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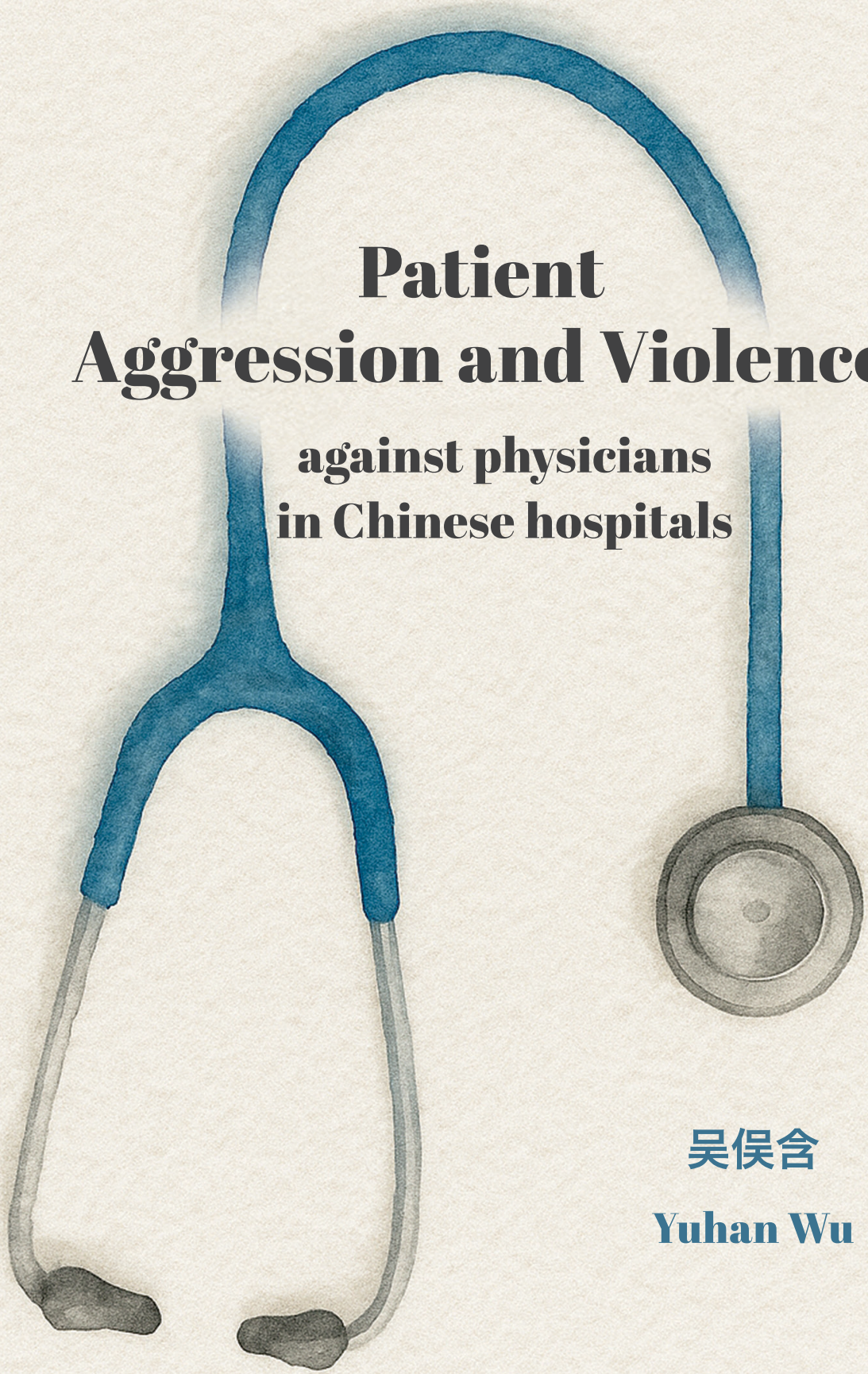

Patient Aggression and Violence

against physicians in Chinese hospitals

吴俣含

Yuhan Wu

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Patient Aggression and Violence against Physicians in Chinese Hospitals

Agressie en geweld tegen artsen door patiënten in Chinese ziekenhuizen

Thesis

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Chapter 1

Introduction

Call for action

"I will always remember my inaugural statement when I became a physician. However, as physicians, we are the most vulnerable to our patients!"

---From a physician's narrative (respondent)

"Facing such behavior from patients leaves me feeling deeply disheartened, to the point where I even question my decision to become a physician."

---From a physician's narrative (respondent)

The Call from the International Labor Organization (ILO)

"Health workers, like all other workers, should enjoy their right to decent work, safe and healthy working environments and social protection for healthcare, sickness absence and occupational diseases and injuries."

---Alette van Leur, Director, ILO Sectoral Policies Department (2022)

"Health services are fundamental to society and the economy, with health care recognized as a basic human right essential for safeguarding the health and safety of populations. There is no health care without health workers. Securing employment and decent working conditions for health workers are essential strategies to ensure equal access to quality health services and to address global health workforce shortages." (International Labor Organizational, n.d.)

Word Health Organization Plea (WHO)

- *Health worker safety: a priority for patient safety (WHO, 2020a)*
- *Protecting health and safety of health workers: All of them (136 million health workers) should be able to enjoy decent work and protection of their health and safety at work. (WHO, n.d.)*
- *Safeguarding the health, safety and well-being of health workers (WHO, 2022).*

Background

Workplace violence, referred to as "any act or threat of physical violence, harassment, intimidation, or threatening disruptive behavior that occurs at the work site" (Occupational Safety and Health Administration, 2018), is recognized as a serious occupational hazard that has sparked industry-wide attention (Dillon, 2012). Among all worker groups, healthcare professionals are particularly vulnerable to experiencing aggression and violence in the workplace (Kumari et al., 2020; Bhattacharjee, 2021). Globally, more than 62% of healthcare professionals have encountered some form of violence and aggression in the workplace during their career, with verbal violence being especially common (Liu et al., 2019; WHO, 2020b). More concerning still, up to 38% of healthcare professionals worldwide report experiencing physical violence in the workplace at some point in their careers (WHO, 2003).

Building upon the prevalence of workplace violence in healthcare settings, it is important to recognize that workplace violence is a multifaceted phenomenon with diverse sources and manifestations. This complexity necessitates a more nuanced understanding of its various forms. More specifically, workplace violence can be broadly categorized into internal violence (from colleagues or leaders) and external violence (from customers or visitors) (Ross, 1985). To provide a more comprehensive framework, the National Institute of Occupational Safety and Health (2006) has identified four distinct types of workplace violence based on the relationship between the perpetrator and the workplace: (1) Type I: violence in the workplace by individuals (usually strangers) who have no legitimate relationship with the business; (2) Type II: violence by individuals with a legitimate business relationship with the workplace (e.g., clients and patients); (3) Type III: violence between coworkers, also known as horizontal or internal violence; and (4) Type IV: violence by individuals with a personal relationship to an employee outside of work (National Institute of Occupational Safety and Health, 2006). Although healthcare professionals may encounter violence from both internal (colleagues/leaders) and external (patients or their relatives/friends) sources, research has consistently identified external sources as the predominant cause of aggression and violence in hospitals (Kowalenko et al., 2005; Hills & Joyce, 2013). A systematic review conducted by Hills and Joyce (2013) revealed the alarming prevalence of external violence in healthcare settings. Their findings indicate that approximately 15-75% of healthcare professionals experienced verbal aggression, and 2-29% faced physical aggression from patients and their relatives/friends in the preceding year alone.

Notably, external and internal violence in the workplace differ in several key aspects. For instance, in cases of external violence, victims often receive support from their coworkers. In contrast, victims of internal violence may find themselves isolated by colleagues (Nowrouzi-Kia et al., 2019a; Moayed et al., 2006). This distinction highlights the unique challenges posed by each type of violence and the need for tailored intervention strategies. Furthermore, the triggers for internal and external violence can vary significantly. Organizational changes, lack

of group cohesiveness, and improper management may precipitate internal violence, such as workplace bullying. However, these factors may not necessarily lead to external violence, which is more likely triggered by unmet expectations of service, miscommunication, and unsupportive media influences (Moayed et al., 2006; Van Emmerik et al., 2007; Roche et al., 2010; Boyle & Wallis, 2016). This difference in causal factors emphasizes the importance of developing distinct prevention and management strategies for each type of workplace violence.

However, most studies have investigated workplace violence without explicitly considering specific sources of violence (Wu et al., 2023). This lack of distinction limits our understanding of the unique characteristics and impacts of different types of violence in healthcare settings. Some studies have focused solely on Type II workplace violence, which involves aggression from individuals with a legitimate business relationship with the workplace, such as patients (Lanctôt & Guay, 2014; Nowrouzi-Kia et al., 2019b; Byon et al., 2020). However, this narrow scope fails to provide a comprehensive representation of the most common perpetrators of violence against healthcare professionals in hospitals. Notably, it excludes patients' relatives and friends, who, while not directly served by healthcare professionals, can be significant sources of aggression and violence as well. Given that aggression and violence from patients and their relatives/friends have been identified as the most prevalent source of workplace violence in healthcare settings, there is a critical need for research that specifically focuses on this group. By studying aggression and violence from this particular source, we can gain a deeper understanding of the unique dynamics, risk factors, and impacts associated with this type of violence. This targeted approach is essential for developing effective prevention and management strategies that can improve the safety and well-being of both healthcare professionals and patients. Therefore, this thesis focuses specifically on aggression and violence from patients and their relatives/friends. By narrowing the scope to this particular source of violence, we aim to address the gap in current research and provide valuable insights that can inform targeted interventions and policies in healthcare settings.

China as the Research Setting

Aggression and violence in the workplace are context-specific (International Labor Office et al., 2002), and therefore investigating such aggression and violence should consider specific social, cultural, and environmental factors (Pompeii et al., 2015). According to Hofstede's cultural theory, people from different cultural backgrounds may have distinct cognition and generate varied behaviors in response to the same situation (Hofstede, 2022). This cultural influence underscores the importance of conducting research on aggression and violence within specific cultural contexts.

Firstly, Chinese social and cultural context differs significantly from that of Western countries. More specifically, unlike many Western countries, where healthcare services are often supported by robust insurance systems and decentralized structures, China's healthcare system is highly centralized and operates under significant resource constraints. Public hospitals dominate healthcare delivery, particularly in urban areas, leading to overcrowding and excessive demand on physicians. This centralized system amplifies the pressure on healthcare professionals, making them more vulnerable to patient dissatisfaction and aggression (Wang et al., 2021; Yip et al., 2019). In addition, Chinese patients frequently bypass primary care facilities to seek treatment at prestigious secondary and tertiary hospitals, creating long waiting times and overstretched resources, which can trigger frustration and conflict (Liu et al., 2018). This differs from countries like the United States or the Netherlands, where gatekeeping systems encourage patients to first visit general practitioners, reducing pressure on higher-level facilities. Moreover, cultural factors play a significant role in shaping patient-physician dynamics in China. Deeply ingrained societal expectations, such as family involvement in medical decisions and patients and their relatives'/friends' high expectations for successful outcomes, further complicate the relationship between patients and physicians (Wu et al., 2017).

Additionally, the issue of aggression and violence from patients (and their relatives/friends) in China is relatively acute, with numerous high-profile incidents highlighting the severity and frequency of violence against healthcare professionals. This situation has resulted in significant attention being focused on this issue within China (Lu et al., 2020). Available studies and surveys indicate a troubling trend. Research by the Chinese Medical Doctor Association (CMDA) suggests that incidents of violence are both frequent and severe, with many healthcare professionals experiencing multiple episodes over their careers (CMDA, 2013). The occurrence of violence against healthcare professionals in Chinese clinical settings ranges from 50% to 83.3% (Wu et al., 2012; Sun et al., 2017); more than 62% of Chinese healthcare professionals have encountered workplace violence, especially from patients and their relatives/friends (Liu et al., 2019; Lu et al., 2020). However, these statistics may underrepresent the true extent of the problem due to underreporting. The reluctance to report such incidents, driven by fear of retribution, stigma, or lack of confidence in protective measures, further exacerbates the issue (Gates et al., 2011; Zhang et al., 2018).

Further, based on the requirement of "Healthy China 2030", improving the welfare of healthcare professionals and providing high-quality healthcare services have become high on the Chinese government's health and development agenda (WHO, 2020c; Zhang & Gong, 2019). In this context, research on aggression and violence from patients (and their relatives/friends) can provide the government and relevant departments with a scientific basis for formulating policies and laws to protect physicians' safety and rights. It can also help healthcare organizations develop effective coping strategies and contribute to improving the quality of healthcare services and enhancing satisfaction for both physicians and patients.

By focusing on the Chinese context, this research not only addresses a pressing national issue but also contributes to the global understanding of patient aggression and violence in healthcare settings. The findings can inform policy decisions, improve healthcare practices, and ultimately enhance the safety and well-being of healthcare professionals both in China and potentially in other countries facing similar challenges.

Aggression and Violence against Physicians in Hospitals

While nurses and other healthcare professionals also face aggression and violence from patients (and their relatives/friends), such violence experienced by physicians may have distinct motivations and characteristics. For example, patient dissatisfaction with diagnosis and treatment options is often directed specifically at physicians (Phillips, 2016). Understanding physicians' perspectives on risk factors for aggression and violence from patients (and their relatives/friends) is particularly crucial because they play a central role in patient care and are often the key decision makers in treatment planning, especially in China, which can have a direct impact on patient satisfaction and potential frustration (Kitaneh & Hamdan, 2012; Hamdan & Abu Hamra, 2015; Yuqing, 2016). In the Chinese context, physicians are more frequently victimized and more commonly experience physical violence compared to nurses (Yuqing, 2016; Wang et al., 2018; Ma et al., 2021). However, the majority of research on aggression and violence in healthcare has focused on healthcare professionals in general or solely on nurses, rather than studying physicians as a specific target group. This gap in the literature underscores the need for research that specifically examines the experiences of physicians.

Moreover, hospitals represent one of the most violence-prone environments compared to other public places (Volz et al., 2017). However, many studies have combined hospital and non-hospital settings without distinguishing between them, despite potential differences in risk factors between these environments (Hills & Joyce, 2013). Hospitals offer a wide range of services, including emergency care, surgery, and inpatient care. The diversity of services and the severity of conditions treated in hospitals create unique risk factors for violence (Li et al., 2020). For example, emergency departments (EDs) and intensive care units (ICUs) are high-stress environments where life-and-death decisions are made rapidly, increasing the potential for patient aggression and violence (Phillips, 2016). In China, hospitals play a particularly significant role in the healthcare system. According to the Gazette of the National Health Commission of the People's Republic of China (2023), at the end of 2022, there were 9,750,000 beds in healthcare facilities nationwide, of which 7,663,000 (78.6%) were in hospitals. This concentration of healthcare resources in hospitals is further exacerbated by Chinese patients' healthcare treatment preferences, with most patients choosing to go directly to hospitals (e.g., secondary and tertiary hospitals) rather than primary care institutions (Lu et al., 2019; Liu et al., 2018). These factors have led to more prominent violence problems in Chinese hospitals.

Given these considerations, this thesis focuses specifically on patient (and their relatives/friends) aggression and violence against physicians in Chinese hospitals. Additionally, we define the aggression and violence from patients (and their relatives/friends) against physicians in hospitals as "all types of violence and aggression encountered by physicians in hospitals from patients and/or their relatives/friends" (Wu et al., 2023). This definition encompasses a broad range of aggressive and violent behaviors, including but not limited to verbal abuse, physical assault, threats, and intimidation. By including both patients and their relatives/friends as potential perpetrators, the definition acknowledges the complex social dynamics often present in hospital settings, where family members and friends may also play a significant role in patient-physician interactions.

Risk Factors

Risk factors of workplace violence in healthcare settings are at multiple levels. The social ecological model (SEM) and its four dimensions (individual, relationship, community, and societal) have been widely used to identify the risk factors and prevention strategies for workplace violence (Wu et al., 2022; Gillespie et al., 2015). By conducting a narrative review, Kumari et al. (2020) categorize risk factors of such violence against physicians into four domains: (1) patient related factors: demographics (e.g., lower-educated people), low impulse control (e.g., mental disorders and influence of drugs and alcohol), personality (style of control and dominance), poor previous experience, patient dissatisfaction, unexpected/high cost of services, poor treatment adherence, and legal cases; (2) physician related factors: demographics (e.g., less experience), shift workers, experiencing emotional distress (stress, anxiety), personality traits (e.g., low self-esteem, high neuroticism, and low agreeableness), and poor communication skills (e.g., rude and indifferent behavior, and inability to de-escalate patient's feelings); (3) organizational factors: department (in the psychiatry and emergency department, violence is more common), poor administration (e.g., lack of resources, overcrowding, long waiting time, and workload), and poor safety culture (e.g., lack of guidelines and protocol, no penalty for aggressor, and no staff training); and (4) societal factors (e.g., language barrier and lack of policies). Besides these risk factors, physical environment (e.g., insufficient lighting) and psychosocial environment (e.g., role conflict, role ambiguity, role overload, work constraints, and diminished autonomy) are also associated with aggression and violence at workplace (Hills & Joyce, 2013). In addition, poor communication, high expectations, high cost of treatment, and negative media orientation are emphasized by many Chinese scholars (Wu et al., 2012; Mei et al., 2019; Jiang, 2019).

Consequences

Regardless of rates and types of violence and aggression in healthcare settings, it will bring harm to the healthcare professionals to some extent. By conducting a systematic literature review, Lanctôt and Guay (2014) identify the consequences of aggression and violence among healthcare professionals into seven aspects: (1) physical (e.g., injury and headache), (2) psychological (e.g. post-traumatic stress, depression), (3) emotional (e.g., anger, fear), (4) work functioning (e.g. sick leave, job satisfaction), (5) relationship with patients/quality of care, (6) social/general (e.g., disturbing the social life and relations and the family life), and (7) financial (e.g., compensation). Among these consequences, healthcare professionals experiencing workplace violence mostly reported consequences with a psychological, emotional, and/or work functioning character (Lanctôt and Guay, 2014; Wu et al., 2023). Next to the work-related consequences, the effects of such violence also extend into personal lives, resulting in an increasing need for family support and negative interactions with family members (Lanctôt & Guay, 2014). A Chinese study found that 86% of victimized physicians reported that they do not want their children to become physicians (Ma et al., 2014). Additionally, for the long-term consequences, these emotional reactions for victimized healthcare professionals can be long-lasting and might change career choices as a result of patient violence and aggression exposure (Hills & Joyce, 2013; Yang & Niu, 2017). Although most consequences are at individual level, they are likely to affect behavior and performance at team- and organizational level. Experiencing workplace violence could reflect a decrease in teamwork behavior, due to troubling interactions between team members (Hassankhani et al., 2018). In addition to having to pay compensation costs, organizational consequences also refer to other financial aspects such as decreased performance, repairing equipment damaged by the patient, medical expenses for injured staff (International Labor Office, 2002), but also to safety climate, organizational culture, and reputation damage (Kessler et al., 2008).

Coping Strategies

Given the negative impacts of workplace violence in the healthcare sector, a wide range of research has concentrated on preventing and managing such violence from different angles. WHO (2002) has proposed a framework of guidelines for adoption by the healthcare sector to reduce the incidence of workplace violence, including preconditions, organizational interventions (e.g., working time and job planning improvement), environment interventions (e.g., safe access and adequate workspace), individual-focused interventions (e.g., training, and assistance and counselling), and after-the-event interventions (e.g., response plan, and reporting and recording). Kumari et al., (2020) claim that intervention plans to mitigate workplace violence in healthcare settings should focus on three levels: individual level (e.g., training, and encouraging empathy), organizational level (e.g., infrastructure changes, and clear management policies), and societal level (e.g., unbiased media reporting).

To investigate the effectiveness of interventions, Morpet et al. (2018) identified four main approaches as evidence-based interventions that can reduce violence at workplace: environmental risk management (i.e., increasing visibility, reducing access to weapons, and safe assessment rooms), consumer risk assessment, staff education (e.g., recognizing at risk behaviors and triggers, communication and de-escalation, and evasive self-defense or break-away training), and aggression management teams and post-incident support. Another systematic review categorized evidence-based interventions into three categories: pre-event preventive measures (e.g., violence prevention programs and risk assessment), interventions during the event (e.g., staying calm and applying de-escalation techniques), and post-incident measures (e.g., reflecting on incidents and organizational support) (Raveel & Schoenmakers, 2019). Importantly, interventions are not meant to be isolated; they should also take into account and incorporate risk factors. For instance, Bowers (2014) established the Safewards model from originating factors (e.g., staff team and physical environment) to staff interventions (e.g., decreasing the conflict-originating factors, and cutting the link between flashpoint and conflict), to decrease conflict in psychiatric wards. In addition to these interventions, research in the Chinese healthcare setting also emphasizes the importance of social support in hospitals (Zhao et al., 2015; Duan et al., 2019)

Research Questions and Outline of this Thesis

This PhD thesis answers four research questions and comprises six chapters.

Chapter 2 presents a systematic literature review of patient aggression and violence against physicians in hospitals

Given that most reviews have examined workplace violence rather heterogeneously without explicit regard to a professional group or particular source of violence (from colleagues/leaders vs. from patients and their relatives/friends), the first research question is: **What do we know about patient (and their relatives/friends) aggression and violence against physicians in hospitals? Chapter 2** systematically reviews the literature on the prevalence, risk factors, consequences, and prevention and management of aggression and violence from patients (and their relatives/friends) against physicians in hospitals according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Page et al., 2021). This chapter provides an overview of current scientific understanding of patient and their relatives/friends) aggression and violence against physicians in hospitals and identifies relevant follow-up research questions based on identified research gaps. Through this review, three research gaps have been identified:

- While existing research has addressed the individual impact of patient (and their relatives/friends) aggression and violence on physicians, there is a dearth of comprehensive investigations into its broader impacts on healthcare teams and organizations.

Therefore, **Question 2** is proposed: What is the impact of patient aggression and violence against physicians on the team and organizational level in Chinese hospitals? **(Chapter 3)**

- While there are many potentially effective interventions, it is unclear which ones would be valuable and feasible in a specific context (i.e., Chinese hospitals), since contextual differences play a role and tailored interventions may be needed. Therefore, **Question 3** is formulated as: What are important and feasible hospital interventions to prevent and manage patient aggression and violence against physicians in Chinese hospitals? **(Chapter 4)**
- Although numerous risk factors for aggression and violence from patients (and their relatives/friends) are identified, little is known about which risk factors are perceived as the most important in a specific context and if there are different views on which risk factors are most important. Therefore, **Question 4** is as follows: What are relatively the least and the most important risk factors of patient aggression and violence against physicians in Chinese hospitals? **(Chapter 5)**

Chapter 3 focuses on the impact of patient aggression and violence against physicians on the team and organizational level in Chinese hospitals

Although existing research mainly focuses on the individual impact of patient (and their relatives/friends) aggression and violence on physicians, scant studies on the impact of such aggression and violence on healthcare teams and organizations. Therefore, in this chapter**,** in-depth qualitative interviews with 29 Chinese participants are conducted to explore the impact on team and organizational level, including physicians, hospital team leaders, and hospital board members, working in two secondary hospitals and two tertiary hospitals in China.

Chapter 4 explores the feasibility and importance of hospital interventions of patient aggression and violence against physicians in China

Understanding how to prevent and manage violent behavior against physicians in hospitals is urgent and not fully researched. While some prevention models took into account the risk factors of aggression and violence in different contexts, there is still limited knowledge on how to establish a well-aligned and comprehensive intervention strategy that considers risk factors and consequences at different levels **(Chapter 2)**. Due to cultural differences, consideration should be given to determining what interventions for the prevention and management of such aggression and violence would be valuable and feasible in Chinese hospitals. Based on that, a Delphi study is conducted to reach a consensus on the importance and feasibility of hospital interventions to prevent and manage patients (and their relatives/friends) aggression and violence against physicians in Chinese hospitals.

Chapter 5 identifies the relatively important perceived risk factors of patient aggression and violence against physicians in China

Little is known about which risk factors are relatively more important in a specific context. However, to reduce the occurrence of violence and ensure the safety of physicians, preventive measures could be tailored according to the risk factors (Shafran-Tikva et al., 2017). Therefore, in this chapter, we conducted a Q-methodology study in China to investigate physicians' perspectives on which risk factors of aggression and violence from patients (and their relatives/ friends) are perceived as the most important and to explore if there are differing views on which risk factors are most important. According to the results in **Chapter 2,** 30 statements in five categories are used in this study. 33 physicians from public Chinese hospitals participated in this study. They rank these risk factors according to the importance of triggering violent incidents and interpret their selection. Based on these distinct perspectives, targeted preventive measures are proposed accordingly in this chapter.

Chapter 6 presents a conclusion of our overall findings. We also reflect on our research methodology, conclude with implications for practice and theory, and provide suggestions for future research.

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Chapter 2

Prevalence, risk factors, consequences, and prevention and management of patient aggression and violence against physicians in hospitals: a systematic review

Wu, Y., Strating, M., Ahaus, K., & Buljac-Samardzic, M. (2023). Prevalence, risk factors, consequences, and prevention and management of patient aggression and violence against physicians in hospitals: A systematic review. *Aggression and Violent Behavior*, 74, 101774.

ABSTRACT

Most reviews have examined workplace violence rather heterogeneously without explicit regard to a professional group or particular source of violence (from colleagues/leaders vs. from patients and their relatives/friends). This study reviews the literature regarding the prevalence, risk factors, consequences, and prevention and management of aggression and violence by patients (and their relatives/friends) against physicians in hospitals. A total of 104 studies were included by searching five databases. The prevalence of aggression and violence was higher in developing countries and against younger physicians. The risk factors for the occurrence of aggression and violence were present at multiple levels (i.e., patients, patient-physician interactions, hospitals, and society). However, knowledge on how risk factors at different levels interact is absent. Although research on risk factors acknowledged multiple levels, research on consequences was mainly focused on the individual level (i.e., work functioning, psychological well-being and health) with less attention to the team and organizational level. While some prevention models took into account the risk factors of aggression and violence in different contexts, there is still limited knowledge on how to establish a well-aligned and comprehensive intervention strategy that considers risk factors and consequences at different levels.

Keywords

Patient Aggression and Violence; Prevalence; Risk Factors; Physicians; Hospital; Prevention and Management

Introduction

Workplace violence in the healthcare system is acknowledged to be a problem that arouses disapproval in society (Bhattacharjee, 2021). The percentage of attacks on healthcare providers has risen globally over the past two decades (Mento et al., 2020). Among all professional groups, healthcare professionals are at high risk of encountering aggression and violence at the workplace (Kumari et al., 2020). Consequently, research focused on understanding the prevalence, risk factors, consequences, prevention and management of aggression and violence in healthcare settings.

Due to the great amount of research, multiple literature reviews have been conducted on aggression and violence towards healthcare professionals. Hills and Joyce (2013) indicated in their systematic review covering prevalence and risk factors that 48.9% of respondents reported any aggression in the past year, and workplace violence in clinical medical practices was associated with patient factors (e.g., patients with mental disorders), physician factors (e.g., less experience), and organizational factors (e.g., working environment). Lanctot and Guay (2014) showed in a systematic review covering consequences that workplace violence had negative effects on the physical, psychological, emotional, work, and social life of healthcare professionals. Other reviews have focused on how to reduce and manage workplace violence against healthcare professionals. For instance, Kumari et al. (2020) suggested interventions to minimize incidents of workplace violence in healthcare settings at individual level (e.g., training and improving physicians' skills), organizational level (e.g., infrastructure changes and management policies), and societal level (e.g., unbiased media reporting). While Kumari et al. (2020) focused on minimizing workplace aggression and violence, Wirth et al. (2021) focused on mitigating it in emergency departments through behavioral interventions (training programs in class, online or hybrid) in de-escalation skills, managing violent persons and providing self-defense techniques.

Several models proposed interventions for aggression and violence that incorporated the risk factors of aggression and violence. For instance, Bowers (2014) established the Safewards model from originating factors (e.g., staff team and physical environment) to staff interventions (e.g., decreasing the conflict-originating factors, and cutting the link between flashpoint and conflict), to reduce conflict on psychiatric wards. Bhattacharjee (2021) proposed an integrated model of workplace violence in healthcare, and then suggested that protective factors and prevention could consider distal factors and proximal factors.

These previous reviews and models examined workplace violence rather heterogeneously without explicit regard to a specific professional group or particular source of aggression and violence (from colleagues/leaders vs. from patients and their relatives/friends). First, most reviews combined hospital and non-hospital settings without distinguishing between them,

whereas differences in risk factors for workplaces may exist between hospital and non-hospital settings (Hills & Joyce, 2013). Since hospitals are one of the most violence-prone places compared to other public places, as shown by the American National Institute of Occupational Safety and Health (NIOSH) (Volz et al., 2017), there is a need for more insight into the risk factors, consequences and prevention and management of workplace violence in hospitals as a specific setting.

Second, the majority of reviews on workplace violence in healthcare have focused on healthcare professionals in general or solely on nurses rather than studying physicians as a specific target group. Physicians are key players in delivering care in hospitals and are at high risk of serious injury or even death due to attacks by patients or their relatives (Volz et al., 2017). For example, approximately 85% of Indian physicians experienced aggression and violence from patients or their relatives/friends during their career (Kaur et al., 2020). Nevertheless, literature that focuses on solely physicians is scarce and remains limited to a few studies that examined physician encounters with workplace violence. For instance, De Jager et al. (2019) explored the characteristics of physicians who are at increased risk for patient-physician aggression. Verma et al. (2019), and Dixit et al. (2019) investigated the factors contributing to workplace violence against physicians. Mirza et al. (2012) examined the impact of workplace violence on physicians, such as psychological influence and satisfaction and performance.

Third, most reviews have investigated aggression and violence from multiple sources: from colleagues or leaders (internal violence) and from patients or their relatives/friends (external violence). The latter group has been identified as the most prevalent source of aggression and violence in hospitals (Kowalenko et al., 2005; Hills & Joyce, 2013), as shown by Silwal and Joshi (2019) who claimed that the majority (63.8%) of perpetrators who generated aggressive behaviors were patients or their relatives. Therefore, there is a need for a comprehensive literature review on patient aggression and violence towards physicians in hospitals. Given the scope on patient aggression and violence, we defined it as “all types of violence and aggression encountered by physicians in the workplace from patients and/or their relatives/friends”. Although some reviews focused on violence directed at employees by customers, clients, patients, students, or any others for whom an organization provides services, referred to as Type II workplace violence (Lanctot & Guay, 2014; Nowrouzi-Kia et al., 2019; Byon et al., 2020), we included in our definition relatives/friends who may not be directly served by healthcare providers.

Concluding, the aim of this study is to determine the prevalence, risk factors, consequences, and prevention and management of aggression and violence by patients (and their relatives/friends) specifically toward physicians in hospitals.

Methodology

Search Strategy

The systematic review was conducted according to the updated Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Page et al., 2021). With the assistance of a research librarian specializing in designing systematic reviews, this search was carried out in five databases (i.e., Embase, Medline, PsycINFO, Web of Science SCI-EXPANDED & SSCI, Cochrane Central Register of Trials, and Web of Science). It took about 2-3 months from the time the search terms were proposed to the time the search results were finalized. Four main topics were combined in the search strategy: (1) violence (e.g., abuse, aggression), (2) patient and/or relatives/friends as the perpetrator (e.g., patient's friends, patient's family); (3) physician as the victim (e.g., surgeon, doctor), and (4) hospital setting (e.g., hospital, tertiary care center) or a specific hospital department (e.g., emergency department, intensive-care unit). The detailed strategy is included in the appendix (see Appendix 1). Searches were limited to articles published in English in peer-reviewed journals.

Eligibility Criteria

The purpose of this systematic review was to provide a full spectrum of studies that empirically examined aggression and violence by patients and their relatives/friends against physicians in hospitals in terms of prevalence and characteristics, risk factors, aftermaths, prevention and management. Based on the purpose, the following research was excluded: 1) Studies without empirical data and not peer-reviewed, such as editorials, letters and literature reviews. Studies were included regardless of study design as long as empirical data were presented. 2) Studies outside the hospital setting (e.g., primary care center). 3) Studies in which aggression and violence was not perpetrated by patients and/or their relatives/friends. Since this review only investigated the aggression and violence from patients and their relatives/friends, studies that did not match the scope and definition of aggression and violence in this review were excluded. An example of an excluded study is bullying and violence from physicians' colleagues. 4) Studies in which aggression and violence was not focused on physicians or trainee physicians. For example, studies on patients showing violent behavior toward only nurses or other patients were excluded. 5) Studies not related to aggression and violence generated by patients. In other words, studies that did not relate to the prevalence and characteristics of aggression and violence by patients (and their relatives/friends), risk factors, consequences, and prevention and management of aggression and violence by patients (and their relatives/friends). For example, studies on medication for aggressive psychiatric patients were excluded. 6) Studies without physician-specific data. For instance, if the object of the article was healthcare providers (i.e., physicians and nurses), and the article did not show specific data for physicians (i.e., all data were about healthcare providers), it would be excluded on the grounds that the findings for

physicians could not be isolated. In line with the purpose of our review, we did not set a time frame for the extraction, but the oldest paper we included was published in 1985.

Data Collection Process and Data Extraction

In the first stage, all titles and abstracts were screened by two of the authors to determine whether they met the inclusion and exclusion criteria of this review (YW and MS or MBS). If both screeners agreed that a paper should be included, the paper was transferred to the next phase. Papers that were a mismatch between the two screeners were transferred to the next phase as well. Next, two of the authors (YW and MS or MBS) independently evaluated the full text according to the inclusion and exclusion criteria. Disagreements between the two screeners were resolved through discussion and, if necessary, the judgment of a third screener (KA).

Data were extracted and summarized in a table, including source of the article (author, publication year, country, setting), study (aims, design), population (number, gender), specific definition of aggression and violence of each selected study, prevalence of characteristics (physicians, perpetrators, organizations), risk factors, consequences, prevention and management of aggression and violence by patients (and their relatives/friends). Notably, this review extracted the data only of physicians in hospitals.

Quality Assessment

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach was used to assess the level of evidence and the quality of the article. The GRADE rating scale has four levels of quality of evidence: (A) high, (B) moderate, (C) low, and (D) very low (Appendix 2 GRADE, the results of quality assessment were not used as a criterion for inclusion or exclusion in this study).

Results

By eliminating duplicates, a total of 3336 records were obtained. Following the abstract analysis and full-text screening, 104 records were eligible to be included in the review finally. The PRISMA flowchart of the record selection process is shown in Figure 1. The quality of most articles was B and C (detailed information shown in Table 1 in Appendix 3).

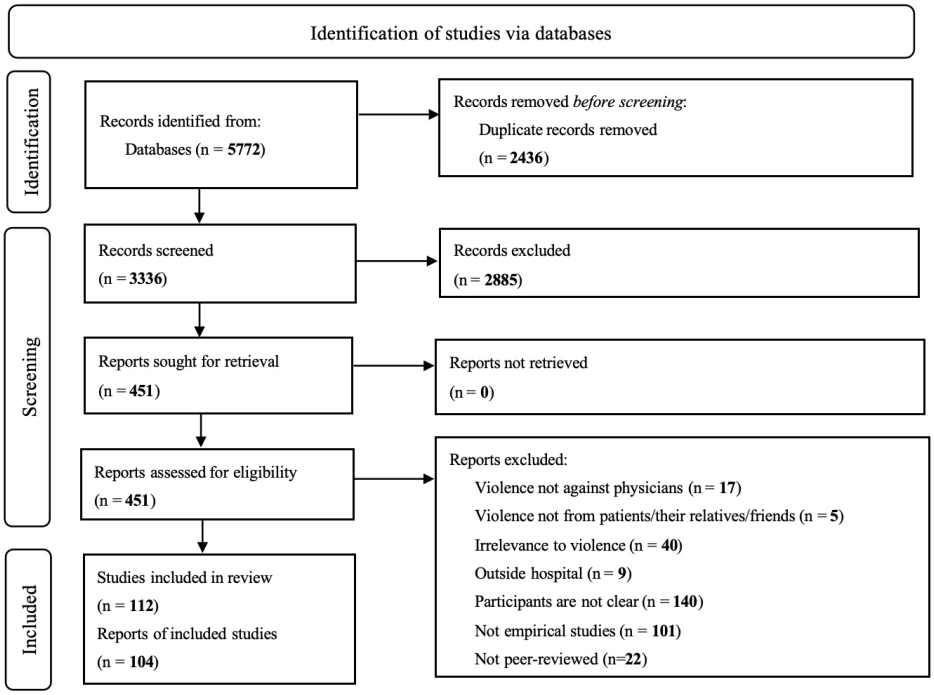

Figure 1. PRISMA Flowchart (2021 version)

These 104 studies were from 30 countries with the main aims of examining the prevalence, causes, aftermaths and prevention of violence in hospitals. Most articles were published in 2011-2021(80 out of 104) and the majority of studies had sample sizes of less than 200 participants (61 out of 104). Of these, the largest sample was 87,998 participants (secondary data analysis) and the smallest was 3 (case study). As for the methods, 94 out of 104 studies adopted a quantitative research method (detailed information shown in Table 2).

For the purpose of this review and synthesizing the results, the following categorizations were derived: 1) prevalence; 2) risk factors: perpetrator-related factors, physician-related factors, interaction-related factors, factors related to organizational context, and external context; 3) consequences: physical effects, psychological well-being effects, job motivation and retention, and other effects; 4) prevention and management.

