighting a stark polarization. On one side, there is a palpable sense of gratitude and support from the public towards the healthcare workers, particularly those on the frontline, underpinned by a comprehensive understanding and empathy for the challenges they face. On the flip side, while healthcare workers are at risk of being exposed to deadly infectious diseases, extreme incidents still occur from time to time, including assaults and even the murder of doctors or nurses. The media plays a substantial role in shaping public perception, often casting doctors in a suspicious light and subjecting them to undue criticism and scrutiny. Examples abound, from healthcare workers in Wuhan being accused of putting on a "show" when dancing with patients, to doctors being falsely accused of misappropriating public goods for replenishing their energy with glucose, and even instances of doctors being labeled as "lazy" for eating bananas while transporting patients.

These incidents contribute to a growing atmosphere of distrust and animosity, making the provider-patient relationship in China increasingly fraught and tense. A study involving 12,683 primary care doctors across 13 provinces in China revealed that nearly 60% of healthcare workers had experienced physical violence (Xiao et al., 2021). The study reported this tense relationship is acknowledged as a common reality in many medical institutions, leading to a

series of adverse consequences including violent attacks on healthcare workers. This alarming trend indicates that the strained relationship between healthcare workers and patients has burgeoned into a significant social issue, necessitating urgent attention and remedial action.

In addition, a study conducted when compared to their counterparts in Europe (specifically, France and Germany), Asia (Japan), and Oceania (Australia), doctors in China shoulder a considerably heavier workload. Analysing the ratio of inpatients per doctor, the disparity has been steadily increasing since 2011, the point at which the workload of Chinese doctors began to surpass that of doctors in France, Germany, Japan, and Australia. By 2017, the scenario had further intensified. The number of inpatients each doctor in China's tertiary hospitals was responsible for not only exceeded the average workload of their colleagues in Australia and Japan but was in fact higher than the combined average of the two. This trend continued its upward trajectory, culminating in a staggering 100 patients per doctor per year by 2019 (Liang et al., 2022). Simultaneously, a study uncovered a significant disparity in the average number of patients assigned to nurses during day-time and night-time hours. In a major general hospital, a nurse is responsible for approximately 8 patients during the day, whereas this number dramatically rises to 23 patients at night (Shen et al., 2020). While it might be logical to assume a higher patient load at night due to patients and their families requiring rest, and consequently, having lower nursing needs, this substantial increase in the nurse-to-patient ratio during the night can adversely affect the distribution of night shifts among nurses, subsequently escalating their workload.

As part of the profession of trauma workers, healthcare workers have long been directly confronted with the suffering, pain, despair and death of their patients. Under pandemic conditions, such suffering is even more intense and heavy (Guo et al., 2021). The findings suggest that a significant number of healthcare workers are either affected by compassion fatigue or prone to developing it soon (Cocker & Joss, 2016; W. Xie et al., 2020; B. Zhang et al., 2022). A previous study reported that 74.8% of nurses in China experience work-related stress (W. Xie et al., 2021) and it was estimated that the risk of compassion fatigue among clinical nurses ranged from 21.6% to 44.8% (Mangoulia et al., 2011) ICU nurses suffer from severe compassion fatigue.

One particular study has identified a tangible link between compassion fatigue and the provider-patient relationship. Compassion fatigue, defined by Figley (1995), emerges from prolonged, intense engagement, self-expenditure, and stress encountered while interacting with patients. This condition has the potential to culminate in emotional burnout, diminished empathy, and a decrease in job satisfaction among healthcare professionals, as noted by Bhutani

et al. (2012). Such an impact can subsequently lead to a deterioration in the standard of patient care, as underscored by both Babineau et al. (2019) and Labib (2015). Hence, it is imperative for healthcare organizations to actively address issues related to empathy and compassion fatigue to uphold and ensure the delivery of high-quality patient care.

Guided by the JD-R model, this study aimed to examine the link between healthcare workers' job demands, provider-patient relationship and compassion fatigue. In addition, we were interested in knowing whether compassion fatigue mediates the relationship between job demands and provider-patient relationship.

1.2 Research question

Given the aforementioned context, this study seeks to investigate the relationship between job demands, compassion fatigue and provider-patient relationship. Recognizing that compassion fatigue arises from the emotional labour exerted by healthcare workers in their professional settings, this study also intends to delve into the determinants of compassion fatigue using the JD-R model as a framework. Consequently, this study poses the following research questions:

1. In the Chinese context, what kind of job demands relate to provider-patient relationship and compassion fatigue among healthcare workers?
2. Does compassion fatigue relate to the provider-patient relationship among Chinese healthcare workers?
3. What role that compassion fatigue plays between job demands and the provider-patient relationship? And how?

From the findings of this study, we can discern the job demands that relate to Chinese healthcare workers and gauge the depth of their relationship. Additionally, we can comprehend the role of compassion fatigue between job demands and the provider-patient relationship. Given these insights, the government and hospital administrator can prioritize adjustments to these specific job demands to lessen compassion fatigue and improve provider-patient relationship among Chinese healthcare workers. This can further enhance the work environment at the hospital level and offer valuable perspectives for future research endeavours.

1.3 Dissertation structure

This dissertation unfolds in a sequential and comprehensive manner, navigating through a path that elucidates the associations and implications of psychological models and concepts in the

healthcare context. Initially, the first chapter, we introduce the background of Chinese healthcare workers' working environment, including their relationship with patients, emotional labor, and workload. Then the second chapter, literature review, delves into the exploration and synthesis of existing knowledge, focusing on the JD-R model, compassion fatigue, and the nuanced dynamics within provider-patient relationship. This foundational chapter aims to scaffold our understanding and formulate the basis for the subsequent research endeavor. Following, the third chapter, methodology, delineates the research design, participants, instruments, and procedures employed to ensure the integrity and reliability of the research findings. Progressing to the fourth chapter, an in-depth data analysis is conducted, where the collected data are scrutinized and interpreted, drawing connections, and identifying patterns that hold the potential to answer the proposed research questions. In chapter 5, we will discuss the result compares with our hypothesis and previous studies. The final chapter of this dissertation offers a concise summary and conclusion, encapsulating the main findings and discussing their implications. Suggestions for future research are also presented, aiming to enrich existing knowledge and inform future work in the healthcare area.

Chapter 2: Literature Review

2.1 Job Demands and Resources Model (JD-R Model)

The Job Demands-Resources (JD-R) model, originally conceptualized by Arnold Bakker and Evangelia Demerouti, categorizes working conditions into two distinct dimensions: job demands (JD) and job resources (JR). These dimensions differentially influence employee well-being and outcomes (Bakker & Demerouti, 2007). The JD-R model is frequently employed in scholarly investigations to assess the impact of the occupational environment on well-being and job performance (Broetje et al., 2020; Thapa et al., 2022). Job demands are defined as the physical, psychological, and organizational aspects of a job that require continuous effort and skill from employees, potentially leading to stress and physiological strains (Demerouti et al., 2001; Yener & Coşkun, 2013). This concept holds significant importance in occupational psychology and has been rigorously examined across diverse professional environments (Deng et al., 2021; Van den Broeck et al., 2017; X. Xie et al., 2021).

Due to its large and rapidly ageing population, China has a high demand for doctors and nurses, which has led to an increasing job demands for them (Guo et al., 2021). Despite facing heightened demands, healthcare workers in China confront a myriad of challenges that detrimentally affect their job satisfaction. These encompass excessive workloads, significant job stress, suboptimal remuneration, elevated occupational hazards, and instances of workplace aggression (Chen et al., 2021). In large hospitals in China, the outpatient workload has been increasing, with specialists often seeing approximately 100 patients per day in the outpatient department, allocating typically less than three minutes per patient, contributing to patients' dissatisfaction and the deterioration of provider-patient relationship (Q. Li & Xie, 2013). A study conducted across 136 tertiary public hospitals in China revealed that a mere 48.22% of respondents expressed satisfaction with their current roles (Shi et al., 2023). For nurses, managing a patient's death is perceived as one of the most taxing and formidable experiences in clinical practice. Those who lack proficiency in handling patient demise might offer insufficient support to both the dying individuals and their families, thereby diminishing the quality of end-of-life care and potentially straining the provider-patient relationship (Zheng et al., 2018). Healthcare workers in China, particularly those in tertiary hospitals, enjoy a notable

social standing. However, they grapple with prolonged training durations, excessive workloads, medical accountability, pressures related to career advancement, and strained patient relations, all while receiving comparatively modest remuneration (Guo et al., 2021).

