ISCTE ◈ Business School
Instituto Universitário de Lisboa

WORKPLACE VIOLENCE AGAINST NURSES: THE FACTORS WHICH MAY INFLUENCE JOB BURNOUT SYMPTOMS OF NURSES IN PUBLIC HOSPITALS IN CHINA

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Abstract

In China, many nurses suffered workplace violence in past few years. This cross-sectional (N= 116) study aim to explore the outcomes of workplace violence against nurses in Chinese public hospitals. Firstly, we hypothesized that violence against nurses would be positively related to organizational injustice perception and job burnout symptoms. Then, we assumed organizational injustice perception as a mediator between violence against nurses and their job burnout symptoms. In addition, we hypothesized that organizational injustice perception would have positive relationship with job burnout symptoms and have negative correlation with job satisfaction, and we predicted job burnout in each dimension to be the mediator between organizational injustice perception and job satisfaction. Our findings confirmed that workplace violence against nurses is likely to raise the organizational injustice perception, which by its turn will increase their job burnout symptoms of emotional exhaustion and depersonalization, thus, our results revealed a partial mediation effect. Meanwhile, our results also suggested that nurses' organizational injustice perception could increase job burnout symptoms of emotional exhaustion and depersonalization, and by its turn decrease their job satisfaction level, then the results revealed another partial mediation model effect. Furthermore, we discuss the limitation, practical implications and give suggestions to future research.

Keywords: workplace violence of nurses, organizational injustice perception, job burnout, job satisfaction.

JEL Classification System: I12 (Health Behavior); Y4 (Dissertations)

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Resumo

Muitas enfermeiras sofreram violência no local de trabalho nos últimos anos na China. Este estudo transversal (N = 116) visa explorar os resultados da violência no local de trabalho contra enfermeiras em hospitais públicos chineses. Primeiramente, levantamos a hipótese de que a violência contra os enfermeiras estaria positivamente relacionada à perceção da injustiça organizacional e ao burnout sintomas. Então, assumimos que a perceção de injustiça organizacional tem um efeito mediador entre a violência contra enfermeiras e o nível de burnout sintomas. Além disso, levantamos a hipótese de que a perceção de injustiça organizacional teria relação positiva com o burnout sintomas e correlação negativa com a satisfação no trabalho, e previmos que o burnout sintomas seja o mediador entre a perceção da injustiça organizacional e a satisfação no trabalho. Os nossos resultados confirmaram que a violência no local de trabalho contra enfermeiras provavelmente elevará a perceção de injustiça organizacional, o que, por sua vez, aumentará os burnout sintomas de exaustão emocional e de despersonalização, portanto, os resultados revelam um efeito de mediação parcial. Simultaneamente, os resultados também aprovaram que a perceção de injustiça organizacional dos enfermeiras pode aumentar os sintomas de burnout de exaustão emocional e despersonalização e, por sua vez, diminuir o nível de satisfação no trabalho; os resultados revelaram um efeito de mediação parcial. Além disso, são discutidas as limitações, implicações práticas e sugestões para futuros estudos.

Palavras-chave: violência no trabalho dos enfermeiras, percepção de injustiça organizacional, burnout no trabalho, satisfação no trabalho.

JEL Classification System: I12 (Health Behavior); Y4 (Dissertations)

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1. Introduction

Nurses are regarded as one of the most highly recognized group of professionals because they are responsible for curing the sickness and saving patients, so that they can become valuable assets to society (Li, 2012). Thus, it is important that individuals who join the nursing profession should have sufficient professionalism and ability to perform their duties. However, it is easy to understand that nurses who are dissatisfied with their work may not commit to and make progress of their work efficiently in the workplace; therefore, it hinders the performance of nurses in the public health sectors and can also lead to high turnover rates for nurses (Kumar et al., 2013). Based on Nardi and Gyurko (2013), there is a shortage of nursing staffs worldwide, which is causing great concern. In recent years, nursing managers have been troubled by the loss of nursing staffs. Once they are not satisfied with their works, it is easy for them to leave, and it is difficult to recruit excellent nursing talents. Many developed countries need to import nurses from overseas to solve the serious social problem of "nurse shortage". So, how to attract and retain nursing staff and give full play to their enthusiasm and creativity has become an important problem for hospital managers (Wu et al., 2011).