Table 2. Descriptive information regarding the selected studies

Year of publication	1985	1 (0.96%)
	1990-1999	9 (8.7%)
	2000-2010	14 (13.5%)
	2011- 2021	80 (76.9%)
Country	China	21 (20.2%)
	United States	15 (14.4%)
	Turkey	12 (11.5%)
	India	10 (9.6%)
	United Kingdom	6 (5.8%)
	Italy	5 (4.8%)
	Pakistan	5 (4.8%)
	Israel	3 (2.9%)
	Poland	2 (1.9%)
	Spain	2 (1.9%)
	New Zealand	2 (1.9%)
	Australia	2 (1.9%)
	Japan	2 (1.9%)
	Iran, Bahrain, Jordan, Syria, Saudi, Kuwait, Iraq, Libya, Morocco, Palestine, Nepal, Myanmar	12 (11.5%)
	Finland, Belgium, Denmark, Norway	4 (3.8%)
	Canada	1 (0.96%)
Methods	Quantitative study (questionnaire-based study)	94 (90.4%)
	Qualitative (i.e., case study, interview, observation study, and secondary data analysis)	9 (8.7%)
	Mixed method (interview and questionnaire)	1 (0.96%)
Number of Participants	≤100	27 (26%)
	101-200	34 (32.7%)
	201-300	7 (6.7%)
	301-500	7 (6.7%)
	501-700	7 (6.7%)
	701-1000	5 (4.8%)
	1001-3000	12 (11.5%)
	3001-10000	4 (3.8%)
	>10000	1 (0.96%)

Prevalence

The 51 studies that researched the prevalence of aggression and violence by patients (and their relatives/friends) against physicians assessed the aggression and violence experienced by physicians in the previous twelve months or during their careers (see for summary information Table 3).

Table 3. Summary information on prevalence

	Career life	Last 12-month
Total prevalence	23.9-87.5% Developing countries: 60-84.7%; Developed countries: 23.9-84.8%	12.4-84.7%
Verbal violence	47%-96.8%	8.7%-86.2%
Physical violence	17.2%-51%	1%-51%
Sexual harassment	0.9%-21.8%	

Half of these studies researched aggression and violence experienced during the physicians' careers and showed a global variation from 23.9% (Norway, in 2004; 50.6%, in 1994) to 87.5% (Iraq) of physicians suffering whole types of aggression and violence from patients (and their relatives/friends) (Verma et al., 2019; Nagata-Kobayashi et al., 2009; De Jager et al., 2019; Barlow & Rizzo, 1997; Paola et al., 1994; Pan et al., 2015; Cikriklar et al., 2016; Magnavita & Heponiemi, 2012; Oguz et al., 2020; Nayyer-ul-Islam et al., 2014; Kumar et al., 2019; Udoji et al., 2019; Lowry et al., 2019; Sui et al., 2019; Kaya et al.,2016; Gong et al.,2014; Zeng et al., 2018; Alsaleem et al., 2018; Shafran-Tikva et al., 2017; Kaur et al., 2020; Johansen et al., 2017; Baykan et al., 2015; Lafta & Pandya, 2006). The other half of the studies focused on aggression and violence experienced in the previous year and showed that between 12.4% (U.K.) and 84.7% (Syria) of physicians had experienced one or more types of aggression and violence by patients (and their relatives/friends) during the previous 12 months (Rosenthal et al., 2018; Nevo et al., 2019; Sharma et al., 2019; Karaahmet et al., 2014; Anand et al., 2016; De Jager et al., 2019; Dixit et al., 2019; Wu et al., 2015; Abualrub & Khawaldeh, 2013; Yao et al., 2014; Hills et al., 2011; Kumar et al., 2016; Naveen et al., 2020; Shi et al., 2020; Duan et al., 2019; Saeki et al., 2011; Mohamad et al., 2021; Afkhamzadeh et al., 2018). More studies on the prevalence of aggression and violence by patients (and their relatives/friends) were from developing countries (34 out of the 51 articles) than from developed countries, while this negative behavior was common in both developed countries and developing countries. More specifically, 23.9% (Norway, in 2004) to 84.8% (Japan) of physicians in developed countries (Belayachi et al., 2010; Nagata-Kobayashi et al., 2009; De Jager et al., 2019; Barlow & Rizzo, 1997; Wyatt & Watt, 1995; Udoji et al., 2019; Lowry et al., 2019; Bernaldo-De-Quiros et al., 2015; Johansen et al., 2017) and 60% (China) to 90.7% (Turkey) of physicians in developing countries (Verma et al., 2019; Çikriklar et al., 2016; Pan et al., 2015; Nayyer-ul-Islam et al., 2014; Gong et al., 2014; Zeng et al., 2018; Gulalp et al., 2009; Oztok et al., 2018; Baykan et al., 2015; Lafta & Pandya, 2006) were exposed to aggression and violence by patients (and their relatives/friends) during their careers. Among all countries, in Turkey, the rate of physicians in emergency departments experiencing violence by patients (and their relatives/friends) was the highest, ranging from 44.8% to 90.7% during their careers (Çikriklar et al., 2016; Altınbas et al., 2010; Oztok et al., 2018; Erdur et al., 2015).

Physicians were subjected to three main forms of aggression and violence from patients: physical, verbal, and sexual. Sixty-six articles investigated the type of aggression and violence by patients (and their relatives/friends) and claimed that the most common form of such violence was verbal violence. During physicians' entire career, 47% (Morocco) to 96.8% (Turkey) of physicians encountered verbal violence (e.g., verbal threats, curses, scolding, blame) from patients (and their relatives/friends), and 17.2% (India) to 51% (U.S.) of physicians were exposed to physical assault (e.g., being spat on, hit, or pushed) by patients (and their relatives/friends) (Verma et al., 2019; Paola et al., 1994; Belayachi et al., 2010; Nagata-Kobayashi et al., 2009; Shi et al., 2015; Magnavita et al., 2012; Barlow & Rizzo, 1997; Wyatt & Watt, 1995; Kumar et al., 2019; Sui et al., 2019; Kowalenko et al., 2012; Kaya et al., 2016; Swain et al., 2014; Catanesi et al., 2010; Coverdale et al., 2001; Bernaldo-De-Quiros et al., 2015; Altınbas et al., 2010; Winstanley & Whittington, 2004; Chaimowitz et al., 1991; Chaudhuri, 2007; Demirci et al., 2020; Mackin, 2001; Kaur et al., 2020; Hu et al., 2019; Schnapp et al., 2016; Bilici et al., 2016; Erdur et al., 2015; Gulalp et al., 2009; Chang et al., 2020; Granek et al., 2019; Berlanda et al., 2019; Oztok et al., 2018; Johansen et al., 2017; Baykan et al., 2015; Lafta & Pandya, 2006). The other half of the studies investigated aggression and violence by patients (and their relatives/friends) experienced by physicians in the previous year and claimed that 8.7% (Myanmar) to 86.2% (India) of physicians experienced verbal violence and 1% (Myanmar) to 51% (U.S.) of physicians suffered physical violence from patients (and their relatives/friends) (Zafar et al., 2016; Rafeea et al., 2017; Kasai et al., 2018; Rosenthal et al., 2018; Nevo et al., 2019; Zhu et al., 2018; Hamdan & Hamra, 2015; Kumar et al., 2019; Sharma et al., 2019; Mirza et al., 2012; Gates et al., 2006; Anand et al., 2016; De Jager et al., 2019; Sun et al., 2017b; Kirkegaard et al., 2018; Lepping et al., 2013; Dixit et al., 2019; Behnam et al., 2011; Kowalenko et al., 2005; Abualrub & Khawaldeh, 2013; Yao et al., 2014; Sun et al., 2017a; Tian et al., 2020; Kumar et al., 2016; Duan et al., 2019; Saeki et al., 2011; Firenze et al., 2020; Winstanley & Whittington, 2004; Mohamad et al., 2021; Afkhamzadeh et al., 2018; Wang et al., 2021). In addition, physicians were exposed to sexual harassment, with a range from 0.9% (Turkey) to 21.8% (U.S.) during their working life (Magnavita et al., 2012; Nagata-Kobayashi et al., 2009; Nayyer-ul-Islam et al., 2014; Lowry et al., 2019; Sui et al., 2019; Kaya et al., 2016; Coverdale et al., 2001; Chaudhuri, 2007; Demirci et al., 2020; Bilici et al., 2016; Kaur et al., 2020; Hu et al., 2019; Schnapp et al., 2016; Oztok et al., 2018; Baykan et al., 2015). Moreover, seven studies investigated which type of physicians were more exposed to aggression and violence by patients (and their relatives/friends), and all showed that younger physicians with less work experience, especially internship physicians, were exposed to more aggressive behavior by patients (and their relatives/friends) (Kumar et al., 2016; De Jager et al., 2019; Paola et al., 1994; Saeki et al., 2011; Mohamad et al., 2021; Kaur et al., 2020; Carmel & Hunter, 1991).

For the perpetrators, eight studies explicitly compared the prevalence rates for aggression and violence from patients and their relatives/friends. Three Indian studies and one Pakistani study reported that physicians experienced more aggression and violence from patients' relatives in public hospitals than in private hospitals (Dixit et al., 2019; Danivas et al., 2016; Kaur et al., 2020; Zubairi et al., 2019), while three other American studies noted that physicians in emergency rooms and surgical departments were more exposed to violence from patients themselves (Barlow & Rizzo, 1997; Behnam et al., 2011; Kowalenko et al., 2005). An Italian and an Australian study specifically distinguished differences arising from verbal or physical aggression by patients or their relatives against physicians: physicians were exposed to more physical assaults from patients and more verbal assaults from patients' relatives (Firenze et al., 2020; Hills et al., 2012) (see for detailed information Table 1).

Risk Factors

Perpetrator-related Factors

Sixteen articles identified the impact of perpetrators' characteristics on aggression and violence. Regarding the personal characteristics of perpetrators, most were male, between the ages of 20 and 35, or lacked education (Paola et al., 1994; Anand et al., 2016; Bayram et al., 2017; Zeng et al., 2018). However, in a study of Pakistani physicians, 41% suffered violence in the emergency department from patients with high socioeconomic status (Mirza et al., 2012). In addition, a patient with a mental illness, with a drug or alcohol addiction, or who smoked had a higher risk of generating violent acts (Belayachi et al., 2010; Nevo et al., 2019; Kaur et al., 2020; Hamdan & Hamra, 2015; Mirza et al., 2012; Anand et al., 2016; Behnam et al., 2011; Debska et al., 2012; Schnapp et al., 2016), and patients were prone to become aggressive when they were in fear, pain, restraint and struggles with billing issues (Paola et al., 1994; Hamdan & Hamra, 2015; Tucker et al., 2015; Dixit et al., 2019; Kumar et al., 2019; Kumar et al., 2016). Patients' high expectations and excessive demands were significant risk factors for triggering their negative behavior against physicians. More specifically, aggression and violence by patients (and their relatives/friends) can be triggered when they invest much money and time in their treatment, but the results do not meet their expectations or physicians are unable to meet their excessive demands (Zhu et al., 2018; Hamdan & Hamra, 2015; Pan et al., 2015; Schnapp et al., 2016). In addition, dissatisfaction with physicians' treatment and services (Nevo et al., 2019; Pan et al., 2015; Nayyer-ul-Islam et al., 2014; Kumar et al., 2019; Zhu et al., 2018) and the patient's death were additional important precipitating factors for the violent behavior of patients or their relatives/friends (Kumar et al., 2019; Mirza et al., 2012; Anand et al., 2016; Dixit et al., 2019; Kaur et al., 2020).

Physician-related Factors

Gender

Eleven articles investigated the relation between physicians' gender and aggression and violence by patients (and their relatives/friends). Eight studies claimed that male physicians experienced more aggression and violence by patients (and their relatives/friends) in their careers than female physicians (India, China, Pakistan, U.K., Turkey) (Verma et al., 2019; Zhu et al. 2018; Mirza et al., 2012; Shi et al., 2015; Dhumad et al., 2007; Erdur et al., 2015; Carmel and Hunter, 1991; Oztok et al., 2018; Binder & McNiel, 1994), especially regarding physical attacks (De Jager et al., 2019). However, two studies showed that female anesthesiologists and female physicians working in emergency departments (95% CI 1.4 to 5.8) in the U.S. had experienced more violence than their male colleagues (Kowalenko et al., 2005; Udoji et al., 2019).

Skill-related Factors

Eight articles studied the impact of a lack of physicians' skills on aggression and violence by patients (and their relatives/friends), and three categories of physicians' skills that influenced the occurrence of aggression and violence were identified: poor medical skills, negative communication skills, and undesirable service awareness. Improper treatment provided by physicians, treatment errors, and insufficient working experience were the antecedents of aggression and violence by patients (and their relatives/friends) (Mirza et al., 2012; Chaimowitz et al., 1991). In general, physicians with less than five to ten years of working experience were at higher risk of patient aggression and violence. A total of 24% to 86.2% of physicians considered miscommunication to be the most common risk factor for violence (Zhu et al., 2018; Anand et al., 2016; Dixit et al., 2019; Kumar et al., 2019; Zeng et al., 2018), and 10.1% to 62% of physicians reported that no sense of providing high-quality services and delivering poor services also led to violence (Zhu et al., 2018; Hamdan & Hamra, 2015).

Work-related Factors

Working hours, working schedule, and workload were three main risk factors for triggering aggression and violence by patients (and their relatives/friends). Twelve articles investigated the working hours when patient (and their relatives/friends) violence occurred frequently. Aggression and violence by patients (and their relatives/friends), especially verbal attacks, mainly occurred during the day between 8 am and 6 pm (hospital business hours) (Dixit et al., 2019; Abualrub and Khawaldeh, 2013; Kumar et al., 2016; Kaya et al., 2016; Oztok et al., 2018; Lafta and Pandya, 2006), while in the emergency department, aggression and violence also occurred frequently during the evening and night (Belayachi et al., 2010). Regarding the working schedule, aggression and violence by patients (and their relatives/friends) mainly occurs in two situations: first, more than half of aggression and violence occurs during shift work (Sharma et al., 2019; Bayram et al., 2017; Kumar et al., 2016); second, aggression and violence frequently happens during moments of interaction between patients and physicians, such as when physicians are examining/treating

patients or during consultations (Magnavita et al., 2012; Kaya et al., 2016). Furthermore, heavy workload and stress and fatigue are risk factors for aggression and violence by patients (and their relatives/friends) (Huang et al., 2020; Tucker et al., 2015).

Interaction-related Factors

Twelve studies found that the interaction between patients and physicians has the following characteristics, which can lead to patient (and their relatives/friends) violence: inadequate attention given to patients (Anand et al., 2016), delay of consultation with patients/delay in the start of treatment (Belayachi et al., 2010; Anand et al., 2016; Kaur et al., 2020; Mohamad et al., 2021), denial of patient requests (Kumar et al., 2016), lack of follow-up after patients die (Granek et al., 2019), perception of wrong treatment given by physicians (Kaur et al., 2020), and misunderstanding and distrust of physicians (Pan et al., 2015; Tucker et al., 2015).

Factors related to Organizational Context

Organizational Resources

Seventeen studies examined organizational resources that triggered the occurrence of aggression and violence. From the perspective of patients, the most common risk factors for aggression and violence were long-term waiting and overcrowding (Paola et al., 1994; Nevo et al., 2019; Hamdan & Hamra, 2015; Kumar et al., 2019; Dixit et al., 2019; Pan et al., 2015; Nayyer-ul-Islam et al., 2014; Kumar et al., 2016; Kaur et al., 2020). Lack of needed services was another important element, including lack of enough equipment (e.g., unavailability of beds), insufficient staff, poor-quality food in cafeterias, and lack of medicines (Mirza et al., 2012; Anand et al., 2016; Abualrub & Khawaldeh, 2013). From the perspective of physicians, lack of security/secure facilities and violence prevention measures and poor training courses provided were risk factors for their inability to protect themselves against attacks by patients (Karaahmet et al., 2014; Altınbas et al., 2010; Chaimowitz et al., 1991; Schnapp et al., 2016; Tucker et al., 2015). Moreover, high humidity and temperature also contributed to patient aggression and violence (Kumar et al., 2019; Anand et al., 2016).

Organizational Departments

Twenty-four studies specifically researched the department where aggression and violence by patients (and their relatives/friends) occurred. These studies showed that aggression and violence occurred most frequently in emergency departments and psychiatric units (Lafta and Pandya, 2006; Baykan et al., 2015; Oztok et al., 2018; Nayyer-ul-Islam et al., 2014; Pan et al., 2015; Barlow and Rizzo, 1997; Anand et al., 2016; Karaahmet et al., 2014; Verma et al., 2019; Mohamad et al., 2021). In addition to these two departments, other studies found that outpatient rooms, inpatient wards, surgery and internal medicine were high-risk departments for aggression and violence (Johansen et al., 2017; Dhumad et al., 2007; Jankowiak et al., 2007; Sui et al., 2019; Coverdale et al., 2001; Zeng et al., 2018; Shi et al., 2015; Karaahmet et al., 2014).

External Context

Only one study investigated whether misleading or unprofessional media reports about violence toward physicians may provoke copycat incidents. Zhu et al. (2018) claimed that 87.1% of physicians in China considered adverse media reports to lead to patient (and their relatives/friends) aggression and violence because some media exaggerated or unrealistically reported situations in hospitals to attract customers' attention, intensifying patients' distrust of physicians (see for detailed information Table 1).

Consequences

Physical Effects

Thirteen articles reported that physicians experienced negative physical impacts after being attacked by patients (and their relatives/friends). In total, 10.6% to 34.8% of physicians suffered minor or moderate physical injuries (Abualrub & Khawaldeh, 2013; Bilici et al., 2016; Baykan et al., 2015; Ma et al., 2014; Altınbas et al., 2010), leading them to take time off from work and health issues, such as insomnia and appetite loss (Zahid et al., 1999; Baykan et al., 2015; Nagata-Kobayashi et al., 2009; Sun et al., 2017a). Severe physical injuries also led to medical care, hospitalization or even death for physicians (Anand et al., 2016; Pan et al., 2015; Zahid et al., 1999; Reid et al., 1985; Altınbas et al., 2010). For the location of the injury, the heads, arms and eyes of physicians were attacked frequently (Coverdale et al., 2001; Carmel & Hunter, 1991). In addition, a study in India showed that 25% of physicians reported headaches after encountering aggression and violence by patients (and their relatives/friends) (Anand et al., 2016).

Psychological Well-being Effects

Aggression and violence by patients (and their relatives/friends) affected physicians' mental health in two main aspects: psychology and emotion (total 37 articles). Nine studies reported that depression was the most common psychological impact of physicians encountering violence and assault by patients (and their relatives/friends) (Elhadi et al., 2020; Nagata-Kobayashi et al., 2009; Anand et al., 2016; Tang & Thomson, 2019; Shi et al., 2020; Sui et al., 2019; Gong et al., 2014; Mohamad et al., 2021; Kaur et al., 2020). Three studies claimed that 25.2% to 75% of physicians felt depressed after experiencing aggression and violence from patients (and their relatives/friends) (Nagata-Kobayashi et al., 2009; Anand et al., 2016; Shi et al., 2020). Fear was another psychological consequence that occurred frequently among physicians after facing aggression and violence by patients (and their relatives/friends) (Magnavita et al., 2012; Nagata-Kobayashi et al., 2009; Mikkola et al., 2016; Dixit et al., 2019; Kowalenko et al., 2005; Catanesi et al., 2010; Debska et al., 2012; Johansen et al., 2017). A total of 4.6% to 75.2% of physicians reported that they felt fearful when they were exposed to aggression and violence by patients (and their relatives/friends) (Magnavita et al., 2012; Nagata-Kobayashi et al., 2009; Mikkola et al., 2016; Dixit et al., 2019; Catanesi et al., 2010; Johansen et al., 2017; Debska et al., 2012), and physicians who had experienced physical violence felt more fearful than those

who had experienced nonphysical violence (Magnavita et al., 2012). In addition, aggression and violence by patients (and their relatives/friends) affected physicians' job burnout (i.e., emotional exhaustion, depersonalization and accomplishment) (Gascon et al., 2013). More precisely, physicians felt emotional exhaustion (Rafeea et al., 2017; Bernaldo-De-Quiros et al., 2015; Erdur et al., 2015), a low level of depersonalization (Rafeea et al., 2017; Bernaldo-De-Quiros et al., 2015; Erdur et al., 2015), and low accomplishment (Rafeea et al., 2017). Eight studies mentioned that patient violence caused physician anxiety (Elhadi et al., 2020; Belayachi et al., 2010; Magnavita et al., 2012; Hamdan & Hamra, 2015; Shi et al., 2020; Bernaldo-De-Quiros et al., 2015; Gong et al., 2014; Kaur et al., 2020), with a variation from 3% to 22.1% (Magnavita et al., 2012; Hamdan &Hamra, 2015; Shi et al., 2020). Four articles reported that 28.7% - 60% of physicians felt angry when suffering from aggressive acts by patients (and their relatives/friends) (Magnavita et al., 2012; Nagata-Kobayashi et al., 2009; Dixit et al., 2019; Catanesi et al., 2010). Aggression and violence by patients (and their relatives/friends) were also significantly associated with PTSD (posttraumatic stress disorder) among physicians, including intrusion symptoms, hyperarousal, nightmares, worse memories, and avoidance of talking about some situations (Zafar et al., 2013; Zafar et al., 2016; Rosenthal et al., 2018; Saeki et al., 2011; Lafta & Pandya, 2006). Six studies showed that physicians felt stressed, including occupational stress and psychological stress, when they experienced violence and attacks (Zhu et al., 2018; Sun et al., 2017a; Yao et al., 2014; Mohamad et al., 2021; Kaur et al., 2020; Granek et al., 2019). Moreover, symptoms that were frequently found among physicians were that they were upset (Wyatt & Watt, 1995), were frustrated (Anand et al., 2016; Dixit et al., 2019), needed help (Debska et al., 2012), felt fatigued, humiliated, distressed (Magnavita et al., 2012), were worried (Silwal & Joshi, 2019; Zafar et al., 2013; Wyatt & Watt, 1995), were disappointed (Magnavita et al., 2012; Catanesi et al., 2010), felt fatigued (Anand et al., 2016), had lost self-confidence and self-efficacy (Yao et al., 2014), had a sense of defeat (Kaur et al., 2020), had low self-esteem (Anand et al., 2016; Kaur et al., 2020), and were irritated and sad (Anand et al., 2016; Dixit et al., 2019; Debska et al., 2012).

Job Motivation and Retention

A total of fifteen studies investigated the impact of aggression and violence by patients (and their relatives/friends) on physicians' jobs. With a variation from 16% (U.S.) to 32.2% (Italy), physicians reported that they had considered leaving or changing jobs (Kowalenko et al., 2005; Magnavita et al., 2012; Duan et al., 2019; Shi et al., 2015), and in America, 19% of emergency department physicians had the desire to change to another department (Magnavita et al., 2012). A Chinese study claimed that 73% of physicians stated they would not choose to become a physician again (Ma et al., 2014). In fact, due to aggression and violence by patients (and their relatives/friends), 3.4% of physicians in Pakistan had changed their department (Mirza et al., 2012), and 1% of American emergency department physicians had quit their job (Kowalenko et al., 2005). In addition, 60% of physicians in India eventually changed their place and pattern of

work (Kumar et al., 2019). Four studies claimed that aggression and violence by patients (and their relatives/friends) reduced the job satisfaction of physicians (Oztok et al., 2018; Shi et al., 2015; Wu et al., 2014; Granek et al., 2019). More specifically, 54.8% of emergency department physicians reported a decrease in job satisfaction and interest in their profession in Turkey (Oztok et al., 2018). In addition, two articles indicated that 44.3% (Pakistan) to 53.4% (Turkey) of physicians reported that aggression and violence by patients (and their relatives/friends) had negatively affected their job performance and work quality (Mirza et al., 2012; Oztok et al., 2018). Two studies mentioned that this violent behavior had diminished physicians' job initiative and eagerness to work (Yao et al., 2014; Nagata-Kobayashi et al., 2009). Aggression and violence by patients (and their relatives/friends) had also impacted physician-patient relationships and physician-patient interactions (Hamdan & Hamra, 2015; Debska et al., 2012; Wu et al., 2014; Kaur et al., 2020). Physicians minimized communication with the patient, reduced the time of patient care, avoided making decisions that might involve medical risks, and showed their anger directly to the patients because of their aggression and violence (Hamdan & Hamra, 2015; Debska et al., 2012; Kaur et al., 2020). More specifically, Kaur et al. (2020) stated that incidents of aggression and violence by patients (and their relatives/friends) against physicians significantly influenced patient management and decision making by the treating physician. For example, as the severity of violence against physicians has increased, there has been an increase in recommendations for investigation and referral and consultation with other specialists.

Other Effects

Three studies mentioned that aggression and violence by patients (and their relatives/friends) had a negative influence on physicians' lives (Nayyer-ul-Islam et al., 2014; Oztok et al., 2018), such as reducing their quality of life (Granek et al., 2019). In addition, a Chinese study claimed that 86% of physicians reported that they do not want their children to become physicians (Ma et al., 2014). Regarding the violent behavior of patients (and their relatives/friends), only 13.2% to 53% of physicians reported these incidents to administrators; consequently, the majority decided not to report (Mirza et al., 2012; Mackin, 2001; Firenze et al., 2020; Coverdale et al., 2001; Kaur et al., 2020; Baykan et al., 2015). At the organizational level, hospitals paid high compensation to patients to resolve medical disputes or pay compensation to injured physicians (Zeng et al., 2018; Liu et al., 2020; Tucker et al., 2015) (see for detailed information Table 1).

Prevention and Management

A total of 24 articles investigated how to prevent aggression and violence by patients (and their relatives/friends). From the hospital perspective, twelve studies indicated that the education and training of staff was the key method to mitigate aggression and violence by patients (and their relatives/friends) (Mackin, 2001, Chaimowitz et al., 1991; Zahid et al., 1999; Morrison et al., 1998; Wyatt & Watt, 1995; Dhumad et al., 2007; Mirza et al., 2012; Nevo et al., 2019; Mohamad et al., 2021), particularly training in violence prevention or de-escalation techniques (Schnapp

et al., 2016), conflict management (Kumar et al., 2019), training in managing potentially violent incidents or aggressive patients (Coverdale et al., 2001; Catanesi et al., 2010), communication skills, and self-defense (Abualrub & Khawaldeh, 2013). In addition, four articles suggested the need to improve staffing arrangements (Chaimowitz et al., 1991; Mirza et al., 2012), especially the recruitment of new staff to reduce physicians' workload. (Granek et al., 2019; Kumar et al., 2016). Seven studies proposed improving security to prevent aggression and violence by patients (and their relatives/friends), including increasing security presence and weapon screening, badge-protected checkpoints, locks on ED doors (Behnam et al., 2011), installation of closed-circuit television (CCTV) cameras in the institution (Verma et al., 2019), establishment of a safe assessment room (Liiywhite et al., 1995), and optimization of a clinician escape route for physicians in consultation or treatment rooms (Abualrub & Khawaldeh, 2013). Enhancement of the physical setting was another significant way to protect physicians (Chaimowitz et al., 1991), including the improvement of surroundings (e.g., lighting, noise, heat, access to food, cleanliness, privacy) (Abualrub & Khawaldeh, 2013), the improvement of conditions in public waiting areas (Abualrub & Khawaldeh, 2013) and proper infrastructure (Kumar et al., 2016; Kumar et al., 2019). Moreover, six studies indicated that improving services in hospitals could prevent aggression and violence by patients (and their relatives/friends). More precisely, hospitals could provide better services by providing translators on site to help with language barriers (Granek et al., 2019), improving communications (Kumar et al., 2016, Kumar et al., 2019; Nevo et al., 2019) and providing channels for patient feedback, such as patient suggestion boxes (Tucker et al., 2015). Four articles reported that 38.4%–73.73% of physicians suggested that restricting visitors' access to hospital departments was necessary (Mohamad et al., 2021; Abualrub & Khawaldeh, 2013; Hills et al., 2011), especially restricting visiting hours for relatives/friends of patients (Kumar et al., 2016), and that only one attendant should be allowed to accompany a patient into an accident and emergency unit (Abualrub & Khawaldeh, 2013; Wyatt & Watt, 1995). Furthermore, introducing a violence reporting system (Mohamad et al., 2021; Hills et al., 2011) and patient risk assessment (i.e., patient screening to record and be aware of previous aggressive behavior) were effective approaches to prevent patient aggression and violence (Abualrub & khawaldeh, 2013; Mohamad et al., 2021). From the government perspective, physicians suggested that the government could improve laws and regulations (Bayram et al., 2017) and educate the public (Baykan et al., 2015; Mirza et al., 2012) to protect such incidents (see for detailed information Table 1).

Discussion and Conclusion

This review investigated the prevalence, risk factors, consequences, and prevention and management of aggression and violence by patients (and their relatives/friends) toward physicians in hospitals by summarizing and synthesizing 104 articles. Most articles examined the prevalence of violence by patients (and their relatives/friends) and showed that this aggression and violence represented a prominent risk for physicians around the world.

In general, physicians working in developing countries were more exposed to patient (and their relatives/friends) aggression and violence than those working in developed countries. Although eight studies differentiated the prevalence of aggression and violence between patients and patients' relatives/friends (most studies combined patient violence with that of patients' family/friends), there were no significant differences in risk factors, consequences, and prevention management for aggression and violence coming from patients or their relatives/friends.

Research on the characteristics of aggression and violence by patients (and their relatives/friends) has focused on two main areas: the type of patient violence and the type of physicians who are more likely to experience violence. More specifically, verbal violence, physical violence, and sexual harassment were the three most prevalent types of aggression and violence by patients (and their relatives/friends), with verbal violence being the most common. Our review indicated that young physicians were a high-risk group for experiencing violence, which is in line with the review of Hills and Joyce (2013). This phenomenon can be explained in two ways: 1) younger physicians have less experience in identifying potentially aggressive patients and taking effective methods to protect themselves from violence, and 2) younger physicians are more likely to spend more time interacting with patients (Hills & Joyce, 2013). In terms of the risk factors for aggression and violence by patients (and their relatives/friends) toward physicians, our review found that these are associated with factors on multiple levels, including patients, interactions between physicians and patients, hospitals, and society (e.g., unbiased media reporting). On the patient level, the dissatisfaction of patients (and their families/friends) with the quality of service (e.g., long waits, insufficient medicine and staff) and dissatisfaction with the treatment results (e.g., high expectations, poor outcomes) are significant triggers for their aggression and violent behavior. Notably, on a societal level, billing issues were more likely to be a major risk factor for patients' violent behavior in developing countries than in developed countries. Due to undeveloped healthcare insurance, patients and their relatives often become aggressive when they have to bear the high cost of healthcare treatment when the results do not meet their expectations. Meanwhile, adverse media reports can mislead patients into thinking that physicians and hospitals can profit from high medical/treatment bills (Zhu et al., 2018). This perception often aggravates the patient's distrust of the physician and is not conducive to a positive professional image of doctors (patient-level risk factor), which can lead to serious violent behaviors (Dixit et al., 2019; Kumar et al., 2019; Chang et al., 2020; Sharma et al., 2019;

Tucker et al., 2015; Bayram et al.; 2017; Kaur et al., 2020). A risk factor at the societal level regarding health policy (such as an underdeveloped insurance system) may aggravate a patient's distrust. In this sense, societal-level factors interact with patient-level factors. However, there is a lack of research that provides a better understanding of how certain risk factors interact with each other and lead to the occurrence of aggression and violence. In addition, although the risk factors for aggression and violence by patients (and their relatives/friends) are multifaceted, from the existing studies, it is difficult to determine which factors are the most significant for patient (and their relatives/friends) aggression and violence.

Regarding the consequences of aggression and violence by patients (and their relatives/friends), our review found that aggression and violence had many negative effects on physicians' health, psychological well-being and work functioning. In general, aggression and violence by patients (and their relatives/friends) were found to be mainly related to psychological and negative emotional consequences, such as anger, fear and sadness. Although many articles mainly studied the impact of aggression and violence by patients (and their relatives/friends) on the individual level, few articles focused on the impact of aggression and violence by patients (and their relatives/friends) on the team or organizational level. Only three articles in our review claimed that aggression and violence by patients (and their relatives/friends) had a negative impact on the organization, i.e., considering compensation for injured physicians. These results were in line with the review conducted by Lanctot and Guay (2014). They claimed that effects of Type II workplace violence have been found on seven different aspects among healthcare providers (i.e., physical, psychological, emotional, work functioning, relationship with patients/quality of care, social/general, and financial effects), but this violence mainly affected healthcare providers' emotions and psychology and only the financial impact could be considered at the organizational level (i.e., cost and compensation). Mento et al. (2020) also mentioned that violence may affect budgets and costs for health organizations due to absence and burnout of professionals experiencing aggression and violence by patients (and their relatives/friends). Kumari et al. (2020) indicated that in extreme cases of workplace violence, protests have erupted in the healthcare community, resulting in tremendous loss of days of work and lack of staff. In conclusion, a range of reviews summarized consequences at individual level (e.g., psychological reaction, burnout, and physical effects) but did not mention the effects at team/organizational level (Caruso et al., 2022; Edward et al., 2014). Therefore, there is still a lack of research on the impact of aggression and violence by patients (and their relatives/friends) on teams and the organization.

This review found scant studies on the prevention and management of aggression and violence by patients (and their relatives/friends) against physicians in hospitals. Moreover, there is a lack of articles examining the actions hospitals take to cope with the negative effects of patient aggression and violence when it occurs. Two main methods to prevent aggression and violence

in hospitals were found, namely, improving the context (e.g., increasing security staff and installing CCTV) and providing training to physicians. Some hospitals chose to compensate the patient as a solution to reduce aggression and violence. However, such behavior has certain drawbacks. In China, there is a phenomenon called Yinao (healthcare disturbance); that is, some patients and their families intentionally harm doctors and damage hospital property to obtain high hospital compensation for actual or perceived medical malpractice (Zhang et al., 2017). In addition, some physicians also proposed suggestions for the prevention of aggression and violence by patients (and their relatives/friends), such as increasing staff to reduce physicians' workload, improving the violence reporting system, improving the availability of resources (e.g., sufficient medicine and beds), and providing social support to cope with negative emotions.

Although there are some mitigation strategies for the prevention and management of aggression and violence by patients (and their relatives/friends), we find that these existing strategies are developed rather loosely, without a clear theoretical notion of the risk factors. More specifically, risk factors for aggression and violence by patients (and their relatives/friends) are multifaceted, and there are links between these factors. However, existing strategies always focus on one or two levels of risk factors, and there was not a well-aligned strategy in which attention was paid to the different levels on which risk factors can be distinguished in relation to the type of violence, type of physicians and violence-prone departments involved in practice. Some models can be helpful to come to more comprehensive strategies, like the Safewards model (Bowers, 2014) which combines risk factors and prevention methods of violence in psychiatric context. However, this knowledge is still scarce and prevention approaches or models still cannot be generalized to other hospital settings or other departments.

This study has several limitations that should be considered. First, it was limited to peer-reviewed articles, which means that books and gray literature were not included. Second, due to publication bias, intervention studies that did not produce the expected results may have been underreported. Third, interventions of aggression and violence based on the interprofessional context were not considered in this review due to the scope of this review and selection criteria.

This review has implications for risk factors, consequences, and prevention and management of patient (and their relatives/friends) aggression and violence against physicians in hospitals. Most studies have focused on the individual level, and there has been little research on aggression and violence by patients (and their relatives/friends) at the team/organizational level. Moreover, the strategies of prevention and management of aggression and violence by patients (and their relatives/friends) lack connection with prevalence, risk factors and consequences, which means that there is a lack of a stronger theoretical conceptual model between these aspects. More specifically, 1) prevention approaches should focus on locations, times and populations that are prone to violence; for example, hospitals should pay more attention to protecting young

physicians from aggression and violence because they are more likely to be attacked by patients (and their relatives/friends) and to strengthening security measures in departments during time periods where violence frequently occurs; 2) the main triggers of patient (and their relatives/friends) aggression and violence need to be further identified to better understand the underlying mechanisms between risk factors and prevention strategies; 3) strategies should pay attention to the interactions between different levels of risk factors; and 4) because patient (and their relatives/friends) aggression and violence is most likely to have negative psychological and emotional effects on physicians, it is important for hospitals to provide measures to mitigate physician's negative emotions and to support them effectively.