Based on the background of the healthcare industry presented in Chapter 1 and the factors affecting the provider-patient relationship summarised in the previous section, the job demands faced by Chinese healthcare workers can be categorized into the subsequent domains:

- **Workload:** This encompasses factors such as the duration of working hours, the intensity of tasks, and the time dedicated to training.
- **Exposure to Pain and Death:** Healthcare workers often care for patients with chronic illnesses or those at the end of life, resulting in the recurring emotional trauma of confronting morbidity and mortality.
- **Threats and Violence:** Healthcare workers may suffer threats, both verbal and physical, from patients or their relatives in clinical settings. There is also the potential of attending to patients who exhibit violence or threatening behaviours.

In sum, while there is a significant demand for healthcare workers in China, they confront numerous obstacles that adversely influence their job contentment and overall well-being. It is imperative for policymakers and hospital administrators to cultivate a work milieu that harmoniously balances job demands with resources. Such an approach is crucial for enhancing the job satisfaction and holistic well-being of China's medical workforce.

2.2 Provider-patient relationship (PPR)

In the past, the provider-patient relationship was largely considered a "doctor-patient relationship." In recent years, however, the number of providers has expanded to include other roles such as nurse practitioners and physician assistants (Honavar, 2018; Truog, 2012), although those in these roles usually work under the supervision or direction of a physician. In the realm of research, a common practice involves differentiating between the doctor-patient relationship and the nurse-patient relationship when exploring interactions between healthcare workers and patients. However, there exists a subset of researchers who opt to study healthcare workers as a collective entity (Kaba & Sooriakumaran, 2007). This approach not only broadens the scope of the provider group but also serves to illuminate specific phenomena or issues prevalent across the entire healthcare sector. In this study, we will consolidate the literature pertaining to both the doctor-patient and nurse-patient relationships, referring to them

collectively under the umbrella term of the provider-patient relationship, without making further distinctions.

The provider-patient relationship is rooted in trust and is characterized by the provider's ethical responsibility. The foundation of a positive provider-patient relationship is built on mutual trust, a shared comprehension of health-related objectives, effortless access to care for the patient, and the provider's commitment to championing the patient's well-being (Emmeline, 2021). A good provider-patient relationship involves empathy, strong communication, and shared decision-making. Positive provider-patient relationship leads to better patient health outcomes, increases patient satisfaction, and generates patient loyalty (Lo, 1999). The relationship's quality can also affect provider job satisfaction and burnout rates, especially in the case of strained relations between physicians and nurses (Julia et al., 2018).

The provider-patient relationship in China has been strained due to various factors. Mistrust and conflicts have become prevalent, with an increasing frequency of verbal and physical violence against healthcare workers. Less than 25% of surveyed healthcare students and junior professionals considered the current provider-patient relationships in China as "good" or acceptable. However, there's a strong optimism (98% of respondents) towards future improvements. Factors contributing to the strained relationship include eroding trust, unrealistic patient expectations, suboptimal service quality, inefficient communication, and an excessive workload for providers, and negative media reports. The need for policy or societal initiatives to enhance the provider-patient rapport in China is underscored by these elements (Du et al., 2020).

This tense and conflictual provider-patient relationship has negatively impacted the well-being of healthcare workers. The relationship has generally been marked by a pervasive atmosphere of distrust between patients and healthcare workers (Jing et al., 2013; Wang & Du, 2023). Elevated levels of depressive symptoms among healthcare workers have been reported in China, and aggression from patients, their relatives, or other visitors is explicitly pinpointed as the primary catalyst. Healthcare workers who report feelings of demoralization, diminished enthusiasm, and heightened anxiety after encountering or observing incidents of workplace aggression. Stressful working conditions, low job satisfaction, and diminished general well-being of healthcare workers can lead to negative staff attitudes, potentially deteriorating patient-provider interactions and escalating the likelihood of violent incidents (He et al., 2023; T. Li et al., 2023; Zhou & Rosenberg, 2021). Burnout syndrome is prevalent among healthcare workers in China, and it is associated with a decline in empathy and a negative impact on the provider-patient relationship (Lyu et al., 2023). Enhancing the environment for service delivery can lead

to increased patient contentment and better outcomes, alongside augmented job satisfaction for healthcare professionals (G. Deng et al., 2021; S. Deng et al., 2018). This can lead to a more positive provider-patient relationship and better well-being for healthcare workers (Lyu et al., 2023). Trust is critical to fostering positive provider-patient relationship, improving provider-patient relationship in China's public hospitals is critical (Han et al., 2022), improving the service provision environment can lead to a more positive provider-patient relationship and better well-being for healthcare workers.

2.3 Job demands and provider-patient relationship

The provider-patient relationship is crucial for preserving human connections in healthcare settings. A good relationship between healthcare providers and patients acts as a source of social support for patients and helps in preventing work-related stress for healthcare professionals. This, in turn, contributes to a conducive work environment and better occupational well-being for healthcare staff (Soler-Gonzalez et al., 2017). A positive provider-patient relationship can contribute to a better working environment, thereby enhancing healthcare staff's well-being. The "happy-productive worker" hypothesis suggests that happy and healthy workers are more productive, which indirectly implies that a conducive provider-patient relationship could lead to better patient care by fostering a positive work environment for healthcare staff (Teoh et al., 2020). Strained relationships between patients and doctors, combined with healthcare providers under significant stress in high-pressure hospital environments, can contribute to the prevalence of serious workplace violence (WPV) in China. A law implemented in 2015 aimed at protecting healthcare providers may have helped curb violence, but the underlying issues related to workload and patient-doctor relationships remain (J. Ma et al., 2021).

The Job Demands-Resources (JD-R) model plays a pivotal role in exploring the evolution of burnout. In this study, we have adapted the JD-R model, and we mainly explore the association between job demands, compassion fatigue and provider-patient relationship, so job resources will be included in the measurement in future research. Since compassion fatigue is recognized as a specific form of burnout, distinct yet closely related (Joinson, 1992), substituting the traditional burnout measurement with a compassion fatigue-related metric. Concurrently, the provider-patient relationship, which is intricately linked to the well-being of healthcare workers, replaces the well-being component in our model, as illustrated in Figure 2.1.

This research model sheds light on the intricate interactions between job demands, compassion fatigue, and the provider-patient relationship. It posits that escalating job demands positively relate to the degree of compassion fatigue, which, in turn, adversely relates to the provider-patient relationship, at the same time, there is also a negative association between job demands and provider-patient relationship. Through this framework, we aim to unravel the complex dynamics at play, offering insights into how the demands placed on healthcare professionals can ripple through to affect their interactions with patients and, consequently, the quality of care provided.

Based on previous research, we have learned about the provider-patient relationship associate with three job demands based on JD-R model, which are workload, exposure to pain and death, threat and violence. Thus, we propose the hypotheses as following:

H1.1. Workload is negatively related to the Provider-Patient Relationship.

H1.2. Exposure to pain and death is negatively related to the Provider-Patient Relationship.

H1.3. Threat and violence is negatively related to the Provider-Patient Relationship.

2.4 Compassion fatigue

Compassion fatigue (CF) has been described as the "natural consequent behaviours and emotions resulting from knowing about a traumatizing event experienced by a significant other - the stress resulting from helping, or wanting to help, a traumatized or suffering person" (Figley, 1995, p7). It's alternatively termed as vicarious or secondary trauma, suggesting the phenomenon whereby an individual internalizes and becomes affected by the traumatic experiences of another (Lamothe et al., 2014). Figley's book (1995) calls it "the cost of caring". Compassion fatigue is often mistaken for burnout, this is an offshoot of burnout, the study exploring burnout first highlighted the adverse psychosocial consequences that emergency room nurses endure (Joinson, 1992). This unique type of burnout affects individuals in caregiving professions, eventually renders a person unable to empathize with or care for another's suffering.

The impacts of compassion fatigue on healthcare workers are profound, affecting their mental and physical well-being, productivity, and the quality of care they extend to patients. This form of fatigue can lead to decreased productivity, increased errors, and may ultimately harm the provider-patient relationship (Bouchard, 2019; Cavanagh et al., 2020). Specifically, healthcare providers may experience emotional, physical, and/or spiritual exhaustion from

working with traumatized individuals, which in turn negatively affects both the individual healthcare workers and the healthcare system at large (Alharbi et al., 2019; Peters, 2018).