Moreover, it is worth to mention that new medical reform in China has gradually entered a deeper area, but relationship between patients and hospital staffs has unexpectedly moved in the opposite direction (Hesketh et al., 2012). The nurse-patient trust gap has become increasingly difficult to bridge, which lead to a series of serious problems, for example, violence from patients against nurses. Meanwhile, even their coworkers --- doctors, may do harm to them (Kim et al. 2013). However, suffering violence behaviors in workplace is progressively becoming pervasive, frequent and intense (Laeeque et al., 2019), especially in some special departments, for example, Emergency, Psychiatric and Pediatric departments (Pich et al., 2010; Lantta et al., 2016; Gillespie et al., 2010). In China, surveys showed that the incidence of workplace violence suffered by psychiatric nurses can reach 99.0% (Hu et

al., 2013; Han and Yin, 2012). When nurses suffered violence in their workplace, they tended to feel depressed, neglect, and lack the senses of fairness in their organization, then, in serious cases, they may develop into job burnout (Yang et al., 2018).

It is worth to mention that, a previous research showed that the burnout level of hospital staffs ranked the first in all industries (Segura, 2014), and in China, nurses with burnout even account for 55,1% to 59,1% of total (Liu, 2014; Li et al., 2014; Liu et al., 2011). People often hear the complaint: the nurse's "temper" is very bad, their speaking manner is blunt, they treat the patient indifferently. In fact, these are related to not only the work overload of nurses but also the violence behaviors they had to suffered and the organizational unfairness they face, which are extremely easy to cause their job burnout (Liu et al., 2018).

Additionally, in terms of nurses' organizational injustice perception, it refers to their unfairness feeling degree of the organization's internal management and decision-making in the work environment (Conhen and Spector, 2001). If employees believe they are being treated fairly, they will have a positive attitude toward the organization and less burnout symptoms. By summarizing previous studies, Li et al. (2003) found that the outcome variables of organizational justice include organizational trust and withdrawal, such as absence from work and negligence. The study of Aryee et al. (2002) found that individuals' perception of the fairness in organization would partly affect their trust in the organization, thus affecting their turnover rate and other behavioral or attitude variables.

Besides, nowadays, workplace violence has been considered as a threat among nursing staffs (Wang et al., 2007). However, as far as we know, at present, in public hospitals in China, no studies have examined the relationship between violence from doctors or patients against nurses and their job burnout symptoms using organizational injustice perception as a mediator, thus, studying whether organizational justice can mediate violence suffered by nurses and job burnout symptoms is an important contribution to the existing knowledge. Meanwhile, though previous studies have made efforts on the influence of organizational

justice or job burnout symptoms on job satisfaction, none of them link them together and putting job burnout symptoms as mediating factor. In fact, our proposals for violence against nurses, as well as the mediating models we use in this study have never been tested before, which ensure that our study is innovative. In addition, this study also puts forward feasible suggestions according to the corresponding results, in order to provide references for reducing workplace violence in nursing works and alleviating burnout symptoms of nurses.

In a word, this study aims to discuss the stress consequences caused by violence in the workplace of nurses, including the relationship among workplace violence against nurses and organizational injustice, job burnout symptoms, and the mediating role of organizational justice, as well as the influence of organizational justice and job burnout symptoms on job satisfaction, and the mediating roles of job burnout symptoms.

In the next chapter, we will present a literature review that covers concepts and content. The theoretical reasoning that explains the hypothesis we put forward. Then, we will introduce the methods that we used in this study, and then analyze the results we obtained. Finally, we will discuss these results, display our conclusions, and provide insights for future research.