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Appendix 1. Searching Strategy

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(aggression/de OR hostility/de OR aggressiveness/de OR anger/exp OR rage/de OR violence/de OR 'verbal hostility'/de OR 'physical violence'/de OR assault/de OR 'physical abuse'/de OR 'workplace violence'/de OR (aggression* OR (aggressive* NEAR/3 behav*) OR violen* OR hostil* OR anger* OR rage OR hate OR ((physical* OR verbal) NEAR/3 (abuse* OR attack*)) OR assault*):ab,ti) AND ('patient'/exp OR 'doctor patient relationship'/de OR parents/exp OR relative/de OR 'workplace violence'/de OR workplace/de OR 'occupational exposure'/de OR (patient* OR parent OR parents OR relatives OR workplace OR at-work OR occupational):ab,ti) AND ((physician/exp NOT ('general practitioner'/de OR 'occupational physician'/de)) OR 'doctor patient relationship'/de OR (doctor* OR physician* OR andrologist* OR anesthesiologist* OR anaesthesiologist* OR cardiologist* OR dermatologist* OR diabetologist* OR endocrinologist* OR epileptologist* OR gastroenterologist* OR geriatrician* OR gerontologist* OR gynecologist* OR gynaecologist* OR hematologist* OR haematologist* OR hepatologist* OR immunologist* OR infectious-disease-specialist* OR intensivist* OR internist* OR medical-geneticist* OR neonatologist* OR nephrologist* OR neurologist* OR obstetrician* OR oncologist* OR ophthalmologist* OR orthopedic-specialist* OR otolaryngologist* OR pathologist* OR pediatrician* OR phlebologist* OR physiatrist* OR podiatrist* OR psychiatrist* OR pulmonologist* OR radiologist* OR rheumatologist* OR surgeon* OR urologist* OR vaccinologist* OR venereologist*):ab,ti) AND (hospital/exp OR 'hospital physician'/de OR 'intensive care'/exp OR 'tertiary care center'/de OR 'secondary care center'/de OR 'hospital patient'/de OR 'hospital personnel'/de OR hospitalization/de OR 'hospital admission'/de OR 'hospital management'/de OR (hospital* OR ward* OR intensive-care-unit* OR icu OR picu OR NICU OR (emergenc* NEAR/3 department*) OR ((tertiary-care OR secondary-care) NEXT/1 (institut* OR center* OR centre*))):Ab,ti) NOT [conference abstract]/lim AND [english]/lim NOT ([animals]/lim NOT [humans]/l

Appendix 2. Quality Assessment of the Papers by GRADE Approach

GRADE	Example of study designs
A high quality of evidence	multicenter RCT, large high-quality multi-center trial, high-quality pre- and post surveys
B moderate quality of evidence	one-center RCT, RCT with severe limitations, and pre-and post surveys
C low quality of evidence	high-quality qualitative studies, quasi-experimental designs and pre-and post surveys with limitations
D very low quality of evidence	low- quality qualitative studies and pre- and post surveys with severe limitations
Decrease grade if: Serious (− 1) or very serious (− 2) limitation to study quality Important inconsistency (− 1) Some (− 1) or major (− 2) uncertainty about directness Imprecise or sparse data (− 1) High probability of reporting bias (− 1)	
Increase grade if: Strong evidence of association—significant relative risk of > 2 (< 0.5) based on consistent evidence from two or more observational studies, with no plausible confounders (+1) Very strong evidence of association—significant relative risk of > 5 (< 0.2) based on direct evidence with no major threats to validity (+2) Evidence of a dose response gradient (+1) All plausible confounders would have reduced the effect (+1)	

Appendix 3. Summary of Results (Table 1)

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Verma et al. (2019)	India	To find out incidence and determinants of violence against the doctors.	Cross-sectional study using a self- administered questionnaire	N=300	An act of aggression, physical assault, or threatening behavior that occurs in a work setting and causes physical or emotional harm to an employee.
Zubairi et al. (2019)	Pakistan	To determine perceptions, attitudes and experience of workplace violence among residents and faculty.	Cross-sectional study using the adopted questionnaire from ILO/ ICN/ WHO/ PSI workplace violence instrument	N=185	Incidents where staff is abused, threatened or assaulted in circumstances related to their work, including commuting to and from work.
Elhadi et al. (2020)	Libya	To identify the prevalence of depression and anxiety among physicians working in the emergency departments.	Cross- sectional study using a self- administered questionnaire and Hospital Anxiety and Depression Score (HADS)	N=108	-
Kowalenko et al. (2012)	U.S	To develop and evaluate an instrument for prospective collection of data relevant to emergency department (ED) violence against healthcare workers.	Cross- sectional study using a self- administered questionnaire (scale from 1-6)	N=70	Violence in the healthcare setting*
Paola et al. (1994)	U.S	To ascertain the incidence of violence against internists.	Cross- sectional study using a self- administered questionnaire	N=63	Assault (an unjustifiable threat of force sufficient to arouse a well-founded apprehension of battery) and battery (rude and inordinate contact with the person of another).
Silwal and Joshi (2019)	Nepal	To find the prevalence of verbal abuse among doctors in tertiary care hospital.	Cross- sectional study using a self- administered questionnaire	N=240	Specific forms of violence (verbal abuse)
Zafar et al. (2013)	Pakistan	To determine the prevalence and nature of WPV reported by physicians and nurses working in the EDs.	Cross-sectional study using the adopted questionnaire from ILO/ ICN/ WHO/ PSI workplace violence instrument	N=134	-

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Prevalence: 75.6%; Gender: Male (71.5%)>female; Type: verbal violence (71.7%), physical violence (17.2%), threats (10.1%); Department: accident and emergency unit (most).	-	-	Strict legal steps, not be overburden with work, installation of CCTV cameras, restricted visitors enter.	C
Perpetrators: patients > their attendants.	-	-	-	C
Verbal violence (65.7%), physical violence or abuse (24.1%).	-	Anxiety and depression	-	C
Type: sexual violence (mean =3.34), verbal violence (mean =2.82), physical violence (mean =4.38).	-	-	-	C
Group: postgraduate-year-one (PGY-1) and PGY-2 resident physicians >PGY-3 /PGY-4; Perpetrator: patients (29%), patients' relatives (13%), male (66.7%), age: 31-45 (65%); Location: ED (40%), medical wards (45%).	Intoxicated patients or patients with Psychiatric histories (54%), patient kept waiting (9%), patient being phlebotomized (9%), patient being restrained (4.5%).	-	-	C
Type: verbally abused for 6-12 months (70.8%); Time: morning time (43.6%)	-	Worried (47.5%), not take any actions (27.5%).	-	B
Type: physically attacked (32.8%), verbally attacked (67.9%).	-	Worried about violence, bad memories, avoidance, super-alertness, everything is an effort.	-	B

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Zafar et al. (2016)	Pakistan	To measure the prevalence of WPV among EPs (emergency physicians) and the association between the experience of WPV and self-report of post-traumatic stress disorder (PTSD), depression, anxiety, and burnout.	Cross-sectional study using the adopted questionnaire from ILO/ ICN/ WHO/ PSI workplace violence instrument, PTSD Checklist, the Maslach Burnout Inventory (MBI), the General Health Questionnaire-12, and the Ways of Coping questionnaire	N= 179	-
Rafeea et al. (2017)	Bahrain	To investigate characteristics of workplace violence, the characteristics of the perpetrator, and effect of such violence on staff working in the ED.	Cross-sectional exploratory questionnaire using exposure to violence (22 questions), and MBI	N=29	An act of aggression toward a person during his or her employment, and it can take many forms such as aggression, harassment, bullying, intimidation, or assault.
Kasai et al. (2018)	Myanmar	To report the current state of workplace violence against physicians in hospitals.	Descriptive survey using a self- administered questionnaire	N=196	-
Belayachi et al. (2010)	Morocco	To determine the frequency of exposure, characteristics, and psychological impact of violence toward hospital-based emergency physicians.	Cross-sectional study using Trait Anxiety Inventory (STAI) scale and self- administered questionnaire for workplace violence	N=60	Behaviour by an individual or individuals within or outside an organization that is intended to physically or psychologically harm a worker or workers and occurs in a work-related context
Danivas et al. (2016)	India	To evaluated prevalence of aggressive behaviour and coercive measures on an acute Indian psychiatric ward.	Observational study using Staff Observation Aggression Scale Revised, Indian (SOAS-RI)	N=47 (patients)	Violence and aggression at the workplace (aggression and violence from inpatients and their relatives)
Rosenthal et al. (2018)	U.S	To assess the incidence and impact of aggression against healthcare workers.	Cross-sectional study using a self- administered questionnaire	N=160	Workplace violence as defined by the National Institute for Occupational Safety and Health (NIOSH)*

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Typs: physical attack (15.6%), witnessing a physical attack (52.8%), experiencing verbal abuse in the last 12 months (60.9%).	-	Attacks were significantly associated with screening positive for PTSD, burnout, and current mental distress.	-	B
Type: verbally abused (79.3%), physical abused (10.3%), sexually abused (3.4%).	-	Burnout and emotional exhaustion (34.5%), high level of depersonalization (20.7%), low accomplishment (52%).	-	C
Type: verbal abuse (8.7%), physical violence (1.0%); Hospital: private hospital (23.3%), public hospitals (6.0%).	-	-	-	C
Total prevalence: 70%; Type: verbal abuse (47%), verbal threat (30%), physical assault (8.3%); Gender: women (45%), men (55%).	A delay of consultation or care (52%), acute drunkenness (17%), neuropsychiatric disease (5%).	Anxiety	-	C
Perpetrators: patient (95%), patient's relatives (2.5%).	-	-	-	C
Total prevalence: 21.9%; Typs: physical assault (8.1%), verbal assault (21.3%).	-	Posttraumatic symptoms (42.9%)	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Magnavita et al. (2012)	Italy	To evaluate the prevalence of violent behaviour in a large sample of Italian radiologists and analyse the phenomenon and its consequences with a view to proposing preventive measures.	Cross-sectional study using the Violent Incident Form (VIF)	N=992	Physical and verbal abuse from internal (e.g., colleagues) and external (e.g., patients)
Nagata-Kobayashi et al. (2009)	Japan	To assess the experiences of Japanese medical trainees (residents) of abuse and harassment during residency.	Cross-sectional study using a self- administered questionnaire	N=691	Abuse or Harassment (i.e., verbal abuse; physical abuse; academic abuse; sexual harassment, and gender discrimination)
Cikriklar et al. (2016)	Turkey	To evaluate the occurrence of violent incidents in the workplace among the various professional groups working in the emergency department.	Cross-sectional study using a self- administered questionnaire	N=43	Risk to a health worker due to threatening behaviour, verbal threats, physical assault and sexual assault committed by patients, patient relatives, or any other person.
Shafran-Tikva et al. (2017)	Israel	To examine the different types of violence experienced by nurses and physicians, the types of perpetrators and the specialty fields involved.	Cross-sectional study using a self- administered questionnaire	N=230	A socially unacceptable behavior - aggressive and sometimes destructive - of an individual or group.
Mikkola et al. (2016)	Finland	To describe fear, the threats causing fear and the occurrence of fear among emergency department nursing staff and physicians.	Mixed methods: cross-sectional study and interview	N=65	Specific forms of violence (work-related fear)

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Physical abuse (6.8% per year) [punching (9.1%), slapping (6.4%), kicking (6.0%) and spitting (4.0 %)]; Situation: during the radiological examination or procedure (25.8%), during emergency procedures (22.7%), during a consultation (14.4%), in an attempt to calm a quarrel (18.9 %) Nonphysical violence: Female (23.6%)> male (18.9%).	-	Anger (60.0 %), anxiety (22.1%), humiliation (20.1%), disappointment (17.1%), fear (15.8%), distress (13.4%), helplessness (25.8%), a desire to change jobs (32.2%), felt done something wrong (21.6%), a desire for revenge (20.5%).	-	B
Total prevalence: 84.8%; Type: verbal abuse (72.1%), physical abuse (18.3%); Location: surgery (27.6%), internal medicine (21.4%), emergency medicine (11.5%), anaesthesia (11.3%).	-	Anger (41.4%), diminished eagerness to work (33.5%), little impact (31.5%), depression (27.1%), increased feelings of difficulty at work (17.2%), health problems (15.3%), fear (10.8%), thoughts about dropping out (7.4%).	-	B
Total prevalence: 90.7%; Perpetrate: patient's relatives (65.3%), patient (5.2%).	-	-	-	C
Total prevalence: senior physician (55.2%), resident physician (35.7%).	-	-	-	C
-	-	Fear: 59%	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Nevo et al. (2019)	Israel	To evaluate trends in violence towards hospital and community doctors.	Cross-sectional study using a self- administered questionnaire	N=145	Specific forms of violence (verbal and physical violence)
Zhu et al. (2018)	China	To analyse gender differences in workplace violence against physicians of obstetrics and gynecology in China.	Cross-sectional study using a self- administered questionnaire	N=1300	Specific forms of violence (violent abuse, riots, attacks, and protests).
Hamdan & Hamra (2015)	Palestine	To assess the characteristics (level and type), associated risk factors, causes, and consequences of WPV against workers in Palestinian EDs.	Cross-sectional study using adopted questionnaire from ILO/ ICN/ WHO/ PSI workplace violence instrument	N=142	Violence in the healthcare setting*
Naveen et al. (2020)	India	To identify the factors among healthcare providers, which are contributing toward work-place violence by patients and visitors.	Cross-sectional study using a self- administered questionnaire	N=120	Workplace violence as defined by the National Institute for Occupational Safety and Health (NIOSH)*

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 59.3%; Type: verbal abuse (59%), physical abuse (9%).	Long waiting time (23.9%), dissatisfaction with treatment (16.9%).	Negative effect on physicians' private lives (42.1%).	Security personal, patient education and advocacy of the issue, training, improving communication between the doctor and the patient.	B
Verbal abuse (66.7%), physical assaults: male physicians > female physicians (18.8% vs.10.5%).	Patients' expectations difficult to meet (85.2%), adverse media reports (87.1%), insufficient communication of skills (74.5%), undesirable service awareness (62.4%).	Psychological stress (90.3%), destruction of medical practice (79.5%).	Legal process, get help from hospital administration.	B
Type: physical abuse (28.9%), non-physical abuse (78.8%).	Factors related to the EDs' system: long waiting time (47.5%), lack of violence prevention measures (37.3%), lack of medicines or needed services (18.7%), staff attitudes (10.4%); Patient- and their family-related factors: unmet expectations (35.4%), anxiety/fear (23.1%), the influence of mental illness (14.9%), illness or pain (13.3%), the influence of substance (drugs or alcohol) (6.0%).	Minimized contacts with patients and their companions (26.4%), minimized the time of patient care (13.6%), avoided taking decisions that might involve medical risks (11.8%), felt hopelessness and disappointment (26.4%), felt fear and anxiety (3%), felt to take revenge (3.5%).	-	C
Type: physical assault (5.8%), non-physical: talking loudly in hospital (4.2%), using offensive language (11.7%), verbal threats of physical violence (22.5%).	Overcrowding (15%), high humidity and temperature (4.2%), lack of privacy (1.7%), death of the patient (44.2%), missing patient (25%), thefts (16.7%), damage to property (14.2%).	-	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Sharma et al. (2019)	India	To evaluate the perceptions of healthcare workers and patient's attendants about factors responsible for violence and patient- physician distrust.	Cross-sectional study using a self- administered questionnaire	N=159	Incidents where staff is abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health.
Karaahmet et al. (2014)	Turkey	To investigate assaults towards doctors working at the Canakkale State Hospital.	Cross-sectional study using a self- administered questionnaire	N=130	Specific forms of violence (physical and verbal assaults).
Mirza et al. (2012)	Pakistan	To determine the magnitude of the problem in a developing country, to examine the effects of ED violence on physician satisfaction and performance, and to identify underlying etiologies and potential solutions.	Cross-sectional study using a self- administered questionnaire	N=675	-
Tucker et al. (2015)	China	To investigates the prevalence of all types of WPV against medical students.	Interview	N=166	No clear definition, just mention patient and their families violence.
Gates et al. (2006)	U.S	To describe the violence experienced by Emergency Department (ED) workers from patients and visitors.	Cross-sectional study using a self- administered questionnaire	N=49	Violence from patients and visitors, including verbal harassment, sexual harassment, verbal threats, and physical assaults.
Berlanda et al. (2019)	Italy	To ascertain the prevalence of patient and visitor violence in a number of emergency departments.	Cross-sectional study using a self- administered questionnaire	N=87	A single event or a number of small, recurrent incidents that, accumulatively, have the potential to cause serious harm to the worker.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 54%	-	-	-	C
Total prevalence: 59.2%; verbal assaults mostly Department: outpatient room (66.2%), ED (50%), inpatient ward (7.1%).	Poor health policies (83.3%), condition-specific working area (9.0%), lack of security (3.8%).	-	-	C
Total prevalence: 76.9%; Type: verbal abuse (65%), physical abuse (11.9%) Gender: male physicians were more exposed to female physicians ($p < 0.05$).	Patient/caretaker factors: drug abuse (15.3%), psychiatric disorders (12.3%), serious illness (26.8%), death (26.4%), lack of education (52.5%), high status/ politicians (41.0%); Service factors: not enough equipment for treatment (39.6%), improper treatment (21.8%), not enough staff (43.6%).	Decline in job satisfaction (40.7%), decrease job performance (44.3%), change department (3.4%).	Physicians' perception: public education (64.7%), 24-h coverage by security staff (57.6%), increasing staff (42.5%), improvement of staff communication skills (36.4%), staff awareness and education (33.4%).	B
-	Patient-physician mistrust, intense workloads and pressures, inadequate training to deal with patient disputes.	-	Increase hospital security forces, "patient suggestion boxes".	C
Type: verbal harassment: 96%; verbal threat (83%), sexual harassment (13%), physically assault (51%).	-	-	-	C
Physicians experienced non-physical violence more frequently ($M = 1.86$, $SD = .55$) than physical violence ($M = 1.20$, $SD = .30$; $p < .001$).	-	-	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Anand et al. (2016)	India	To assess the exposure of workplace violence among doctors, its consequences among those who experienced it and its perceived risk factors.	Cross-sectional study using a self- administered questionnaire	N=169	Violence or threat of violence against workers.
Bayram et al. (2017)	Turkey	To determine the prevalence of violence directed at emergency department (ED) physicians in Turkey and confirm the factors influencing such violence.	Cross-sectional study using self-administered questionnaire	N=713	All forms of violence
De Jager et al. (2019)	Belgium	To describe the characteristics of physicians who are at increased risk for patient-physician aggression.	Cross-sectional study using self-administered questionnaire	N=3762	Four types of aggression: physical, verbal, sexual or psychological.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 40.8%; Type: physically assault (11.6%), threatened (50.7%), verbally abuse (75.4%); Gender: males physicians > females Department: ED (78.3%), surgery (13.6%), department of medicine (10.1%).	Death of the patient (14.5%), delay in initiation of treatment (14.5%), lack of medicines, mismanagement of the patients and inadequate attention given to the patient, poor communication skills (81.1%), poor conflict resolution skills (56.8%), drug addiction among patients' or their relatives (68.6%), a history of personality disorders among patients' or their relatives (64.5%), overcrowding in hospitals (77.5%), Frequent shortage of medicine and other supplies (73.4%), poor working conditions of doctors in hospitals (72.2%).	Felt fatigued and had low self-esteem (50%), headache (25%), hospitalized (25%), fearful (69%), felt sad (44.3%), became more conscious and vigilant (97.1%).	-	B
Total prevalence: 78.1%; physical violence (31.3%); Department: in emergency department (most); Time: every shift (28.2%).	The medical conditions (67.2%), the sociocultural status (89.8%), education level of persons (78.4%), the policies of the Ministry of Health (87.4%), the overcrowded nature of the EDs (71.7%).	Taking a short break (33.3%), reported the incident to law enforcement (37.2%).	Security precautions (94%), the severity of the punishment of such crimes should be increased (72.8%).	B
Total prevalence: 84%; Gender: more men than women had experienced physical aggression; more women than men experienced sexual aggression; Age: younger physicians were more likely to experience patient-physician aggression; Language (verbal violence): speaking French (75%), speaking Dutch (79%); Department: ED (82%), psychiatry (64%), neurology (58%), geriatrics (53%), internal medicine (52%) departments.	-	-	-	B

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Sun et al.(2017)	China	To identify the incidence rate of WPV against doctors and to examine the association between exposure to WPV, psychological stress, sleep quality and subjective health of Chinese doctors.	Cross-sectional study using self-administered questionnaire	N=2617	Violence in the healthcare setting*
Zahid et al. (1999)	kuwait	This study aimed to investigate the effects of violence on doctors working in accident and emergency departments.	Cross-sectional study using self-administered questionnaire	N=101	-
Kirkegaard et al. (2018)	Denmark	To explore differential occupational safety and health risk perceptions, risk behaviour and risk exposure among healthcare providers in EDs.	Cross-sectional study using a self- administered questionnaire	N=67	-
Lepping et al. (2013)	U.K.	To assess the prevalence of violence against healthcare staff.	Cross-sectional study using a self- administered questionnaire	N=8	-
Dixit et al. (2019)	India	The objective was to study the factors contributing to workplace violence against doctors in a tertiary care teaching hospital.	Cross-sectional study using a self- administered questionnaire	N=263	Any act or threat of physical violence, harassment, intimidation or other threatening disruptive behaviour that occurs at the work site. It ranges from threats and verbal abuse to physical assaults and even homicide.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Type: verbal violence: 76.2%; physical violence (24.1%), sexual harassment (7.8%).	-	Violence and aggression was positively correlated with psychological stress (r=0.382, p<0.001) and negatively associated with subjective sleep quality (r=−0.281, p<0.001) and subjective health (r=−0.471, p<0.001).	-	C
-	-	Depression (68%), reliving experience (59%), sleeplessness (56%), fearfulness (50%), time off' by (37%), worried about violence at their workplace (89%).	Training to deal with any possible violent situation (72%).	C
Type: physical violence (22%) (scratched, scraped or pinched or being spat on, hit or pushed); threats (40%).	-	-	-	C
Type: verbal violence: 50%; physical violence (25%), verbal threats (50%).	-	-	-	D
Total prevalence: 35.7%; Type: verbal abuse (86.2%), physical violence (5.3%); Perpetrator: patient (9.6%), patient's relative (80.9%); Time: between 1 pm to 6 pm (38.2%), between 7 am to 1 pm (29.7%), between 6 pm to 12 am (22.3%), and between 12 am to 7 am (9.5%).	Miscommunication: (86.2%), prolonged waiting time (70.2%), death of patient (31.9%) and billing issue (28.7%).	Anger 27(28.7%), frustration 30(31.9%), irritability 26(27.7%), fear 11(11.7%), asked person to stop (46.8%), told friends/ family/ colleague (28.7%), defended myself physically (02.1%), sought help from union/ association (05.3%).	-	B

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Shi et al. (2015)	China	This study examined the different frequency levels of specific types of violence and their relationships to physicians' psychological well-being, including emotional exhaustion (EE), job satisfaction (JS), and intention to leave (IL).	Cross-sectional study using a self- administered questionnaire	N=1656	Patient-initiated violence (no clear definition)
Barlow & Rizzo (1997)	U.S.	To gauge the prevalence of violent acts affecting general hospital workers who treat victims of violence on a daily basis.	Cross-sectional study using a self- administered questionnaire	N=475	-
Behnam et al. (2011)	U.S.	The purpose of this study was to assess the incidence of violence in the ED nationwide.	Cross-sectional study using a self- administered questionnaire	N=263	-
Wu et al. (2015)	China	To understand how organizational factors influence workplace violence against physicians is critical.	Cross-sectional study using a self- administered questionnaire	N=189	Any intended or actual use of power (either physical or psychological) to injure, threaten, or assault a person in workrelated circumstances, in the healthcare sector.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Type: verbal attack: 92.75%, threats (88.10%), physical attack (81.04%); Gender: male physicians were more likely to experience high exposure to verbal attack (40.67%), threats (33.52%), and physical attack (24.58%); young physicians aged 30-39 reported higher exposure to verbal attack (40.31%) and threats (31.19%).	-	Violence had significant adverse effects on EE, JS, and IL.	-	B
Type: witnessed a physical attack (59%), being verbally threatened (51%); Perpetrator: patient (6%) and patient's family member (30%); Department: in the emergency room (most), followed by the wards and the parking lots.	-	-	-	C
Total prevalence: 78%; Type: verbal threats (74.9%), physical assaults (21.3%), outside confrontations (5%); Perpetrator: verbal violence: more than 50% of threats came from patients; physical violence from patients (91%).	84% of the perpetrators were intoxicated frequently or most of the time.	-	In changes in security police (24%), including included increased security presence, increased weapon screening, badge-protected check points, locks on ED doors, increased use of restraints, and use of metal detectors, violence workshops (16%), and self-defense training (10%).	B
Type: workplace-related violent threat (physical or verbal) (41.5%), sexual harassment (9.8%); Department: in psychiatry and emergency medicine reported significantly higher incidences of both violent threats and sexual harassment.	Safety climate (OR=0.89; 95% CI=0.81−0.98) and job demands (OR=1.15; 95% CI=1.02−1.30), were significant determinants of violent threats.	Respondents who experienced violent threats had less experience, poorer perceived safety climates, and higher job demands.	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Kowalenko et al. (2005)	U.S.	To determine the amount and type of work-related violence experienced by Michigan attending emergency physicians.	Cross-sectional study using a self- administered questionnaire	N=171	-
Pan et al. (2015)	China	To analyze the characteristics and causes of violence in China through the collected medical violence reported.	Quantitative analysis of secondary data	N=101	-
Magnavita & Heponiemi (2012)	Italy	To identify the prevalence of physical and non-physical violence in a general health care facility in Italy and to assess the relationship between violence and psychological factors.	Cross-sectional study using VIF	N=186	Physical and non-physical violence

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 76%; Type: verbal assault (74.9%), physical assault (28.1%), confrontation outside the ED (11.7%), stalking (3.5%); Perpetrators: patient (89%), a family member (9%), a friend of a patient (2%).	-	Fearful (81.9%), considered leaving their hospital (16%), considered leaving emergency medicine (19%), did leave the hospital for another location to practice (1%).	Obtaining a gun (18%), a knife (20%), a concealed weapon license (13%), and carrying mace (7%) or a club (4%); most (31%) used a security escort (7% used a variety of other means).	C
Department: in the emergency department was targeted most often in medical disputes, followed by pediatrics, obstetrics, urology, and otorhinolaryngology.	Dissatisfaction with the treatment or diagnosis because the patients and their family commonly have high expectations concerning treatment or diagnosis results (51 %), dissatisfaction with services (24 %), including instrument exchange, acupuncture, providing false certificates, long waiting times, etc., expensive hospital fees (5 %), misunderstandings between patients and doctors (1 %), drunkenness (2 %), mental illness (2 %), and unknown causes (9 %).	-	-	C
Type: physical aggression (OR 2.20, 95%CI 1.16-4.16); threat (OR 4.32, 95%CI 1.94-9.64), verbal violence (OR 1.27, 95%CI 0.84-1.94), harassment (OR 2.80, 95%CI 0.90-8.75).	-	-	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Morrison et al. (1998)	U.S.	To provide a general overview of aggression and violence in the health care setting and a more specific focus on violence directed toward physicians by their patients.	Case study	3 cases	Violence in the healthcare setting*
Oguz et al. (2020)	Turkey	To examine the state of exposure to violence among employees in our clinic in the last one year and our employees' opinions and attitudes about violence.	Cross-sectional study using VIF	N=37	Violence in the healthcare setting*
Wyatt & Watt (1995)	U.K.	To investigate the scale and management of patient aggression directed towards junior A&E (accident and emergency) doctors.	Cross-sectional study using a self- administered questionnaire	N=100	Patient aggression (no clear definition)
Jankowiak et al. (2007)	Poland	To evaluate the frequency, source and type of aggression towards doctors, depending on their place of work and position.	Cross-sectional study using a self- administered questionnaire	N=501	Workplace violence may take on different forms, starting from the mildest, such as: verbal abuse, bullying, sexual harassment and finishing with physical attacks in the form of assaults and maltreatment. Aggression may come from the outside, when it is inflicted by strangers (patients and their families) or from the inside of the institution (colleagues, superiors or subordinates).

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
The vast majority of violence in the health care setting is perpetrated by patients.	-	-	(1) A commitment from health care administrators and physician educators to acknowledge the reality of violence and to allocate resources for the development of training, crisis management, debriefing, and surveillance programs; (2) The development of training and educational programs for employees, supervisors, managers, and security personnel.	D
Total prevalence: 56%.	-	-	-	D
Verbal violence: 50%; Perpetrator: patient (96%).	-	Concerned for their own personal safety when dealing with an aggressive patient (41%), upset (32%).	Teaching A&E SHOs how to manage aggression (88%).	C
Type: threats (61%), physical aggression (11%).	Staff shortages (9%), stress-tiredness (9%), unknown (57%).	-	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Nayyer-ul-Islam et al. (2014)	Pakistan	To explored the frequency of workplace aggression directed towards doctors in a year.	Cross-sectional study using a Swedish study conducted by Judith et al. and modified to suit local needs	N=354	Any incident where staff was abused, threatened or assaulted in circumstances relating to their work involving an explicit or implicit challenge on their safety, well-being and health.
Abualrub & Khawaldeh (2013)	Jordan	To examine the incidence, frequency and contributing factors to workplace violence among nurses and physicians in underserved areas in Jordan, and identify the existing policies and the management modalities to tackle workplace violence.	Cross-sectional study using a self- administered questionnaire	N=125	-

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 74.9%; Type: verbal violence (69.8%), physical violence (11.3%), sexual harassment (3%); Perpetrators: attendants (61.5%), patients (14.7%); Department: emergency (39.6%), general medicine (29.1%), surgery (18.9%), gynecology (17.4%).	Dissatisfaction with service provided by the doctor for the patient (61.1%), long waiting times (47.5%), politically motivated violence (45.3%).	Negative impact on physicians' lives and on the lives of their family (53.1%).	-	B
Type: physically attacked (18.4%), witnessed incidents of physical violence (57.6%); Perpetrators: relatives of patients (73.9%); Time: between 3 p.m.-11 p.m. (78.3%).	Long working shifts, shortage of staff; lack of sources (e.g., insufficient equipment and instruments), inappropriate work environments for providing healthcare services (demanding work load, lighting, noise, heat, access to food), factors related to staff (inadequate staffing, workload), lack of communication skills, poor quality care and the inexperienced staff, factors related to patients and their families (e.g., increased level of anxiety and tension, having previous impressions in regard to poor-quality health care before admission), life stress and lack of health insurance, factors related to the society (the negative image of nursing profession), ignorance, traditions and tribal culture, and factors related to security (inexperienced and unqualified security staff, increased public and visitors' access and uncontrolled visiting time).	Injured (34.8%), being injured took time off from work after being attacked (21.7%)	Presence of security measures (e.g., alarms and portable telephones) (56.0%); restricting public access (38.4%), the presence of special equipment or clothing (e.g. uniform or absence of uniform) (29.6%), the improvement of surroundings (e.g. lighting, noise, heat, access to food, cleanliness, privacy) (24.8%), the patient screening (to record and be aware of previous aggressive behaviour) (20.8%), the improvement of training (e.g. workplace violence, coping strategies, communication skills, conflict resolution, self-defence) (20.8%).	B

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Yao et al. (2014)	China	To explore associations of general self-efficacy (GSE), workplace violence and doctors' work-related attitudes.	Cross-sectional study using Workplace Violence Scale	N=758	Any physical assault, threatening or intimidating behavior, or verbal abuse occurring at the work site.
Kumar et al. (2019)	India	To draw attention toward the issue of violence against critical care physicians, reveal the dimensions of such violence and highlight ill effects of WPV on personal life of doctors.	Cross-sectional study using a self- administered questionnaire	N=118	Workplace violence as defined by the National Institute for Occupational Safety and Health (NIOSH)*
Hills et al. (2011)	Australia	To determine the extent of aggression directed towards Australian doctors and the implementation of aggression prevention and minimization strategies in medical workplaces.	Cross-sectional study using a self- administered questionnaire	N=321	-

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 63.2%	-	Experiencing workplace violence were significantly positively correlated with the level of occupational stress ($r = 0.33$ and 0.34, respectively, $p < 0.01$), but significantly negatively correlated with job satisfaction, job initiative, and general self-efficacy ($r = –0.32$, $–0.30$, $–0.20$, $–0.36$, $–0.30$, $–0.24$, respectively, $p < 0.01$ for all comparisons).	-	C
Total prevalence: 72%; Type: verbal violence (67%); Time: during night times (most).	Poor communication (65%), billing related disputes (27%), dissatisfaction regarding medical services (21%).	Physicians change their place and pattern of work (60%), loss of working hours (28%), profound psychological impact (23%) on them.	Proper communication (76%), by improving security (49%), infrastructure (47%), ensuring vigilant monitoring (29%), increasing responsibilities of the hospital authorities (29%), conflict management (98%).	B
Perpetrators: patients (61.1%), patient relatives or carers (48.9%).	-	-	Policies and procedures (71%), warning signs (50%), risk alerts (51%), restrict service access (48%), incident reporting (67%), education and training (53%), duress alarms (45%), optimized clinician escape (55%), optimized patient waiting (55%), facility access restrictions (60%), building security (69%), after hours safety (35%).	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Sun et al.(2017)	China	To determine the prevalence of workplace violence (WPV) against healthcare workers.	Cross-sectional study using adopted questionnaire from ILO/ ICN/ WHO/ PSI workplace violence instrument	N=1086	Workplace violence as defined by the World Health Organization (WHO)*
Tian et al. (2020)	China	To explore the frequency distribution of different types of WPV by demographic and occupational characteristics, to identify the associated factors for different types of WPV, and to investigate the impact of WPV on career satisfaction.	Cross-sectional study using a self- administered questionnaire	N=934	Workplace violence as defined by the National Institute for Occupational Safety and Health (NIOSH)*
Kumar et al. (2016)	India	To determine the prevalence of workplace violence among doctors and to study the associated risk factors.	Cross-sectional study using a self- administered questionnaire	N=151	Workplace violence as defined by the World Health Organization (WHO)*
Hills et al. (2012)	Australia	To describe the 12-month prevalence of verbal or written and physical aggression in Australian clinical medical practice.	Exploratory-descriptive study	N=9951	Verbal or written and physical aggression from patients, patients' relatives or carers, coworkers and others.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Physical violence: 16%; verbal violence (69.6%)	-	-	-	C
Type: physical assault: 15.9%; threats (30.4%), sexual abuse (7.8%), verbal sexual harassment (19.1%), emotional abuse (49.8%).	-	Violence affects the physical and mental health of healthcare workers and decreased the victims' confidence in the healthcare system.	-	C
Total prevalence: 47.02%; Type: verbal violence (87.3%), physical violence (8.5%); Age: younger doctors were more likely to report physical violence. (p-value= 0.012); Time: maximum events of violence took place after the main OPD hours i.e., 9 AM to 1 PM either in the afternoon (35.1%) or during the night shifts (30.1%); Department: obstetrics and gynecology (59.6%), the medical departments (51.4%), surgical departments (42.9%).	Long time waiting (73.5%), billing issue (56.45%), delayed medical provision (45.7%), violation of visiting hours (41.7%), patient's dissatisfaction with nursing staff (41.1%), psychological problems (38.4%), and denial of patient's admission in the hospital (31.1%).	-	Increase in security (40.4%), increase in staff/ doctors (20.5%), restrict visiting hours for relatives (10%), improving communication (4%), proper compliance with the standard operating procedures (4%), vigilant management and proper infrastructure (4%), one patient-one attendant policy, training of security personals and patient relative counselling.	B
Physical violence from patient frequently (5%), verbal or written violence from patient's relative or carer frequently (12%), physical violence from patient's relative or carer frequently (3%).	-	-	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Udoji et al. (2019)	U.S.	To better understand the prevalence and incidence of workplace violence among anesthesiologists in their various work settings.	Cross-sectional study using a self- administered questionnaire	N=2694	Workplace violence as defined by the National Institute for Occupational Safety and Health (NIOSH)*
Tang & Thomson (2019)	China	To examine the relationship between healthcare disturbance, surface acting as a response to emotional labour, and depressive symptoms in Chinese healthcare workers.	Cross-sectional study using the Emotional Labour Scale (ELS), the Zung Self-Rating Depression Scale (SDS) (Chinese version)	N=112	Incident where staff are abused, threatened, or assaulted in circumstances relating to their work, including commuting to and from work.
Shi et al. (2020)	China	To investigate the effects of workplace violence on depression and anxiety symptoms by propensity score matching, and to explore the prevalence of depression and anxiety symptoms in physicians and nurses.	Cross-sectional study using adopted questionnaire from ILO/ ICN/ WHO/ PSI workplace violence instrument	N=1264	-
Lowry et al. (2019)	U.S.	To examine the incidence of WPV affecting Internal Medicine trainees to understand the types of violence encountered, reporting rates, and the factors that influence reporting.	Cross-sectional study using adopted questionnaire from ILO/ ICN/ WHO/ PSI workplace violence instrument	N=88	Experiencing a violent incident, assault, or threatening behavior at work.
Sui et al. (2019)	China	To identify the prevalence of workplace violence and examine the relationships between workplace violence and psychological capital with depressive symptoms and burn-out in Chinese doctors.	Cross-sectional study using the Center for Epidemiology Studies Depression Scale, MBI and Workplace Violence Scale	N=1392	Incidents where staff were abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit threat to their safety, well-being or health.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 69%; Gender: female anesthesiologists had a higher risk of reporting both nonphysical violence and physical violence.	-	-	-	C
-	-	The frequency of healthcare disturbance was positively related to surface acting and depressive symptoms, surface acting in response to emotional labour mediated the relationship between healthcare disturbance and depressive symptoms.	-	C
Total prevalence: 40.1%	-	Anxiety symptoms (15.5%), depression symptoms (25.2%).	-	C
Total prevalence: 47%; Type: verbal assaults (53%), emotional assaults (23%), physical assaults (11%), sexual assaults (3%).	-	-	-	C
Total prevalence: 77.5%; Type: psychological aggression (72.7%), physical violence (33.7%), threat (31.1%), verbal sexual harassment (19.5%), sexual assault (12.6%); Department: surgical department (83.3%), ancillary department (69.5%).	-	Workplace violence was positively associated with depressive symptoms and increased the level of depressive symptoms and burnout by damaging psychological capital.	-	B

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Duan et al.(2019)	China	To identify the prevalence of workplace violence against physicians; to examine the association between exposure to WPV, job satisfaction, job burnout and turnover intention of Chinese physicians.	Cross-sectional study using the Workplace Violence Scale, Social Support Rating Scale, Questionnaire Short Scale, Minnesota Job Satisfaction Short Scale, MBI, and Turnover Intention Scale	N=1257	Workplace violence as defined by the World Health Organization (WHO)*
Saeki et al. (2011)	Japan	To determine the incidence rate of work-related aggression and violence (WRAV) against doctors and investigate risk factors and psychological influences of WRAV doctors.	Cross-sectional study using a self- administered questionnaire and the Revised Impact of Event Scale	N=758	Work-related aggression and violence: verbal sexual harassment,sexual abuse, indirect harassment and/or threats (telephone call, mail, email), stalking, verbal abuse, property damage, and threats with a dangerous weapon and physical injuries requiring treatment.
Firenze et al. (2020)	Italy	To assess the prevalence of workplace violence of doctors.	Cross-sectional study using a self- administered questionnaire	N=4545	Workplace violence as defined by the National Institute for Occupational Safety and Health (NIOSH)*
Kaya et al. (2016)	Turkey	This study shows the rates of violence experienced by doctors and nurses and their ensuing responses including reporting rates and any effects experienced because of the violence.	Cross-sectional study using a self- administered questionnaire	N=124	Workplace violence as defined by the World Health Organization (WHO)*