Compassion fatigue is characterized as an amalgamation of Secondary Traumatic Stress (STS) and cumulative Burnout (BO) (Cocker & Joss, 2016). Burnout and STS are both associated with compassion fatigue, but as per Stamm's (2005) delineation, they represent distinct outcomes of exposure. The magnitude of compassion fatigue is ascertained by integrating the items from the burnout and STS subscales. Elevated scores on the burnout subscale signal increased burnout intensity. Conversely, heightened scores on the STS subscale denote elevated levels of secondary traumatic stress. (Ondrejková & Halamová, 2022)

It's noteworthy that the incidence of compassion fatigue among healthcare professionals fluctuates based on the specific population and environment under examination. The observed prevalence of compassion fatigue in healthcare professionals spans between 21.6% and 44.8%, contingent upon the designated hospital unit or geographic region. (Cocker & Joss, 2016; Ondrejková & Halamová, 2022). Research by Natália Ondrejková MA (2011) offers an extensive summary of the prevalence of compassion fatigue across a range of caregiving professions – including doctors, nurses, paramedics, family nurses, teachers, social workers, psychologists, psychotherapists, coaches, clergy, and law enforcement officers. Physicians reported the lowest levels of compassion satisfaction, markedly lower than other caregiving professions. Physicians particularly have higher prevalence than nurses of moderate compassion fatigue (B. Zhang et al., 2022). Physicians reported the minimal levels of satisfaction derived from compassion, coupled with the maximal levels of compassion fatigue, putting physicians at an increased vulnerability to the adverse effects stemming from their work. Therefore, there is a need to bring to the attention of health authorities the creation of strategies and programs aimed at mitigating compassion fatigue.

Symptoms of compassion fatigue hinder effective patient care and the execution of other professional responsibilities (Powell, 2020). Notable indicators of compassion fatigue encompass feelings of powerlessness and despair in the face of a patient's distress, diminished empathy and sensitivity, sensations of being swamped and drained by job demands, and experiencing feelings of detachment, numbness, and emotional disconnection (Marshman et al., 2022). Fundamentally, compassion fatigue impedes one's cognitive clarity, emotional regulation, validation, and the preservation of hope. These alterations can lead to ramifications such as fatigue, sleep disturbances, anxiety, headaches, gastrointestinal issues, irritability, emotional numbness, and a reduced sense of purpose (Sinclair et al., 2017). While burnout may not necessarily originate from overpowering emotions that surpass one's capacity to assist

others or from witnessing others' hardships, compassion fatigue is explicitly tied to these factors (Cavanagh et al., 2020).

There are several studies have indicated the prevalence of compassion fatigue among various groups of healthcare workers in China, especially nurses, possibly due to the work-related stress they experience. For instance, one study found that 75.9% of emergency department nurses experienced compassion fatigue, with working position, job satisfaction, diet habit, sleep hours per day, and occupational stress identified as predictive factors (W. Xie et al., 2023). The phenomenon of compassion fatigue among healthcare professionals in China is acknowledged, yet the exact prevalence and influential factors may vary across different studies and healthcare settings (Jin et al., 2021).

Based on extant research, the repercussions of compassion fatigue on healthcare workers within their workplace encompass the following dimensions:

- Diminished quality of patient care: Compassion fatigue can compromise the capacity of healthcare professionals to offer empathetic care. Those grappling with compassion fatigue might manifest heightened emotional responses, emotional detachment, or irritability, which can adversely influence their patient interactions.
- Elevated medical malpractice risk: Compassion fatigue potentially heightens the susceptibility to medical errors. Afflicted healthcare professionals might be prone to oversights due to diminished concentration or attentiveness.
- Decreased job satisfaction: Compassion fatigue can erode job satisfaction among healthcare practitioners. As they encounter the weight of compassion fatigue, they might sense a void in job satisfaction and wane in their vocational commitment.

Based on the review above, the hypotheses is stated as follow:

H2.1. Workload is positively related to compassion fatigue.

H2.2. Exposure to pain and death is positively related to compassion fatigue.

H2.3. Threat and violence is positively related to compassion fatigue.

2.5 Compassion fatigue and Provider-patient relationship

The association between compassion fatigue and the provider-patient relationship is a topic with mixed research results. Some studies have found no association between burnout and differences in physician behaviour toward patients (Ahmad et al., 2018). However, other studies have shown that compassion fatigue and burnout may detrimentally affect the standard of care delivered to patients.

Compassion fatigue arises from extended, intense interactions with patients, combined with self-expenditure and exposure to stress (Babineau et al., 2019) that can lead to emotional exhaustion, reduced empathy, and decreased job satisfaction in healthcare professionals (Bhutani et al., 2012). Burnout is a condition characterized by physical and mental depletion, resulting from a diminished capacity to handle daily challenges and demands. (Ahmad et al., 2018)

One study showed that expressions of compassion and the development of fatigue were seen as endpoints in a transactional model of compassion for physicians. The model suggests that expressions of compassion are influenced by the physician's personal and professional characteristics, patient characteristics, and the context in which care is provided (Fernando & Consedine, 2014). Therefore, addressing compassion and compassion fatigue is critical for healthcare organizations to maintain the quality of care they provide to their patients.

Based on the literature reviews, the role of compassion fatigue between job demands and burnout is not clear, and we suppose to test these hypotheses:

H3. Compassion fatigue is negatively related to the Provider-Patient Relationship.

H4.1 Compassion fatigue mediates the relationship between workload and Provider-Patient Relationship.

H4.2 Compassion fatigue mediates the relationship between exposure to pain and death and Provider-Patient Relationship.

H4.3 Compassion fatigue mediates the relationship between threat and violence and Provider-Patient Relationship.

We propose the above hypotheses and they also show in figure 2.1:

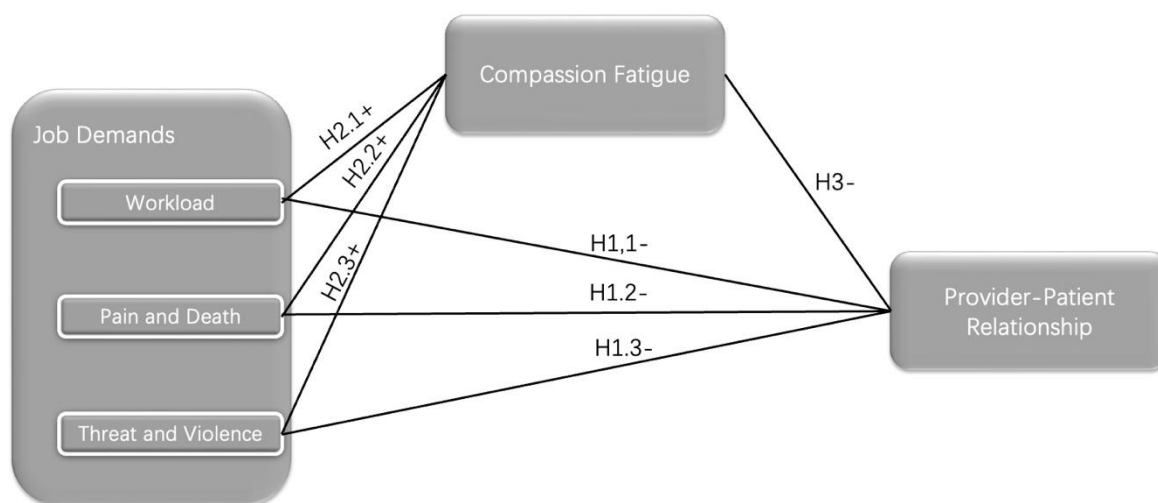


Figure 2.1 Research model

Chapter 3: Methodology

3.1 Procedure and sample

The research targets of this study are the healthcare workers including doctors and nurses of China, the main responders were from two provinces, 39.7% from Shanghai, 20.1% from Guangdong, there are also some from Hebei, Zhejiang, Liaoning and other provinces. The questionnaire was disseminated to participants via WeChat and received 261 responses. All of the questionnaires received were fully completed. Considering the number of items in the questionnaire, we established a predetermined minimum completion time of 5 minutes. Consequently, any questionnaires completed in under 5 minutes were deemed invalid and subsequently removed from the dataset. Following this filtration process, a total of 204 responses were validated, resulting in an effective response rate of 78.16%.