2. Literature Review

In recent years, workplace violence in hospitals has become an important issue threatening the health and life safety of medical workers (Pan et al., 2011). According to the World Health Organization, workplace violence against healthcare workers refers to the abuse, threat or attack in their workplaces, which create clear or implicit challenges to their safety, well-being and health (Gerberich et al., 2004). As the group with the longest contact time and the most contact opportunities with colleagues, patients and their families, nursing staff undoubtedly become the high-risk group of workplace violence in hospitals (Jiao et al., 2015).

However, the incidence of workplace violence in China was reported differently by nurses in different departments in hospitals. Based on Wang's (2011) investigation in five Grade 3A hospitals in Guangzhou, 80,2% of the Emergency nurses suffered workplace violence in the past 1 years, significantly higher than nurses in other departments, due to the messy medical environment, imperfect system of medical treatment, process complex, and closely related to the patients in critical condition in Emergency department. Moreover, a study from Liu et al. in 2013 showed that, due to the large openness, the rapid change of children's condition, and the high demands of family members on the puncture technique of nurses in pediatric outpatient department, the workplace violence against nurses there is particularly prominent.

Meanwhile, though it had no practicable consistent classification of violence (Taylor and Rew, 2011), the classification of workplace violence in public healthcare centers in China should not be limited to physical and psychological violence, but more extensive forms of violence should be reclassified and cautiously studied. Categorized by Health Management Office of Harbin Medical University, the types of violence behaviors contained Verbal Violence, Physical Assault, Sexual Harassment, Defamation of Reputation, Hardship, Obstruction of Work, Intimidation and Threat (Zhang et al., 2016).

What's more, the perpetrators of violence behaviors against nurses not only include patients and their families, but also doctors, which was seldom mentioned by previous studies. As mentioned by Kim et al. (2013), doctors may also have incivility behaviors towards nurses, since some of them treat nurses as an inferior person, express stress or anger with nurse, think nurses' time is not important and yell at nurses about an unimportant event or about nurses' mistake.

After suffering violence, nurses may have more of job burnout symptoms, including emotional exhaustion, depersonalization and lack of personal accomplishment, as they feel angry, wronged, afraid and low status, which leads to the decrease of their job satisfaction and increase of their intention to quit (Wang et al., 2007). Violence has not only become an occupational injury that violates the physical and mental health of emergency nurses, but also an important obstacle to the healthy development of the nursing industry (Zhao, 2013).

Workplace Violence Against Nurses and Job Burnout Symptoms

One of the possible consequences of violence against nurses is to experience job burnout symptoms. Job burnout symptoms are complex syndrome together with emotional exhaustion, depersonalization, and lack of personal accomplishment (Maslach and Jackson, 1981). These three dimensions of job burnout symptoms respectively represent the personal stress, interpersonal situation and self-evaluation of work fatigue. The extreme psychosomatic exhaustion is caused by excessive mental energy taken from long-term dedication to others.

According to Halbesleben et al. (2014), people always try to maintain the existing resources and actively acquire new resources. When the resource loss or investment fails to achieve the expectation, it will bring stress and burnout symptoms to employees. The violence behaviors from doctors or patients and their family members threated the job safety of nurses, which forced nurses feel that they were untrusted and disrespected by others. Safe working

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environment and harmonious interpersonal relationship between nurses and doctors or among nurses, patients and their family members are valued resources; however, those violence behaviors deprive these resources and leads to emotional exhaustion and interpersonal apathy among nurses. In addition, Job Demands-resource theory is a popular theory to explain job burnout symptoms. When the job demands are high, the physical and mental resources of nurses will be consumed. At this time, the lack of work resources cannot effectively support nurses, so the burnout symptoms of nurses may occur (Häusser, et al., 2010). Violence behaviors worsen the strain of the relationship between nurses and doctors or patients and their families, and loosened the trust gap, which forced the nurse pay more emotional labor, and the existing organizational environment had no corresponding nursing support resources. Hence, from the Job Demands-resource theory, it totally based on the nurse individual experience to cope with the tense relationship between nurses and doctors or patients and their families. The combination of high interpersonal interaction work requirements and the lack of support resources increased the level of nurses' job stress and burnout symptoms. Doctors or patients' and their family members' violence behaviors are strong stimulus to nurses. In this situation, nurses often need to practice for their self-control, such as impulse control, emotion control and cognitive control, etc. At this time, a large amount of mental energy or mental resources will be consumed by nurses, and job burnout symptoms will become "after-effect of self-depletion" of nurses. Meanwhile, frequent violence behaviors against nurses will take up more of the nurses' attention, thinking, working memory and other executive resources, and the loss of such executive resources may also cause the nurses' job burnout symptoms.