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 66.19%; Type: verbal violence (65.31%), physical violence (12.57%), sexual harassment (0.88%); Perpetrators: patients' relatives (54.2%), patients (26.4%).	-	WPV was positively correlated with turnover intention ($r = 0.238$, $P < 0.01$) and job burnout ($r = 0.150$, $P < 0.01$). WPV was negatively associated with job satisfaction ($r = -0.228$, $P < 0.01$) and social support ($r = -0.077$, $P < 0.01$). Social support was a partial mediator between WPV and job satisfaction, as well as burnout and turnover intention.	-	B
Type: verbal abuse (14.1%), threats (5.3%), property damage (2.9%); Age: younger physicians experienced more WRAV.	-	Symptoms suggestive of PTSD (8.2%) due to the most severe incident, intrusion symptoms (22.7%), avoidance (21.8%), hyperarousal (19.8%).	-	B
Type: physical violence: 4%; verbal violence (51.5%); Perpetrators: physical violence from a patient (78%), from a patient's relative (23%), 7% from a superior, the 4% from colleagues. Verbal violence from a patient (58%), from a patient's relative (49%).	-	-	-	C
Total prevalence: 76.6%; Type: verbal violence (89.5%), physical and sexual violence (10.5%); Gender: males (69.5%) and females (30.5%) Time: between 8:00 A.M.–4:00 P.M (57.9%); between 4:00 P.M.-12:00 A.M. (36.8%), between12:00-08:00 A.M. (5.3%).	-	-	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Swain et al. (2014)	New Zealand	To examine the levels of aggression experienced by DHB (District Health Board) hospital staff and consider whether experienced aggression varied according to health workers' roles and places of work.	Cross-sectional study using a self- administered questionnaire	N=22	Patient aggression (no clear definition)
Dhumad et al. (2007)	U.K.	To investigate assaults of psychiatrists by patients in a 12-month period.	Cross-sectional study using a self- administered questionnaire	N=129	-
Catanesi et al. (2010)	Italy	The study takes a detailed look at psychiatric patient violence towards their psychiatrists.	Cross-sectional study using a self- administered questionnaire	N=1202	Patient violence
Coverdale et al. (2001)	New Zealand	To determine the prevalence of various types of threats or assaults by patients against training physicians and to determine the psychological impact of the most distressing incidents.	Cross-sectional study using a self- administered questionnaire	N=160	Threats and violent acts by patients.
Bernaldo-De-Quiros et al. (2015)	Spain	To evaluate the psychological consequences of exposure to workplace violence from patients.	Cross-sectional study using the MBI and the General Health Questionnaire	N=135	Violence in the healthcare setting*
Altınbas et al. (2010)	Turkey	To detect the prevalence of verbal and physical assaults towards psychiatrists in Turkey.	Cross-sectional study using a self- administered questionnaire	N=186	Workplace violence as defined by the World Health Organization (WHO)*

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Type: verbal aggression (81.9%), physical aggression (59.1%).	-	-	-	C
Physical assault: 12.4%; Gender: males (68.7%).	-	Medical treatment after the assault (2%), had a break from duties for up to 2 hours (2.3%).	Courses on the prevention and management of violence (63.5%).	C
Type: verbal aggression (90.89%), physical aggression (64.58%).	-	Feeling vulnerable (80.7%), fear (75.16%), inadequate (70.71%), or even alone (73.3%).	Need for training in the management of violent or aggressive patients (97.09%).	C
Type: verbal threats (64%), physical intimidation (54%); Gender: women (38%) were more likely to report having been sexually harassed (10%); Perpetrators: male (78%) and ethnicity was most often European (57%); Department: inpatient ward (55%); accident and emergency department (22%).	-	-	A security person was available at the time of the incident (30%), training in protecting against assault or in managing potentially violent incidents (30%).	C
Type: verbal violence (51.5%), verbal and physical violence (31.9%).	-	Anxiety, emotional exhaustion, depersonalization and burnout syndrome.	-	C
Type: verbal assault (88%), physical assault (51%).	A shortcoming in security in clinic/ hospital (30.1%), inexperience (3%).	-	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Binder & McNiel (1994)	U.S.	To evaluated the relationship between staff gender and the risk of becoming a victim of assault while taking into account the professional discipline of the staff victims.	Cross-sectional study using the Overt Aggression Scale (OAS)	N=120	-
Winstanley & Whittington (2004)	U.K.	To evaluate physical assault, threatening behaviour and verbal aggression from patients towards general hospital staff.	Cross-sectional study using a self- administered questionnaire	N=58	Physical assault, threatening behavior, and verbal abuse.
Gong et al. (2014)	China	To quantify Chinese physicians' anxiety and depressive symptoms as well as evaluate associated risk factors.	Cross-sectional study using a self- administered questionnaire	N=2641	-
Huang et al. (2020)	China	To study the characteristics of patient and visitor violence (PVV) and identified the correlation between the incidence of PVV and healthcare worker (HCW) workload in China.	Quantitative analysis of secondary data	N=87998	Patient and visitor Violence (no clear definition)
Wu et al. (2014)	China	To explore the factors influencing doctors' job satisfaction and morale in China, in the context of the ongoing health system reforms and the deteriorating doctor–patient relationship.	Cross-sectional study using a self- administered questionnaire	N=202	-

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Gender: male physicians experienced more violence than female.	-	-	-	C
Type: physical assault (13.8%), threats (12.1%), verbal aggression (12.3%).	-	-	-	C
Total prevalence: 63.17%	-	More violence exposure at work was associated with anxiety or depressive symptoms.	-	C
-	The incidence rate of physical PVV correlated positively with the outpatient workload of doctors ($r=0.4$, $p<0.01$), and psychological PVV correlated positively with the outpatient workload of doctors ($r=0.23$, $p<0.01$).	-	-	C
87% of physicians reported that there was an increasing trend of violence against doctors.	-	Lower satisfaction	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Liiywhite et al. (1995)	U.K.	To identify rooms which were judged unsuitable for interviewing potentially aggressive patients in, and as a result, several recommendations for safety improvements to these rooms were made.	Cross-sectional study using a self- administered questionnaire	N=22	-
Chaimowitz et al. (1991)	Canada	To guideline specifying minimum security requirements for psychiatric facilities in Canada.	Cross-sectional study using a self- administered questionnaire	N=136	Patient assaults
Chaudhuri (2007)	India	To explore women's experiences and perceptions of sexual harassment in hospital settings.	Interview	N=45	Sexual harassment at workplace
Gascon et al. (2013)	Spain	To detect whether violence is related to burnout.	Cross-sectional study using the MBI, Areas of Work-life Scale and Aggression Questionnaire	N=603	Violence carried out by clients, users, patients and pupils (type II violence).
Demirci & Ugurluoglu (2020)	Turkey	To evaluate the verbal, physical, and sexual workplace violence experienced by healthcare professionals.	Cross-sectional study using a self- administered questionnaire	N=104	Verbal, physical, and sexual violence at workplace.
Mackin & Ashton (2001)	U.K.	To assess the level of violence against trainee paediatricians.	Cross-sectional study using a self- administered questionnaire	N=25	Incidents where (staff) are abused, threatened, or assaulted in circumstances related to their work, involving an explicit or implicit challenge to their safety, well-being, or health.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
-	-	-	An audit of room safety in all facilities where medical staff may be asked to assess potentially violent or aggressive patients, and all interview rooms should be located close to staff areas and incorporate the features discussed above, namely alarm buttons, spyholes, etc., and should be regularly checked for potential weapons.	C
Physically assault: 50.2%	Due to an error (24.5%), lack of secure facilities (32.1%).	-	Facilities for assessing patients (35.1%), an improvement in the physical setting (83.3%), improvements in education and the training of staff (79.5%), an improvement in staffing arrangements (44.7%).	C
Type: sexual harassment (53.3%), verbal attack (40%), intimidation and anxiety provoking (20%), unwanted touched (22.2%).	-	-	-	C
-	-	Felt burnout (energy, involvement and efficacy).	-	C
Type: verbal violence (89.4%) physical violence (6.7%), sexual violence (4.8%).	-	-	-	C
Total prevalence: 90.7%; physically assault: 5.3%.	-	Worrying about the episode after work (60.3%), reported the incident to hospital authorities (13.2%).	Received training in how to manage violent or aggressive patients or relatives (9.3%).	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Debska et al. (2012)	Poland	To evaluate different aspects of aggression among psychiatric professionals.	Cross-sectional study using a self- administered questionnaire and Buss-Perry Aggression Questionnaire	N=132	Forceful behavior, action or attitude that is expressed physically, verbally, or symbolically.
Zeng et al. (2018)	China	To analyze the current situation and influencing factors for medical disputes among different hospitals.	Cross-sectional study using a self- administered questionnaire	N=17 (hospitals)	Medical disputes
Wang et al. (2021)	China	The current study aimed to examine the prevalence of and the risk factors of WPV in county hospitals.	Cross-sectional study using adopted questionnaire from WHO workplace violence instrument	N=476	-
Mohamad et al. (2021)	Syria	To estimate the prevalence of violence against resident doctors and examine the association between WPV and doctors' psychological stress, sleep quality, depression, and general health and to suggest approaches to tackle this problem from the resident doctors' perspectives.	Cross-sectional study using a self- administered questionnaire and the Copenhagen Psychological Questionnaire II	N=1127	Deliberate physical, psychological, sexual, and other acts against someone at work that may risk his/her health or even cause death.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
-	-	Negative emotions: fear of being criticized, fury, sadness, helplessness, anger.	-	C
Medical disputes: 60%; Perpetrators: female patients had a higher proportion in dispute cases. The farmers (32.8%) and workers (28.6%) had high incidence of dispute; Department: hospitalization (54.5%), outpatient (24.9%), and the emergency department (20.6%). The medical disputes involved the departments of obstetrics and gynecology (24.9%), surgery system (21.0%), internal medicine (19.8%), and pediatric (10.5%).	Improper communication (24.0%), lack of medical knowledge for patients (22.1%), poor medical skills (17.0%), and poor medical skills (43.7%).	The amount of compensation due to disputes had been doubled from 8.67 million Yuan in 2013 to 17.89 million Yuan in 2014.	-	C
Physical attacks: 10.9%, and the prevalence of physical attacks peaked at the 36- to 40-year-old group (10.5%), threatened (27.1%).	-	-	-	C
Total prevalence: 84.74%; Type: verbal violence (84.74%), physical violence (19.08%); Age: doctors aged (24–26) were significantly more exposed to verbal violence; Gender: men doctors were more frequently physically assaulted in comparison with women, which was statistically significant.	Delay in waiting/ care time has been causally implicated in both verbal (80.02%) and physical (62.33%) violent incidents.	WPV was positively correlated with depression (sadness, loss of confidence, guilt and loss of interest) and stress (stress handling and overall stress), and negatively correlated with subjective sleep quality and subjective health.	Enacting more legislation to protect doctors as the best solution to reduce WPV (87.31%), restricting visitors' access to hospital departments (73.47%), violence reporting system (66.90%), increasing security guards (61.85%), video recording (49.33%), training of resident doctors using workplace violence prevention programs to handle WPV (34.43%), increasing the number of healthcare workers (28.22%), and educational lectures about workplace violence to increase the awareness of this issue (26.00%).	B

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Alsaleem et al. (2018)	Saudi	To determine the frequency and types of violence against healthcare worker.	Cross-sectional study using a self- administered questionnaire	N=77	Workplace violence as defined by the National Institute for Occupational Safety and Health (NIOSH)*
Kaur et al. (2020)	India	To assess workplace violence faced by doctors, its effect on the psycho-social wellbeing of the treating doctor and, subsequently, on patient management.	Cross-sectional study using a self- administered questionnaire	N=617	Incidents, where employees are abused, threatened, assaulted, or subjected to offensive behavior in circumstances related to their work.
Hu et al. (2019)	U.S.	To assess mistreatment, burnout, and suicidal thoughts during the past year.	Cross-sectional study using a self- administered questionnaire and MBI	N=7464	-

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 57.1%	-	-	-	C
Total prevalence: 77.3%; Type: verbal abuse(91.2%), verbal threat (60.8%); Age: the age group of 31-40 years (41.7%); Gender: more male (78.3%) in comparison to females (74.5%) experienced violence.	Actual or perceived non-improvement or deterioration of the patient's condition (40.0%), perception of wrong treatment given (37.3%), death of the patient (34.4%), actual or perceived delay in treatment (28.5%), unrealistic demands from patient and patient party (e.g., issuing a false certificate, early discharge, special preference) (9.2%), cost and fee-related issues (5.0%), and reasons associated with administrative failure and poor infrastructure, (e.g., long waiting time, unavailability of bed, drugs, investigations) (3.4%).	Loss of self-esteem and feeling of shame (52.2%), stress/ depression/anxiety/ ideas of persecution (51.2%), a sense of defeat (41.7%) while giving their best in the profession, had to change their place of work and shift to another place/town after the incident (12.4%).	-	B
Type: verbal or emotional abuse (30.2%), physical abuse (2.2%), sexual harassment (10.3%).	-	Increasing frequency of mistreatment exposures (composite of discrimination, harassment, and abuse) was associated with a stepwise increase in burnout and suicidal thoughts.	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Schnapp et al. (2016)	U.S.	To quantify and describe acts of violence against emergency medicine (EM) residents by patients and visitors and to identify perceived barriers to safety.	Cross-sectional study using a self- administered questionnaire (published by Gates et al, 2006))	N=119	Any act or threat of physical violence, harassment, intimidation, or other threatening and disruptive behavior at one's place of employment.
Bilici et al. (2016)	Turkey	To explored the rates of exposure to violence among health care staff working at the locked psychiatric clinics.	Interview	N=50	A verbal or behavioral threatening, physical assault, or sexual assault by patients, patients' relatives, or someone else, posing a risk against medical staff.
Erdur et al. (2015)	Turkey	To assess the violence and its possible effects on burnout in physicians working in emergency units.	Cross-sectional study using a self- administered questionnaire and MBI	N=174	Any incident that puts healthcare workers at risk, which includes verbal abuse, threatening behaviour, or assault by a patient or patient accompanier.
Ma et al. (2014)	China	To evaluate the demographics of orthopaedic practice and job satisfaction among orthopaedic surgeons.	Cross-sectional study using a self- administered questionnaire	N=383	-
Gulalp et al. (2009)	Turkey	To investigate the incidence and characteristics of aggression towards the staff in emergency departments.	Cross-sectional study using a self- administered questionnaire	N=37	Aggression, threat and physical violence.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Type: physical violence (65.5%), verbal harassment (96.6%), verbal threats (55.5%), sexual harassment (21.8%).	Patient-related factors: alcohol (95.0%), drug use (94.1%), psychiatric disease (91.6%), organic causes (58.8%) (e.g., dementia leading to physical abuse), patient's inability to deal with a crisis situation (63.9%); Environmental factors: a lack of security or police presence (82.4%), security or police not responding in a timely manner (68.1%), patient areas being open to the public, and ease of bringing weapons into the ED (58.0%); Others: a lack of adequate staff (79.8%).	-	Prior training in violence prevention or de-escalation techniques (16.8%).	C
Type: verbal aggression/swearing (46.3%), threatening (32.0%), physical contact (38.0%), sexual assault (22.0%).	-	Minor Injuries (12.0%), Serious Injuries (6%).	-	C
Total prevalence: 44.8%; Type: physical violence (5.2%), verbal violence (39.7%); Gender: Male are more vulnerable to physical violence than female.	-	There were significant associations between emotional exhaustion and total violence (p=0.012) and verbal violence (p=0.016), depersonalization and total violence (p=0.021).	-	C
Total prevalence: 82%.	-	Would not choose to be a physician again (73%), do not want their children to become a physician (86%).	-	C
Type: aggression (67.6%), threat (67.6%), physical assault (30.4%).	-	-	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Carmel & Hunter (1991)	U.S.	To determine the rate of injury from patient attack among staff psychiatrists , and compare psychiatrists injured from patient attack.	Cross-sectional study using a self- administered questionnaire	N=54	Patient attack
Chang et al. (2020)	China	To examine the dual effects of the violation of psychological contract on patient's antisocial behaviour via the mediator of patient trust and the role of doctor-patient communication.	Cross-sectional study using the Wake Forest Physician Trust Scale, Psychological Contract Violation Scale, Doctor-patient Communication scale and Antisocial Behaviour Scale	N=483 (patients)	Patient's antisocial behavior
Liu et al. (2020)	China	To summary statistics of 225 medical disputes that took place from 2012 to 2013 in Z city.	Cases study	N=225	Medical disputes
Granek et al. (2019)	Israel	To examine one aspect of this phenomenon by looking at expressions and causes of anger among Israeli cancer patients and their families from the perspective of oncologists who treat them.	Interview	N=22	Violence from patients and their families (no clear definition)
Afkhamzadeh et al. (2018)	Iran	To survey the prevalence of exposure to workplace violence (WPV) as well as its related factors among physicians and medical students.	Cross-sectional study using a self- administered questionnaire	N=321	Incidents where employees are abused, threatened, assaulted or subjected to other violent behaviors in conditions related to their work.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Age: who under 36 years of age were more likely to be injured by patient attack; Gender: male physicians experienced more physical attacks.	-	Injuries (13%), five of the injuries were head injuries, the other two were related to stress response.	-	C
-	Psychological contract violation is positively associated with patient antisocial behaviour via patient trust.	-	Doctor-patient communication moderates the mediated effects of psychological contract violation on patient's antisocial behaviour through patient trust.	C
Type: threats (17%), abusive language against medical staff (13%).	-	-	62% of all cases ended with some form of compensation.	D
Both verbal (impatience, rudeness in tone, and aggressive speech) and physical expressions of anger by family members.	Patient-related factors: poor treatment, poor outcome, communication error, patient's death, lack of follow up after a patient had died; Others: a culture that has open interpersonal boundaries and is family-oriented, and a strained healthcare system that leaves oncologists limited in time and resources, including limited access to palliative care.	Stressful, reduced physicians' quality of life and satisfaction with their work.	Reducing oncologist workload by hiring more mental health professionals, having translators available on site to help with language barriers, reducing administrative burdens, and incorporating palliative care widely to help with the psychological and physical care of patients and families.	C
Total prevalence: 58.9%; Type: physical violence (5.3%), verbal abuse (58.9%); Gender: Men had experienced more violence than women (p-value=0.05).	Male sex (AOR = 2.60, CI: 1.56–4.32) and having shift work (AOR = 3.13, CI: 1.67–5.84) were the most significant risk factors for total WPV.	-	-	C

Authors (Year)	Country	Aim	Methods	Sample (physicians)	Definition of aggression and violence
Oztok et al. (2018)	Turkey	To assess the extent of increasing violence toward emergency physicians in Turkey and to define their opinions about reasons of violence.	Cross-sectional study using a self- administered questionnaire	N=502	Harmful behaviors of a party toward bodily integrity, moral integrity or property, or symbolic and cultural values of others in a reciprocal relationship.
Johansen et al. (2017)	Norway	To investigate whether reported prevalence of experienced threats, real acts of violence and debilitating fear of violence among Norwegian doctors have increased over the last two decades.	Quantitative analysis of secondary data	N=2628 (in 1993); N=1158 (in 2014)	-
Baykan et al. (2015)	Turkey	To investigate the extent of violence, the causes of violence and to evaluate proposed solutions to violence.	Cross-sectional study using a self- administered questionnaire	N=597	Violence in the healthcare setting*
Lafta and Pandya (2006)	Iraq	To assess the risk of aggression on resident physicians.	Cross-sectional study using a self- administered questionnaire	N=80	Verbal and physical aggression
Reid et al. (1985)	U.S.	To understand the characteristics of attacks in the hospital.	Cross-sectional study using a self- administered questionnaire	N=118	Assault in hospitals

Note: We only extracted the data for physicians;
Abbreviations: the International Labour Office (ILO), the International Council of Nurses(ICN), the World Health Organization (WHO), and thePublic Services International (PSI), VIF (Violent Incident Form), Maslach Burnout Inventory (BMI), Occupational Safety and Health (NISO).
NISO definition: The act or threat of violence, ranging from verbal abuse to physical assaults directed toward persons at work or on duty.
Violence in health institutions: a condition that is composed of threat behavior, verbal threat, physical assault, and sexual assault arising from patients, patients' relatives or any person, and causing risk for healthcare workers.
WHO definition: The intentional use of physical force or power, threatened or actual, against oneself, another person, group, or community, that either results in, or has a high likelihood of resulting in, injury, death, and/or psychological or developmental harm or deprivation.

Prevalence	Risk factors	Consequences	Prevention and management	Quality assessment
Total prevalence: 82.5%; Type: verbal violence (82.4%), physical violence (74.4%), sexual violence (28.3%); Gender: higher in men ($\chi 2$ =3.940; p=0.047); Department: emergency medicine physicians (most); Time: between 8:00 and 17:00 (20.5%), during after-hours between 17:00 and 8:00 (night shifts) (79.5%); Perpetrators: male (81.6%), and most of them were aged between 25 and 40 years.	-	Social life was negatively affected (60.6%), decrease in job satisfaction or interest toward their profession (54.8%), and a decline in work quality (53.4%).	-	C
In 1993: threats (52.6%), real acts of violence (25.3%); younger group of doctors > the oldest group of doctors. In 2014: threats (50.6%), real acts of violence (23.9%) Department: psychiatry (most).	-	Feeling unfit due to fear of violence.	-	C
Total prevalence: 86.4%; Type: physical violence (26.8%), verbal violence (96.8%), sexual violence (0.9%).	Excessive demands of the patients, the expectation that the issue will be solved immediately and blaming physicians for their problems.	Injured (10.6%), took time off from work after the attack (4.9%), filed charges/ claimed compensation (17.5%).	Education of society and improvement of working conditions.	C
Total prevalence: 87.5%; Type: verbal attacks (80%); Time: during the day (69%), at night (31%). Department: ED (64%), outpatient clinics (19%), the wards (14%).	-	Painful (49%), annoying (41%), no longer considered the episode to be important (10%), did not like to talk about the experience (86%).	-	C
-	-	Leading to an injury requiring even brief medical care (6%), missed work or were bedridden for one or more days (<2%).	-	D

3

Chapter 3

The impact of patient aggression and violence against physicians on the team and organizational levels in China: a qualitative study

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ABSTRACT

Aggression and violence against physicians in hospitals is acknowledged to be an issue, and patients (and their relatives/friends) have been identified as the most prevalent source. While existing research has addressed the individual impact of patient (and their relatives/friends) aggression and violence on physicians, there is a dearth of comprehensive investigations into its broader impacts on healthcare teams and organizations. This study conducted in-depth qualitative interviews with 29 diverse participants, including physicians, hospital team leaders, and hospital board members, working in two secondary hospitals and two tertiary hospitals in China. Interview transcripts were coded and analyzed in Atlas.ti. Based on the in-depth interviews, this study found that, at the team level, aggression and violence by patients (and their relatives/friends) can affect team climate, team communication, team beliefs, and team resources. At the organizational level, such aggression and violence can have negative financial impacts (i.e., involving compensation and additional costs) and societal impacts (i.e., image and reputational damage, and public distrust). Although peer support and leader's support were identified as important ways for physicians to deal with violent incidents, this was not used to its full potential. Recovering a team climate after a violent incident, and providing a variety of forms of support, especially proactive support from leaders and peers, can be considered as two important approaches to cope with the negative impact on the team and organizational levels of patient (and their relatives/friends) aggression and violence against physicians.

Keywords

Aggression; Violence; Physicians; Patients; Teams; Hospitals

Introduction

Aggression and violence in hospitals is acknowledged as an issue that arouses concern in society (Bhattacharjee, 2021). Among healthcare professionals, physicians are at a high risk of experiencing aggression and violence in hospitals (Kumari et al., 2020). Although workplace violence in hospitals can come from both internal sources (e.g., colleagues, leaders) and external sources (patients and their relatives/friends), the latter group has been identified as by far the most prevalent source (Kowalenko et al., 2021; Hills & Joyce, 2013).

The consequences of patient (and their relatives/friends) aggression and violence against physicians are widely acknowledged in practice and in the literature (Kumari et al., 2020; Hills & Joyce, 2013; Wu et al., 2024; Mento et al., 2020; Morphet et al., 2018). Although, these consequences have been studied from multiple angles and on different levels, most studies have focused on the individual level. More specifically, physicians that had experienced patient violence and aggression mostly reported consequences with a psychological (e.g., depression), emotional (e.g., anger, fear), and/or work-functioning character, such as reduced job satisfaction (Wu et al., 2024; Lanctôt & Guay, 2014). Such aggression and violence also impacts team functioning and has consequences for the hospital. For example, violence in the workplace can make team members feel unsafe, which affects the group climate and the establishment of team relationships at work (Van Emmerik et al., 2017). Further, the team climate can impact a team's behavior and productivity, such as its performance, creativity, cooperation, and its employees' turnover intention (Xie et al., 2023; Gonzalez-Gomez & Richter, 2015; Hjerto & Kuvaas, 2017; Li et al., 2019; Choi & Lee, 2017). Organizational-level consequences could include reduced performance and compensation costs due to patient violence leading to physicians taking time off work due to injury (Hills & Joyce, 2013; Lanctôt & Guay, 2014). Overall, the impact of patient aggression and violence against physicians has been relatively poorly researched at the team and organization levels compared to the consequences on the individual level, and the potential consequences warrant a more comprehensive investigation.

A wide range of worldwide studies have highlighted the prevalence of patient aggression and violence and indicated its negative impact on healthcare professionals and institutions. In Europe, physicians in Bulgaria and Spain frequently experience violence from patients and their families, resulting in psychological and work functional impacts (Eshah et al., 2024; Yücel et al., 2024). Belgian and Italian studies have shown sever risk factors associated with patient aggression and violence against healthcare workers, both at the individual and at the systemic level (De Jager et al., 2019; Viottini et al., 2020). Multiple studies in Turkey and India have shown that the prevalence of workplace violence against physicians frequently occurs in emergency departments, leading to occupational stress and burnout (Erkol et al., 2007; Bayram et al., 2017; Davey et al., 2020).

Although aggression and violence in healthcare settings is a global issue, its prevalence and impact vary by culture and healthcare system (International Labor Office, 2002). In China, more than 60% of healthcare professional have experienced workplace violence, and particularly from patients and their relatives (Liu et al., 2019; Lu et al., 2020). China's healthcare system also faces persistent challenges that place significant strain on hospitals, increasing the risk of patient aggression and violence. These challenges include high patient expectations, resource limitations, and a preference for patients to directly seek care at higher-level hospitals due to the lack of a primary care gatekeeper system (Lu et al., 2019; Yip et al., 2019). As such, Chinese hospitals form a research setting in which there is extensive experience with patient aggression and violence against physicians and therefore a wide understanding of the consequences from physicians, as victims but also as witnesses of such incidents. Insights from this study will also be valuable for other hospitals in other countries that encounter less patient aggression and therefore lack the experience to fully understand the consequences and severe impacts of such incidents.

This study aims to understand the impact of patient (and their relatives/friends) aggression and violence against physicians on the team and organizational levels through semi-structured interviews. Based on the findings, strategies to address the negative impacts of patient (and their relatives/friends) aggression and violence on the team and hospital levels can be developed.

Methods

Research Design and Participants

Given the limited number of studies that have investigated the effects of patient (and their relatives/friends) aggression and violence against physicians on the team and organizational levels, a qualitative study was appropriate to explore the impact on these levels. The interview design combined semi-structured and open-ended questions (see Appendix 1 for the interview guidelines). To capture the consequences on the team and organizational levels, this study involved three types of people working in hospitals who are exposed in different ways to patient aggression and violence: 1) physicians who have experienced verbal and/or physical violence from patients (and/or their relatives/friends) or witnessed it against team members (i.e., fellow physicians); 2) leaders of physician teams; and 3) hospital board members. The combination of these three groups provided a comprehensive view of the impact of patient (and their relatives/friends) aggression and violence on teams and organizations. To attain a diverse sample, four public hospitals (two secondary and two tertiary) located in eastern China (i.e., Shanghai, Shandong, Jiangsu, and Zhejiang) were selected. These regions were selected for the variety in hospital landscapes. Specifically, Shanghai possesses advanced medical technology and famous hospitals, which attracts many Chinese patients. In contrast, due to urban-rural divide,

Shandong faces a range of problems (e.g., distribution of healthcare resources) that impact access to healthcare services. With proactive government policies and a well-developed economy, Jiangsu has well-organized hospital management and physician training programs that set an example for improving healthcare efficiency. Zhejiang is known for the widely recognized hospital's management model through healthcare reforms and an innovative service model of urban-rural healthcare integration (e.g., digital healthcare). The regions present a comprehensive view of the hospital dynamics in Chinese hospitals.

Participants were recruited using the authors' own networks. The intention was to achieve data saturation, and the required number of interviews depended on the nature of the topic, the quality of the data, and the method of analysis (Dworkin, 2012). This study started by inviting, from each hospital, one board member, two team leaders, and at least four physicians who were part of a monodisciplinary team with the same specialism. The number of participants was increased based on accessibility (additional board members were beyond the reach of this study) until data saturation was achieved. A total of 29 participants were interviewed between April and July 2023. The final sample contained four board members, eight team leaders, and 17 physicians. Of these participants, 16 were male. Detailed participant information is provided in Appendix 2.

Data collection

This study collected data using semi-structured interviews. To test whether the interview questions were understandable and appropriate, pilot interviews were first conducted. Five participants were interviewed in this pilot, including four physicians (from gynecology and obstetrics, orthopedics, nephrology, and otolaryngology departments) and one team leader (from an ophthalmology department) from different Chinese hospitals. Based on the outcome of the pilot study, the interview questions were refined by tailoring them to the different types of respondents (i.e., physicians, team leaders, and board members).

Following the revisions, the physicians were primarily asked about the impact of patient (and their relatives/friends) aggression and violence on their daily teamwork. In addition, team leaders and board members were also asked about the impact of this type of aggression and violence on the hospitals and the role of leadership. All the interviews were conducted face-to-face in the Chinese hospitals that the respondents were affiliated with and were audio-recorded and transcribed. Interviews lasted between 25 and 65 minutes (average 32 minutes) and did not conflict with the participants' work.

Data Analysis

The first author transcribed the interviews and anonymized them by assigning identification numbers (physicians: P1-P17; team leaders: T1-T8; and board members: B1-B4). These identifiers are used in the quotes included in this paper. The interviews were conducted in Chinese by the

first author (YW) and a subset of the interviews was translated into English. The qualitative data was analyzed using the method proposed by Gioia et al. (1991, 2013, 2021) including 1) generating first-order codes (i.e., raw codes directly extracted from the interview transcripts); 2) integrating first-order codes into second-order themes through axial coding; and 3) ultimately refining higher-order theoretical frameworks. On this basis, data coding and analysis were carried out using Atlas.ti, including the following sequential steps:

1. One author (YW) derived a comprehensive list of first-order codes (in English) based on all 29 transcripts. To assess the reliability of this coding, one external researcher (HW) independently examined two randomly selected transcripts and coded them against the full set of first-order codes.
2. The open codes were then combined, through axial coding, into second-order themes. Each researcher was involved in parts of the first-order codes, analyzing their underlying meanings, and contributed to the development of second-order themes by interpreting the data through their perspectives and expertise. These second-order themes were then compared and any differences discussed until a consensus was reached.
3. Finally, the second-order themes were grouped into integrative dimensions to form a structured and comprehensive framework for understanding the impact of patient aggression and violence at the team and organizational levels.

Patient and Public Involvement Statement

Patients and/or the public were not involved in this study.

Results

Team-level Impacts

Team Climate: Unsafe and Depressed

According to the respondents, patient (and their relatives/friends) aggression and violence against one of the physicians would have an immediate negative consequence for team climate, expressed by safety concerns and consequently a depressed team atmosphere. The fear of physical harm or verbal abuse created a pervasive sense of a lack of safety among all team members, irrespective of whether they had directly encountered or witnessed such incidents. Respondents voiced concerns about potentially becoming the next victim of such aggression and violence given their similar working conditions: "*My colleague and I had similar job duties and content, and I was terrified that the same thing would happen to me.*" (P4) Moreover, physicians could encounter patient (and their relatives/friends) aggression and violence that was directed at them by chance – in response to a team member's actions rather than their own:

> *"Sometimes the violence was directed at the entire department. I mean, a patient's frustration with one physician may be taken out on other physicians in the same department. It has also happened that a patient wanted to attack a specific physician but, when that physician was not in the office, such violence can be transferred to other members of the department." (B1)*

The aftermath of raised safety concerns was a depressed atmosphere. This depressive team atmosphere could be traced back to team members empathizing with each other, and the effortless spread of individual negative emotions throughout the entire team:

> *"We could understand how the victims felt (...) We were all sad. We treated our patients so well, but they did not understand us and even wanted to hurt us." (P5)*

And

> *"The victim was in a bad mood after experiencing such an incident. We were also easily influenced (...) I felt the whole atmosphere in the department became depressed." (P3)*

As a consequence, under such circumstances, it was easy for team members to lose enthusiasm for their work, at least for a short period: "*I have noticed that team members were less motivated about their work than they used to be.*" (T3)

Decreased Desire to Communicate within Teams

Respondents indicated that the occurrence of violence and aggression leads to a decline in communication within the team. This was predominantly observed in two dimensions: the communication between the victim and other team members, as well as communication within the entire team. The main reason for victims' reluctance to communicate was based on their negative emotions: *"I did not want to communicate with others because I was in a bad mood."* (P15) Victims also expressed that, for some time after, they found it challenging to concentrate on work due to safety concerns. The victim's lack of focus was also noticed by team members in that they indicated that such circumstances interfere with effective conversations: *"I needed to question [the victim] several times to get a response. Sometimes the answers did not match the questions I asked."* (P2)

Moreover, many respondents mentioned that even though they were not victims, communication within the whole team would be affected by a negative atmosphere: *"The whole atmosphere was negative, and we did not want to talk much."* (P3) Respondents said that even talking about trivial matters seemed inappropriate: *"Normally we share funny things, but, in that situation, we certainly did not discuss them."* (P17)

Team Beliefs: Better to Offer Low-risk Treatment

There was an overall belief that it is better to be safe than sorry. Most respondents expressed the view that risk-reduction behaviors had become common within healthcare teams. Many respondents indicated that they increasingly opted for conservative treatment methods out of concern for their own safety and to avoid disputes. For instance, *"We like to opt for a more conservative treatment approach. For example, we avoid some high-risk treatments, even though this treatment might lead to better results in some cases."* (T1) Respondents also reported that they tended to recommend patients to undergo a thorough medical examination, although some tests were not strictly necessary. At secondary hospitals, physicians were more likely to refer patients with complex conditions to other hospitals to protect themselves from potential violence and aggression, which is perceived as more likely during complex, high-risk, and expensive medical procedures. This referral behavior will affect the advancement of medical skills in the whole team: *"Sometimes, we opted for a referral, even though we could have cured the disease. This hinders physicians or the team learning new techniques."* (T8)

Team Resources: Impacts on Material and Human Resources

Patient (and their relatives/friends) aggression and violence has an impact on team resources in two main ways: damaging material resources and diminishing human resources. Respondents indicated that aggression and violence from patients (and their relatives/friends) can result in damage to material resources needed to treat patients:

> *"Patients are likely to take out their frustration on some items. For example, they may break the office computer or some medical equipment (...) Some important medical equipment was smashed, and so we had no way to treat some patients quickly." (T7)*

Team leaders reported that violent incidents may result in injuries or emotional distress to physicians, requiring adjustments to work schedules or the provision of leave to allow victims to recover. This may result in teams facing staff shortages in the short term:

> *"We will let the victim take a few days off. Or sometimes we will ask a colleague to accompany the victim to the local police station to make a statement. This will affect the normal medical practice because of the shortage of people." (T3)*

In the long term, team leaders noted that the occurrence of patient (and their relatives/friends) aggression and violence can create challenges in attracting and retaining employees, especially for high-risk departments (such as the emergency care):

> *"Sometimes intern physicians will witness such events happening and they may then change their employment intentions. Sometimes new employees may also choose to leave or to join another, safer team when faced with such an incident." (T1)*

Support from Team Members and Leaders: Valuable yet Limited

Although the above findings suggest that victims are reluctant to engage in conversations, some would actively seek help. Seeking emotional support, such as verbal comfort from other team members, was perceived as a useful way to relieve negative emotions: *"When I experienced such violence, I liked to confide in my colleagues. After that, I would feel better. Of course, my colleagues will also take the initiative to care about me."* (P9) The power of peer support was also reflected in the aftermath of a violent incident. Team members would take over the victim's tasks during their absence. For example, "*Other team members will perform the operation in the victim's place and briefly take over the care of their patients.*" (T4), and most team members did not perceive this type of support as an increased workload: *"I did not consider this situation as adding to my workload. We all help each other out. I may be in the same position one day."* (P6)

Moreover, respondents indicated that the leader could play an important role since attention and support from leaders is likely to be more helpful for the victim in "coming out of the woods". Team leaders could also reach out to hospital administrators (e.g., board members) for assistance given their experience with dealing with such incidents:

> *"They (hospital administrators) tend to have more experience and insights. I mean they may have experienced what you are experiencing, and they can tell you how to solve it based on their own experience." (T4)*

Despite the recognition of the value of diverse support sources (from team members, team leaders, and hospital administrators), in practice the support for victims is mainly singular in form, namely (verbal) support from their peers: *"The help we can get is limited and mostly verbal comfort. In fact, we would all like to have more forms of support, such as paid vacations."* (P15)

Hospital-level Impacts: Societal and Financial Impacts

The effects of patient (and their relatives/friends) aggression and violence at the hospital level had two main dimensions: societal and financial impacts. In terms of societal impact, aggression and violence by patients (and their relatives/friends) can damage the image and reputation of hospitals, potentially leading to public mistrust in them. Many respondents pointed out the negative role that the media can play. For example, some media reports may exaggerate the impact of an incident, resulting in reputational damage to the hospital.