3.2 Measurement scale

The research questionnaire composed four aspects: (1) job demands; (2) compassion fatigue; (3) provider-patient relationship, and (4) the respondent's social-demographic characteristics.

3.2.1 Job demands

This study examined three job demands, namely pain and death, threat and violence, and workload. We employed a scale and chose two aspects from it for measuring specific job demands within the health care sector-Development and psychometric assessment (Sundin et al., 2008) to measure the first two job demands. The "pain and death" was measured with 6 items (e.g., "*Numerous deaths in a row*"), The "threat and violence" was measured with 3 items (e.g., "*Have experienced threats from patients*"). The workload was measured with three-item (e.g., "*I have too much work to do*"), which were from questionnaires on the experience and assessment of work scale (QEAW) (Lequeurre et al., 2013). In this study, we use the 6-point Likert scale ranging from "Never" (1) to "Always" (6). The higher the score is, the more job demands that healthcare workers have. All items were translated from English to Chinese to create the Chinese version.

3.2.2 Compassion fatigue

Adopted from Y. Zhang (2021), the CF short scale Chinese version (C-CF short scale) measured compassion fatigue with 13 items. Its validity has been verified in Chinese healthcare system. The C-CF short scale based on 2 dimensions, with 8 items belong to Job burnout, (e.g., “*I have felt trapped by my work.*”), and 5 items belong to secondary trauma, (e.g., “*Suddenly recalled frightening experience while working with client.*”). Participants were asked to respond using a 6-point Likert scale, with options ranging from "Never" (1) to "Always" (6). A higher score on this scale indicates a higher level of compassion fatigue.

3.2.3 Provider-Patient Relationship:

Provider-patient relationship was measured from a 10-item scale which developed by Zeng et al. (2018). The original scale measures the doctor-patient relationship and based on the definition of provider-patient relationship in the literature review, this study applied this scale to measure both relationship between doctors and nurses and patients. The DPR scale consists of 4 for trust (e.g., “*The patient trusts me to put his/her medical needs first.*”), 6 items for treatment (e.g., “*I often patiently communicate with patients and their families over and over again.*”). Respondents are requested to use a 6-point Likert scale ranging from “Strongly disagree” (1) to “Strongly agree” (6). The higher the score is, the better relationship between healthcare workers and patients has. The original language of the questionnaire is Chinese, so it was used directly in the actual survey.

In order to enhance the explanatory power and accuracy of the model and to improve the construct validity of the instrument to ensure that the resulting factors accurately reflect the underlying theoretical constructs, we did exploratory factor analysis (EFA) and reliability analysis on all variables to test which items are not acceptable. In addition, by optimizing the items, we were able to improve the reliability of the questionnaire to ensure consistency and repeatability. Items would be considered for removal when their factor loadings less than 0.50, or when an item has high cross-loading, which indicating ambiguity and a lack of clarity regarding its factorial association (Cabrera-Nguyen, 2010). The significance of the item’s content from both theoretical and practical perspectives should also be considered. As well as other statistical metrics, including commonalities and Cronbach's alpha coefficients, play a crucial role in informing the decision-making process regarding item retention or deletion. The reliability of each dimension within the scales, as well as the overall scale reliability, were affirmed with Cronbach's alpha values surpassing 0.7, showcasing robust consistency across

the factors (Tavakol & Dennick, 2011). The model demonstrated strong convergent validity, as evidenced by the majority of Average Variance Extracted (AVE) values exceeding the threshold of 0.5 (Chin, 1998).

3.2.4 Social-demographic characteristics

Variables comprising gender (Female=1, Male=2), age, education level, marital status, department, position, professional position, hospital size, hours of work in hospitals per week, Average number of night shifts per month, length of service in current hospital.

3.3 Statistical analysis

Data analysis was conducted using IBM SPSS Statistics software (version 29 for Mac). To analyze demographic characteristics and other variables, we employed descriptive statistics. The relationships between different variables were examined through correlation and linear regression analyses. Additionally, we calculated correlations and coefficients alpha for internal consistency reliability.

Following Baron and Kenny (1986), our analytical procedure encompassed several key steps:

1. Establishing a significant relationship: We first needed to confirm a significant relationship between the independent variable and the dependent variable.
2. Assessing the mediator variable: The mediator variable must demonstrate a significant association with the independent variable.
3. Controlling for independent variable Effects: Even after accounting for the effects of the independent variable, the mediator variable must still significantly influence the dependent variable.
4. Evaluating the change in significance: With the mediator variable considered, we examined the change in significance between the independent variable and dependent variable. If this relationship remains significant, it indicates partial mediation. If it becomes non-significant, it suggests full mediation.

Finally, we sequentially tested the regression coefficients to thoroughly assess the mediating effect. After that, the bootstrap analysis method was employed to derive estimates of our key statistics by repeatedly resampling from our original dataset. Bootstrapping offers a non-parametric alternative to traditional inferential statistics, making it particularly advantageous for our data, which might have small sample sizes or not adhere to normal distribution assumptions (Wood, 2004, 2005). This method allowed us to establish robust confidence

intervals and test hypotheses more accurately in instances where classical parametric procedures could be less reliable.

Chapter 4: Results

4.1 Demographic statistics

The study's participants comprised doctors and nurses from public hospitals across China, with a notable 39.7% of respondents hailing from Shanghai. Additional representation included Guangdong at 20.1%, Hebei at 13.2%, Zhejiang at 10.8%, Liaoning at 9.8%, and various other provinces accounting for 6.4%. A predominant majority of the respondents were female (77.5%) and held positions as doctors (64.7%). The demographic of the sample displayed a relatively balanced age distribution, with the largest cohort being those aged 31-40 years (37.7%), followed by 20-30 years (25.5%), 41-50 years (24%), and those over 50 years (12.7%). The youngest participant was 20 years old, and the oldest was 75.

From a departmental perspective, as delineated in Table 1, the majority were from internal medicine (32.4%) and other departments (41.7%). Regarding working hours, most healthcare workers reported working more than 40 hours per week, with 57.8% working 40-50 hours and 34.3% exceeding 50 hours. In terms of night shifts, the majority worked 0-4 average number of night shifts per week (56.4%), while 33.8% worked 5-9.

Moreover, the tenure of participants at their current hospital showcased a relatively even distribution. A larger proportion, 28.4%, had been at their current hospital for ≥ 16 years, closely followed by those with less than 5 years of service (27%). In relation to the size of the hospital, 48.5% of participants were employed in hospitals with ≤ 500 beds, while 20.1% worked in larger institutions with 1501-2000 beds.

Table 4.1 Demographics characteristics of the sample (N=204)

Measure	N (%)	Measure	N (%)
Provinces		Marital Status	
Shanghai	81 (39.7%)	Married	153 (75%)
Guangdong	41 (20.1%)	Unmarried	50 (24.5%)
Hebei	27 (13.2%)	Other	1 (0.5%)
Zhejiang	22 (10.8%)	Position	
Liaoning	20 (9.8%)	Doctor	132 (64.7%)
Others	13 (6.4%)	Nurse	72 (35.3%)
Gender		Hospital Size	

The Relationship between Job Demands, Compassion Fatigue, and Provider-Patient Relationship among Chinese Healthcare Workers

Female	158 (77.5%)	≤500	99 (48.5%)
Male	46 (22.5%)	501-1000	22 (10.8%)
Age		1001-1500	22 (10.8%)
20-30	52 (25.5%)	1501-2000	41 (20.1%)
31-40	77 (37.7%)	>2000	20 (9.8%)
41-50	49 (24%)	Professional Position	
>50	26 (12.7%)	Physician	41 (20.1%)
Education		Resident Physician	50 (24.5%)
College degree or below	34 (16.7%)	Associate Chief Physician	30 (14.7%)
Bachelor degree	94 (46.1%)	Chief Physician	11 (5.4%)
Master degree or above	76 (37.3%)	Nurse	11 (5.4%)
Department		Senior nurse	33 (16.2%)
Internal Medicine	66 (32.4%)	Supervisor nurse	22 (10.8%)
Surgical	29 (14.2%)	Co-chief nurse	5 (2.5%)
Obstetrics and Gynaecology	7 (3.4%)	Chief nurse	1 (0.5%)
Emergency Medicine	4 (2%)	Length of service in your hospital (years)	
Oncology	8 (3.9%)	≤5	55 (27%)
Intensive care unit (ICU)	5 (2.5%)	6-10	49 (24%)
Other	85 (41.7%)	11-15	42 (20.6%)
Hours of work in hospitals/week		≥16	58 (28.4%)
<40	16 (7.8%)	Average number of night shifts/month	
40-50	118 (57.8%)	0-4	115 (56.4%)
>50	70 (34.3%)	5-9	69 (33.8%)
		≥10	20 (9.8%)