In fact, the nursing work pressure is high, which causes the nurse body and mind to be in the long-term nervous and fatigue condition. Once they are hit by other social factors, such as violence, the negative emotions of nurses will increase and the job satisfaction will decrease apparently (Wang et al., 2015). It is easy for them to produce apathy, helplessness, disappointment, and anger emotions; then they may lack of motivation and quit. Wang's (2015) research shows that the degree of emotional fatigue, work apathy and low sense of

achievement of nurses who experienced psychological violence is significantly higher than that of nurses who did not experience psychological violence. Furthermore, the emotional fatigue and work apathy of nurses who experienced physical violence were apparently higher than those who did not. At the same time, workplace violence is a common factor affecting emotional fatigue and work apathy, suggesting that workplace violence will add to nurses' emotional exhaustion and work apathy, and then lead to nurses' job burnout symptoms. Hence, we think it is important to deeply understand the relationship between violence from doctors or patients and their family members as a source of nurses' job burnout symptoms occurs. Therefore, according to the classification of job burnout symptoms from Maslach and Jackson (1981), the hypothesis is as follows:

H1: Nurses that experience more workplace violence will have higher level of job burnout symptoms.

Specifically:

H1a: Nurses that experience more workplace violence will have higher level of emotional exhaustion.

H1b: Nurses that experience more workplace violence will have higher level of depersonalization.

H1c: Nurses that experience more workplace violence will have higher level of lack of personal accomplishment.

Workplace Violence Against Nurses and Organizational Injustice Perception

Recently, nurses pay more and more attention of their rights to be fairly treated in their organizations at all times (Mathur and Padmakumari, 2013). Organizational justice is one of the vital aspects in remaining and supporting the development of the organization and its employees (Lotfi and Pour, 2013; Elanain, 2009). According to Lambert et al. (2007), organizational justice is regarded as the nurses' sense of how fairly their working

organizations are treating them. Colquitt (2001) categorized organizational justice into four dimensions: distributive, procedural, interpersonal, and informational justice. In the current study, these components will be used to measure organizational justice.

The association between violent behaviors suffered by nurses and organizational injustice is a psychosocial variable which has developed in current years as a determining factor of workers' health (Elovainio et al., 2010). A previous study pointed out that violence is connected with low organizational justice among nursing staffs (Magnavita and Heponiemi, 2011). Psychosocial problems such as mental health (Madsen et al., 2011), job stress, and organizational justice (Elovainio et al., 2010) are linked with violence, and they are particularly important since they demonstrate that violent behaviors in workplace are noteworthy occupational risk that preventive programs should chiefly focus on.

Besides, a study displayed by Jones (2004) declared that injustice perception is the strongest indicator for violent behaviors. In this case, we hypothesize the following:

> H2: Nurses that experience more workplace violence will perceive more organizational injustice.

Organizational Injustice Perception and Nurses' Job Burnout Symptoms

Justice perception is a subjective concept which is in line with the level of psychological consistency, and the psychological consistency of nurses was considered as an important factor affecting the generation of job burnout symptoms (He, 2011). Cole et al. (2010) believed that psychological consistency affects individuals' cognition of stress, and strong psychological consistency can help people understand, correctly recognize and deal with stressors. A lack of consistency can lead to stress at work, which may lead to fatigue. Islam's (2014) and Samad's (2012) studies also showed that it had close relationship between psychological consistency and job burnout symptoms level, with a negative correlation, meaning that when a nurse perceive more injustice (low level of psychological alignment),

he or she may be more prone to job burnout symptoms, and when a nurse feel less treated unfairly (high psychological alignment level), job burnout symptoms possibly reduce.