In terms of financial impacts, the influence of aggression and violence by patients (and their relatives/friends) was concentrated in three areas. First, such aggression and violence can involve legal payments and costs related to the required time commitment. Respondents noted that patient aggression and violence often accompanies medical disputes. In such cases, either the patient or the hospital may seek a solution through legal means such as appeals. Hospitals are required to spend time and money to resolve such issues. In addition, it was sometimes

difficult to determine beyond doubt the at-fault party in a medical dispute, and hospitals were consequently required to compensate a patient (and their relatives):

> *"After medical errors, we will certainly compensate patients and their families (...) However, sometimes, it is difficult to determine whether the physician or the patient was at fault in a medical dispute. In such cases, we also have to pay some compensation to patients" (B1)*

Second, if a physician is injured by a patient and/or their relatives/friends, the hospital will pay compensation to cover the physician's medical or hospitalization costs: *"If a physician in our hospital is injured due to a patient's attack, we will definitely pay their related treatment expenses."* (B3)

Third, respondents from a secondary hospital claimed that, due to image and reputational damage to their hospital, patients might in the short term choose other hospitals for their treatment, which would mean that the hospital will lose a certain amount of income:

> *"You know, the public will become less inclined to come to secondary hospitals for treatment. After violence occurs, some patients are likely to choose to go to a more prestigious hospital for treatment." (B4)*

Discussion

Studies investigating the consequences of aggression and violence by patients (and their relatives/friends) had a strong focus on the individual level, with little research focused on impacts at the team and organizational levels. As a result, strategies to cope with and prevent such violence also tended to be largely centered on diminishing the individual-level impacts. However, the impact of patient (and their relatives/friends) aggression and violence on teams and hospitals cannot be denied. Based on this study, aggression and violence by patients (and their relatives/friends) can at the team level affect team climate, team communication, team belief, and team resources. At the hospital level, such aggression and violence can have negative financial impacts (in paying compensation and incurring additional costs) and societal impacts (image and reputational damage and public distrust). Although support from peers, leaders, and hospital administrators were identified as important sources for physicians in dealing with violent incidents, often verbal peer support was the only form provided.

Consequences of an Unsafe Climate and Safety Concerns

This study showed the impact of patient (and their relatives/friends) aggression and violence against physicians on the team climate. Consistent with previous research (Van Emmerik et al., 2017), this study found that, in an unsafe working environment, individual negative emotions can easily permeate the entire team and influence the moods of other team members and,

consequently, shape the team atmosphere. This phenomenon aligned with collective emotion theory: team members may react similarly to shared events and therefore experience similar feelings of frustration (Van Emmerik et al., 2017). They can also influence each other's emotions, resulting in a mood convergence (Bakker et al., 2003; Totterdell, 2000). Unpleasant emotions are more likely to lead to emotional contagion than pleasant ones among group member, which in turn created a negative affective tone within the team (Barsade, 2002). In addition, group member's emotions can affect group level outcome through emotional contagion (Barsade, 2002; Xie et al., 2023). Consistent with this argument, as well as other prior research, this study found that the impacts of a negative team climate can extend to team behavior, such as negatively affecting team communications as well as boosting employee turnover intention (Xie et al., 2023; Gonzalez-Gomez & Richter, 2015; Hjerto & Kuvaas, 2017; Li et al., 2019; Choi & Lee, 2017).

Furthermore, patient (and their relatives/friends) aggression and violence did not only have negative consequences for physicians, team functioning, and hospital performance, but also for patients themselves. Due to physician's developing a self-protective motivation, this study showed that defensive medical activities may occur, such as making additional unnecessary referrals, opting for only conservative, potentially less optimal, treatments, and over-testing; again an observation in line with other studies (Arafa et al., 2023; Renkema et al., 2022). These defensive medical practices not only tended to lead to higher healthcare costs, but also wasted scarce resources (Ries & Jansen, 2021; Baungaard et al., 2022).

Cultural Differences in Perceptions of Violence and Support

Existing research suggests that patient aggression and violence can lead to increased perceived and actual workload among healthcare professionals (Al-Shiyab & Ababneh, 2018; Chapman et al., 2009). For instance, a study conducted in Australian hospitals found that workplace violence resulted in task redistribution and employee absence, leading to additional burdens on healthcare professionals within the group (Chapman et al., 2009). However, our study did not find a similar perception among Chinese physicians, which may be attributed to cultural differences. In China's collectivist organizational culture, patient aggression and violence could be regarded as shared team concerns rather than as individual responsibilities (Meyer, 2014; Wang et al., 2023). Consequently, physicians may tend to view coping with violent incidents as a collective responsibility rather than an additional workload imposed on specific individuals. While respondents acknowledged that the responsibilities of absent colleagues' (due to injured or distressed) had to be redistributed, they did not explicitly regard this as an increased workload, but rather as an expected professional duty. Inversely, in more individualistic cultures, workplace responsibilities tend to be perceived as personal rather than shared, resulting in a stronger awareness of individual accountability (Meyer, 2014). Therefore, experiencing violence could be seen as an individual burden rather than a collective issue within the team, which means

that workplace violence is synonymous with an increase in stress and workload in such cultural context (Al-Shiyab & Ababneh, 2018; Chapman et al., 2009). However, our study revealed that these violent incidents still affected team resources in other notable ways. In particular, due to staff turnover and absenteeism, these violent occurrences can strain on human resources within the team. Material resources were also be impacted, since medical equipment or facilities could be damaged during violent incidents. Clearly, the Chinese cultural context may shape physicians' understanding and responses to expressions of patient aggression and violence, while the underlying strain on both human and material resources should not be overlooked.

Moreover, cultural factors may also influence the effectiveness of various forms of support methods in assisting physicians cope with patient aggression and violence. Consistent with previous studies, our research underscored the critical role of both peer support and leadership support in managing patient aggression and violence (Schat & Kelloway, 2003; Zhao et al., 2015; Van Emmerik et al., 2017). However, in the context of China's high power-distance culture (Hofstede, 2022), leadership support appeared as particularly important. Previous studies in China claimed that healthcare professionals often expect more support from leaders than from colleagues or family members (Zhao et al., 2015; Zhao et al., 2016). In contrast, Western cultures (i.e., low power distance and individualism), formal support methods (e.g., institutional policies) may be more valued than support from leaders and team members (Hofstede, 2011). In addition to this, the effectiveness of peer support was also debated in Western countries (Solms et al., 2023). For instance, some studies suggested that, in absence of appropriately structured guidance, peer support may lead to emotional contagion that spread within the team and exacerbated psychological distress among team members (McGonagle et al., 2020; Solms et al., 2023). However, this aspect has not been emphasized in Chinese context (Mortenson et al., 2009). Specifically, in coping with stress, Western cultures tended to focus on seeking personal and independent support, while the collectivist Chinese culture encouraged individuals to rely more on social networks and placed a greater focus on group relationships when seeking help (Mortenson et al., 2009).

The Organizational-level Impacts

The finding that aggression and violence by patients and their relatives/friends against physicians affects hospitals financially was consistent with previous studies. Such violence has both direct and indirect costs for the organization, including absenteeism, resignations, lack of motivation, and requirement to pay compensation (Yeh et al., 2020; Chapman et al., 2009; Lanctot & Guay, 2014). Patient (and their relatives/friends) aggression and violence also had a societal impact. Related negative media reports can increase patients' distrust in hospitals and were not conducive to building a good image of healthcare professionals. This could even adversely impact the prevalence of aggression and violence by patients and their relatives/friends. Indeed, previous studies have found that superficial or erroneous reporting of medical disputes in new media outlets is a risk factor for patient aggression and violence (Lu et al., 2020; Xing et al., 2016).

Strengths, Implications and Limitations

Through incorporating perspectives at individual, team, and organizational levels in the Chinese context, our study contributed to the existing research on the aftermath of patient aggression and violence against physicians. Compared to most previous studies which mainly investigated the negative consequences of workplace violence at individual level (e.g., physical injury and burnout) (Kumari et al., 2020; Shi et al., 2015), our study further explored the impact of patient aggression and violence on teams and healthcare institutions. Additionally, although our study is line with existing research on nurse teams, which has also shown the effects of workplace violence on the team level (e.g., team efficacy) (Heckemann et al., 2019, 2020), our study further revealed that team climate, communication, and beliefs are affected by patient aggression and violence against physicians. At the organizational level, prior studies have shown that workplace violence resulted in financial losses for hospitals, such as compensation, increased security costs and staff turnover (Lanctôt & Guay, 2014; O'Brien et al., 2024). Building on this, our study found a more nuanced relationship between patient aggression and violence, financial losses (e.g., reduced income), and public distrust, especially in Chinese secondary hospitals. Based on that, by integrating insights from multiple levels (individual, team, and organizational), our study provided a comprehensive understanding of the consequences of patient aggression and violence against physicians in Chinese hospitals.

Based on the findings from our study, three main strategies emerge for addressing the negative impacts of patient (and their relatives/friends) aggression and violence in Chinese hospitals. First, recovering the team climate after a violent incident, and building a safe and positive working environment especially requires attention. Here, introducing safety policies and programs (e.g., safety training, and the availability of safety-related resources) proved effective to create safer workplaces (DeJoy et al., 2004). Second, leaders and peers should provide proactive support to physicians who experience patient (and their relatives/friends) aggression and violence. To improve the effectiveness of support interventions, in addition to the emotional support (e.g., verbal comfort) highlighted in our study, a broader range of forms of support, such as paid leave and professional interventions (e.g., individual coaching), should be considered to strengthen support interventions. In facilitating support, hospitals should take the possible emotional contagion into account and provide guidance to prevent this. Third, the top-level hospital management should consider how to cope with the negative impact of media reports about workplace violence. For example, hospitals could formulate contingency plans to identify and manage the impact of negative news and could increase their influence through disseminating positive publicity about their hospital (Zhao et al., 2015).

There are four main limitations that should be taken into account when interpreting the findings and drawing conclusions in this study. First, since respondents were recruited using the authors' own networks, a selection bias might be present. However, the severity of any selection bias is

probably limited as respondents were selected from the broad networks of two of the authors and therefore come from different regions and different levels of hospital, and involve different types of people working in hospitals. However, respondents who preferred not to share their experiences were less likely to have been included in the sample and this could lead to a bias. Second, respondents may have been reluctant to present the full picture, regardless of the emphasis we placed on anonymity. This reluctance could be explained by a social desirability bias, whereby respondents may have provided responses they perceived as socially acceptable rather than fully disclosing their true experiences. For example, physicians may not have fully disclosed their experiences because of a possible stigma attached to being a victim of violence. Similarly, leaders may also have downplayed certain aspects to protect a hospital's reputation and image. Third, as our study did not distinguish different types of patient (and their relatives/friends) aggression and violence, specifically verbal and physical violence, the potential for different outcomes resulting from these various types of violence has not been explored. Finally, since patient aggression and violence are highly context-dependent phenomena, the consequences on the team and organizational levels should be placed in a specific national context. This study explained how some findings fit the specific Chinese culture. Consequently, the generalizability of our findings to other cultures and contexts will be limited. Nevertheless, this study can serve as a starting point for similar studies in other countries and cultures.

Conclusions

This study, by conducting interviews, investigated the impact of patient (and their relatives/friends) aggression and violence against physicians on the team and organizational levels in Chinese hospitals. At the team level, patient aggression and violence can create an unsafe and depressing team climate and damage team resources, leading to a decreased communication within the teams and the adoption of low-risk treatments. At the organizational level, patient aggression and violence can have negative financial impacts (i.e., involving compensation and additional costs) and societal impacts (i.e., image and reputational damage, and public distrust). Recovering a team climate after a violent incident, and providing a variety of forms of support, can be considered as two important approaches to address these negative impacts of such violence on the team and organizational levels.

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Appendix 1: Guideline interviews

Participant Type	Guideline Interview Questions
Physicians	1. Can you describe a situation in which patient aggression and violence have occurred? 2. How did that experience affect you? Follow up: Did it also affect you physically, emotionally, in terms of your work performance? Were there any other consequences? 3. Could you think of a situation in which you experienced/witnessed patient aggression and violence? How did this incident affect your work in your team? And teamwork as a whole? 4. Follow-up based on previous answers: Given the (negative) impact of the patient aggression and violence both on you and your work in the team, what kind of help did your team and hospital provide you to address these negative effects? 5. When you experienced patient aggression and violence, did you ask your leader for help or report these incidents to your leader? How did your leader respond to you? What roles do leaders have in this situation currently? How would you like the leader to respond to you? 6. When your colleagues (team members) experienced patient aggression and violence, how did she/he react? Did this situation influence you, like asking you for help, or affecting your work in the department due to aggressively approached colleagues? 7. Did you offer help to colleagues who experienced patient violence? What kind of help did you provide?
Team leaders	1. When a member of your team experienced patient aggression or violence, how did they react? How did the rest of the team respond? 2. How did these reactions affect the team? Follow-up questions: 3. If a physician in your team was injured due to patient attacks, did these negative effects influence your team and how? 4. If patient aggression and violence affected the psychological well-being of the physician within your team, did these negative effects influence your team and how? 5. What other effects do you think patient aggression and violence has on the team? 6. When someone in your team experienced patient violence, how do you normally respond as a leader? What do you see as your role in handling these situations? 7. Have you ever personally experienced patient violence as a team leader? If so, do you think it has affected your team? 8. Which tools are most used to cope with the negative effects of patient violence, and which tools are available, like compensating physicians? Is there a need that is not covered by the available interventions/tools?
Hospital board members	1. How does patient aggression and violence impact the hospital? 2. What policies and interventions has the hospital implemented to reduce patient aggression and violence and minimize its negative impact? 3. The team leaders pointed out the impact of patient aggression and violence on the team (based on interviews with team leaders). What solutions does the hospital offer for coping with these effects? Besides that, what other negative effects do you think patient aggression and violence has on the team? 4. What role does the team leader play in these situations? And what about you—what is your role when these incidents happen?

Appendix 2. Characteristics of participants

Working profession	Department	Patient aggression and violence	Hospitals
Physician (P1)	Gynecology and obstetrics	Experienced and witnessed	Hospital A
Physician (P2)	Medical Oncology	Witnessed	
Physician (P3)	Otolaryngology	Experienced and witnessed	
Physician (P4)	Cardiology	Witnessed	
Physician (P5)	Enterosurgery	Witnessed	
Team leader (T1)	Emergency department	Experienced and witnessed	
Team leader (T2)	Medical affairs	Witnessed	
Board member of hospital (B1)		Witnessed	
Physician (P6)	Traumatic orthopedics	Witnessed	Hospital B
Physician (P7)	Traumatic orthopedics	Witnessed	
Physician (P8)	Orthopedics	Experienced and witnessed	
Physician (P9)	Gynecology and obstetrics	Experienced and witnessed	
Team leader (T3)	Traumatic orthopedics	Experienced and witnessed	
Team leader (T4)	Traumatic orthopedics	Experienced and witnessed	
Board member of hospital (B2)		Experienced and witnessed	
Physician (P10)	Acupuncture department	Witnessed	Hospital C
Physician (P11)	Psychiatry	Witnessed	
Physician (P12)	Psychiatry	Experienced and witnessed	
Physician (P13)	Internal medicine department	Experienced and witnessed	
Team leader (T5)	Geriatric care	Experienced and witnessed	
Team leader (T6)	Geriatric care	Witnessed	
Board member of hospital (B3)		Experienced and witnessed	
Physician (P14)	Dental department	Witnessed	Hospital D
Physician (P15)	Dental department	Experienced and witnessed	
Physician (P16)	Ophthalmology department	Experienced and witnessed	
Physician (P17)	Otolaryngology department	Witnessed	
Team leader (T7)	Orthopedics & Physician-patient office	Experienced and witnessed	
Team leader (T8)	Ophthalmology	Experienced and witnessed	
Board member of hospital (B4)		Experienced and witnessed	

4

Chapter 4

The importance and feasibility of hospital interventions to prevent and manage patient aggression and violence against physicians in China: a Delphi study

Wu, Y., Buljac-Samardzic, M., Zhao, D., & Ahaus, C. T. B. (2024). The importance and feasibility of hospital interventions to prevent and manage patient aggression and violence against physicians in China: a Delphi study. *Human Resources for Health*, 22(1), 34.

ABSTRACT

Aggression and violence by patients (and their relatives/friends) is widely acknowledged as a serious occupational hazard, with physicians being particularly susceptible to witnessing and experiencing such incidents within hospitals. Research has shown that the negative consequences of such aggression and violence are not only felt at the individual level, but also at the team and organizational levels. Understanding how to prevent and manage this behavior towards physicians in hospitals is urgent and not fully researched. While there are many potentially effective interventions, it is unclear which ones would be valuable and feasible for Chinese hospitals. Given that patient aggression and violence may occur more frequently in Chinese hospitals than in other countries, this suggests that cultural differences play a role and that tailored interventions may be needed. Therefore, we conducted a Delphi study to reach a consensus on the importance and feasibility of hospital interventions to prevent and manage patient (and their relatives/friends) aggression and violence against physicians in Chinese hospitals. Seventeen experts in China were invited to complete online questionnaires over three rounds. After three rounds, consensus was achieved concerning 44 interventions, five other interventions were rejected, and no consensus was reached on another two. These interventions were clustered into eight categories: environment design, access and entrance, staffing and working practices, leadership and culture, training and education, support, during/after-the-event actions, and hospital policy. Each category is considered important in preventing and managing patient (and their relatives/friends) aggression and violence towards physicians in Chinese hospitals. Moreover, this study also investigated the feasibility of the suggested interventions and found that 36 of the 44 interventions were considered not only relevant but also feasible for implementation in Chinese hospitals. Based on that, this study provides an overview of interventions that can be implemented in Chinese hospitals to prevent and manage patient (and their relatives/friends) aggression and violence before, during, and after a violent incident occurs.

Keywords

Patient Aggression and Violence, Prevention and Management, Hospital, Physicians, Interventions, Importance, Feasibility, Delphi Study

Introduction

Workplace violence in healthcare settings is recognized as a serious occupational hazard, and especially in hospitals (Raveel & Schoenmakers, 2019; Caruso et al., 2022). Many healthcare professionals worldwide experience verbal and physical violence at some point in their careers (Volz et al., 2007; Anand et al., 2016). Among healthcare professionals, physicians are particularly likely to witness and experience aggression and violence in the workplace (Anand et al., 2016; Bilici et al., 2016). Although physicians encounter violence from different sources, patient and their relatives/friends have been identified as the most prevalent source of aggression and violence in hospitals (Hills & Joyce, 2013; Kowalenko et al., 2005). Consequently, this study focuses on patient (and their relatives/friends) aggressive and violent actions against physicians in hospitals.

The risk factors for the occurrence of aggression and violence are present at multiple levels, such as patient-related factors (e.g., under the influence of alcohol) physician-related factors (e.g., poor medical skills), and patient-physician interactions factors (e.g., poor physician-patient communication) (Wu et al., 2023). Although inadequate services can also have negative impact on the patient (Lanctot & Guay, 2014), this study focuses on the multifaceted negative consequences for hospitals. At the individual level, it can have severe adverse effects on physicians' psychology, emotions, work functioning (e.g., reduced job satisfaction, higher level of stress, and loss of confidence) (Zafar et al., 2016; Rosenthal et al., 2018; Oztok et al., 2018) and even extend into their personal lives, resulting in an increasing need for family support and negative interactions with family members (Hills & Joyce, 2013, Lanctot & Guay, 2014). Although the individual-level consequences have received most attention, this aggression and violence also affects behavior and performance at the team and organizational levels such as in influencing the team climate, lowering performance, increasing compensation costs, and reputational damage (Wong et al., 2022; Van Emmerik et al., 2007; Mento et al., 2020).

Given the detrimental impact of aggression and violence in healthcare settings, numerous studies have concentrated on preventing and managing workplace violence. The World Health Organization (WHO) proposed a guideline framework to prevent and manage workplace violence in healthcare that addressed preconditions, organizational interventions, environment interventions, individual-focused interventions, and after-the-event interventions (WHO, 2002). The US Occupational Safety and Health Administration (OSHA) provided five guidelines for preventing workplace violence in healthcare that addressed: management commitment and worker participation, worksite analysis and hazard identification, hazard prevention and control, safety and health training, and recordkeeping and program evaluation (OSHA, 2016). Kumari et al. (2020) also suggested possible interventions to reduce workplace violence against physicians: at the individual level (e.g., training and communication skills); the organizational level (e.g., infrastructure changes and management policies); and the societal level (e.g., unbiased media reporting) in their review.

However, there is a lack of evidence on the effectiveness of these interventions. Therefore, Morpet et al. (2018) in a scoping review reviewed the effectiveness of interventions adopted by hospitals and identified risk assessment, staff education, and aggression management teams as evidence-based interventions that can reduce consumer-perpetrated violence. Another systematic review categorized evidence-based interventions into three categories: pre-event preventive measures (e.g., violence prevention programs and risk assessment), interventions during the event (e.g., staying calm and applying de-escalation techniques), and post-incident measures (e.g., reflecting on incidents and organizational support) (Raveel & Schoenmakers, 2019).

Given that the scope of workplace violence is broader than patient aggression and violence, including internal violence (violence from leaders/colleagues) and external violence (violence from patients/visitors) (Dillon, 2012), it is sensible to place a particular emphasis on focused interventions for preventing and managing a specific source of violence against a specific type of healthcare professionals. The unique nature of patient (and their relatives/friends) aggression and violence against physicians necessitates tailored interventions to effectively address its challenges and negative effects.

Compared to European countries, physicians working in Asian countries experience more patient aggression and violence (Liu et al., 2019). In the specific context of China, this problem has unique dimensions and challenges that require comprehensive investigation and addressing. Surveys conducted by the Chinese Hospital Management Society in 2005 revealed that the majority (over 73%) of healthcare staff in China were victims of such violence, including threats and taunts from patients and their relatives within hospital settings (Liu et al., 2019). Furthermore, over the past few decades, the prevalence of patient aggression and violence against physicians has increased in China (Hesketh et al., 2012). A recent systematic review conducted in China found that 62.4% of Chinese healthcare workers reported experiencing actual workplace violence, and particularly from patients (Lu et al., 2020).

The distinctive cultural, socioeconomic, and healthcare system factors in China underscore the need for a thorough examination of the importance and feasibility of hospital interventions tailored to the Chinese healthcare system. Although there are many suggested interventions, and some studies have examined the effectiveness of interventions elsewhere, it is not clear which are relevant and feasible in China given its cultural differences. Therefore, it is important to examine the importance and feasibility of interventions suggested in the literature in China.

As such, the main objective of this study is to reach a consensus regarding the importance and feasibility of hospital interventions to curtail and manage patient (and their relatives/friends) aggression and violence against physicians in Chinese hospitals. For these reasons, a Delphi study was conducted, aiming to contribute valuable insights and evidence-based

recommendations that can enhance the safety and well-being of both patients and healthcare providers in China's evolving healthcare landscape.

Methodology

Based on the above analysis and given the scarcity and difficulty of experiment-based studies on interventions to prevent and manage patient (and their relatives/friends) aggression and violence (Kelly& Mullen, 2006; Lipscomb et al., 2002), this study opted to conduct a Delphi study. The Delphi method is mainly adopted when the existing knowledge is incomplete or subject to uncertainty and higher levels of evidence cannot be provided using other methods (Niederberger & Spranger, 2020). In this, we were aiming to reach a consensus among Chinese experts on the importance of hospital interventions, and to explore their feasibility to counter patient (and their relatives/friends) aggression and violence against physicians in Chinese hospitals. Three rounds were sufficient to reach consensus.

The panel of experts were recruited using authors' own network and contained four types of participants: 1) management team members of Chinese hospitals and dedicated staff members (e.g., HR manager, quality and safety advisor) who hold the portfolio of patient aggression and violent behavior; 2) experts with experience in developing hospital policies on workplace violence (e.g., national/local health commission of China); 3) scientists who were specialized in patient-physician relationship (e.g., patient aggression and violence, patient-physician communication) in Chinese healthcare settings (scientists with a PhD degree and/or working experience >10 years); 4) physicians who had experienced/witnessed patient (and their relatives/friends) aggression and violence in Chinese hospitals. We invited a maximum of two experts per region, hospital and research organization to ensure diversity of data sources. Since our aim was to derive hospital-level interventions, patients were not a target group.

The initial list of interventions (as presented in the first round of our Delphi study) was based on the results of our published systematic review about patient aggression and violence against physicians in hospitals, and that aimed to investigate the prevalence, risk factors, consequences, and prevention and management of patient (and their relatives/friends) aggression and violence against physicians in hospitals (Wu et al., 2023). We started with an inventory of interventions mentioned in papers we had identified for our review plus additional papers found through a snowballing technique. Eventually, a list of 47 interventions were extracted from 32 related articles. Drawing on the WHO and OSHA guidelines (WHO, 2002; OSHA, 2016), we grouped the 47 measures into eight categories: 1) environment design, 2) access and entrance, 3) staffing and working practices, 4) leadership and culture, 5) training and education, 6) support, 7) during/after-the-event actions, and 8) hospital policy. All the interventions were translated

from English into Chinese using the standard translation/back-translation technique by two researchers before each round of data collection (Behling & Law, 2000).

The respondents completed online questionnaires during three Delphi rounds, where they rated each intervention as to 'how important and how feasible is the intervention to prevent, cope, and/or manage patient (and their relatives/friends) aggression and/or violence against physicians in Chinese hospitals?'. More specifically, experts were asked to rate the importance and feasibility of each intervention relative to each other. A four-point scale was used (1=not important to 4=very important; and 1=not feasible to 4=very feasible). The first round took place in June 2023, the second in July 2023, and the third in August 2023. In each round, respondents were allowed three weeks to complete the questionnaire. After rating each intervention's importance and feasibility, respondents had the opportunity to reformulate the intervention. At the end of each round, respondents also had the opportunity to add new interventions. In the second and third Delphi rounds, the list of interventions was based on the responses given in the previous round, including newly added, reformulated, and unchanged interventions that had scored somewhere between definite inclusion and exclusion (i.e., importance scores between 51% and 80%). The rules adopted for inclusion and exclusion of items were consistent with other Delphi studies (Steinmann et al., 2021; Veenstra et al., 2017; Diamond et al., 2014).

Interventions that were rated as 'very important', or 'important' by at least 80% of the experts were immediately retained in the final list and those that were rated as 'not important', or only 'moderately important' by more than 50% the experts were excluded. New interventions, as well as interventions deemed important by 51% to 80% of the experts, were retained for re-evaluation in the next round of the Delphi study. This method, which includes feedback and the opportunity to reconsider initial answers, allowed the experts to reach consensus on all the interventions. In the third round, interventions that were not perceived as important by at least 80% of the experts were categorized as not achieving a consensus. Note that the exclusion and inclusion criteria in this study were based on the importance scores and not on the feasibility scores as it is not meaningful for hospitals to adopt feasible but unimportant interventions. However, our method can provide insight into the boundary implementation conditions for important but infeasible interventions.

This study was approved by the Research Ethics Review Committee of Erasmus School of Health Policy and Management, Erasmus University Rotterdam (Approval No. ETH2223-0250). Informed consent was obtained from all the experts before data collection.

Results

Seventeen experts participated in all three rounds of this Delphi study, with no dropouts (response rate=100%). Detailed information on the respondents is presented in Table 1.

Table 1 Background information on the panel of experts

Respondent	Job Title	Gender	Educational Background	Involvement in patient aggression and violence	Working years
R1	Physician	Male	Master	Witnessed	6-10 years
R2	Physician	Male	Master	Experienced	≤5 years
R3	Physician	Male	PhD	Experienced	16-20 years
R4	Physician	Withheld	Master	Witnessed	6-10 years
R5	Physician	Female	Master	Experienced	≤5 years
R6	Physician (head of department)	Female	Bachelor	Experienced	≥21 years
R7	Physician and security department manager in hospital	Male	Master	Experienced	≥21 years
R8	Physician and head of department of medical administration in hospital	Male	PhD	Witnessed	≥21 years
R9	Hospital HR manager	Female	Master	Witnessed	6-10 years
R10	Physician in patient-relations office staff	Female	Master	Witnessed	6-10 years
R11	Physician in patient-relations office staff	Female	Master	Policymaker in hospital	6-10 years
R12	Physician in patient-relations office staff	Female	PhD	Witnessed	16-20 years
R13	Head of department of medical safety in hospital and expert in related area	Female	Master	Scientist	≥21 years
R14	Expert in physician-patient communication	Female	PhD	Scientist/research	≥21 years
R15	Expert in physician-patient communication and health commission in China	Male	PhD	Scientist	11-15 years
R16	Health commission in China	Male	Master	Scientist/research	16-20 years
R17	Health commission in China	Female	Master	Witnessed and policymaker	16-20 years

Table 2 shows the flow of items through this Delphi study. During the three rounds, the panel added four new interventions to the list of 47 elements that we had gathered during the literature study. After three rounds, saturation was achieved with a final list including 44 items.

Table 2 Results three Delphi rounds

Response rate (n=17)	**Round 1 100%**	**Round 2 100%**	**Round 3 100%**
Number of items	47	8	6
Included	37	4	3
Excluded	4	0	1
Reformulated	5	4	0
Unchanged	1	0	0
Newly suggested items:	2	2	0

Note: unchanged means we used the same intervention in the next round

Table 3 shows the 44 interventions that made it through to the final list, together with their mean, level of agreement, SD, and assigned category. The interventions that were excluded or on which no consensus (NC) was reached are provided in Table 4. We discuss the level of importance in relationship to the level of feasibility of the included interventions, and particularly highlight differences in importance and feasibility.

Table 3 Round number, agreement, means and standard deviations of included elements

Round	Importance			Feasibility			Interventions	Category
	Agreement	Mean	SD	Agreement	Mean	SD		
1	100%	3.65	0.49	100%	3.65	0.49	Hospital security (e.g., 24-hr coverage by security staff)	Environment Design
1	100%	3.53	0.51	100%	3.53	0.51	Alarm systems (e.g., panic buttons, hand-held alarms) and reliable response system	
1	100%	3.41	0.51	64.7%	2.76	0.97	Separation of dangerous patients (e.g., psychiatric patients, drunk patients) from other patients	
3	100%	3.35	0.49	82.4%	3.06	0.66	Assigning security personnel (or dedicated coordinators) to intervene early in the event of loud noise resulting from conflicts	
1	100%	3.18	0.39	100%	3.41	0.51	Surveillance cameras with video recording	
1	94.1%	3.18	0.53	64.7%	2.88	0.78	Escape routes and safe rooms dedicated to physicians	
1	82.4%	3.18	0.73	58.8%	2.82	0.81	Protective measures in contact moments between physician and patient (and their relatives/friends)	
1	88.2%	2.88	0.60	76.5%	2.94	0.83	Electronic boards indicating approximate waiting times	
1	88.2%	2.82	0.53	88.2%	2.88	0.60	Adequate air conditioning (i.e., temperature /humidity/ventilation control) in waiting areas	
2	82.4%	2.82	0.39	100%	3.18	0.39	Relaxing and attractive colors in the hospital	
1	100%	3.24	0.44	88.2%	3.06	0.56	Security checks (e.g. metal detectors) at the hospital's main entrance	Access and Entrance
2	82.4%	3.12	0.70	41.2%	2.35	0.79	Risk assessment of patients' aggression and violence based on their past behavior (e.g., history of violence, physically aggressive or threatening, verbal hostility)	
1	100%	3.41	0.51	64.7%	2.65	0.70	Adequate presence of staff at peak periods	Staffing and Working Practices
1	88.2%	3.24	0.83	88.2%	3.12	0.78	Gaining valid consent from patients (and their relatives, if necessary) before treatment	

Round	Importance			Feasibility			Interventions	Category
	Agreement	Mean	SD	Agreement	Mean	SD		
1	94.1%	3.41	0.62	88.2%	3.24	0.66	Support from managers and hospital administration for physicians who experience patient (and their relative/friend) aggression and violence (e.g., paid leave and leadership concern)	Leadership and Culture
1	82.4%	3.00	0.61	92.1%	3.18	0.53	Increasing leaders' awareness of the impact of aggression and/or violence by patient (and their friends/relatives) on physicians' well-being	
1	82.4%	3.00	0.61	82.4%	3.00	0.79	Involving physicians and patients in creating safety plans	
1	82.4%	2.94	0.56	88.2%	3.12	0.60	Leaders encouraging physicians (who have experienced/witnessed) to report patient (and their friends/relatives) aggression and/or violent incidents	
1	100%	3.56	0.51	94.1%	3.56	0.62	Training physicians in de-escalation techniques (e.g., showing understanding to patients)	Training and Education
1	94.1%	3.47	0.62	94.1%	3.47	0.62	Training physicians in communication skills for use with patients and their relatives/ friends	
1	100%	3.41	0.51	100%	3.35	0.59	Training physicians in managing and coping with aggressive and violent patients (and relatives/friends)	
1	94.1%	3.35	0.61	76.5%	3.24	0.83	Informing patients and their relatives/friends of the consequences of aggression and violence against physicians (in terms of legal, well-being, medical treatment)	
1	88.2%	3.29	0.69	94.1%	3.41	0.62	Informing physicians of their legal rights and available resources regarding encounters with patients' (and by their relatives/friends) aggression and violence	
2	100%	3.24	0.44	82.4%	3.18	0.73	Professional coaching sessions for guidance on how to handle patient (and their relative/friend) aggression and violence	
1	88.2%	3.18	0.64	94.1%	3.24	0.56	Training to increase awareness among physicians on the importance of reporting every incident of patient (and their relative/friend) aggression and violence	
3	88.2%	2.94	0.66	82.4%	2.88	0.70	Training to improve the service attitude of healthcare providers towards patient (and their relatives/friends)	
1	82.4%	2.94	0.75	70.6%	2.88	0.70	Training physicians in self-defense	

Round	Importance			Feasibility			Interventions	Category
	Agreement	Mean	SD	Agreement	Mean	SD		
1	100%	3.65	0.49	100%	3.53	0.51	A violence prevention program	Support
1	100%	3.35	0.49	94.1%	3.35	0.60	Offering peer support among physicians after patient (and their relative/friend) aggression and violence incidents	
1	94.1%	3.35	0.56	88.2%	3.24	0.66	Easy access to medical and mental health services for physicians	
1	100%	3.24	0.44	88.2%	3.12	0.60	Possibility for physician to request the presence of an additional health care worker during situations that the physician has identified as potentially dangerous	
1	82.4%	3.12	0.70	88.2%	3.29	0.69	Establishing conflict management teams in hospitals to avoid and respond to patient (and their relative/friend) aggression and violent incidents	
1	100%	3.59	0.51	100%	3.53	0.51	Providing legal aid to physicians	During/After-the-event actions
1	100%	3.53	0.51	94.1%	3.53	0.62	Providing immediate medical treatment to injured physicians	
1	94.1%	3.24	0.56	88.2%	3.18	0.64	Implementing formalized reporting procedures for patient (and their relative/friend) aggressive and violent incidents	
1	88.2%	3.18	0.64	100%	3.35	0.49	Providing information and support to the families of physicians after a patient (and their relative/friend) aggressive and violent incident	
1	88.2%	3.00	0.71	88.2%	3.00	0.71	24-hour hotline for reporting patient (and their relatives/ friends) aggression and violence	
1	88.2%	2.94	0.43	94.1%	3.00	0.35	Comforting measures for patient (and their relatives/friends) (e.g., warm blankets and medication to reduce anxiety)	
1	100%	3.82	0.39	82.4%	3.29	0.92	Zero tolerance policy regarding patient (and their family/relatives) aggression and violence	Hospital Policy
1	100%	3.76	0.44	100%	3.59	0.51	Weapon prohibition policy for patients or visitors	
1	94.1%	3.41	0.80	100%	3.41	0.51	Assigning a key senior management-level employee to handle patient (and their relatives/friends) aggressive and/or violent incidents	
3	100%	3.35	0.49	100%	3.35	0.49	Clarifying support staff's responsibilities (e.g., healthcare guild and information desk, and registration and triage desk), standardizing the workflow and improving the work accuracy to avoid negative patient emotions	
1	94.1%	3.25	0.56	94.1%	3.24	0.56	Respecting patient privacy	
2	94.1%	3.18	0.53	94.1%	3.29	0.59	Clear hospital policy when incidents of aggression and violence by patient (and their relatives/ friends) fall under civil law	

Note: Agreement (importance) = the number of **important and very important** responses / the number of experts (n=17)
Agreement (feasibility) = the number of **feasible and very feasible** responses / the number of experts (n=17)
Mean = Sum of each expert's ratings for each intervention / the number of experts (n=17)

Table 4 Round number, agreement, means and standard deviations of excluded interventions

Round	Importance			Feasibility			Interventions	Category
	Agreement	Mean	SD	Agreement	Mean	SD		
1	47.1%	2.35	0.86	47.1%	2.41	0.80	One patient–one accompanying person policy	Access and Entrance
1	35.3%	2.29	0.92	64.7%	2.76	0.83	Restricting visiting hours for patients' relatives/ friends	
1	29.4%	2.18	0.64	17.6%	1.82	0.73	Escorting physicians through different buildings in the hospital during nightshifts	Staffing and Work Practices
1	23.6%	2.06	0.66	23.6%	1.94	0.90	Escorting physicians to their transport home (car park, bus station) after nightshifts	
3	41.2%	2.29	0.69	82.4%	2.76	0.75	Implementing odor control in the hospital	Environment Design
NC	64.8%	2.71	0.77	94.1%	3.06	0.66	Implement strict hygiene measures	
NC	64.8%	2.65	0.86	88.2%	2.94	0.83	Introducing pre-treatment nursing activities (e.g., medical guidance and taking blood pressure) for patients to reduce experienced waiting	

Note: Agreement (importance) = the number of **important and very important** responses / the number of experts (n=17)
Agreement (feasibility) = the number of **feasible and very feasible** responses / the number of experts (n=17)
Mean = Sum of each expert's ratings for each intervention / the number of experts (n=17)

Environment design

There were seven suggested interventions in this category that were perceived as important and viable, referring to "hospital security", "alarm system", "assigning security personnel", "surveillance cameras", "adequate air conditioning" and "relaxing and attractive colors". Four interventions (i.e., separation of dangerous patients from other patients, escape routes and safe rooms dedicated to physicians, protective measures in contact moments between physician and patient (and their relatives/friends), and electronic boards indicating approximate waiting times) were deemed important but less feasible. One expert suggested that interventions to separate dangerous patients from other patients, especially in emergency departments, is infeasible because it is difficult to identify potentially dangerous patients and execute separation measures without aggravating the patient. Although the intervention referring to applying odor control was rejected by the panel, one expert suggested that Chinese hospitals should increasingly prioritize enhancing the overall patient experience through environmental design, including plans for future improvements in waiting areas, dining spaces, and restroom facilities.