4.2 Factor analysis and internal consistency

4.2.1 Job demands

Subsequent to performing comprehensive factor analysis and reliability analysis on the overall job demands construct, we proceeded to conduct reliability analyses on each of its constituent sub-factors individually. Table 4.2 summarized the component of job demands. JD1, JD2, JD3, and JD4 predominantly address the exposure of healthcare workers to pain and death, highlighting the emotional and psychological challenges they face in their professional roles. With regard to the variable “pain and death”, a factor analysis with the original 6 items showed there are two items for pain and death were not acceptable, which are “Difficulties in giving/obtaining pain relief” (Abbreviation item D) and “Caring for patients with severe chronic pain” (Abbreviation item C).

Table 4.2 Rotated component matrix of job demands

	Item	Component		
		Pain and Death	Threat and Violence	Workload
JD1	Numerous deaths in a row	0.811		
JD2	Unexpected or dramatic deaths	0.764		
JD3	Caring for patients with prolonged disease	0.817		
JD4	Caring for dying patients	0.844		
JD5	Have experienced threats from patients			0.884
JD6	Have been exposed to violence from patients			0.869
JD7	Caring for aggressive and threatening patients	0.387		0.750
JD8	I have too much work to do.		0.832	
JD9	I have to work extra hard in order to complete something.		0.900	
JD10	I have to hurry.		0.844	

In the process of conducting a Principal Component Analysis (PCA) on the dataset, our initial intention was to extract three components, upon examination of the component matrix and the rotated component matrix, it was observed that items D and C loaded substantially onto a fourth component, separate from the rest of the items. This deviates from our theoretical framework, where we expected items to load onto three components. On the other hand, upon inspection of the Component Matrix, two items, namely Item D and Item C, exhibit factor loadings that do not clearly associate with the three intended components. Specifically, item D shows a factor loading of 0.612 on Component 1 but also a cross-loading of 0.714 on Component 4 in the Rotated Component Matrix, item C has a factor loading of 0.480 on Component 1 and similarly exhibits a cross-loading of 0.829 on Component 4 in the Rotated Component Matrix. Thus, we removed them to modify the model and to ensure a clearer and more meaningful component structure that aligns with the original design of the study.

JD4, JD5, and JD6 primarily focus on the threats and violence encountered by healthcare workers, whereas JD7, JD8, and JD9 emphasize the substantial workload that these professionals must manage. This categorization of job demands components aligns with prior recommendations.

Upon refining the indices, a subsequent reliability analysis was performed. The Kaiser-Meyer-Olkin (KMO) measure for job demands yielded a value of .785, and the Bartlett's Test of Sphericity was statistically significant ($p < .001$), indicating that factor analysis and Principal Component Analysis (PCA) were appropriately applied to the job demands data. The internal consistency of the job demands construct was robust, with a Cronbach's α of .813. Additionally,

the constructs of pain and death, threat and violence, and workload demonstrated strong internal consistency, with Cronbach's α values of .838, .817, and .838 respectively. This affirms the reliability of the measures used to assess the various components of job demands.

4.2.2 Compassion fatigue

The factor analysis and reliability analysis conducted on the two-factor structure of compassion fatigue demonstrated satisfactory fit indices. The KMO measure for compassion fatigue was .930, and the Bartlett's Test of Sphericity was statistically significant ($p < .001$), indicating that factor analysis and PCA were suitable for evaluating compassion fatigue.

The composition of compassion fatigue, as outlined in Table 4.3, was found to be consistent with prior theoretical and empirical work. Specifically, items CF1 through CF8 predominantly addressed aspects of job burnout, while items CF9 through CF13 pertained more directly to secondary trauma.

Table 4.3 Rotated component matrix of compassion fatigue

Item		Component	
		JB	ST
CF1	I have felt trapped by my work.	0.816	
CF2	Sense of hopelessness working with clients.	0.657	0.311
CF3	Felt tired due to work as caregiver.	0.775	
CF4	Felt depressed as a result of work.	0.818	
CF5	Unsuccessful at separating work from personal life.	0.663	0.321
CF6	Sense of worthlessness associated with work.	0.768	
CF7	Feel like a "failure" in work.	0.788	
CF8	Thoughts about not achieving goals.	0.795	
CF9	Flashbacks connected to clients.	0.349	0.748
CF10	Troubling dreams similar to client's.		0.814
CF11	Intrusive thoughts after working with difficult clients.	0.417	0.781
CF12	Suddenly recalled frightening experience while working with client.	0.304	0.822
CF13	Losing sleep over client's traumatic experience.		0.836

With a Cronbach's α of .931, the internal consistency of the overall compassion fatigue measure was deemed excellent. Furthermore, the constructs of job burnout and secondary trauma also demonstrated robust internal consistency, with Cronbach's α values of .920 and .903, respectively.

Given these results, all 13 items were retained for subsequent analyses. The high Cronbach's alpha of 0.931 underscores the reliability of the compassion fatigue measure.

4.2.3 Provider-Patient Relationship

The factor analysis and reliability analysis on the provider-patient relationship two-factor structure yielded satisfactory fit indices. KMO measure for provider-patient relationship was .915, and the Bartlett's Test of Sphericity was statistically significant ($p < .001$). This suggests that factor analysis and PCA are adequate methods for assessing the provider-patient relationship.

As summarized in Table 4.4, the provider-patient relationship can be divided into two main components. The first component, represented by items PPR1 to PPR4, focuses on the trust between healthcare workers and patients. The second component, represented by items PPR5 to PPR10, pertains to the treatment provided by healthcare workers. This categorization aligns with prior theoretical and empirical findings, affirming the validity of the provider-patient relationship's structure.

Table 4.4 Rotated component matrix of provider-patient relationship

	Item	Component	
		Treatment	Trust
PPR1	The patient trusts me to put his/her medical needs first.		0.807
PPR2	The patient trusts the diagnosis and treatment plan I develop for him/her.	0.326	0.860
PPR3	Patients are happy to follow my recommended treatment plan.		0.852
PPR4	The patient believes that the examination items I requested are reasonable.		0.868
PPR5	I often patiently communicate with patients and their families over and over again.	0.767	0.336
PPR6	I always carefully inform patients of the possible risks of their diagnosis and treatment.	0.791	
PPR7	I am always serious about helping patients and their families.	0.827	
PPR8	I often compare multiple options and provide patients with the most reasonable diagnosis and treatment plan.	0.734	0.388
PPR9	I am proud that my professional skills can effectively help patients.	0.779	
PPR10	I am very happy to receive follow-up visits from patients.	0.822	

The internal consistency of the provider-patient relationship was found to be excellent, with a Cronbach's α of .920. Similarly, the internal consistency of the trust and treatment components were also strong, with Cronbach's α values of .914 and .913, respectively.

In light of these results, all 10 items will be retained for further analysis. The high Cronbach's alpha values for the overall provider-patient relationship and its two components underscore the reliability of this measure.

4.3 Correlation analysis

Table 4.5 displays the correlation analysis results for healthcare worker job demands, compassion fatigue, provider-patient relationship and social-demographic characteristics. Job demands were significantly, and negatively, correlated with provider-patient relationship ($r = -.157, p < 0.05$). Job demands were positively correlated with compassion fatigue ($r = .414, p < 0.01$). Compassion fatigue was significantly and negatively correlated to provider-patient relationship ($r = -.375, p < 0.01$).

Between the relationship of job demands and provider-patient relationship, only threat and violence was significantly and negatively related to provider-patient relationship ($r = -.283, p < 0.01$). Between the relationship of job demands and compassion fatigue, workload was significantly related to compassion fatigue ($r = .285, p < 0.01$), threat and violence was also significantly and positively related to compassion fatigue ($r = .419, p < 0.01$),.