Moreover, according to Zhang (2013), when nurses feel that the organization is unfair, it will become the pressure from the organization and management, which may reflect their work performance. In addition, Nurses who perceive injustice in their organizations often feel exhausted and have no energy in their work, treat patients coldly, unenthusiastically and without affinity, have low sense of achievement in their work, and fail to experience the fun and meaning of their work (Li and Shi, 2006).

Thus, the hypothesis is:

H3: Nurses that perceive more organizational injustice will have higher level of job burnout symptoms.

Specifically:

H3a: Nurses that perceive more organizational injustice will have higher level of emotional exhaustion.

H3b: Nurses that perceive more organizational injustice will have higher level of depersonalization.

H3c: Nurses that perceive more organizational injustice will have higher level of lack of personal accomplishment.

Organizational Injustice as a Mediator between Workplace Violence Against Nurses and Job Burnout Symptoms

Violence in the workplace can cause physical and mental harm to nurses, increase their stress and unwillingness to work (Shi et al., 2017). At the same time, violence in the workplace can stimulate nurses' extreme insecurity and decrease their self-worth, leading to higher levels of job burnout symptoms (Liu et al., 2018).

In addition, organizational justice has a direct or indirect effect on nurses' job burnout symptoms (Liu et al., 2018). Based on Settoon et al's (1996) study, the psychological mechanism of organizational justice perception is the social exchange between employees and their organizations. From the perspective of social exchange, employees' awareness of perceived organizational fairness completely depends on the level of organizational justice. The fundamental reason for employees' willingness to stay in the organization after experiencing violence is that they believe their contributions to the organization are equal or fair in terms of the return they receive from the organization concerned (Liu et al., 2018). As knowledge workers, nurses generally have higher motivation to achieve since they would like to accomplish and grasp socially recognized values, meaning that when nurses believe that hospitals and departments would pay attention to their contributions and focus on their individual interests and career development, this will significantly reduce their burnout symptoms levels and lead to higher organizational commitment and work capacity(Li & Shi, 2003).

So, the hypothesis should be:

> H4: Organizational injustice perception is the mediator between workplace violence and nurses' job burnout symptoms.
>
> Specifically:
>
> H4a: Organizational injustice perception is the mediator between workplace violence and nurses' emotional exhaustion.
>
> H4b: Organizational injustice perception is the mediator between workplace violence and nurses' depersonalization.
>
> H4c: Organizational injustice perception is the mediator between workplace violence and nurses' lack of personal accomplishment.

Organizational Injustice Perception and Job Satisfaction

Managers in current organizations make their efforts to recruit and retain satisfied employees (Afsheen et al., 2012). These administrators realized that the role of job satisfaction for the prosperity and accomplishment of their organizations (Roodt et al., 2002). Job satisfaction is an enjoyable emotional status which is the outcome of assessment of one's job or job experiences (Locke, 1976). According to Henne and Locke (1985), once employees give their emotional reactions to a value judgment, it is job satisfaction (or dissatisfaction). When employees perceived they are fulfilled in their jobs, for example, they are satisfied with the jobs, they will be pleased. Instead, they will be unpleasing if their job values depressed them. (Afsheen et al., 2012).

Currently, there are many studies concentrate on the influence of organizational injustice on job satisfaction. Organizational justice refers to an employee's perceptions towards the fairness of decisions and decision-making processes within their organizations and its consequence over those perceptions and behaviors (Colquitt et al., 2001). Within the healthcare professionals, nurses seem to be the most noteworthy group to be discussed in organizational justice literature (Leiter & Maslach, 2009; Tallman, Phipps & Matheson, 2009).