Access and entrance

The interventions referring to security checks and risk assessment of patients were important, but the feasibility of the latter was questioned by most of the panel. In response to the feasibility of risk assessment, the experts had two points of concern. First, some experts commented that risk assessment was important, but that this intervention would require a complex linking of information between hospitals, and that this would currently be challenging to implement. Second, some experts expressed concerns that flagging patients based on a risk assessment might lead to patient stigmatization and the infringement of patient privacy, potentially exacerbating physician-patient conflicts and mistrust. This contradicted the view of some experts who believe that hospitals should construct blacklists based on risk assessments. Two interventions, referring to a 'one patient–one accompanying person policy' and 'restricting visiting hours', failed to achieve a consensus.

Staffing and working practices

The interventions referring to gaining valid consent from patients (and their relatives, if necessary) before treatment and the adequate presence of staff at peak periods were important, but no consensus was reached on the feasibility of the latter. One expert explained that the number of physicians in hospitals was fixed, and the adequate presence of staff in this area might increase the workload of other physicians. Two interventions that referred to escorting physicians were rejected by the panel.

Leadership and culture

All the interventions in this category were perceived as both important and feasible. Leadership plays a pivotal role in managing and coping with patient (and their relatives/friends) aggression and violence. Leaders can facilitate the establishment of an organizational safety climate by paying attention to the negative effects of aggression and violence for physicians, encouraging physicians to report violent incidents, and providing support to physicians who experience aggression and violence.

Training and education

Most of the interventions related to training and education to prevent and manage patient (and their relatives/friends) aggression and violence were considered important and feasible. One expert suggested that training should encompass more than just managing and coping with aggressive and violent patients (and relatives/friends), and that identifying potentially aggressive and violent patients is also vital. Only two interventions (i.e., training physicians in self-defense, and informing patients and their relatives/friends of the consequences of their aggression and/or violence against physicians) did not achieve a full consensus on their feasibility. One expert commented that it is hard to inform patients and their relatives/friends at the hospital level because public education largely relies on government initiatives, social media campaigns, and other external channels. In addition, one expert commented that hospitals should recruit professionals or experienced physicians for training activities.

Support

According to the panel, seeking support from both peers and organizations is not only important but also feasible. One expert suggested that support from leaders is crucial since China is characterized by a high power-distance culture.

During/after-the-event actions

All the identified interventions in this category were perceived as important and feasible.

Hospital policy

All the related interventions were perceived as important and feasible by the panel. Two experts had the same comments on the 'zero tolerance policy regarding patient (and their family/ relatives) aggression and/or violence': that any zero-tolerance policy needs to be backed up at the national legal level, and is difficult for individual hospitals to implement.

Discussion

The aim of this Delphi study was to explore the importance and feasibility of hospital interventions related to patient (and their relatives/friends) aggression and violence towards physicians in China. Consensus was reached on 44 interventions that were perceived as important for the prevention and management of patient (and their relatives/friends) aggression and violence against physicians in Chinese hospitals. These interventions were clustered into eight categories: environment design, access and entrance, staffing and working practices, leadership and culture, training and education, support, during/after-the-events actions, and hospital policy. Our findings indicated that all these intervention categories are important in preventing and managing patient aggression and violence. Saturation was reached after three rounds, as in the third round, the panel did not reformulate or put forward new interventions. There were only two interventions on which a consensus was not achieved. This study also investigated their feasibility and found that most of the important interventions were also considered feasible for implementation in Chinese hospitals.

In terms of environment design, respondents could consider two types of interventions: environmental factors and workplace design in hospitals. Among environment-related factors, our study found that air conditioning and color schemes (i.e., adequate air condition, and relaxing and attractive colors) in the hospital were considered both important and feasible. These supportive environmental factors have an influence not only on patient outcomes but also on the satisfaction levels of both patients and physicians (Jamshidi et al., 2020; Mroczek et al., 2005), reducing the likelihood of patient aggression and violence. In terms of workplace design, hospitals should focus on security, alarm systems, reliable response systems, and surveillance cameras with video recording. These interventions also are widely reported elsewhere as part of a workplace violence prevention strategy in healthcare

settings (Morken et al., 2015; Farrell et al., 2014). The effectiveness of adopting surveillance cameras has also been considered in other studies (Kumari et al., 2020; Morpet et al., 2018; Adamson et al., 2009). More specifically, physical violence is decreased by the introduction of surveillance cameras and continuous monitoring of surveillance footage allows for the quick identification and rapid response to escalating behavior (Adamson et al., 2009).

In terms of the interventions in the access and entrance category, security checks (e.g., metal detectors) at a hospital's main entrance should be considered by Chinese hospitals since this intervention was perceived as important and feasible. This result is consistent with previous research which emphasizes security services at the main entrance and using weapon and metal detectors ((WHO, 2002; Behnam et al., 2011). However, whether patient risk assessments can be used in Chinese hospitals needs further consideration. Although our study deemed this intervention important, its feasibility was questioned by the experts. The same concerns are reflected in previous studies. Risk assessment advocates claim that risk assessments can be employed by hospitals to safeguard physicians and to reduce the incidence of violence (Morpet et al., 2018; Adamson et al., 2009; Kling et al., 2011). However, its opponents are concerned that applying policies and procedures that flag individuals would lead to patient stigmatization and damage patient privacy (Ferron et al., 2022; Paterson et al., 2019). Although implementation of patient risk assessments is controversial, some countries have adopted practical measures to flag patient based on risk assessment. For example, the methods of flagging patient in some Canadian hospitals include a combination of symbols and colors (e.g., 'purple dot' sticker on patient charts) to indicate the risk (Ferron et al., 2022). However, such interventions are not straightforwardly translatable from one context to another since aggression and violence in healthcare settings is a culturally dependent concept (Najafi et al., 2018). Therefore, to enhance the feasibility of patient risk assessments in Chinese hospitals requires further research.

Leadership plays a pivotal role in preventing and managing patient aggression and violence in hospitals. Leaders should encourage physicians to report a violent incident as this has also been identified as an important and feasible intervention in other studies. More specifically, incident reporting is a key method for identifying trends in the causes of violence and factors for prevention (Raveel & Schoenmakers, 2019; Arnetz et al., 2011; Gilligan & Alamgir, 2008). Reported data can inform the development of appropriate and relevant prevention and response strategies for hospitals (Gilligan & Alamgir, 2008; Arnetz et al., 2015). Reflecting Chinese culture, which can be characterized as having a high power-distance (Matusitz & Musambira, 2013), we found that support from managers and hospital administration is significant at the hospital level. This finding is in line with previous studies that emphasize the benefits of senior management support for safety programs in fostering hospital safety climates (Gershon et al., 2000). The Braverman seven-step workplace violence-prevention plan similarly stresses that getting support from the top is an essential step in workplace violence prevention (Braverman, 1998).

In addition to support from leaders, this study showed that support from peers is also important and feasible, which is in line with other studies. Previous research has shown that implementing a peer support program for assaulted employees can lead to a reduction in the frequency of aggression and violence (Joa & Morken, 2012). The buffering effect of support is significant when physicians experience patient aggression and violence (Schat & Kelloway, 2003). Seeking peer support may provide the emotional support necessary to navigate challenging working conditions (Van Emmerik et al., 2007). Further, having supportive and collaborative coworkers can foster motivation, increase job satisfaction, and enhance overall well-being in the workplace (Van Emmerik, 2002).

Moreover, providing training and education is seen as a key approach to preventing and managing patient aggression and violence in Chinese hospitals. Our study found that enhancing physicians' skills including de-escalation techniques and communication skills, and in managing and coping with aggressive and violent patients (and relatives/friends) is important and feasible. These results are in line with other studies. In this regard, communication, de-escalation, and recognizing risky behaviors and triggers were identified as core elements to be addressed in training, and recognized as effective and person-centered mitigation strategies to reduce aggression and violence (Raveel & Schoenmakers, 2019; Morpet et al., 2018). Notably, our finding that self-defense techniques were not feasible has been similarly shown in other studies. Physicians have difficulty in applying self-defense techniques learned in training (Dickens et al., 2009; Rogers et al., 2006) and there is no evidence that self-defense training reduces the incidence of violence in hospitals (Morpet et al., 2018).

Furthermore, hospital policies for patient (and their relatives/friends) aggression and violence are also needed. A weapons prohibition policy for patients and visitors, and respecting patient's privacy, were considered significant and viable methods for reducing patient aggression and violence, again a finding consistent with previous studies ((WHO, 2002; Morphet et al., 2018). Although having a zero-tolerance policy was perceived as important and feasible in our study, the effectiveness of this has been questioned in other studies. A major concern with a zero-tolerance policy is that it fails to discriminate between different causes of violence. This has resulted in employees in many healthcare settings not applying their 'Refusal to Treat' policy (Morpet et al., 2018). It has been recognized that zero-tolerance policies have not effectively reduced workplace violence among healthcare workers in Britain (Design Council, 2011).

Importantly, the experiences of the experts in our study suggest a vital role for support staff within Chinese hospitals. Unlike patients in Western countries who often initially seek help from their general practitioner (GP) before they are admitted to a hospital, Chinese patients typically go directly to hospitals for treatment. This can lead to healthcare staff being overloaded in Chinese hospitals, especially in tertiary hospitals (Zhao, 2023). Consequently, patients

without a GP referral and diagnosis have to rely heavily on support staff working on information and registration desks and on triage staff to guide them to the appropriate department for consultation and treatment. Mistakes made by support staff, such as directing patients to the wrong department, can easily trigger patient frustration and even violence towards physicians. Therefore, clarifying the responsibilities of support staff, standardizing workflows, and enhancing work accuracy to prevent such negative patient emotions and potential violence is considered an important intervention to avoid triggering violent patient behavior in China.

Implications and Limitations

Our study has practical implications for Chinese hospitals in terms of preventing and managing patient (and their relatives/friends) aggression and violence in different stages. To manage the period before violent events potentially occur, hospitals should provide professional training for physicians, especially in communication skills, skills on identifying potentially aggressive patients, and de-escalation approaches. Hospital policy should be established with the primary purpose of protecting the safety of physicians and clarifying when incidents of aggression and/or violence by patients (and their relatives/ friends) fall under civil law. In addition, the design of the hospital environment, its access and entrance (e.g., security checks), and staff assignment should be considered in preventing and mitigating patient (and their relatives/ friends) aggression and violence before it takes place. During ongoing violent events, actions should focus on comforting measures for patient (and their relatives/friends), and de-escalation techniques. After such violent events, hospitals should provide support to physicians who have experienced aggression and violence in the workplace, in the form of leader support, peer support, and management support (e.g., representation and legal aid and medical support).

Our study has limitations that should be acknowledged. At first, since experts were recruited using authors' own network, a selection bias might have occurred. The severity of the selection bias is limited as respondents were selected from a broad network of two authors and therefore include a diversity of participants from multiple hospitals, regions, and research organizations. In addition, it is crucial to note that patient aggression and violence are highly context-dependent phenomena. Therefore, interventions should take account of the specific national context, including the underlying risk factors associated with aggression and violence within Chinese hospitals. This contextual consideration is essential for ensuring the practical relevance and effectiveness of any interventions. Consequently, the generalizability of our findings to other cultures and contexts is limited. Nevertheless, this study can serve as starting point for other developing countries.

Conclusions

This investigation, by conducting a three-round Delphi study, identified a broad consensus among experts on the importance and feasibility of hospital-based interventions for mitigating patient aggression and violence against physicians in China. In total, 44 interventions, later clustered in eight categories (i.e., environment design, access and entrance, staffing and working practices, leadership and culture, training and education, support, during/after-the-events actions, and hospital policy) were considered important. All the identified interventions that fall within the categories of leadership and culture, support, during/after-the-events actions, and hospital policy were deemed both important and feasible.

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Chapter 5

Perspectives of physicians on risk factors for patient aggression and violence against physicians in Chinese hospitals: a Q-methodology study

Wu, Y., Buljac-Samardzic, M., Shi, J., Zhao, D., & Ahaus, C. T. B. (2025). Perspectives of physicians on risk factors for patient aggression and violence against physicians in Chinese hospitals: a Q-methodology study. *Human Resources for Health,* 23(5).

ABSTRACT

The prevalence of patient (and their relatives/friends) aggression and violence against healthcare professionals in general, and physicians in particular, is a recognized problem worldwide. While numerous risk factors for such aggression and violence from patients (and their relatives/friends) have been identified, little is known about which risk factors are perceived as relatively most important in a specific context and among a particular group, and about the potentially differing views on the relative importance. This lack of insight prohibits preventive measures being tailored to address the main risk factors. Therefore, we conducted a Q-methodology study to investigate physicians' perspectives on risk factors for aggression and violence from patients (and their relatives/friends) against physicians in Chinese hospitals. A total of 33 physicians from public Chinese hospitals participated in this study and were asked to rank 30 risk factors according to their importance in triggering violent incidents. In addition, respondents were asked to explain their ranking of most and least important risk factors. By employing a by-person factor analysis, four distinct perspectives on the importance of risk factors were identified: 1) unmet expectations of treatment and lack of resources; 2) perpetrator's educational background and personal characteristics; 3) distrust and limited protection measures; and 4) perpetrator's emotional well-being and poor interaction. There was a consensus across perspectives that failure to meet perpetrator's expectations is one of the most important risk factors and that physician's gender is one of the least important risk factors in the occurrence of patient (and their relatives/friends) aggression and violence against physicians in Chinese hospitals. These insights enable the development and prioritization of targeted measures to address specific risk factors according to the dominant views among physicians.

Keywords

Physician, Patient, Aggression, Violence, Risk factors, Q-methodology

Introduction

The prevalence of patient (and their relatives/friends) aggression and violence against healthcare professionals is a recognized problem worldwide (Lamothe et al., 2021). Among healthcare professionals, physicians face a heightened risk of encountering aggression and violence in the workplace (Kumari et al., 2020). Globally, between 24% and 88% of physicians have reported that they had experienced violence from patients (and their relatives/friends) during their career (Kumari et al., 2020; Wu et al., 2023). Such behavior has a wide range of negative impacts on physicians, teams, and hospitals, such as affecting the physician's work and emotional state, the team climate, performance, and the hospital's reputation (Lanctôt et al., 2014; Mento et al., 2020; Morphet et al., 2018).

To avoid aggression and violence from patients (and their relatives/friends) and to address the negative aftermaths, many studies have focused on identifying the risk factors and, accordingly, how to prevent such behavior. The social ecological model (SEM) and its four dimensions (individual, relationship, community, and societal) have been widely used to identify the risk factors and prevention strategies for workplace violence (Wu et al., 2020; Gillespie et al., 2015). Based on our recent systematic review (Wu et al., 2023), we refined the categorization within SEM to clearly explain the risk factors for aggression and violence from patients (and their relatives/friends) against physicians, including perpetrator-related factors (e.g., lack of education), physician-related factors (e.g., inexperience), interaction-related factors (e.g., denial of patient requests), factors related to organizational context (e.g., lack of organizational resources such as enough equipment), and external factors (e.g., adverse media). These risk factor categories are closely aligned with the available preventive measures. For example, Kumari et al. (2020) argued in their narrative review that interventions should focus on three levels, namely the individual level (e.g., training of physicians), the organizational level (e.g., infrastructure changes such as installing alarm systems), and the societal level (e.g., seeking unbiased media reporting). Additionally, Bowers (2014) emphasized that interventions should focus on reducing the factors that cause conflict, and on cutting the link between flashpoint and conflict. There is a common belief in the literature that preventive measures should be tailored to the risk factors to mitigate workplace violence (Phillips, 2016; Peek-Asa et al., 2007). However, different viewpoints on the importance of risk factors are expected. Distinct views will cover different risk factors that are perceived as relatively most important, potentially complicating the adoption of general preventive measures that are not tailored to these viewpoints.

In addition, although nurses and other healthcare workers also face patient aggression and violence, the violence faced by physicians may have different motivations and characteristics. For example, patient dissatisfaction with diagnosis and treatment options is often directed at physicians (Phillips, 2016). Understanding physicians' perspectives on risk factors for patient aggression and violence is crucial because they play a central role in patient care and are often

the key decision makers in treatment planning, which can have a direct impact on patient satisfaction and potential frustration (Kitaneh & Hamdan, 2012; Hamdan & Abu Hamra, 2015). However, it is important to recognize that even among physicians, views on the most critical risk factors differ. For example, Kumar et al. (2016) conducted a quantitative study and concluded that most of the physicians (73.5%) considered long waiting times as the most important risk factor for violence, followed by delayed medical provision that was considered important by less than half of the physicians (45.7%). Based on a qualitative study, Pan et al. (2015) concluded that the main reasons for violence were dissatisfaction with the treatment or diagnosis (51%) and dissatisfaction with services (24%). Naturally, differences in specialty, experience, and individual interactions with patients can all contribute to the diversity in perspectives on what risks are the most significant. By understanding these varied perspectives, and who holds which perspective, more nuanced and effective strategies can be developed to mitigate the risk of violence in healthcare settings.

Aggression and violence are context-specific (International Labor Office, 2002), and studying aggression and violence from a specific source (i.e., patients and their relatives/friends) against a specific target (i.e., physicians) enables a more contextualized consideration of the different perspectives on what are the main risk factors and possible responses to prevent them. The distinct characteristics of the healthcare system in China, such as high patient expectations, limited resources and patients' medical treatment preferences (i.e., patients prefer to go directly to higher-level hospitals due to the absence of gatekeepers in primary care) result in Chinese hospitals having to work under tremendous pressure with the risk of patient aggression and violence (Lu et al., 2019; Yip et al., 2019). Given this context and China's rapid socioeconomic development, the relationship between physicians and patients faces unique challenges. For example, the number of healthcare professionals experiencing violence in Chinese clinical settings varies from 50% to 83.3%, which has raised serious concerns and attention in China (Sun et al., 2017). To address these challenges, recent reforms, such as the Healthy China 2030, focus on structural changes to improve access and quality of healthcare services (Zhang & Gong, 2019). However, the persistence of patient aggression and violence underscores the need for evidence-based approaches to understand and prevent such violence in the Chinese context (Sun et al., 2017). Additionally, studying such aggression and violence against physicians in China offers valuable opportunities for international comparisons and knowledge sharing. Chinese hospitals provide a unique research setting, offering extensive experience in managing aggression and violence, and enabling a comprehensive understanding of risk factors as reported by both victims and witnesses of such incidents. Ultimately, this research can contribute to the global body of knowledge, informing effective practices and solutions to address patient aggression and violence worldwide.

Previous research has emphasized the importance of the experiences and variations in perspectives of physicians in seeking a comprehensive understanding of such violence (Phillips, 2016; Kitaneh & Hamdan, 2012; Hamdan & Abu Hamra, 2015). Understanding the specific risks and needs that physicians face in their work would enable the development of targeted prevention and training measures (Alhamad et al., 2021). The aim of this study is to investigate different views of physicians on the relative importance of risk factors for patient (and their relatives/friends) aggression and violence in Chinese hospitals. This study builds on the present extensive literature on risk factors by providing nuances in the many risk factors through identifying different views.

Method

Study Design

This study adopted the Q methodology to investigate subjective perspectives with a combination of quantitative and qualitative methods (Cross 2005; Watts & Stenner, 2012). A set of statements on risk factors associated with aggression and violence from patient (and their relatives/friends) was assembled and presented to participants who were instructed to rank these statements from least to most important in terms of the occurrence of such aggression and violence (Cross 2005; Watts & Stenner, 2012). In addition, qualitative data were collected by asking participants to explain their rankings of the least and the most important risk factors. Significant clusters of correlations between rankings were identified through by-person factor analyses (Patty et al., 2017). The analysis was based on the assumption that participants who ranked statements similarly would also hold similar views on the risk factors for aggression and violence from patient (and their relatives/friends). For each factor, a composite ranking of the statements was constructed. In combination with the qualitative data, these rankings were used to develop an understanding of each viewpoint.

Statement Set Development (the Q-set)

The initial statements for this study were based on several literature reviews on risk factors for violence and aggression against healthcare providers (Kumari et al., 2020; Hills & Joyce, 2013; Edward et al., 2016), research on this topic within the Chinese context (Tian et al., 2020; Ma et al., 2022), and the recently published systematic review of the risk factors for patient (and their relatives/friends) aggression and violence against physicians (Wu et al., 2023). In total, 114 potential risk factors were obtained. According to our systematic review and the four-level social ecological model (SEM), the identified potential factors were classified into five categories: perpetrator-related factors, physician-related factors, interaction-related factors, factors related to organizational context, and external factors. Subsequently, the authors engaged in extensive discussions and refinement regarding the potential risk factors, ultimately distilling them into

30 statements. Statements deemed redundant, irrelevant, or ambiguous were excluded during the process. In order to validate these statements, a pilot study was conducted with three Chinese physicians (two female and one male). These participants were asked to rank these statements from the most important to the least important and to consider three related aspects: 1) whether improvements in the phrasing of the statements was required; 2) whether there were other risk factors that should be added; and 3) whether any risk factors should be deleted. Based on the results of this pilot study, there were no statements that needed to be added, deleted or modified.

Participants (the P-set)

Based on the literature and following the suggestions of Watts and Stenner (2012), the ratio of statements to participants for such a study should be approximately 1:1. Therefore, we aimed to include at least 30 physicians in this study. Participants were invited through the authors' various networks and further applying a snowball sampling method, which resulted in a total of 33 participants. Since this study aims to investigate the importance of risk factors for patient (and their relatives/friends) aggression and violence from a physician's perspective, all the participants in our study were to be physicians who had experienced and/or witnessed such aggression and violence in public hospitals in China. To ensure diversity in the data sources, participants came from different departments, areas of China, hospital locations (urban/rural), and public hospital types (secondary/tertiary).

Data Collection

Data were collected from February to April 2024 through online interviews. Prior to the interviews, the participants received an email with instructions plus a consent form and a preparation form. Once participants had agreed to join this study, we provided them with a score sheet and statement cards via email and also used screen sharing to display these documents during the online interviews held using Microsoft Teams. Participants were asked to judge the importance of the Q-set based on the question: "Please rank the risk factors for patient (and their relatives/friends) aggression and violence towards physicians from least to most important". More specifically, participants were first asked to place the statement cards in most important, neutral, and least important piles (Lee, 2017). Participants then ranked their most important pile of statements and entered them into the grid, followed by the least important pile, and the remaining neutral pile (Figure 1). After participants completed their ranking, they were asked to explain the choices they had made. In addition, we collected demographic information on the participants, including their gender, working experience, and hospital characteristics. For the purpose of this study, all the statements were translated from English into Chinese employing the standard translation/back-translation technique by two researchers (Y.W. and H.W.) (Behling & Law, 2000).

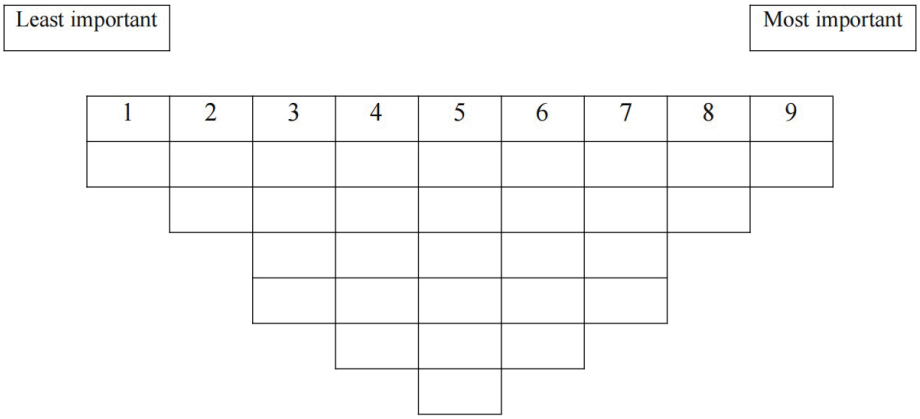

Figure 1. Q sorting grid

Data Analysis and Interpretation

In this Q-methodology study, data analysis was conducted using KADE software to identify distinct perspectives on risk factors for patient aggression and violence against physicians (Banasick, 2019). The process began with factor extraction, producing a factor matrix that displayed correlations between participants' Q-sorts (rankings of statements) and the identified factors. This process led to grouping participants with similar perspectives (Watts & Stenner, 2012; McKeown & Thomas, 2013). Factor loadings were calculated to determine how strongly each participant's responses aligned with each factor, identifying representative participants for each viewpoint (McKeown & Thomas, 2013). A by-person factor analysis was applied to group participants with similar Q-sorting patterns. This process involved calculating a correlation matrix to represent associations between participants, followed by centroid factor extraction to reveal factors in the unrotated factor matrix (Watts & Stenner, 2012). The criteria to determine the number of factors to retain included: 1) an Eigenvalue (EV) >1.00; 2) at least two participants loading significantly at $p<0.05$ on one factor (Watts & Stenner, 2012; McKeown & Thomas, 2013; Hackert et al., 2019); and 3) the interpretation of the factors through qualitative analyses. Lastly, factor scores were calculated by averaging statement rankings within each factor, providing insights into the relative importance of statements within each perspective (Watts & Stenner, 2012).

A mixed-method approach was used to interpret the factors and characterize them as distinct perceptions of risk factors for patient (and their relatives/friends) aggression and violence. This approach initially required us to consider characteristic and distinguishing statements. Characteristic statements were identified using scores of -4, -3, +3, and +4 within a factor, while distinguishing statements were considered those showing statistically significant differences compared to other factors. Verbal explanations from interviews with participants who loaded on to a specific factor were used to verify and refine the interpretation of each factor.

Results

The sample consisted of 33 participants, of whom 14 (42.2%) were male and 19 (57.8%) were female. Most of the participants had worked for less than ten years (63.6%). 84.8% were working in urban hospitals, and 75.8% in tertiary hospitals. Among these participants, 9 participants (solely) directly experienced aggression and violence from patients (and their relatives/friends) (27.3%), 13 participants (solely) witnessed such aggression (39.4%), and 11 participants both experienced and witnessed such aggression and violence (33.3%). The detailed descriptive statistics of the sample are shown in Table 1.

Table 1 Descriptive statistics of the study sample (N = 33)

Characteristics	n (%)
Gender	
Male	14 (42.2%)
Female	19 (57.8%)
Working experience	
≤10 years	21 (63.6%)
11-20 years	6 (18.2%)
>20years	6 (18.2%)
Hospital location	
Urban	28 (84.8%)
Rural	5 (15.2%)
Hospital type	
Secondary	8 (24.2%)
Tertiary	25 (75.8%)
Experience with aggression and violence	
Directly experienced (solely)	9 (27.3%)
Witnessed (solely)	13 (39.4%)
Both directly experienced and witnessed	11 (33.3%)

The factor analysis identified five factors with an EV>1 and at least two participants loading significantly onto them. Four- and five-factor solutions were compared because both these solutions explained more than 50% of the variance in the data. We found that the first four factors were almost identical in both solutions. The remaining fifth factor in the five-factor solution was too similar in interpretation to Factor 3 and therefore did not add a significantly distinct perspective. Consequently, the four-factor solution was chosen.

This four-factor solution explained 51% of the total variance. Table 2 shows the factor loadings: ten participants were associated with Factor 1, four with Factor 2, seven with Factor 3, and four with Factor 4. In addition to these twenty-five participants, five participants were mixed loaders (i.e. confounded) and three participants were null loaders (i.e. no significant loadings). Correlations between the factors ranged from 0.17 to 0.55. Table 3 presents the composite sorts of the statements for the four factors.

Table 2. Factor matrix

Participant ID	Factor 1	Factor 2	Factor 3	Factor 4
1	0.5316*	0.103	0.0738	0.3597
2	-0.1482	0.3822	0.3989	0.4837
3	0.2293	-0.1785	0.4047*	0.3381
4	0.1138	0.3037	0.6155	0.4955
5	0.3044	0.2838	0.7139*	0.0591
6	0.7274*	-0.1764	0.2779	0.1893
7	0.7005*	0.1174	0.2165	-0.0334
8	0.6206*	0.2701	0.2688	0.2401
9	0.0823	0.583*	0.3275	0.0922
10	0.3283	0.2716	0.2601	0.6712*
11[#]	0.0735	0.0621	0.2207	0.1194
12	0.3939	0.2313	0.218	0.5534
13	0.2841	0.246	0.1854	0.6896*
14[#]	0.1332	-0.0296	0.3588	0.1116
15	0.5768*	-0.1823	0.0471	0.3634
16	0.4387	0.486	0.2843	0.2174
17[#]	0.1417	0.1349	0.1989	0.1004
18	0.4917*	-0.4021	0.2831	-0.1248
19	0.4104*	-0.0164	0.0536	0.3438
20	-0.161	0.8248*	0.0888	0.1589
21	0.1442	0.1977	0.7015*	0.2695
22	0.1903	0.2747	0.1867	0.4905*
23	-0.1011	-0.2066	0.5006*	0.359
24	0.1664	0.5629*	0.2503	0.0081
25	0.272	0.3543	0.685*	-0.1123
26	0.3851*	0.0416	0.1087	-0.2186
27	0.5702	-0.0194	0.15	0.3938
28	0.2685	0.0863	0.6979*	0.2213
29	0.0081	0.0517	0.2062	0.8227*
30	0.5583*	0.2549	-0.0767	0.0505
31	0.6008*	-0.015	0.4369	0.324
32	0.0689	0.2931	0.6988*	0.3078
33	0.3192	0.7466*	-0.0635	0.4381
% Variance Explained	14	10	14	13
Correlation with Factor 2	0.1706			
Correlation with Factor 3	0.5473	0.4199		
Correlation with Factor 4	0.4777	0.4764	0.531	

* denotes exemplar Q-sort for factor: that is, the Q-sort loads significantly at $p < 0.05$ on to only one factor. Significant loading calculated using the formula: $1.96\times (1/\sqrt{\text{No. of items in Q-set}})$, equating to $1.96\times (1/\sqrt{30}) = 0.36$

[#] Null loading Q-sorts.

Table 3. Factor scores per statement

No.	Statements	Factor 1	Factor 2	Factor 3	Factor 4
Perpetrator-related factors					
1	Perpetrator's age	-3	0*	-4	0*
2	Perpetrator's gender	-2	+2**	-2	-1**
3	Perpetrator's educational level	-1	+4*	+2*	0
4	Perpetrator's social status	-3	+3**	-1	-2
5	Perpetrator's personality traits	-1**	+1	+1	+4**
6	Perpetrator under influence of alcohol and/or drug	-1**	+2	+2	+3
7	Perpetrator's mental state	-1**	+2*	+4	+3
8	Perpetrator's lack of medical knowledge	+1	+3	+1	+2
9	High out-of-pocket expenses	-2*	+1	0	-2*
10	Patient's severity of the disease state	+2	+1	0	+1
11	Actual or perceived non-improvement or deterioration of the patient's condition including patient death or irreversible damage	+4**	+1	+1	+1
12	Perpetrator's expectations are not met	+3#	+2#	+2#	+2#
Physician-related factors					
13	Physician's gender	-4*#	-3#	-3#	-3#
14	Physician's inexperience	0	0	-1	-1
15	Physician's personality traits	-2	-4 **	-2	-1*
16	Physician's poor medical skills	0	-1	-2	0
17	Physician's heavy workload	0*	-1	-2	-2
18	Medical error by physician	+1	0	-1	0
Interaction-related factors					
19	Perpetrator's distrust of physicians	+3	+1	+3	+2
20	Perpetrators' dissatisfaction with physicians' attitude	+2	0	0	+2
21	Poor physician-perpetrator communication	+2	0	+1	+1
22	Physicians' poor skills in coping with patient aggression and violence	-1	-2	0*	-1
23	Denial of perpetrator's requests	+1	-2*	+1	0
Factors related to organizational context					
24	Long waiting time	0	-2*	0	+1
25	Overcrowding	+1	-3	-1	+1
26	Lack of resources (e.g., equipment, free beds, and medication)	+2	-2*	0	0
27	Insufficient staff	+1	-1	-1	-2
28	Lack of security	0	-1	+2**	-1
External factors					
29	Lack of policies and laws to protect physicians from aggression and violence	0*	-1*	+3**	-3*
30	Characteristics of hospitals, e.g., hospital level, hospital type (public or private), or hospital location	-2*	0*	-3	-4

* $p<0.05$; ** $p<0.1$; Consensus statements are indicated by #.

Perspective 1: Unmet expectations of treatment and lack of resources

Participants associated with Perspective 1 identified factors related to the perpetrator's unmet expectations of treatment outcomes as important triggers of aggression and violence by the patient (and their relatives/friends) against physicians (st.11, +4; st.12, +3). These factors trigger perpetrator's negative reactions that are fed by emotions: "*They (perpetrators) cannot accept the poor treatment results, and they are prone to emotional breakdowns, which may then lead to some violent behavior against us*." (id 8). Here, the severity of the patient's disease (st.10, +2) plays an important role: "*The severity of the patient's condition has a significant impact on the family's emotions*." (id 31). The possible consequences of unmet expectations following treatment are mistrust and dissatisfaction with physicians (st.19, +3; st.20, +2). The possible causes of unmet expectations are the lack of material resources (st.26, +2) and insufficient staff (st.27, +1) because these would affect the timeliness of treatment and potential lead to poor outcomes: "*Patients cannot be hospitalized in a timely manner (...) If their condition worsens, it will put pressure on our follow-up treatment*." (id 30).

From this perspective, the personal characteristics of the perpetrator and the physician were unlikely to be the cause of violent behavior (st.13, -4; st 1. -3; st.2, -2; st.4, -3; st,5, -1; st.15, -2): "*Whether a physician is male or female, he or she is at risk of experiencing violence, and patients can be violent regardless of their gender or age*." (id 15). "*These factors do not affect our treatment of patients or the effectiveness of treatment outcomes*." (id 30). Relative to the other perspectives, a perpetrator's mental state was considered slightly less important (st.7, -1): "*It takes experience to determine whether a patient is mentally abnormal or not. Sometimes it is hard for us, especially young physicians, to determine a patient's mental state unless he/she is clearly behaving in that way*." (id 7).

Perspective 2: Perpetrator's educational background and personal characteristics

Participants aligning with this perspective stressed the importance of the educational background of perpetrators, including their educational level (st.3, +4) and their knowledge of medicine (st.8, +3), because these characteristics influence physician-patient interactions, attitudes and realistic expectations: "*I think individuals who have had higher education tend to exhibit stronger self-control over their behavior*." (id 20). "*Many patients who lack understanding of medicine believe that simply visiting the hospital guarantees recovery. When we are unable to cure them, they struggle to accept such outcomes, sometimes leading to incidents of violence*." (id 33). Perpetrators' social status was also attached to their educational background and propensity for violence (st.4, +3): "*I think social status, education level, economic condition, and understanding of medicine are related. (...) People with a higher social status tend to pay more attention to the way to solve something*." (id 9). Participants associated with Perspective 2 deemed perpetrator's

characteristics (i.e., mental state, gender, and personality traits) as important risk factors for patient violence (st.2, +2; st.7, +2; st.5, +1): "*Patients who are mentally ill are more likely to be unable to control their behavior.*" (id 33). However, for those holding this perspective, physicians' traits and gender were not seen as major risk factors for patient aggression and violence (st15. -4; st.13, -3).

Factors related to organizational context were considered by these respondents as less important. These include overcrowding (st.25, -3), long waiting times (st.24, -2), lack of resources (st.26, -2), insufficient staff (st.27, -1), and lack of security (st.28, -1), since these situations are viewed as the norm: "*We all know that hospitals are crowded*." (id 9). "*The hospital lacks resources, this is an objective reality. Generally, since patients choose to visit the hospital, they are less likely to be concerned about these issues*." (id 20).

Perspective 3: Distrust and limited protection measures

In this perspective, participants identified the perpetrator's distrust of physicians (st.19, +3) as an important trigger for violent behavior. Although similar to Perspective 1, the distrust in this case is not caused by unmet expectations but due to the created climate: "*Inaccurate and exaggerated media reports can exacerbate patients' distrust of us. (...) Lack of trust by our patients will make them question all of our actions."* (id 3). Moreover, those holding to this perspective view the lack of protective measures as a risk factor. Participants considered the lack of policies, legislation, and security to protect physicians from aggression and violence (st.29, +3; st.28, +2) as an important risk factor given that perpetrators can attack physicians with relative impunity: "*The lack of security in hospitals can give patients a false sense that they can freely insult or assault physicians without anyone stopping them*." (id 32). Participants also noted that the lack of appropriate safety measures in hospitals puts them under great pressure when dealing with patients with mental illness (st.7, +4): "*I hope that the security check will identify people with abnormal mental behavior, and then these people should be accompanied by security guards when seeking medical treatment*." (id 21).

Consistent with the previous perspectives, the gender and personality traits of physicians (st.13, -3; st.15, -2), the gender and age of potential perpetrators (st.1, -4; st.2, -2), and characteristics of hospitals (st.30, -3) were considered as relatively unimportant risk factors. Interestingly, in this perspective, physicians' heavy workloads (st.17, -2) and poor medical skills (st.16, -2) were also seen as less important in causing patient aggression and violence: "*The heavy workload of physicians is an industry norm. Patients also do not see that we have a lot of work*." (id 28). "*If treating a patient's illness exceeds our capabilities, we will refer them. We do not do more than we are capable of*." (id 21).