Table 4.5 Means, Standard Deviations, Internal Consistencies (Cronbach's α on the Diagonal), and Spearman Correlations Among the Variables (N=204)

Variables	M (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1age	\																							
2Gender	\	-0.07																						
3Marital_status	\	-.540**	0.09																					
4Position (Total)	\	-.348**	-.325**	.153*																				
5Doctor_Title	\	.580**	-0.03	-.510**	.c																			
6Nurse_Title	\	.819**	-.241*	-.233*	.c	.c																		
7Years	\	.692**	-0.13	-.501**	-0.01	.454**	.733**																	
8Education	\	-0.11	.342**	-0.01	-.449**	0.05	0.12	-.198**																
9Department	\	.191**	-0.09	-0.06	-0.10	0.09	.284*	0.13	-0.11															
10Nightshifts	\	-.400**	-0.12	0.10	.285**	-0.16	-.522**	-.221**	-0.06	-.325**														
11Hours_week	\	-0.04	.214**	-0.05	-.261**	0.05	0.05	-0.12	.339**	-0.12	0.11													
12Professional Position	\	-.568**	-0.03	.471**	.309**	-.548**	-.566**	-.521**	-.195**	-0.05	.201**	-0.03												
13Hospital Size	\	-.453**	-0.14	.264**	.541**	-.179*	-.285*	-.192**	-0.10	-.187**	.399**	-.139*	.256**											
14PPR	5.54 (0.51)	.160*	-0.12	-.307**	-0.05	.202*	-0.07	.170*	-0.06	0.12	0.04	0.00	-.196**	-0.11	(-0.92)									
15PPR_treatment	5.69 (0.46)	.145*	-0.08	-.311**	-0.08	.210*	-0.10	.146*	-0.01	0.10	0.05	0.03	-.173*	-0.10	.896**	(-0.913)								
16PPR_trust	5.31 (0.73)	.144*	-.141*	-.243**	-0.02	0.15	-0.02	.161*	-0.10	0.11	0.02	-0.02	-.180*	-0.09	.905**	.622**	(-0.914)							
17CF	4.34 (1.63)	-0.01	0.12	0.00	-.161*	-0.10	0.09	-0.04	.246**	-0.03	-0.08	.234**	0.00	0.02	-.375**	-.248**	-.424**	(-0.931)						
18CF_JB	5.52 (0.62)	-0.07	0.12	0.06	-.173*	-0.13	0.01	-0.07	.258**	-0.04	-0.09	.218**	0.00	0.05	-.401**	-.275**	-.443**	.945**	(-0.92)					
19CF_ST	2.38 (0.98)	0.09	0.09	-0.10	-0.10	-0.02	0.18	0.01	.164*	0.00	-0.03	.203**	0.00	-0.03	-.239**	-.141*	-.286**	.840**	.618**	(-0.903)				
20JD	2.50 (1.10)	-0.13	-0.04	-0.01	0.11	0.16	0.04	-0.04	.274**	-.230**	0.12	.218**	-0.02	.266**	-.157*	-0.07	-.206**	.414**	.405**	.325**	(-0.813)			
21JD_workload	3.34 (1.25)	0.07	0.11	-.161*	-.175*	.266**	0.13	0.03	.352**	0.04	-0.11	.324**	-.175*	-0.01	0.04	0.12	-0.04	.285**	.312**	.167*	.611**	(-0.838)		
22JD_pain & death	2.17 (1.05)	-.226**	-.183**	0.12	.306**	0.04	-0.06	-0.06	0.13	-.370**	.262**	0.09	0.09	.432**	-0.11	-0.07	-0.14	.253**	.247**	.201**	.851**	.250**	(-0.838)	
23JD_threat & violence	3.40 (0.78)	-0.04	0.12	-0.08	-0.06	0.11	0.07	-0.02	.181**	-0.02	-0.02	0.13	-0.05	-0.02	-.283**	-.212**	-.295**	.419**	.377**	.385**	.657**	.249**	.333**	(-0.817)

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

c. Cannot be computed because at least one of the variables is constant.

4.4 Hypotheses testing

4.4.1 Hypothesis 1

In order to test hypothesis “H1.1. Workload is negatively related to the Provider-Patient Relationship.”, “H1.2. Exposure to pain and death is negatively related to the Provider-Patient Relationship.”, and “H1.3. Threat and violence is negatively related to the Provider-Patient Relationship.”, we conducted a regression analysis to see if there is a significant relationship between job demands and provider-patient relationship.

Table 4.6 Regression analysis (PPR and job demands)

Independent variable	PPR (Dependent Variable)					
	R	R ²	Adjusted R ²	β	t	Sig.
Workload				0.129	1.83	0.069
Pain and Death	.309 ^a	0.096	0.082	-0.046	-0.64	0.523
Threat and Violence				-0.300	-4.13	<.001

a. Predictors: (Constant), workload, threat and violence, pain and death

It is shown in Table 4.6, only threat and violence is significantly and negatively related to provider-patient relationship ($\beta = -.300$, $p < .001$), workload and pain and death do not have significant relationship with provider-patient relationship. Thus, threat and violence exhibited a significant negative relationship with provider-patient relationship, while workload showed a positive trend that might be significant in larger or different samples. Pain and death's correlation with provider-patient relationship was not evident in this analysis but might be relevant in other contexts. Therefore, our hypothesis H1.3 is supported, hypotheses H1.1 and H1.2 are not supported.

4.4.2 Hypothesis 2

In order to test hypothesis “H2.1. Workload is positively related to compassion fatigue.”, “H2.2. Exposure to pain and death is positively related to compassion fatigue.”, and “H2.3. Threat and violence is positively related to compassion fatigue.” we conducted a regression analysis to see if there is a significant relationship between job demands and compassion fatigue.

Table 4.7 Regression analysis (compassion fatigue and job demands)

Independent variable	CF (Dependent Variable)					
	R	R ²	Adjusted R ²	β	t	Sig.
Workload				0.175	2.664	0.008
Pain and Death	.467 ^a	0.218	0.207	0.095	1.412	0.16
Threat and Violence				0.344	5.106	<.001

a. Predictors: (Constant), workload, threat and violence, pain and death

It is shown in Table 4.7, workload ($\beta = .175, p < 0.01$) and threat and violence ($\beta = .344, p < 0.001$) are significantly and positively relate to compassion fatigue, exposure to pain and death does not have significant relationship with compassion fatigue. Both workload and threat and violence exhibit a significant and positive association with compassion fatigue. Therefore, our hypothesis H2.1 and hypothesis H2.3 are supported, hypothesis H2.2 is not supported.

4.4.3 Hypothesis 3

In order to test hypothesis “H3 Compassion fatigue is negatively related to the Provider-Patient Relationship.”, we conducted a regression analysis to see if there is a significant relationship between compassion fatigue and provider-patient relationship.

Table 4.8 Regression analysis (PPR and compassion fatigue)

Independent variable	PPR (Dependent Variable)					
	R	R2	Adjusted R2	β	t	Sig.
CF	.375 ^a	0.141	0.136	-0.375	-5.751	<.001

a. Predictors: (Constant), compassion fatigue

It is shown in Table 4.8, compassion fatigue is significantly and negatively related to provider-patient relationship ($\beta = -.375, p < 0.01$) as evidenced by linear regression analyses. Therefore, our hypothesis H3 is supported.

4.4.4 Hypothesis 4

To test the hypothesis "H4.1 Compassion fatigue mediates the relationship between workload and Provider-Patient Relationship.", "H4.2 Compassion fatigue mediates the relationship between exposure to pain and death and Provider-Patient Relationship.", "H4.3 Compassion fatigue mediates the relationship between threat and violence and Provider-Patient Relationship.", a liner regression analysis was performed to assess the significance of the relationship between job demands and provider-patient relationship, with compassion fatigue included as a mediating variable.