Moreover, perceptions of justice for the actual jobs used to generate that fairness perceptions are important for satisfaction with the organizations, and nurses who are satisfied with their jobs are less likely to leave their organization. Hence, the hypothesis we create is:

> H5: Nurses that perceive more organizational injustice will have lower level of job satisfaction.

Nurses' Job Burnout Symptoms and Job Satisfaction

Job burnout symptoms are psychological behaviors caused by long-term emotional and

interpersonal stressors at work (Beheshtifar and Omidvar, 2013; Elit et al., 2004). After suffering violence and perceived injustice in workplace, job burnout symptoms appeared to nurses, which may result in a lack of sympathy to the patient, lack of competence and achievement to work (Hinderer et al., 2014; Książek et al., 2011), what's more, they may lose their energy and feel exhausted (Allen et al., 2015). It was not only harm to their mental health, but also the nurse career development (Zhao and Zhang, 2010).

In reviewing the effects of burnout symptoms, Phipps (1988) found that burnout symptoms may resulted in the decrease of nurses' job satisfaction, leading to a negative attitude toward their work, family, patients, colleagues, and even their work. Some research showed that hospital employees who had the experience of burnout symptoms were more likely to have higher turnover rates, since they were less satisfied with their jobs (Rahim and Cosby, 2016; Oyeleye et al., 2013; Hsu et al., 2010). They faced challenges such as lack of motivation, low productivity and the inability to cope with their workplace changes (Payne, 2001).

In addition, the studies of Khamisa et al. (2015) and Özden et al. (2013) also showed that the job satisfaction of nurses was affected by the level of job burnout symptoms and improving job satisfaction could be an effective measure to reduce burnout symptoms. If nurses suffer from job burnout symptoms, their job satisfaction would be impaired, leading to the loss of passion and fatigue of nurses (Rosales et al., 2013).

Thus, the hypothesis is:

H6: Nurses that have higher level of job burnout symptoms will have lower level of job satisfaction.

Specifically:

H6a: Nurses that have higher level of emotional exhaustion will have lower level of job satisfaction.

H6b: Nurses that have higher level of depersonalization will have lower level of job satisfaction.

H6c: Nurses that have higher level   of lack of personal accomplishment will have lower level of job satisfaction.

Nurses' Job Burnout Symptoms as Mediators between Organizational Injustice Perception and Job Satisfaction

In China, some studies have found that nurses' sense of organizational justice affects their job satisfaction. For example, there is a significant positive correlation between organizational justice and job satisfaction (Peng and Zhang, 2007), and procedural equity is a positive predictor of nurse job satisfaction (Wang, 2008). Obviously, most scholars assume that organizational justice has a direct impact on job satisfaction, but with the deepening of research, some scholars question the direct impact of organizational justice on job satisfaction , Some studies show that the effect of perceived organizational justice on job satisfaction is not a unitary linear relationship, but with some mediating variables, for example, organizational commitment, organizational trust (Colquitt & Greenberg, 2003), organizational support, manager-staff relationship (Cropanzano & Mitchell,2005), and organization-member relationship (Karriker & Williams,2009), etc.

Furthermore, Adams' (1976) equity theory holds that the sense of organizational justice affects employees' work enthusiasm. Once employers enhance employees' sense of justice, their job satisfaction can be improved, as well as their organizational commitment, and job performance. At the same time, when employees are treated unfairly by the organization, they are prone to have negative behaviors, such as demotivation, job burnout symptoms and turnover intention. Many studies have revealed that job burnout symptoms have significant and positive correlation with organizational injustice perception and turnover intention, and a noteworthy negative correlation with job satisfaction, job commitment and organizational commitment (Wolpin, et al., 1991; Arnold et al., 2006). So, the relationship among nurses' sense of organizational injustice, job burnout symptoms and job satisfaction will also be

discussed in this study. Based on the above literature analysis, we propose the following research hypothesis:

H7: Nurses' job burnout symptoms are mediators between organizational injustice perception and job satisfaction.