Perspective 4: Perpetrator's emotional well-being and poor interaction

Participants fitting within this perspective considered aspects related to the perpetrators' emotional well-being the most important risk factors: perpetrators' personality traits (st.5, +4), their mental state (st.7, +3), and being under the influence of alcohol and/or drugs (st.6, +3). "*Some patients have personality flaws or are prone to anger. Whatever we do, we may inadvertently provoke them*." (id 29). "*Sometimes it is hard to predict and control the behavior of patients who have mental issues*." (id 10). "*The perpetrator was under the influence of alcohol or drugs and was prone to loss of control*." (id 13).

Those participants adhering to Perspective 4 also saw interactions between physicians and perpetrators as a potential trigger for such violence, including perpetrators' dissatisfaction with physicians' attitudes (st.20, +2) and their distrust of physicians (st.19, +2). Unlike with Perspective 1, these negative interactions may be due to the perpetrator's psychological state: "*It is hard to communicate with patients when they are drunk*." (id 29).

In this perception, external factors, including characteristics of hospitals (st.30, -4) and the lack of policies and laws to protect physicians (st.29, -3) were seen as less important in triggering patient's violent behavior: "*No matter what type of hospital it is, violence would occur.*" (id 13). "*Laws are in place, but they are not very effective*." (id 22). Further, and consistent with Perspective 1, gender (st.13, -3; st.2, -1), a perpetrator's social status (st.4, -2), and high out-of-pocket expenses (st.9, -2) were not seen as important risk factors for such aggression and violence.

Statements where there was a broad consensus

An inability to meet perpetrators' expectations was consistently regarded as a significant factor in inciting violence (st.12#, P1:+3, P2:+2, P3:+2, P4:+2). "*They (perpetrators) expect too much from us and, to be honest, a lot of diseases are hard to cure*." (id 33). "*The greater the expectations, sometimes the greater the disappointment*." (id 17). Finally, the gender of the physician was considered among all perspectives as one of the least important factors to trigger violence (st.13#, P1:-4, P2:-3, P3:-3, P4:-3).

Discussion and Conclusions

Main findings and comparison with previous findings

The aim of this study was to investigate the perspectives held among physicians on risk factors for patients (and their relatives/friends) aggression and violence against physicians in Chinese hospitals. Four distinct perspectives were identified by using Q-methodology. The first and third perspective focused on perpetrators' attitudes towards the physicians and unavailable

resources: unmet expectations of treatment and distrust, and a lack of resources and limited protection measures. Those adhering to the second and fourth perspective emphasized the importance of features of potential perpetrators and interactions: their educational background and personal characteristics, their emotional well-being, and poor interaction. Based on the results of this study, there appears to be a broad consensus among physicians that a failure to meet the expectations of perpetrators is a significant factor in the occurrence of aggression and violence, and that the gender of a physician is not a factor in the likelihood of violence. The following discussion is broken down into separate levels, in line with the SEM.

Individual level: perpetrators and physicians

According to SEM, individual characteristics influence the occurrence of violent incidents. We subdivided the individual level into perpetrator- and physician-related factors in this study. In terms of perpetrator-related factors, our findings showed that participants among all four views broadly agreed on perpetrators' unmet expectations being an important risk factor in triggering violent behavior. This is consistent with previous studies. High expectations and disappointing realities, and the mismatch between patients' expectations and the service provided, were seen as likely to spark aggression and violence towards healthcare professionals (Najafi et al., 2018; Kaur et al., 2020). Within the SEM framework, this can be interpreted as an individual-level mismatch between personal beliefs or expectations and the reality of treatment outcomes. While unmet treatment expectations are a common factor in healthcare violence globally, the combination of high family involvement, and the expectation of high-quality care from tertiary hospitals intensifies this challenge in Chinese context (Wu et al., 2017; Deng et al., 2018). This convergence of factors creates a situation where unmet expectations can lead to frustration and even escalate into aggression. Interestingly, although some Chinese studies have claimed that high out-of-pocket medical expenses are significant in generating aggression and violence by patients (and their relatives/friends) (Jiao et al., 2015; Cai et al., 2011), such expenses were not perceived as relatively one of the most important risk factors among any of our perspectives. Actual or perceived non-improvement or deterioration in a patient's condition was considered an important risk factor among all four perspectives. This risk factor has also been seen as important in other countries. For example, an Indian study similarly showed that more than 70% of physicians perceived non-improvement and death of a patient as the two main causes of workplace violence (Kaur et al., 2020).

Compared to the other three perspectives, participants who hold Perspective 1 seem reluctant to attribute violence to perpetrator-related factors, especially perpetrator's mental health. However, respondents holding other perspectives, and confirmed by previous studies (Arnetz et al., 2015; Abdellah & Salama, 2017), claim that perpetrator's mental health played an important role in inducing violent incidents. In Perspective 1, participants argued that not all physicians were equipped to determine whether a perpetrator had a mental illness, and therefore felt they could

not attribute violence to this factor. The existing literature similarly recognizes that spotting potentially aggressive patients was a key skill for physicians and should therefore be a core element in their training (Morphet et al., 2018; Raveel & Schoenmakers, 2019).

On the other hand, this study found that physician-related factors are not considered as one of the most important factors in triggering violent incidents among any of the four perspectives. Although some research has suggested that a lack of experience and insufficient skills among physicians can contribute to the occurrence of violent incidents (Kaur et al., 2020; Jiao et al., 2015), participants in this study emphasized that they would recommend patients referral if faced with situations beyond their own experience and skills. This can be seen as not only taking responsibility for the patient but also as ensuring their own protection. Physician-related factors might be considered as relatively less importance due to defensive medicine practices as physicians avoid certain activities to protect themselves (Arafa et al., 2023; Renkema et al., 2022).

Relationship level: interaction-related factors

The relationship level of SEM emphasizes the quality of interactions between patients and physicians. In Perspective 1, 3 and 4, patient-physician interactions such as poor communication and patient distrust, emerged as the relatively important risk factors, reflecting how relational dynamics directly impact the likelihood of aggressive incidents. Those participants who held Perspectives 1, 3 and 4 specifically highlighted the impact of poor treatment outcomes on perpetrators' trust, indicating that a perceived failure in treatment fuels a sense of resentment in perpetrators, a finding in line with previous studies (Najafi et al., 2018; Yesilbas & Baykal, 2021). Additionally, consistent with other studies (Xiao et al., 2020; Lu et al., 2020), our findings suggest that patients' distrust may be fueled by negative media attention, which in turn worsens the patient-physician relationship and adds an external strain to their interaction. Within the SEM, this observation underscores how misaligned emotional and communication dynamics between patients and physicians could contribute to aggression and violence.

Community level: factors related to the organizational context

At the community or organizational level, SEM posits that workplace conditions and structural factors shape interactions within healthcare settings (Wu et al., 2022; Gillespie et al., 2015). This study found that participants across three perspectives (Perspective 1, 3, 4) recognized organizational stressors like overcrowding, long wait times, and insufficient staff as aggravators of aggression. In line with the SEM, such organizational stressors contribute to an environment of increased tension and dissatisfaction (Ayasreh & Hayajneh, 2021). Our finding showed that although patients may anticipate overcrowding and delays, the presence of these conditions may still intensify frustration. This interpretation is consistent with previous Chinese research (Lu et al., 2019; Ayasreh & Hayajneh, 2021). Due to Chinese patients' medical treatment preferences for seeking care directly at overcrowded higher-level hospitals (e.g., tertiary hospitals), these

already crowded hospitals face community-level pressures that increase the risk of aggression. This leaves physicians to bear the brunt of patient dissatisfaction, stemming from systemic issues beyond their control (Lu et al., 2019).

Societal level: external contextual factors

SEM suggests that societal factors, such as the legal and policy landscape, create an overarching influence on violence prevention in healthcare (Wu et al., 2022). In this regard, there is a distinction between those holding Perspective 3 and the other perspectives on the importance of the lack of laws protecting physicians against aggression and violence. While participants holding Perspective 3 acknowledged the importance of legal protection and support for physicians in the face of aggression and violence from patients (and their relatives/friends), this was less recognized in the other perspectives.

Implications for practices

In light of our findings, several key implications emerge for hospital administration to address patient aggression and violence. Due to the broad consensus on the importance of unmet perpetrator's expectations across all perspectives as a core contributor to aggression and violence, hospitals should consider interventions to address this risk factor. Creating a team trained to proactively address patient concerns can prevent misunderstandings and manage expectations, reducing the risk of aggression or violence (Hills & Joyce, 2013; Raveel & Schoenmakers, 2019). Additional strategies, such as shared decision-making and tailoring healthcare services, could further support these efforts by aligning treatment plans more closely with patient expectations (Elwyn et al., 2012; Dugan et al., 2005).

Distinct perspectives offer additional insights into targeted interventions. For example, to address the risk factors related to Perspective 1 (actual or perceived poor treatment outcomes and lack of resources), in addition to managing perpetrator's expectations (as previously mentioned), hospital may consider implementing incident analysis tools, such as root cause analysis and health failure mode and effect analysis). These tools help systematically investigate adverse events and identify underlying issues in patient care processes (Shaqdan et al., 2014). Additionally, hospital could focus on optimizing available resources by adopting lean management practices (e.g., eliminating waste, streamline workflows, and creating standardized procedures) to allow staff to handle a higher volume of cases effectively with existing resources (Marsilio & Pisarra, 2021). Addressing risk factors related to Perspective 2 (perpetrators' backgrounds and personal characteristics) calls for tailored communication training for physicians. Physicians who are trained to adjust their communication styles towards patients' demographics (e.g., age, cultural background, education level) and patient's personality traits, will improve patient-physicians interaction (Weiss, 2007; Kernberg 2007). To address the risk factors associated with Perspective 3 (limited protection measures and distrust for physicians), hospitals may consider enhancing

security measures. This could include positioning security personnel in high-risk areas, establishing metal detectors at main entrances, and enforcing a zero-tolerance policy against aggression and violence (Wu et al., 2024). Improving patient trust can be improved by fostering open communication, respecting patient privacy, and showing empathy to patients (Dugan et al., 2005; Wu et al., 2024). Finally, to cope with Perspective 4 (poor interaction that arises from perpetrators' emotional well-being), hospitals might implement protocols for early identification of patients with high emotional distress or mental health issues, combined with de-escalation training for physicians to improve interactions with these patients (Wu et al., 2024).

Future research directions

This study proposes three suggestions for future study. First, future studies could conduct an in-depth investigation into potential differences between rural and urban physicians' perspectives on patient aggression and violence, as well as variations across different types of hospitals within these settings. Our findings hint that physicians in rural hospitals may hold distinct views compared to their urban counterparts. In this study, physicians in rural hospitals loaded onto Factor 1 (Perspective 1) and Factor 4 (Perspective 4), while physicians in urban hospitals loaded on all perspectives. However, these differences may not be conclusively established or generalized based solely on the Q methodology, as it is not designed to provide definitive categorizations but rather to identify patterns of shared viewpoints. Second, the potential differences in views on risk factors between physicians who have directly experienced patient aggression and violence and those who have only witnessed such incidents should be further investigated. This study included physicians who (solely) experienced aggression directly, physicians who (solely) witnessed aggression, and physicians who both experienced and witnessed aggression. In this study, we did not distinguish whether these three groups of participants held different views for risk factors. However, existing literature claimed that direct exposure to aggression and violence could have different consequences than witnessing it (Leiter et al., 2009). Third, the distinct perspectives provide implications for interventions based on the assumption that a match between perceived crucial risk factors and the adoption and consequently the effectiveness of interventions will increase. Research should provide insights into how hospitals can assess the viewpoints among their healthcare professionals and guide the selection of best fitted interventions.

Limitations

Some limitations should be acknowledged. First, although the participants were assured of anonymity, some may still have been hesitant to provide a full disclosure. Some physicians might have felt stigmatized for being victims of violence and thus could have been reluctant to fully describe their experiences. Further, given the sampling process, potential participants who were reluctant to share their experiences may have been less likely to participate. In addition, since no distinction was made between types of aggression and violence from patients (and their

relatives/friends), especially between verbal and physical violence, differences in risk factors in their predisposition to certain forms of violence were not addressed. Finally, although we used the SEM and other relevant literature to identify all the potential risk factors for patient aggression and violence against physicians and validated these in a pilot study, the possibility remains that certain risk factors may have been overlooked in our statement set. To mitigate this, we provided respondents with ample opportunities during the interviews to elaborate on their perspectives, ensuring that any additional relevant insights into additional risk factors could still be captured.

Conclusions

In conclusion, this Q-methodology study has identified four distinct perspectives among physicians on the risk factors for patient aggression and violence against physicians in Chinese hospitals: 1) unmet expectations of treatment and a lack of resources, 2) perpetrators' educational background and personal characteristics, 3) distrust of physicians and limited protection measures, and 4) perpetrator's emotional well-being and poor interactions. For practice, we suggest combining interventions targeted to cover the viewpoints of physicians.

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6

Chapter 6

Discussion and conclusion

The development of China's healthcare system has long been a priority for the Chinese government. In 2015, the Chinese government introduced the "Healthy China 2030" blueprint, which aims to enhance the overall health and well-being of Chinese citizens by promoting equitable access to healthcare, improving the quality of healthcare services, and fostering a supportive healthcare environment (Word Health Organization, 2020; Zhang & Gong, 2019). This blueprint emphasizes several key areas to improve patient satisfaction, including shortening patient waiting time, upgrading the professional competence of healthcare workers, and enhancing physician-patient communication. Additionally, the blueprint commits to strengthening legal protections for healthcare workers, safeguarding their rights and occupational safety. Protecting the safety of physicians in the workplace is fundamental to ensuring the delivery of high-quality healthcare service and is an integral part of the "Healthy China 2030" blueprint. This thesis aims to provide a comprehensive understanding in aggression and violence from patients (and their relatives/friends) against physicians in Chinese hospitals, which is in line with the goal of the "Healthy China 2030" blueprint. By investigating risk factors (Chapter 5), consequences (Chapter 3), and prevention and management strategies (Chapter 4) of such aggression and violence against physicians in the context of Chinese hospitals, this thesis aims to provide deeper insights for relevant stakeholders such as physicians, hospitals leaders, and policymakers. This chapter summarizes the main findings, discusses implications for policy and practice, provides reflections on theory, offers methodological reflections, and suggests avenues for future research.

Main Findings

Research question

What do we know about patient aggression and violence against physicians in hospitals? (Chapter 2)

Given that most reviews have examined workplace violence rather heterogeneously without explicit regard to a professional group or particular source of violence (from colleagues/leaders vs. from patients and their relatives/friends), we conduct a systematic review addressing a specific type of aggression and violence, against a specific group in a certain setting; aggression and violence from the patient (and their relatives/friends) against physicians in hospitals. By synthesizing 104 articles, we summarize findings across four domains: prevalence, risk factors, consequences, and prevention and management of aggression and violence from patients (and their relatives/friends) against physicians. Based on the selected studies, between 23.9% and 87.5% of physicians experienced such incidents during their careers globally, with higher prevalence rates observed in developing countries and among younger physicians. Research shows that risk factors for such aggression and violence are multifaceted and can be categorized

into five groups: 1) physicians-related risk factors (e.g., lack of skills, heavy workload); 2) perpetrator-related risk factors (e.g., mental state, lack of education); 3) interaction-related factors (e.g., denial of patient requests); 4) organizational context factors (e.g., lack of security and resources); and 5) external context factors (e.g., unsupportive media attention). The consequences of aggression and violence include physical effects (e.g., physical injuries and insomnia), psychological well-being effects (e.g., fear and emotional exhaustion), work functioning (e.g., job performance, work quality), and other effects (e.g., reducing physicians' quality of life). Prevention and management strategies for violent incidents are especially presented from two perspectives: hospitals (e.g., education and training of staff, improving security) and governments (i.e., improving laws and regulations, and educating the public). Based on the results of the systematic review, three research gaps are identified and addressed in Chapters 3 to 5:

- There is limited insight into the impact of patient aggression and violence against physicians on the team and organizational level, especially when compared to the extensive research conducted at the individual level. (Chapter 3)
- Many possible interventions exist to prevent and manage patient aggression and violence, but there is no clarity on the importance and feasibility of those interventions in Chinese hospitals. (Chapter 4)
- Various risk factors are identified for patient aggression and violence, but the relative importance of these factors and the different views on aggression and violence from the patients (and their relatives/friends) against physicians in hospitals are unknown. (Chapter 5)

Although our systematic review (Chapter 2) includes studies only up to 2021, our results are reinforced by the recently published review that focuses on prevalence, risk factors, consequences, and prevention of workplace violence against healthcare workers (O'Brien et al., 2024). Based on 74 papers, this review underscores the ongoing prevalence of aggression and violence against healthcare workers, identifying the risk factors (i.e., patients-related, healthcare workers-related, and organizational/sociocultural risk factors) and negative consequences (e.g., burnout, stress and mental health impacts, and costs to the healthcare system), and the pressing need for effective intervention strategies (e.g., training and leadership support), which coincides with our findings. Notably, the prevalence of violence against healthcare providers are affected by the COVID-19 pandemic. Incidents surged at the height of the pandemic, driven by heightened patient anxiety and healthcare system strain, but declined post-pandemic as fear of the virus subsided (Ramzi et al., 2022; Zhang et al., 2023; Hadavi et al., 2023; Qi et al., 2022). These findings collectively underscore the nature of violence against healthcare workers and the importance of effective interventions.

Research question

What is the impact of patient aggression and violence against physicians on the team and organizational levels in Chinese hospitals? (Chapter 3)

Research provided especially insights into the consequences of aggression and violence from patients (and their relatives/friends) at individual level with limited knowledge about the consequences at team and organizational level. To address the first gap, we conduct in-depth interviews with 29 participants, including physicians, hospital team leaders, and hospital board members, working in four public hospitals (i.e., two secondary hospitals and two tertiary hospitals) in China. Based on the interviews, we find that at the team level, aggression and violence by patients (and their relatives/friends) can affect team climate (unsafe and depressed), team communication (decreased desire to communicate within teams), team beliefs (better to offer low-risk treatment), team resources (impacts on material and human resources), and support from team members and leaders (valuable but limited in form). At the organizational level, such aggression and violence can have negative financial impacts (i.e., involving compensation and additional costs) and societal impacts (i.e., image and reputational damage, and public distrust). Although peer support and leader's support are identified as important ways for physicians to deal with violent incidents, this is not used to its full potential. Two approaches have been identified as crucial to cope with the negative impact on the team and organizational levels of patient (and their relatives/friends) aggression and violence against physicians: restoring the team climate after a violent incident and providing various forms of support, especially proactive support from leaders and peers.

Research question

What is the importance and feasibility of hospital interventions to prevent and manage patient aggression and violence against physicians in Chinese hospitals? (Chapter 4)

While there are many potentially effective interventions, it is unclear which ones would be valuable and feasible for Chinese hospitals. The relatively high frequency of patient (and their relatives/friends) aggression and violence in Chinese hospitals suggests that cultural and contextual differences are at play, indicating a need for tailored interventions. Therefore, we conduct a Delphi study to reach a consensus among experts on the importance and feasibility of hospital interventions to prevent and manage patients (and their relatives/friends) aggression and violence against physicians in Chinese hospitals. Seventeen experts in China were invited to participate. After three rounds, consensus is achieved concerning 36 important and feasible interventions for implementation in Chinese hospitals. Drawing on the Word Health Organization (WHO) and Occupational Safety and Health Administration (OSHA) guidelines (WHO, 2002; OSHA, 2016), these interventions are clustered into eight categories: environment design (e.g., hospital security, and alarm systems), access and entrance (i.e., security checks at the hospital's main entrance), staffing and working practices (e.g., adequate presence of staff

at peak periods), leadership and culture (e.g., paid leave and leadership concern), training and education (e.g., training in communication skills and de-escalation techniques), support (e.g., building conflict management teams), during/after-the-event actions (e.g., providing legal aid and medical treatment to victimized physicians), and hospital policy (e.g., zero tolerance policy and weapon prohibition policy).

Research question

What are the different perspectives of physicians on the relative importance of various risk factors for patient aggression and violence in Chinese hospitals? (Chapter 5)

Although several risk factors have been identified, little is known about the relative importance of these risk factors in general or in a specific context, hindering the development of targeted prevention strategies. Therefore, to address this third research gap, we conduct a Q-methodology study in Chinese hospitals to investigate physicians' different perspectives on the relative importance of various risk factors. We select Q-methodology for its ability to study subjectivity, reveal distinct viewpoints among different groups, and quantify these perspectives, thus providing more nuanced insights for developing targeted interventions. Thirty-three physicians from Chinese public hospitals are involved in this study. Participants rank 30 risk factors based on their perceived importance in triggering violent incidents and provided explanations for their selections. Using by-person factor analysis, four distinct perspectives on the most critical risk factors are identified. The first perspective (unmet expectations of treatment and lack of resources) focuses on the poor treatment results (e.g., actual or perceived non-improvement or deterioration of the patient's condition including patient death or irreversible damage), lack of material resources (e.g., equipment, free beds, and medication) and insufficient staff can trigger violence and aggression. The second perspective (perpetrator's educational background and personal characteristics) emphasizes that perpetrators' educational level, their lack of knowledge of medicine and their characteristics (i.e., mental state, gender, and personality traits) are relatively important factors for aggression and violence from violence and aggression from patients (and their relatives/friends). The third perspective (distrust and limited protection measures) shows that perpetrator's distrust of physicians and lack of protection for physicians (i.e., lack of policies, legislation, and security to protect physicians, and lack of appropriate safety measures in hospitals) are important risk factors for triggering violence and aggression. The fourth perspective (perpetrator's emotional well-being and poor interaction) demonstrates that perpetrators' personality traits, their mental state, being under the influence of alcohol and/or drugs, and poor physician-patient interaction (i.e., perpetrators' dissatisfaction with physicians' attitudes and their distrust of physicians) can be considered as important risk factors for aggression and violence from patients (and their relatives/friends). Across various perspectives, physicians consistently identify unmet perpetrator expectations as a significant risk factor for aggression and violence, while considering the physician's gender as the least important factor.

Implications for Practice

This thesis provides insights for constructing a comprehensive strategy to manage and mitigate aggression and violence from patients (and their relatives or friends) toward physicians in Chinese hospitals. Through the Delphi study (Chapter 4), 36 important and feasible interventions are identified (achieved above 80% consensus among experts), reflecting expert consensus on practical solutions for these pressing issues. However, implementing all 36 interventions universally in every hospital in China may pose significant challenges, particularly given resource constraints and challenges in the implementation process. Additionally, physicians hold varying perspectives on the primary risk factors for patient aggression and violence, as revealed in Chapter 5, necessitating a more nuanced approach to intervention design and implementation.

To address this, the thesis distinguishes between two types of intervention bundles: a general bundle and specific bundles. Given that experts from various hospitals and fields are consulted (Chapter 4), the eight interventions that received 100% agreement on their importance and feasibility can be considered foundational practices. These interventions are likely to benefit all hospitals, regardless of their unique contexts. Therefore, they constitute a general bundle, offering a universal framework for hospitals seeking to improve safety and manage aggression effectively (for further details, refer to General Bundle of Interventions).

Beyond the general bundle, this thesis emphasizes the critical role of specific bundles, tailored to address the unique challenges faced by different hospitals. These bundles are derived from the remaining 28 important and feasible interventions identified in Chapter 4. While these interventions are widely endorsed for their general importance and feasibility, their implementation and impact may vary depending on the specific contexts of individual hospitals. This flexibility makes them adaptable to diverse healthcare environments, ensuring their relevance across a range of settings. The rationale for including these 28 interventions in specific bundles lies in their alignment with the diverse perspectives and priorities identified in Chapter 5. For instance, hospitals may prioritize interventions targeting unmet patient expectations by implementing training programs in shared decision-making or enhancing physician-patient communication. Others might focus on measures to strengthen security protocols or address systemic organizational challenges, such as optimizing staff-to-patient ratios or establishing robust peer support systems. By allowing hospitals to selectively apply these interventions based on their specific needs, these bundles offer practical, targeted solutions that remain actionable across varying operational environments. Notably, these specific bundles are deeply informed by the findings in Chapter 5, which highlight diverse physician perspectives on key risk factors for patient aggression and violence. By aligning interventions with these perspectives, the bundles ensure that strategies are not only evidence-based but also responsive to the real-world challenges experienced by healthcare professionals. Additionally, factors such as physician specialties, departmental demands, and the hospital's

patient demographics, as outlined in the systematic literature review (Chapter 2), may necessitate further customization (see further details in Building Specific Bundles).

By combining a general bundle of universally applicable measures with specific bundles tailored to individual hospital needs, this thesis provides a flexible framework for addressing patient aggression and violence in Chinese hospitals. The dual approach not only ensures widespread applicability but also accommodates the diversity of challenges across hospital settings, bridging the gap between broad evidence-based practices and targeted solutions.

General Bundle of Interventions

In Chapter 4, eight interventions achieve unanimous agreement on their feasibility and importance, forming a comprehensive and generic bundle that spans prevention, preparedness, immediate response, and post-incident support. Tailored to the distinct phases of managing patient aggression and violence, these components provide a structured and effective approach to improving hospital safety. It includes:

Preventive security measures

This refers to surveillance cameras and round-the-clock security coverage form the foundation of deterrence in hospital settings. Visible security measures discourage violent behavior by reminding patients (and their relatives/friends) of potential consequences, creating an environment where aggression is less likely to occur or escalate unnoticed. In addition, a strict weapon prohibition policy adds a further layer of security by limiting the presence of dangerous items within the hospital. Together, these interventions foster a safer and more controlled environment that prevents potential incidents before they arise.

Physicians' preparedness

Physicians could be prepared in advance for potential aggression and violence from patients (and their relatives/friends). Comprehensive violence prevention programs, which have been shown to reduce the incidence of aggressive incidents, equip physicians with awareness of aggressive behaviors and de-escalation techniques, promoting early intervention when warning signs are noticed (Arnetz et al., 2017). Additionally, physicians could be trained in managing and coping with aggression from patients (and their relatives/friends), increasing physicians' preparedness and reducing the likelihood that their responses will unintentionally escalate situations. This training included two essential areas: how to identify potentially aggressive patients and how to cope with aggressive and violent behavior. Richmond et al. (2012) claim that patients' raised voices, clenched fists, or pacing could be seen as early warning signs of agitation or aggression. Existing studies suggest several actions physicians can consider to address these warning signs, such as active listening, speaking in a calm and reassuring tone, and offering choices to give the

patient a sense of control (Richmond et al., 2012). Preparedness through training also empowers staff to feel safer, contributing to a more positive working atmosphere.

Emergency response measures

Immediate, effective responses to incidents of aggression are crucial to ensure the safety and well-being of physicians, and prevent the escalation of violent behaviors. The installation of alarm systems, such as panic buttons or hand-held alarms, alongside a reliable response system, ensures that help is accessible at any moment an incident occurs. This infrastructure provides physicians and staff with the assurance that if an incident escalates, support is readily available, helping to contain and manage volatile situations swiftly. Coordinated with the 24-hour security presence, these systems allow for timely interventions that protect both healthcare workers and patients.

Legal and administrative support

Hospital support, especially post-incident support, is an essential part of a sustainable approach to managing aggression in Chinese hospitals. Legal aid for physicians provides them with necessary legal assistance if they experience violence, helping to mitigate the personal and professional impacts of these incidents. In tandem, streamlining administrative workflows and clarifying the roles of support staff, such as those at information desks, triage areas, and registration points, help to address a key source of patient frustration—delays and misunderstandings about hospital processes.

Aggression and violence will be prevented (and managed) through safety measures and the increasing preparedness of physicians. After safety incidents occur, safety measures are taken and support is provided at hospital level. This approach not only addresses aggression and violence from patients (and their relatives/friends) pre and post incident, but also addresses it at multiple levels: environment, hospital, team and individual.

Building Specific Bundles

Physicians hold diverse perspectives on the relative significance of risk factors contributing to patient aggression and violence (Chapter 5). These varying viewpoints suggest that different interventions may be more appropriate depending on the prevailing perspective within a given hospital. Understanding the dominant perspectives enables the development of targeted intervention bundles that align with these specific views and consequently increasing it implementation. The selection of interventions may also be influenced by other contextual variables, such as physician specialties and departmental characteristics, as identified in Chapter 2.

Bundle 1: Expectation and Environment Management Bundle

This bundle aims to address unmet patient expectations and the frustrations that can arise from limited hospital resources, employing both expectation management interventions and

environmental adjustments. Creating a team trained to proactively address patient concerns can offer prompt, clear communication about treatment processes, and expected outcomes, thereby setting accurate expectations and reducing misunderstandings, and patients' feelings of neglect and dissatisfaction (Raveel & Schoenmakers, 2019; Hills & Joyceet, 2021). To ensure mutual understanding, gaining valid consent from patients and their families before treatment reinforces transparency, helping align patient expectations with achievable medical outcomes (Johnston & Kilty, 2016). Other strategies to manage expectations of patients can also be considered, such as implementing personalized care (e.g., tailoring healthcare services), and shared decision-making (Elwyn et al., 2012; Dugan et al., 2005).

To further address patient discomfort, environmental adjustments are made to ensure a physically and emotionally calming experience which is considered beneficial for the patient's healing process. Adequate temperature, humidity, and ventilation in waiting areas contribute to comfort, while relaxing, attractive color schemes help create a soothing atmosphere proven to ease stress in healthcare settings (Chapter 4). Altogether, these coordinated interventions create a supportive, transparent environment that manages patients' expectations and alleviates resource-related frustrations.

Bundle 2: Patient-Centered Communication Bundle

This bundle addresses the challenge of diverse patient backgrounds and personal characteristics, promoting an inclusive and culturally sensitive environment within the hospital. Training physicians in cultural sensitivity and effective communication equips them with the skills to understand and respectfully respond to patients' differing backgrounds and characteristics. This training, focused on recognizing and adjusting for cultural variations, aims to prevent conflicts that might arise from misunderstandings rooted in educational or cultural differences. Some practical training measures should also be considered, including using plain language and tailoring communication based on patient demographics (i.e., adjusting language and approach based on patient's age, cultural background, and education level) (Weiss, 2007). Meanwhile, training physicians to adapt their communication styles to patient personality traits, such as training physicians to use clear and direct communication with narcissistic patients (Kernberg, 2007). Gender-specific training programs that address communication styles and potential biases have also been recommended (Reeves et al., 2017). Additionally, to enhance patient understanding, patient education sessions are emphasized to explain treatment processes, hospital protocols, and possible treatment outcomes, helping patients feel more informed and engaged and reducing potential risk factors (Bellamy, 2004). Together, these interventions foster a culturally respectful environment, enhancing the hospital experience for patients from all backgrounds and reducing the potential for aggression arising from perceived misunderstandings.

Bundle 3: Trust and Safety Enhancement Bundle

This bundle is designed to counteract distrust in physicians and limited protection measures by enhancing both the perception and reality of safety within the hospital. Visible security measures, such as metal detectors at main entrances, the assignment of security personnel or dedicated coordinators in visible areas, and a clear zero-tolerance policy against aggression and violence, send a strong message about the hospital's commitment to safety. Support structures, such as the ability for physicians to request an additional healthcare worker's presence during challenging encounters, leadership support (e.g., paid leave and direct assistance following aggressive incidents) and informing physicians of their legal rights and resources, strengthen the perception of safety. To close the loop, physicians are provided with structured opportunities to report incidents, backed by hospital leadership's commitment to addressing these incidents transparently. To further build the trust of physicians, involving physicians and patients in creating safety plans fosters a collaborative atmosphere that encourages open dialogue about safety concerns (Sarkhosh et al., 2022). Moreover, hospitals should respect patients' privacy, which is an important way to win the respect and trust of patients. By integrating visible security protocols and strong physician support, this bundle reinforces trust and transparency within the hospital, fostering a supportive and safe atmosphere where patients and physicians can interact respectfully.

Bundle 4: Emotional Support and Interaction Enhancement Bundle

This bundle focuses on supporting patients' emotional well-being and improving interactions with physicians. Comforting amenities, such as warm blankets and anxiety-relieving medication, help address patients' emotional needs, reducing anxiety that could otherwise lead to conflict. Physicians also receive training in communication skills that allow them to engage effectively with patients and their families, showing empathy and understanding even in difficult conversations. To enhance communication effectiveness, physicians can utilize structured approaches in their practice. The AIDET Framework (Acknowledge, Introduce, Duration, Explanation, Thank you) helps structure patient interactions more effectively (Studer et al., 2010). The LEAPS De-escalation Strategy (Listen, Empathize, Ask, Paraphrase, and Summarize) has proven effective in managing emotionally charged situations (Richmond et al., 2012). Complementing these communication skills, training to improve the service attitude of healthcare providers towards patients and their associates is important. Further, immediate access to medical and mental health services offers physicians the necessary emotional support, especially following challenging patient interactions. By addressing both patients' emotional comfort and physicians' capacity for empathetic communication, this bundle helps create a supportive interactional environment that reduces tension and improves the quality of physician-patient interactions.

Bundle 5: Young Physician Support Bundle

This bundle is tailored particularly for young physicians. Recognizing that young physicians may be particularly vulnerable to aggression, hospital leadership can play a proactive role by raising awareness and providing support for these early-career professionals. One important intervention is training for young physicians, which includes professional coaching sessions focused on managing patient aggression and violence. This coaching can offer young physicians tools to cope with aggressive encounters, helping them navigate these incidents with greater confidence and resilience. Complementing this is de-escalation technique, which enhance their capacity to manage challenging patient interactions constructively and empathetically. To further support young physicians' mental well-being, peer support groups offer a safe space for sharing experiences, developing coping strategies, and building solidarity among colleagues facing similar challenges. Together, these interventions foster a supportive environment, reinforcing young physicians' ability to handle conflict while protecting their emotional health.

Bundle 6: High-Risk Department Resilience Bundle

This bundle is tailored particularly for high-stress environments such as emergency and psychiatric departments. In high-risk departments, tailored interventions help address the unique demands of these settings. Improving patient flow to reduce wait times can significantly mitigate frustration and lower the risk of patient aggression. Additionally, early identification of high-risk patients through screening tools and staff training allows for preemptive measures, reducing the potential for escalation (Boles et al., 2023; Boersma & Linton, 2005). Together, these interventions provide proactive safety measures in high-risk departments, creating a more secure and responsive hospital environment.

We propose both a general bundle and six specific bundles for hospitals to consider when addressing patient (and relatives/friends) aggression and violence. The general bundle provides a foundational set of interventions that can be applied universally in Chinese hospitals. However, depending on a hospital's unique contextual factors, such as its size, location, patient demographics, physician demographics and views, department setting, and prevalent risk factors, specific bundles can be adopted to tailor the approach more precisely to its needs. Hospitals can integrate these bundles into their broader strategy, allowing them to build a comprehensive multi-faceted strategy that effectively prevents and manages aggression and violence.

Theoretical Reflection

Although this thesis is primarily grounded in empirical research, integrating theoretical frameworks has enriched the analysis by offering structured lenses to examine the complex phenomenon of patient aggression and violence in Chinese healthcare settings. This reflection employs three complementary theories: the Social Ecological Model (SEM), Psychological Stress and Coping Theory, and Conservation of Resources (COR) Theory, to frame the interactions between environmental, social, and resource-related factors that drive patient aggression and violence in healthcare systems.

Social Ecological Model

The Social Ecological Model (SEM) provides a comprehensive framework for understanding complex behaviors by examining the interplay between factors at multiple levels: individual, interpersonal, organizational, community, and society (Bronfenbrenner, 1979; McLeroy et al., 1988). This model has been widely applied across various research domains, such as public health (e.g., obesity prevention; Story et al., 2008), education (e.g., factors influencing student engagement; McCormick et al., 2015), and environmental studies (e.g., pro-environmental behaviors; Steg & Vlek, 2009), to analyze behaviors influenced by multi-layered systems. In the context of aggression and violence research, SEM has been extensively used to explore and prevent workplace violence in healthcare. For example, Gillespie et al. (2015) applied SEM to propose individual, relationship, workplace, and societal recommendations for addressing healthcare workplace violence. Wu et al. (2022) adopted SEM to examine contributors to workplace violence in the health sector in China, such as societal/systemic factors (legislation and health system factors), community/organizational factors (governmental health authorities and law enforcement agencies), interpersonal factors (communication and trust), and individual factors (providers and patients). It is clear that SEM is particularly relevant for studying patient aggression and violence in healthcare settings, where interactions occur within an influenced by individual behaviors, relational dynamics, organizational and societal factors. In such context, SEM also allows for the identification and categorization of these factors, enabling the development of targeted, multi-level interventions.

Building on this foundation, our research applies SEM to investigate the risk factors for patient aggression and violence against physicians, refining its application in healthcare contexts (Chapter 5). We categorize these risk factors into five dimensions: (1) perpetrator-related factors (e.g., gender, lack of education), (2) physician-related factors (e.g., inexperience, personality traits), (3) interaction-related factors (e.g., poor physician-patient communication, denial of patient requests), (4) organization-context factors (e.g., insufficient hospital resources, lack of security), and (5) external factors (e.g., lack of policies and laws). This nuanced categorization enhances SEM's applicability in workplace violence research, especially in the Chinese healthcare context. Another contribution of our study is the evaluation of the relative significance of risk factors across

SEM levels. While some existing studies have applied SEM to investigate workplace violence in healthcare settings, such as those conducted by He et al. (2023) and Kim and Lee (2024), our study is able to bring together physicians' perceptions of the importance of different tiers of risk factors, through the use of the Q method (Chapter 5). Specifically, we find that perpetrator-related factors, such as unmet treatment expectations, play a more significant role than physician-related factors, such as physician's gender; additionally, interactional factors, such as distrust of physicians, can provoke patient aggression and violence more easily than external factors (e.g., types of hospitals).