The linear regression analysis results as we can see in table 4.9 revealed that while the relationship between workload and provider-patient relationship was initially not significant (as established in hypothesis H1.1), the inclusion of compassion fatigue as a mediating variable resulted in a significant and positive relationship between workload and provider-patient relationship ($\beta = .191, p < 0.01$), which is support hypothesis H4.1. On the other hand, the negative correlation between threat and violence and provider-patient relationship was reduced through the mediating effect of compassion fatigue, changing from $\beta = -.300, p < 0.01$ to $\beta =$

-0.179, $p < 0.05$, which is support hypothesis H4.3. Since the respondents in this sample regarding exposure to pain and death had no significant relationship with either compassion fatigue or provider-patient relationship; therefore, the hypothesis H4.2 could not be supported. Table 4.9 Regression analysis (compassion fatigue as mediating variable between job demands and PPR)

Model		PPR (Dependent Variable)					
		R	R ²	Adjusted R ²	β	t	Sig.
1	Workload				0.129	1.83	0.069
	Pain and death	.309 ^a	0.096	0.082	-0.046	-0.64	0.523
	Threat and violence				-0.3	-4.13	<.001
2	Workload				0.191	2.8	0.006
	Pain and death				-0.013	-0.189	0.851
	Threat and violence	.438 ^b	0.192	0.176	-0.179	-2.445	0.015
	CF				-0.351	-4.871	<.001

a. Predictors: (Constant), workload, threat and violence, pain and death

b. Predictors: (Constant), workload, threat and violence, pain and death, CF

Table 4.10 Bootstrap analysis (6000 samples)

Model		PPR (Dependent Variable)		
		B	95% Confidence Interval	
			Lower	Upper
1	Workload	0.070	0.003	0.143
	Pain and death	-0.019	-0.072	0.029
	Threat and violence	-0.167	-0.256	-0.086
2	Workload	0.104	0.038	0.175
	Pain and death	-0.005	-0.058	0.044
	Threat and violence	-0.100	-0.195	-0.002
	CF	-0.184	-0.306	-0.088

Note: Unless otherwise noted, bootstrap results are based on 6000 bootstrap samples.

To ensure the robustness of the results, a bootstrap analysis with 6000 samples was performed which shows in table 4.10. The bootstrap coefficients were consistent with the linear regression results. The bootstrap analysis offers added assurance of the robustness of the findings. For model 1, the 95% confidence intervals for workload and threat and violence were 0.003 to 0.143 and -0.256 to -0.086, respectively, confirming the initial findings from the linear regression analysis. For model 2, the 95% confidence intervals for workload, threat and violence and compassion fatigue were 0.038 to 0.175, -0.195 to -0.002, and -0.306 to -0.088, respectively, which do not encompass zero, reinforcing their significance. Conversely, the confidence intervals for pain and death straddles zero, mirroring the initial non-significance in the regression analysis.

In summary, as we can see in figure 4.1, compassion fatigue fully mediating the relationship between workload and provider-patient relationship, while partially mediates the relationship between “threat and violence” and provider-patient relationship. Hence, hypothesis H4.1 is fully supported and hypothesis H4.3 is partially supported.

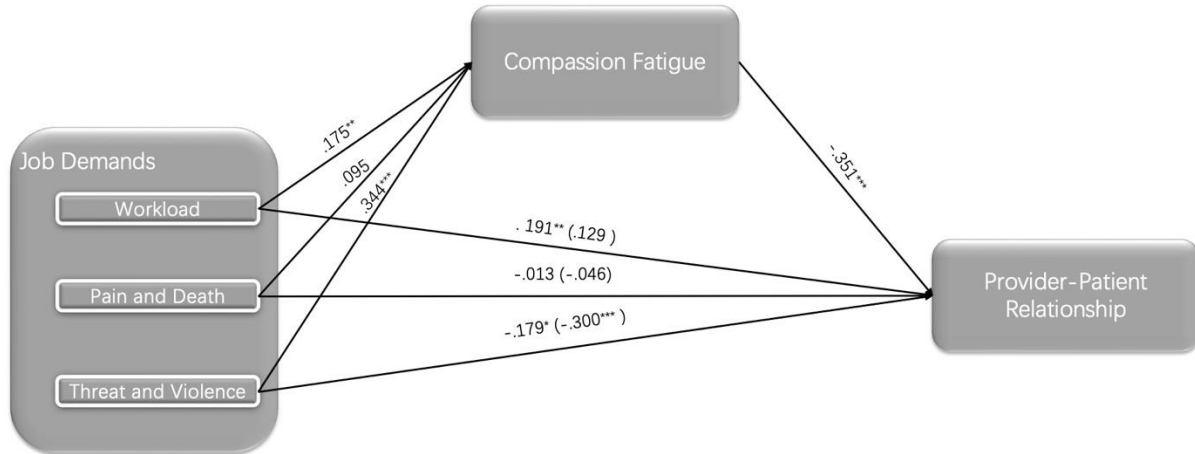


Figure 4.1 Compassion fatigue as a mediator between job demands and PPR

Note: All numbers of standardized beta coefficients (numbers in brackets are direct effects without including mediator); * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

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Chapter 5: Discussion

This study explores the connections between three facets of job demands, compassion fatigue, and provider-patient relationship. Initially, the study evaluates the associations between job demands and provider-patient relationship, job demands and compassion fatigue, as well as compassion fatigue and provider-patient relationship. Subsequently, the mediating role of compassion fatigue in the linkage between job demands and provider-patient relationship is scrutinized. The findings and their implications are elaborated upon in the sections that follow.

5.1 Hypotheses testing

According to the hypothesis 1, our sample reports a significant relationship between “threat and violence” and provider-patient relationship, but the relationship between “workload and provider-patient relationship” and “exposure to pain and death and provider-patient relationship” are not significant. Therefore, hypotheses H1.1 and H1.3 are not supported in this study, only hypothesis H1.2 has been supported. The findings in H1.1 and H1.3 do not corroborate prior study (Guo et al., 2021; Shi et al., 2023), based on the characteristics of our sample, there are several possible reasons as following:

Regarding the pain and death, the reason of there is no significant relation between it and provider-patient relationship could be the limitation of department. In our sample, only less than 30% healthcare workers are from the department which more exposure to pain and death, such as ICU, obstetrics and gynecology, oncology, and emergency medicine department, they may not have so much chance exposure to pain and death. It could be a reason that cause the limitations in the sample and affect the verification results.

Regarding the workload, taking our sample characteristics into account, two possible reasons for this: (1) The size of hospital: A substantial quantity of our samples (48.5%) are made up with doctors and nurses from small hospital (bed < 500). Chinese patients are more likely to choose more authoritative large hospitals when seeking medical treatment, and they are prefer to trust the professional standards of large hospitals, regardless of the severity of their illnesses (Che et al., 2023; Liu et al., 2018), so that may cause healthcare workers’ workload relatively low in smaller hospitals. (2) Resilience: The healthcare workers may have developed

resilience or coping mechanisms to manage the demands of their workload without it negatively affecting their interactions and relationships with patients (Delgado et al., 2017).

Conversely, the situation is different when it comes to threats and violence, it is the sub-component of job demands, however this factor has a pronounced negative association with the provider-patient relationship ($\beta = -.300, p < 0.001$), even more so than the overall job demands ($\beta = -.103, p < 0.05$). The findings in H1.2 suggests that while Chinese healthcare workers may be able to cope with high workloads, they cannot tolerate threats and violence in the clinical setting. Even if they occur threat and violence infrequently, once it happens, these negative experiences could have a severe correlation with the quality of the provider-patient relationship. This correlation is particularly profound for trust in provider-patient relationship ($\beta = -.229, p < 0.001$), it also consistent with the statement that the provider-patient relationship is rooted in trust (Emmeline, 2021). It highlights the need for targeted interventions and support mechanisms to address and mitigate the impact of threats and violence on healthcare workers, to safeguard their well-being and ensure the maintenance of strong and positive provider-patient relationships.

According to the hypothesis 2, workload also has positive relationship with compassion fatigue ($\beta = .175, p < 0.01$). The threat and violence has positive relationship with compassion fatigue ($\beta = .344, p < 0.001$). Therefore, two dimensions of job demands “threat and violence” and “workload” reports significant and positive relationship with compassion fatigue, that supports hypotheses H2.1 and H2.3. Our sample reports there is no significant relationship between “pain and death” and compassion fatigue, therefore, hypothesis H2.2 is not supported in this study. The reason may same as H1.1, sample has limitations, or healthcare workers are resilient to exposure to pain and death. However, based on the causes of compassion fatigue and the prevalence reported (Alharbi et al., 2019; Cocker & Joss, 2016; Figley, 1995; Ondrejková & Halamová, 2022; Peters, 2018), the development of compassion fatigue is a long-term internalization process (Lamothe et al., 2014), necessitating the use of long-term time series data and more sophisticated modeling techniques in subsequent research endeavors for follow-up.

This study's results provided complete validation for hypothesis 3 and corroborate several prior studies, suggesting that compassion fatigue is negatively related with provider-patient relationship (Babineau et al., 2019; Bouchard, 2019; Cavanagh et al., 2020; Labib, 2015). Compassion fatigue was significantly and negatively related to provider-patient relationship ($\beta = -.375, p < 0.001$). The prolonged exposure to death and feelings of helplessness experienced by healthcare workers throughout the three years of the pandemic may have led to

a widespread prevalence of compassion fatigue among frontline healthcare workers nationwide. It's possible that this is a legacy of emotional labor. In their quest for self-rehabilitation, these healthcare workers might seek moments of respite and engage in activities to uplift their spirits. However, as highlighted in the Tsinghua University (2021) report, when these moments of self-care, such as taking breaks or dancing, are publicized in the media, healthcare workers are at risk of being unfairly labeled as 'lazy' or 'showboating'. This misrepresentation can add to their existing burdens, potentially exacerbating their compassion fatigue exacerbates negative relationships with provider-patient relationships.

The fourth hypothesis of our study tested the mediating role of compassion fatigue between job demands and provider-patient relationship. The finding reveals that compassion fatigue fully mediates the relationship between workload and provider-patient relationship, while it partially mediates the relationship between "threat and violence" and provider-patient relationship. It could mean that when healthcare workers' workload increases, this may lead to an increase in compassion fatigue, which in turn affects their relationship with patients. In this case, compassion fatigue fully mediated the relationship between workload and the provider-patient relationship, suggesting that compassion fatigue may be a major driver of this relationship. On the other hand, compassion fatigue may also be a mediator of the relationship between threat and violence and the provider-patient relationship, but it only partially mediates this relationship. This may mean that there are other factors that also influence the relationship between threat and violence and the provider-patient relationship.

This phenomenon might be attributed to Maslow's Hierarchy of Needs theory includes the basic need, safety, and the higher-level need, self-esteem (Hayre-Kwan et al., 2021). Our sample consisted mostly of highly educated doctors and nurses, 46.1% hold bachelor degree and 37.3% hold master or above degree, their work also enjoys a high reputation and status in society, therefore not only their basic needs are met, but also their higher level needs, self-esteem. Therefore, when the working environment is safe, they can tolerate or self-regulate the negative emotions caused by a heavy workload out of their professional attitude, the sense of morality, and the sense of mission so as not to affect the relationship with patients. But when they suffer verbal or physical threats and violence, it will destroy their self-esteem and destroy their high-level needs. For this reason, their needs retreat to the bottom level, safety.

The observed positive relationship between workload and provider-patient relationship, mediated by compassion fatigue, might be attributed to the necessity for healthcare workers to deeply engage in compassion. This profound engagement can subsequently lead to compassion fatigue, in this process, their compassion enables them to understand and sympathize with

patients, thus positively affecting provider-patient relationship. Nonetheless, the government and hospital administrators should be aware that overexposure to compassion may still negatively have correlation with provider-patient relationship (Ahmad et al., 2018). In addition to this, there may be other factors (e.g., support from co-workers and supervisors) that contribute to a positive correlation between workload and provider-patient relationship.

5.2 Implications

Our findings indicate that threats and violence wield a significantly greater influence on the provider-patient relationship (PPR) in the healthcare sector, surpassing the relationship with other job demands explored in this study. To mitigate these negative influences, we propose several recommendations for the government and hospital administrators.

For policy makers:

To address the growing concerns surrounding workplace safety for healthcare workers, it is imperative that the government takes proactive steps to reinforce existing legislation and introduce new policies aimed at safeguarding healthcare workers. Enhancing legal protections not only serves as a deterrent for potential aggressors but also demonstrates a commitment to creating a secure and supportive environment for healthcare professionals. In addition to strengthening the existing laws, the government should also consider introducing measures such as mandatory training for healthcare workers on how to handle violent situations, as well as clear guidelines for reporting incidents and seeking support.

Further reforms by the government should establish an integrated health-care system to help reduce the workload of medical personnel. As patients are more inclined to consult senior hospitals even if they have only minor medical problems (Che et al., 2023; Liu et al., 2018), leading to over-utilization of secondary and tertiary hospitals and an imbalance between the workload of primary hospitals and senior hospitals, the government should balance the resources between senior hospitals and junior hospitals by directing patients who have only minor medical problems to consult primary hospitals first, so as to balance the workload between hospitals of different levels.

For hospital administrator:

Hospitals need to proactively identify healthcare workers who may be experiencing compassion fatigue, this support could manifest in various forms, such as counseling services, peer support groups, or workload adjustments. This can be achieved through regular psychological assessments and the provision of intervention programs. Given the mediating

role of compassion fatigue between job demands and provider-patient relationship, these initiatives can diminish the negative association with threats and violence, while amplifying the positive association between workload with provider-patient relationship.

Hospital management should establish a balanced shift work system and enforce limits on daily working hours to prevent excessive workload and compassion fatigue. Promoting activities that encourage interaction and cooperation between different departments can enhance empathy among healthcare workers, contributing to improved provider-patient relationship.

By implementing these strategies, hospitals can work towards cultivating a safer and more supportive environment, ultimately fostering a stronger and more positive relationship between healthcare workers and their patients.

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Chapter 6: Conclusions

Depends on Chinese context, this study examined the relationship between three job demands which are “exposure to pain and death”, “threat and violence”, and “workload”, compassion fatigue, and provider-patient relationship. We discovered a negative correlation between overall job demands and provider-patient relationship, a positive correlation between overall job demands and compassion fatigue, and negatively correlation between compassion fatigue and provider-patient relationship. While healthcare workers exposure to pain and death there is no significant relationship between compassion fatigue and provider-patient relationship, but there were observed significant relationship between threat and violence and both compassion fatigue and provider-patient relationship.

We also found compassion fatigue plays a mediating role between job demands and provider-patient relationship. After the mediating effect of compassion fatigue, the negatively degree of relationship between threat and violence and provider-patient relationship has been reduced. Intriguingly, workload was not found to directly relation with provider-patient relationship, however, after the mediating effect of compassion fatigue, the relation between workload and provider-patient relationship turned out to be significantly and positively. Consequently, compassion fatigue serves as a mediator in the relationship between job demands and provider-patient relationship, which partially mediating the relationship between “threats and violence” and provider-patient relationship, and fully mediating the relationship between workload and provider-patient relationship, and overall, it plays a positive intermediary role between job demands and provider-patient relationship.

Considering these findings, we suggest the government takes proactive steps to reinforce existing legislation and introduce new policies aimed at safeguarding healthcare workers. We also advocate for the enhancement of psychological support within hospitals and the implementation of regular screenings to decrease the occurrence of compassion fatigue, ultimately fostering an improvement in provider-patient relationship levels. Furthermore, we recommend the hospital establish a balanced shift work system and enforce limits on daily working hours to prevent excessive workload and compassion fatigue.

6.1 Limitation and further studies

This study presents a few limitations that warrant consideration. Firstly, the majority of our data was sourced from departments that seldom interact with chronically ill patients or frequently confront patient death, leading to a potential lack of comprehensiveness in our sample collection. Additionally, our sample predominantly consists of hospitals with fewer than 500 beds, indicating a smaller hospital size. Future research should aim to include data from a broader range of hospitals, particularly medium to large institutions, to enhance the generalizability of the findings.

Secondly, the cross-sectional nature of our data introduces the possibility of response bias, and it precludes the establishment of causal relationships. To address this issue, future studies should employ longitudinal designs to discern the directionality of the relationships more accurately among the variables. It is also important to note that compassion fatigue might influence provider-patient relationship over time, necessitating the use of long-term time series data and more sophisticated modeling techniques in subsequent research endeavors.

Thirdly, our reliance on self-assessment questionnaires may render our findings susceptible to response and social desirability biases, as participants' responses could be influenced by their desire to present themselves in a favorable light. Future research could consider incorporating objective measures or third-party evaluations to mitigate these potential biases and validate the self-reported data.

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