One of SEM's core strengths is its ability to capture interactions across levels. Our findings also show how risk factors at different levels interact dynamically. For example, interaction-level perpetrator factors, such as poor communication, can be influenced by perpetrator-level issues, such as the perpetrator's being under the influence of alcohol or lack of medical knowledge. Similarly, external factors, such as unsupported media reports of physicians, can amplify interpersonal tensions (e.g., distrust of physicians), creating a hostile environment for physicians. SEM also underscores the dynamic nature of these interactions over time, emphasizing the need for flexible and adaptive interventions. For instance, unmet treatment expectations often stem from systemic issues, such as inadequate resources. Addressing and combining these challenges necessitates interventions that improve both individual physician skills and organizational systems and policies. This multi-level approach aligns with the SEM framework's emphasis on collaborative and systemic solutions.

Psychological Stress and Coping Theory

The Psychological Stress and Coping Theory (Lazarus & Folkman, 1984) provides a comprehensive framework for understanding how individuals perceive, interpret, and manage stress in response to challenging situations. Stress is conceptualized as a dynamic interaction between the individual and their environment, mediated by cognitive appraisal and coping processes (Folkman & Moskowitz, 2007). This theory emphasizes two core processes: primary appraisal, where individuals evaluate whether a situation poses a threat, harm, or challenge to their well-being, and secondary appraisal, where they assess the resources available to cope with the stressor (Folkman, 2012). This framework provides a structured lens to analyze how physicians navigate these stressful encounters within broader organizational and societal contexts.

Existing research has extensively applied psychological stress and coping theory to study workplace stress in healthcare settings (Oh, 2017; Rus et al., 2022; Wang et al., 2022; Zhang et al., 2024). For instance, studies have shown that stressors such as heavy workloads and role conflicts significantly affect healthcare professionals' well-being and performance (Pisanti, 2012; Schmidt & Diestel, 2013; Wang et al., 2022). Research in Chinese hospitals has demonstrated that nurse-patient tensions, lack of social support, and poor organizational resources are major stressors for healthcare workers (Zhao et al., 2016; Wang et al., 2022; Zhang et al., 2024).

Some reviews, such as by Hartwig et al. (2020), have looked at stress factors at the team level, including heavy workloads, conflicts, and leadership issues. However, most of the existing research focuses on general organizational contexts. More specifically, there is a gap in research specifically addressing team-level stressors in healthcare settings, particularly those arising from patient aggression and violence. Furthermore, the majority of healthcare-related stress research traditionally emphasizes individual-level stressors. For example, Chesak et al. (2019) reviewed individual factors like emotional exhaustion, work overload, and burnout as primary stressors for nurses. Building on this research, our research expands this scope by investigating stressors across individual, team, and organizational levels in the context of patient aggression and violence against physicians. For example, at the individual level, our findings show that physicians often perceive patient aggression and violence as direct threats to their safety and professional identity (primary appraisal), leading to stress responses such as emotional exhaustion and decreased job satisfaction (Chapter 2). At the team level, our study demonstrates that aggression disrupts team climate and communication among team members. Physicians report a decreased willingness to collaborate within teams due to enhanced stress and a lack of trust in their peers following violent incidents. This lack of trust exacerbates workplace strain and hinders effective team-based problem-solving (Chapter 3). At the organizational level, patient aggression and violence leads to financial strain from compensation claims and reputational damage, which diminish institutional resources for implementing supportive measures such as formal debriefing programs.

Additionally, our research emphasizes the dynamic interaction between stressors and coping resources. For example, systemic challenges such as unmet patient expectations, resource shortages, or long waiting times often amplify stress from patient aggression. These stressors are further exacerbated by a lack of adequate coping resources, such as the lack of peer support or inadequate security measures, leading to heightened vulnerability among physicians. Moreover, our study expands the application of the theory by integrating team and organizational dimensions into the stress and coping framework. While traditional applications of the theory focus on individual-level processes, our research demonstrates that team and organizational-level factors are critical for understanding and mitigating stress in healthcare settings. For instance, fostering a supportive team climate and implementing organizational policies that prioritize physician well-being are essential for enhancing coping resources.

The Importance of Resources

Conservation of Resources (COR) Theory posits that individuals strive to acquire, retain, and protect resources, which include objects (e.g., personal belongings), personal characteristics (e.g., self-esteem), conditions (e.g., relationships, job security), and energies (e.g., time, money) (Hobfoll, 2001; Hobfoll, 2002). Stress arises when these resources are threatened, lost, or insufficiently replenished (Hobfoll, 1989; Hobfoll, 2001). This theoretical framework aligns closely with our findings on the cascading effects of patient aggression and violence.

Violence disrupts the psychological safety within teams in hospitals, which is an important element of a positive team climate (Edmondson, 1999). Our research shows that aggression experienced or witnessed by physicians or team members leads to stress and resource depletion, which impairs collaboration and team beliefs (Chapter 3). This reflects COR Theory's "resource loss spirals," where an initial resource loss, such as reduced team communication, triggers further losses, perpetuating a cycle of stress and dysfunction (Heath et al., 2012; Holmgreen et al., 2017). For instance, when team members avoid communication to protect themselves emotionally, interpersonal relationships become strained, further diminishing collaboration and trust. Over time, such spirals not only degrade team dynamics but could also compromise the quality of care, creating escalating challenges. Additionally, our research highlights the potential interventions to cope with negative effects at team level such as fostering supportive and safe team climates, implementing conflict resolution training, and enhancing organizational support systems (Chapter 5). These measures create "gain spirals," where resource recovery initiates a positive feedback loop (Salanova et al., 2010; Holmgreen et al., 2017). For example, fostering open communication within teams can gradually rebuild trust and enhance collaboration, which may reduce stress levels among healthcare providers, ultimately contributing to a more stable and supportive care environment.

At the organizational level, COR Theory also provides a framework for understanding the financial and societal consequences of patient aggression and violence. Tangible responses such as providing compensation to affected staff, represent strategies to cope with resource depletion (Chapter 3; Gillen et al., 2017). Meanwhile, intangible losses, such as patients' distrust and reputational damage, exacerbate the financial and operational burdens on healthcare institutions, placing long-term strain on organizational resources. These findings underscore COR Theory's principle that stressors can ripple across multiple levels, depleting collective resources and eroding institutional resilience.

Methodological Reflection

Study Designs and Data Sources

This thesis employs a multi-method approach, which strengthens its ability to explore patient aggression and violence from multiple dimensions. Each method is selected to contribute uniquely to different aspects of the problem. More specifically, the systematic review (Chapter 2) provides a foundational understanding of prevalence, risk factors, and consequences while identifying research gaps. Semi-structured interviews (Chapter 3) capture practical experiences of healthcare professionals and offer in-depth qualitative insights into the team and organizational impacts of aggression. The Delphi study (Chapter 4) facilitates expert consensus on feasible interventions tailored to the Chinese hospital setting. The Q-methodology study (Chapter 5)

captures the subjective perspectives of physicians on the relative importance of risk factors, bridging the gap between policy-level recommendations and frontline experiences. The multi-method integration ensures a comprehensive investigation that considers both objective data and lived experiences.

Moreover, the methodological rigor is further strengthened by the diversity of data sources. The interview study includes hospital leaders, team leaders, and physicians from secondary and tertiary hospitals in both rural and urban settings, providing a broad range of perspectives. The Delphi study incorporates a geographically diverse panel of experts, while Q-methodology includes physicians from multiple specialties, ensuring the representation across different medical contexts. However, the reliance on snowball sampling and professional networks (in Chapter 3, 4 and 5), while effective in accessing knowledgeable participants, may have introduced selection bias. This bias may have led to underrepresented groups, such as physicians in remote rural areas or smaller community hospitals. Despite this, the diversity of the sampled participants mitigates this risk to some extent.

Methodological Considerations: Integrating Perspectives and Evaluating Evidence

This research highlights that single interventions alone are insufficient to address patient aggression and violence, and therefore the results of the Delphi and Q-methodology studies are combined to develop multifaceted strategies. By combining these two studies, this thesis identifies both generic and specific bundles (see Chapter 6: Implications for Practice). This integration allows for a dual perspective: while the Delphi study facilitates expert consensus on feasible and effective interventions, Q-methodology captures the diverse viewpoints of physicians regarding key risk factors. Together, the study bridges the gap between theoretical, expert-driven recommendations and the practical experiences of frontline physicians, ensuring that proposed bundles are supported and contextually relevant.

However, this methodological integration also presents challenges. The epistemological differences between Delphi (focus on consensus) and Q-methodology (focus on different perspectives) may require additional validation steps to ensure that the proposed intervention bundles account for the full range of perspectives identified in the Q-study. Furthermore, while this study captures important perceptions of risk factors and interventions, it does not systematically assess the quality of evidence supporting them. The items included in the Delphi and Q-methodology studies are derived from existing literature; however, their empirical strength or effectiveness, particularly within the Chinese healthcare context, have not been evaluated. For example, de-escalation training is identified as an important and feasible intervention in this study (Chapter 4). However, a systematic review by Price and Baker (2012) indicates that while such training improves immediate communication skills, its long-term

impact on reducing violence is limited unless integrated with broader organizational measures (e.g., security systems and structured incident reporting). Similarly, zero-tolerance policies are endorsed as an essential strategy in this study. However, research by Arnetz et al. (2018) shows that while such policies can improve staff perceptions of safety, their long-term effectiveness remains uncertain, particularly in environments where enforcement is inconsistent (Phillips, 2016). Additionally, our study does not quantitatively assess the relative significance of each risk factor in Chinese hospitals. While the Q-methodology study captures physician perspectives on contributing factors, it does not establish their causal impact. Moreover, the Delphi study identifies interventions deemed important and feasible by experts but does not empirically evaluate their effectiveness in the Chinese setting. Future research should integrate empirical validation methods, such as implementation and evaluation studies to assess the real-world impact of these interventions.

Generalizability

While the findings of our research are rooted in the Chinese healthcare context, the methodological approach is broadly applicable to other cultural and institutional settings. The alignment of our findings with existing international studies demonstrates the potential for generalization to similar healthcare environments, particularly those in resource-constrained or high-pressure settings. For example, studies conducted in low- and middle-income countries (LMICs), such as India and Nigeria, have also highlighted significant impact of patient aggression and violence on healthcare professionals, with systemic issues such as resource shortages, high patient loads, and limited security measures contributing to these challenges (Afolabi et al., 2024; Kaur et al., 2020). In high-income countries, such as the United States and Australia, while resource constraints may be less pronounced, the high-pressure nature of emergency departments and psychiatric units similarly mirror the settings examined in our research (Gacki-Smith et al., 2009; Chapman et al., 2008). However, cultural nuances play a crucial role in shaping patient-physician interactions. For instance, China's collectivist culture emphasizes family involvement in medical decisions, whereas Western healthcare systems are more individualistic. These variations underscore the need for context-specific adaptations when applying the findings of this thesis to other contexts. Future research should explore how interventions can be tailored to align with different cultural, organizational, and systemic factors, ensuring effective and sustainable policy implementation across diverse healthcare systems.

Suggestions for Future Research

To further develop a comprehensive understanding of patient (and their relatives/friends) aggression and violence against physicians, as well as to identify effective prevention and management strategies, we propose four key areas for future research.

Strengthening Team and Organizational Resilience in Healthcare Settings

In Chapter 3, this thesis emphasizes the detrimental effects of patient aggression and violence on healthcare teams and organizations, such as fostering unsafe climate, reducing team communication, and leading to both financial and social consequences. Despite these impacts, we find that healthcare institutions often lack comprehensive team- and organizational level strategies to address these challenges. Team and organizational resilience, defined as the ability of a team or organization to adapt, recover, and grow stronger in response to challenges or adversity, has been shown to enhance communication, cooperation, and overall performance within an organization or team (Rodríguez-Sánchez et al., 2021; Hartwig et al., 2020; Chapman et al., 2020). Therefore, strengthening team and organizational resilience in healthcare settings may provide a promising approach to mitigate the negative effects of patient aggression and violence. However, in healthcare settings, most research has primarily focused on team and organizational resilience in response to occasionally occurring crises and disasters (e.g., economic crisis and pandemic disasters), rather than addressing frequently occurring crises such as patient aggression and violence (Barasa et al., 2018; Tan et al., 2023; Ignatowicz et al., 2023; Seyghalani et al., 2024). Although few studies have explored team resilience in caring for patients in psychiatric hospitals (Brolese et al., 2017; Heckemann et al., 2020), the applicability of these approaches to general hospitals and healthcare teams requires further research. Therefore, future research could focus on developing and implementing resilience strategies at both the team and organizational levels in general healthcare settings, specifically tailored to address daily challenges such as patient aggression and violence.

Improving Feasibility of Important Interventions in Chinese Hospitals

Our Delphi study (Chapter 4) identifies several interventions deemed important yet currently unfeasible in the Chinese healthcare system. Future research should focus on strategies to improve their feasibility in China, particularly in two areas: how to implement risk assessment and the blacklist in Chinese hospitals. Despite the recognition that patients' psychological and emotional states are major risk factors for aggression (Chapter 5), conducting systematic risk assessments remains impractical in Chinese hospitals (Chapter 4). While existing tools, such as the Violence Risk Scale and the Historical, Clinical, and Risk Management-20, have been used for psychiatric patients (Zhou et al., 2016), they may not be applicable to broader patient populations. Some countries, like Canada, have developed practical methods for flagging high-risk patients based on their history of violent behavior (HOVB), such as color-coded chart

indicators (Ferron et al., 2022). Future research should explore context-specific adaptations and implementation of these strategies in China while balancing ethical considerations, patient privacy, and feasibility within hospital workflows.

Enhancing Support Systems for Physicians in China

Our findings highlight the critical role of support systems, such as peer and leadership support, in mitigating the negative impacts of patient aggression and violence against physicians (Chapter 3). However, these support systems are currently underutilized in Chinese hospitals, warranting further research on how to enhance and implement them effectively. First, future research could explore how to institutionalize proactive peer support mechanisms. Research could draw on successful models from other countries. For example, in Australia, the Peer Support Program (PSP) in hospitals has been shown to enhance coping strategies and reduce stress among healthcare workers by offering confidential, one-on-one peer support sessions following critical incidents (Carne & Furyk, 2024; Bakes-Denman et al., 2021). Notably, although peer support is an important approach to cope with negative impacts of aggression and violence from patients (and their relatives/friends), negative emotions can spread within the team through such support, and potentially trigger further exhaustion among team members (Solms et al., 2023; McGonagle et al., 2020). A Dutch study claimed that peer support with guidance, goal-setting and action-planning has been shown to be more effective (Solms et al., 2023). How to provide effective and proactive peer support mechanisms in Chinese hospitals can be considered in future studies. Second, studies could investigate ways to strengthen leadership engagement in responding to aggression. While leadership supports, such as allocating resources, providing staff training, and ensuring timely intervention, are recognized as valuable, it remains inconsistently implemented (Chapter 3). Future research could examine how leadership training programs emphasizing proactive intervention might improve the support physicians receive, fostering a more protective hospital culture.

Balancing Action

We identify an important question for future research: how to balance medically defensive behaviors with shared decision-making (SDM) to address patient aggression and violence. On the one hand, many physicians will engage in medically defensive behaviors (e.g., unnecessary examinations or hospitalizing low-risk patients) to protect themselves. These behaviors are often seen as wasted resources (e.g., excessive or unnecessary tests or overprescription of medications) that increase healthcare costs and a burden on the patient. On the other hand, SDM practices could be interpreted as efforts to involve patients in the decision-making process by providing additional information or second opinions upon request or concerns of the patient, aligning with the principles of SDM, such as discussing pros and cons of all possible treatment options (Barry & Edgman-Levitan, 2012). While SDM has the potential to reduce conflict by fostering trust and collaboration, barriers such as insufficient consultation time, mismatched perceptions between physicians and patients in China hinder SDM's effective implementation (Li et al.,

2023; Yao et al., 2017; Zheng et al., 2016). Therefore, future research could focus on two key areas: first, developing strategies to implement SDM effectively in Chinese hospitals, taking into account the aforementioned barriers; second, identifying how to integrate SDM's advantages without exacerbating the negative effects of defensive medicine, ultimately addressing patient aggression and violence.

Conclusion

In conclusion, this thesis provides a comprehensive investigation into the multifaceted phenomenon of patient aggression and violence against physicians in Chinese hospitals. Through a systematic exploration of prevalence, risk factors, consequences, and prevention strategies, this research offers valuable insights that bridge critical knowledge gaps in the field. By adopting a multi-method approach, including qualitative interviews, Delphi consensus, and Q-methodology, the findings highlight the complex interplay between individual, team, organizational, and societal factors that shape this pressing issue. The emphasis on diverse perspectives, ranging from physicians' subjective experiences to expert-driven recommendations, ensures that the proposed interventions are both literature-based and contextually relevant.

This thesis not only underscores the need for tailored, multi-level strategies to mitigate the impacts of aggression but also emphasizes the importance of fostering a supportive team climate, strengthening organizational resources, and addressing systemic challenges to create safer hospital environments. While the findings are rooted in the Chinese healthcare context, the implications are broadly applicable to global efforts in improving workplace safety and physician well-being. Last but not least, addressing this critical issue requires sustained efforts and collaboration across all levels of the healthcare system, ensuring that physicians can perform their essential roles in a safe and supportive environment.

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A

Appendix

SUMMARY
SAMENVATTING
ABOUT THE AUTHOR
PhD PORTFOLIO
ACKNOWLEDGEMENT

SUMMARY

Aggression and violence by patients (and their relatives/friends) against physicians have become critical concerns in healthcare systems worldwide, particularly in hospital settings. The Chinese healthcare system presents unique challenges that exacerbate the issue of patient aggression and violence, such as overburdened tertiary hospitals, and a growing demand for high-quality care. These challenges underscore the need for comprehensive research to understand and address the dynamics of aggression in this context. However, most studies have examined workplace violence rather heterogeneously without explicit regard to a professional group or particular source of violence (from colleagues/leaders vs. from patients and their relatives/friends). As a result, the understanding of patient-perpetrated aggression and violence remains fragmented. Therefore, this research focuses on aggression and violence by patients (and their relatives/friends) against physicians in Chinese hospitals, specifically studying risk factors for such aggression and violence, consequences, and interventions.

Literature review on patient aggression and violence against physicians in hospitals

In *Chapter 2*, a systematic review is conducted to investigate what is known about patient (and their relatives/friends) aggression and violence against physicians in hospitals (worldwide). Through the search in five databases and the data extraction, four domains are identified by synthesizing 104 empirical studies: prevalence, risk factors, consequences, and prevention and management of aggression and violence from patients (and their relatives/friends) against physicians in hospitals. The results reveal that between 23.9% and 87.5% of physicians experienced such incidents during their careers globally, with higher prevalence rates observed in developing countries and among younger physicians. The risk factors for such aggression and violence are multifaceted and can be categorized into five groups: 1) physician-related risk factors; 2) perpetrator-related risk factors; 3) interaction-related factors; 4) organizational context factors; and 5) external context factors. The consequences of aggression and violence mainly include physical effects, psychological well-being effects, and work functioning. Hospitals and governments play important roles in preventing and managing such aggression and violence. Based on the findings in *Chapter 2*, three research gaps are identified and investigated in the following chapters: 1) The impact of patient aggression on teams and organizations remains underexplored compared to individual-level research. *(Chapter 3)*; 2) While many interventions exist, their importance and feasibility in Chinese hospitals are unclear. *(Chapter 4)*; 3) Numerous risk factors are identified, but their relative importance and differing perspectives on patient aggression and violence among Chinese physicians remain unknown. *(Chapter 5)*

Impact on team and organizational levels

In *Chapter 3*, in-depth interviews are conducted to explore the aftermaths of patient aggression and violence against physicians on the team and organizational levels in Chinese hospitals with 29 respondents, including physicians, hospital team leaders, and hospital board members, working in four Chinese public hospitals. Aggression and violence by patients (and their relatives/friends) may affect teams in several ways. It can create an unsafe and depressed team climate, making members feel afraid to take risks and feel emotionally drained. Communication within the team may suffer, as individuals become less willing to share concerns. Such incidents can shape team beliefs, leading to a preference for low-risk treatment options to avoid potential conflicts. Additionally, both material and human resources may be strained, making it harder for teams to function. While support from team members and leaders is perceived as valuable, it is often limited in scope, leaving individuals to cope with these challenges on their own. At the organizational level, aggression and violence can lead to financial burdens, including compensation payments and additional costs. Beyond the financial strain, these incidents can also have a societal impact through damaging the organization's reputation and public trust. Although peer support and leader support are identified as important sources for physicians to deal with violent incidents, this is not used to its full potential. Two approaches have been identified as crucial to cope with the negative impact on the team and organizational levels of patient (and their relatives/friends) aggression and violence against physicians: restoring the team climate after a violent incident and providing various forms of support, especially proactive support from leaders and peers.

Interventions to prevent and manage patient aggression and violence against physicians

While there are many potentially effective interventions, it is unclear which ones would be valuable and feasible for Chinese hospitals. In *Chapter 4*, a Delphi study is conducted to reach a consensus among experts on the importance and feasibility of hospital interventions to prevent and manage patients (and their relatives/friends) aggression and violence against physicians in Chinese hospitals. Seventeen experts in China are invited to participate. After three rounds, consensus is achieved concerning 36 important and feasible interventions for implementation in Chinese hospitals. These interventions are clustered into eight categories: environment design, access and entrance, staffing and working practices, leadership and culture, training and education, support, during/after-the-event actions, and hospital policy.

Different perspectives on risk factors

In *Chapter 5*, a Q-methodology study is conducted in Chinese hospitals to investigate physicians' different perspectives on the relative importance of various risk factors. Thirty-three physicians from Chinese public hospitals are involved in this study, who are asked to rank 30 risk factors that are identified in the literature review based on their perceived importance in triggering violent

incidents against physicians and provide explanations for their selections. Using by-person factor analysis, four distinct perspectives on risk factors are identified. The first perspective (unmet expectations of treatment and lack of resources) highlights the role of poor treatment results (e.g., actual or perceived non-improvement or deterioration of the patient's condition), lack of material resources (e.g., equipment, free beds, and medication) and insufficient staff for triggering violence and aggression. The second perspective (perpetrator's educational background and personal characteristics) emphasizes that perpetrators' educational level, their lack of knowledge of medicine and their characteristics (i.e., mental state, gender, and personality traits) are relatively important factors for aggression and violence from violence and aggression from patients (and their relatives/friends). The third perspective (distrust and limited protection measures) shows that perpetrator's distrust of physicians and lack of protection for physicians (i.e., lack of policies, legislation, and security to protect physicians, and lack of appropriate safety measures in hospitals) are important risk factors for triggering violence and aggression. The fourth perspective (perpetrator's emotional well-being and poor interaction) demonstrates that perpetrators' personality traits, their mental state, being under the influence of alcohol and/or drugs, and poor physician-patient interaction (i.e., perpetrators' dissatisfaction with physicians' attitudes and their distrust of physicians) can be considered as important risk factors for aggression and violence from patients (and their relatives/friends). Across various perspectives, physicians consistently identify unmet perpetrator expectations as a significant risk factor for aggression and violence.

Discussion and conclusion

In *Chapter 6*, the results of this thesis are summarized and discussed, offering both practical and theoretical contributions. From a practical perspective, a general intervention bundle and six specific intervention bundles are proposed to prevent and manage patient aggression and violence in hospitals. On the theoretical front, this research extends the utility of the Social Ecological Model, the Psychological Stress and Coping Theory, and Conservation of Resources Theory, offering new insights into their application for understanding and addressing workplace violence in healthcare. A notable methodological contribution is the innovative combination of the Delphi and Q-methodology, which provides a deeper understanding of expert consensus and the subjective perspectives of physicians.

In conclusion, this thesis provides a comprehensive investigation into the multifaceted phenomenon of patient aggression and violence against physicians in Chinese hospitals. By adopting a multi-method approach, the findings highlight the complex interplay between individual, team, organizational, and societal factors that shape this pressing issue. The emphasis on diverse perspectives-ranging from physicians' subjective experiences to expert-driven recommendations-ensures that the proposed interventions are both evidence-based and contextually relevant. This thesis not only underscores the need for tailored,

multi-level strategies to mitigate the impacts of aggression and violence but also emphasizes the importance of fostering a supportive team climate, strengthening organizational resources, and addressing systemic challenges to create safer hospital environments.

SAMENVATTING

Agressie en geweld door patiënten (en hun familie/vrienden) tegen artsen vormen een serieus probleem in de zorg wereldwijd, vooral in ziekenhuizen. Het Chinese zorgsysteem kent unieke uitdagingen die dit probleem verergeren, zoals overbelaste tertiaire ziekenhuizen en een groeiende vraag naar hoogwaardige zorg. Deze uitdagingen onderstrepen de noodzaak van onderzoek naar agressie en geweld door patiënten (en hun familie/vrienden) tegen artsen in Chinese ziekenhuizen. Echter, de meeste studies hebben agressie en geweld op het werk onderzocht, zonder expliciet rekening te houden met een specifieke beroepsgroep of de bron van geweld (van collega's/ leidinggevenden versus van patiënten en hun familie/vrienden). Hierdoor blijven de inzichten in dedoor patiënten gepleegde agressie en geweld gefragmenteerd. Dit onderzoek richt zich daarom specifiek op agressie en geweld door patiënten (en hun familie/vrienden) tegen artsen in Chinese ziekenhuizen, met een focus op risicofactoren, gevolgen en interventies.

Literatuuronderzoek naar patiëntagressie en geweld tegen artsen in ziekenhuizen

In Hoofdstuk 2 wordt een systematische review gepresenteerd van wat er wereldwijd bekend is over patiëntagressie en geweld tegen artsen in ziekenhuizen. Door vijf databanken te doorzoeken en gegevens te extraheren, zijn er vier domeinen geïdentificeerd op basis van 104 empirische studies: prevalentie, risicofactoren, gevolgen en preventie en beheersing van agressie en geweld door patiënten (en hun familie/vrienden) tegen artsen in ziekenhuizen. De resultaten tonen aan dat wereldwijd tussen de 23,9% en 87,5% van de artsen dergelijke incidenten heeft meegemaakt tijdens hun loopbaan, met vooral hogere prevalentiecijfers in ontwikkelingslanden en onder jongere artsen. De risicofactoren voor agressie en geweld zijn veelzijdig en kunnen worden onderverdeeld in vijf categorieën: 1) artsgerelateerde risicofactoren, 2) dadergerelateerde risicofactoren, 3) interactiegerelateerde factoren, 4) organisatorische contextfactoren en 5) externe contextfactoren. De gevolgen van agressie en geweld hebben betrekking op het fysieke gesteldheid, psychologisch welzijn en werkfunctioneren. Ziekenhuizen en overheid instanties spelen een belangrijke rol bij de preventie en de beheersing van agressie en geweld. Op basis van de bevindingen in Hoofdstuk 2 zijn drie hiaten in de literatuur geïdentificeerd die in de volgende hoofdstukken zijn onderzocht: 1) De impact van patiëntagressie op teams en organisaties is onderbelicht in vergelijking met onderzoek naar de effecten op individueel niveau (Hoofdstuk 3); 2) Er bestaan veel interventies voor de preventie en beheersing van agressie en geweld tegen artsen, maar de mate waarin deze belangrijk en toepasbaarheid zijn in Chinese ziekenhuizen is onduidelijk (Hoofdstuk 4); 3) Er zijn talrijke risicofactoren geïdentificeerd, maar hun relatieve belang en de verschillende perspectieven van Chinese artsen hieropzijn onbekend (Hoofdstuk 5).

Impact op team- en organisatieniveau

In Hoofdstuk 3 wordt gerapporteerd over diepte-interviews naar de gevolgen van patiëntagressie en geweld tegen artsen op team- en organisatieniveau in Chinese ziekenhuizen. Er zijn 29 respondenten geïnterviewd, waaronder artsen,teammanagers en bestuursleden uit vier Chinese ziekenhuizen. Agressie en geweld door patiënten (en hun familie/vrienden) kan teamwerk op verschillende manieren beïnvloeden. Het kan een onveilige en deprimerende teamcultuur creëren, waardoor teamleden zich minder geneigd voelen om risico's te nemen en emotioneel uitgeput raken. De communicatie binnen het team kan verslechteren, omdat teamleden terughoudender worden om hun zorgen te delen. Deze incidenten kunnen werkwijzen binnen teams beïnvloeden, bijvoorbeeld door een voorkeur voor laag-risico behandelingsopties om potentiële conflicten te vermijden. Bovendien kunnen zowel materiële als personele middelen onder druk komen te staan, wat het functioneren van teams bemoeilijkt. Hoewel steun van mede teamleden en leidinggevenden als waardevol wordt ervaren, wordt deze vaak beperkt of niet optimaal benut, waardoor teamleden zelf moeten incidenten omtrent agressie en geweld moeten verwerken. Op organisatieniveau kunnen agressie en geweld t financiële consequenties hebben, zoals schadevergoedingen en extra kosten. Naast de financiële druk kunnen incidenten ook een maatschappelijk effect hebben en de reputatie en het publieke vertrouwen in de organisatie schaden. Twee cruciale benaderingen om de negatieve impact op team- en organisatieniveau te beperken, zijn het herstellen van het teamklimaat na een gewelddadig incident en het bieden van verschillende vormen van ondersteuning, vooral proactieve steun van leidinggevenden en collega's.

Interventies ter preventie en beheersing van patiëntagressie en geweld tegen artsen

Hoewel er veel potentiële interventies zijn, is het onduidelijk welke waardevol en haalbaar zijn in de context van Chinese ziekenhuizen. De Delphi-studie uitgevoerd om consensus te bereiken onder experts over de belangrijkste en toepasbare interventies om agressie en geweld door patiënten (en hun familie/vrienden) tegen artsen te voorkomen en beheersen, wordt beschreven in Hoofdstuk 4. Zeventien experts in China hebben deelgenomen enna drie ronden werd consensus bereikt over 36 interventies die belangrijk en geïmplementeerd kunenn worden in Chinese ziekenhuizen. Deze interventies zijn geclusterd in acht categorieën: omgevingsontwerp, toegang en entree, personeelsinzet en werkpraktijken, leiderschap en cultuur, training en educatie, ondersteuning, acties tijdens/na het incident en ziekenhuisbeleid.

Verschillende perspectieven op risicofactoren

In hoofdstuk 5 wordt beschreven hoe met Q methodologie de verschillende perspectieven van artsen op het relatieve belang van verschillende risicofactoren is onderzocht. Drieëndertig artsen uit Chinese ziekenhuizen hebben deelgenomen en is gevraagd om 30 in de literatuur geïdentificeerde risicofactoren te rangschikken van minst tot meest belangrijkbij het ontstaan van incidenten omtrent agressie en geweld tegen artsen door patiënten. Ze zijn ook gevraagd om een verklaring te geven

voor hun rangschikking. Er zijn vier verschillende perspectieven op risicofactoren geïdentificeerd. Het eerste perspectief benadrukt de belangrijke rol van tegenvallende resultaten van de behandeling (bijv. de daadwerkelijke of ervaren verslechtering van de toestand van de patiënt), gebrek aan materiële middelen (bijv. apparatuur, vrije bedden en medicatie) en onvoldoende personeel. Het tweede perspectief benadrukt dat het opleidingsniveau van de daders, hun gebrek aan kennis van de zorg en hun persoonskenmerken (bijv. mentale toestand, geslacht en persoonlijkheid) relatief belangrijke factoren zijn voor agressie en geweld van patiënten (en hun familieleden/vrienden). Het derde perspectief laat zien dat wantrouwen van de dader ten opzichte van artsen en gebrek aan bescherming voor artsen (vanwege ontbrekende beleidskaders, wetgeving en gebrek aan beveiliging van artsen en passende veiligheidsmaatregelen in ziekenhuizen) belangrijkste risicofactoren zijn voor het ontstaan van agressie en geweld. Het vierde perspectief toont aan dat de persoonlijkheidskenmerken van de dader, de mentale toestand, het onder invloed zijn van alcohol en/of drugs, en slechte interactie tussen arts en patiënt (bijv. ontevredenheid van de dader over de houding van de arts en wantrouwen tegenover de arts) beschouwd kunnen worden als belangrijkste risicofactoren voor agressie en geweld door patiënten (en hun familieleden/vrienden). Overstijgend aan de verschillende perspectieven identificeren artsen de onvervulde verwachtingen van de dader als een belangrijke risicofactor voor agressie en geweld.

Discussie en conclusie

In hoofdstuk 6 worden de resultaten van dit proefschrift samengevat en besproken, waarbij zowel praktische als theoretische contributies in kaart zijn gebracht. Vanuit praktisch oogpunt wordt een algemene interventiebundel en zes specifieke interventiebundels voorgesteld om agressie en geweld door patiënten in ziekenhuizen te voorkomen en te beheersen. Op theoretisch vlak draagt dit onderzoek bij aan het Social Ecological Model, de Psychological Stress and Coping Theory en de Conservation of Resources Theory, en biedt het nieuwe inzichten in hoe deze theorieën kunnen worden toepast om geweld op de werkplek in de gezondheidszorg te begrijpen en aan te pakken. Een opmerkelijke methodologische bijdrage is de combinatie van Delphi en Q-methodologie, die zorgt voor inzichten waar consensus onder experts over bestaat omtrent interventies en de verschillende perspectieven van artsen over de het relatief belang van risicofactoren.

Concluderend, dit proefschrift biedt een uitgebreid onderzoek naar het veelzijdige fenomeen van agressie en geweld van patiënten tegen artsen in Chinese ziekenhuizen. Verschillende onderzoeksmethoden geven inzicht in de complexe wisselwerking tussen individuele, team, organisatorische en maatschappelijke factoren die bij dit urgente probleem een rol spelen. Dit proefschrift onderstreept niet alleen de behoefte aan op maat gemaakte strategieën op verschillende niveaus om de gevolgen van agressie en geweld te verminderen, maar benadrukt ook het belang van het bevorderen van een ondersteunend teamklimaat, het versterken van organisatorische middelen en het aanpakken van systemische uitdagingen om een veiliger ziekenhuisomgevingen te creëren.

ABOUT THE AUTHOR

Yuhan Wu was born on 28th April 1996 in Yunnan province, China. From 2014 to 2018, she earned her bachelor's degree from Central South University in China, graduating as the top student in her faculty. During her undergraduate studies, she obtained honors such as Outstanding Graduate and Outstanding Graduation Thesis. In 2019, she gained a master's degree (MLitt) in Management from the University of St Andrews in the U.K, where her thesis achieved distinguished marks. During this period, she also became a research assistant at the School of Management, George Washington University. Meanwhile, she published several articles in Chinese on organizational behavior. In 2020, she worked as an English teaching assistant at New Channel English School, teaching TOEFL and IELTS.

In November 2020, with the support of the China Scholarship Council, she started her PhD trajectory focusing on patient aggression and violence against physicians in Chinese hospitals, in the section of Health Services Management and Organization, Erasmus School of Health Policy and Management, Erasmus University Rotterdam. Her research mainly includes qualitative and mixed methods studies investigating the risk factors, consequences, and prevention and management of patient aggression and violence in Chinese hospitals. She also served as a reviewer for journals such as BMC Public Health, Health Expectations, and BMC Nursing. In addition, she participated in two projects in China about elderly care which were supported by the Humanities and Social Science Research Foundation of the Ministry of Education, and the Philosophy and Social Science Foundation Project of Chengdu City.

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PhD PORTFOLIO

Name	Yuhan Wu
Department	Health Services Management & Organization, Erasmus School of Health Policy & Management, Erasmus University Rotterdam
PhD period	November 2020-August 2025
Promotor	Prof.dr.ir. (Kees) CTB Ahaus
Co-promotor	Dr. Martina Buljac-Samardžić

Courses	**Year**	**ECTS**
Brush up your SPSS skills	2021	1.00
Brush up your research design	2021	2.5
Qualitative coding with Atlas.Ti	2021	1.5
How to finish your PhD in time	2021	2.5
Searching and managing your literature	2021	1.0
English academic writing	2021	2.0
Qualitative Comparative Analysis (QCA)	2021	2.5
Professionalism and Integrity in research	2021	1.5
How to get your article published	2021	2.5
Survey Design	2021	2.0
Communicating your research: Lessons from Bitescience	2021	1.5
Maximize your visibility as a researcher	2021	1.0
Visual exploration of scientific literature with VOSviewer	2022	1.5
The Focus Group method	2022	2.5
Q-Methodology	2022	2.5
Qualitative Interview Techniques	2022	2.0

Skills Training	**Year**
Teaching in English	2021

Projects
"Research on Intergenerational Care and Welfare Effects of Middle-aged and Elderly Sandwich Generation under the Perspective of Generational Differences" founded by the Ministry of Education Humanities and Social Science Research Foundation [24YJC840025], 2025-2027 (in progress, participant)
"Assessment of Current Situation, Impact Effect and Effective Supply of Ageing Adaptive Retrofitting at Home in Chengdu" founded by the Philosophy and Social Science Foundation Project of Chengdu City [2024BS018], 2022-2025 (in progress, participant)

Publications
Wu, Y., Ahaus, C. T. B., Zhao, D., & Buljac-Samardzic, M. (2025). The impact of patient aggression and violence against physicians on the team and organizational levels in China: a qualitative study. *BMJ Open,* 15(5): e092229.
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Zhao, S., **Wu, Y**., & Shi, J. (2019). How Does Benevolent Leadership Influence Employees' Followership?: An Intermediation Model with Regulation Effect. *Luojia Management Review*, 30 (3), pp. 54-70. (in Chinese)
Shi, J., Zhao, S. & **Wu, Y.** (2018). Spiritual Leadership and Career Calling: A Research Based on Self-determination Theory. *Business Management Journal*, 12, pp. 138-152. (in Chinese)

Presentation	Year
Presentation "Research status of patient aggression and violence against physicians in hospitals" at Sixth Global Public Health Policy Forum, Shanghai	2023
Presentation "Patient aggression and violence against physicians in Chinese hospitals" at Key Issues in Chinese Health Systems Forum, Shanghai	2024

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“Per aspera ad astra (Through hardships to the stars)”. Though the path ahead is still long, it shines with hope. The future, though distant, remains beautifully within reach.
循此苦旅，以抵繁星；前路漫漫亦灿灿，未来虽远，但仍可期。

A