Specifically:

H7a: Nurses' emotional exhaustion is a mediator between organizational injustice perception and job satisfaction.

H7b: Nurses' depersonalization is a mediator between organizational injustice perception and job satisfaction.

H7c: Nurses of lack of personal accomplishment is a mediator between organizational injustice perception and job satisfaction.

In conclusion, this study proposes a mediated moderation research model. In this model, organizational injustice perception will be the mediator between workplace violence suffered by nurses and their job burnout symptoms. In addition, job burnout symptoms will mediate the relationship between organizational injustice perception and job satisfaction. A graphic representation is shown in Figure 1.

Figure 1. Research model
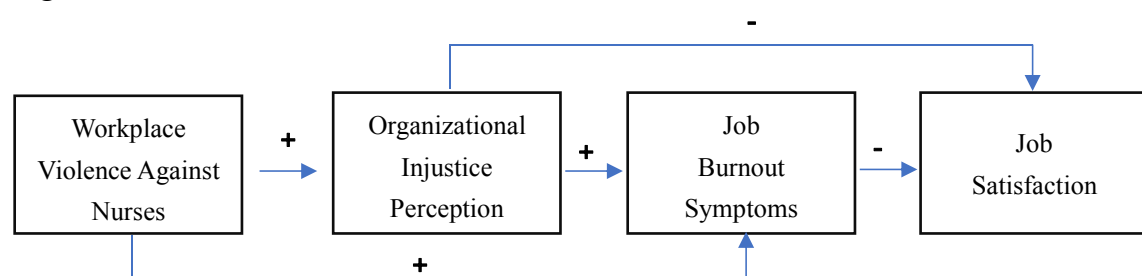
3. Method

Data Source

In this research, questionnaires were spread in public hospitals in China, and informants from 14 cities were cautiously chosen in order to represent various regions of the China (north, south, east and west), including Beijing, Shanghai, Guangdong, Chongqing, Shandong, Jiangxi, Anhui and Hebei, but mostly in Guangdong Province, since it is a big province with the population of more than 112 million, contains 101 Grade 3A hospitals, where attracted the most intense collection of the Grade 3A hospitals. In Guangdong Province, the respondents were evenly distributed in 7 different cities, comprising by Guangzhou, Shenzhen, Zhuhai, Shantou, Meizhou, Foshan and Qingyuan; however, out of 116 respondents, there were 73 came from the two first-line cities (37 from Guangzhou and 36 from Shenzhen), since both of them are located in the south of the province and most of the top hospitals are situated there, especially in Guangzhou.

Questionnaire

We carefully chose the scales which were basically suitable for Chinese contemporary culture, obtained the authorized Chinese translation version of them online, and then verified the translation.

Investigation of Workplace Violence Against Nurses in public hospitals in China adopted a questionnaire compiled by the teaching and research office of Public Health Management of Harbin Medical University. The questionnaire measured violence behaviors against nurses in their workplace in the past 12 months with 7 different aspects, namely, Verbal Violence (affront, insults, loud voices, angry expressions, yelling, etc.), Physical Assault (bite, hit, push, smash, rob, spit and other aggressive behaviors), Sexual Harassment (e.g. talk repeatedly about sexual privacy or sexual behavior, intentional touching and other forms of

sexual harassment), Defamation of Reputation (Groundless accusation or complaint, libel, slander, private dissemination of damaging remarks, etc.), Hardship (giving an excessively severe rebuke, accusation, etc.), Obstruction of Work (use violence or threats to hinder nurses' normal work), Intimidation and Threat (threats involve personal and property safety, threats of complaints, tailgating, etc.). Each Violence item was measured as a single item. Six frequency scales (never, rarely, occasionally, often, frequently and every day) were used in the questionnaire, with values ranging from 0 to 5 for each, and with a total score of 0 to 35 added by each aspect. The total mean score was used for analysis, and the higher the score, the higher the frequency of suffering violence. Cronbach's Alpha of this questionnaire is 0.89. The results of exploratory factor analysis indicated that the 7 categories of violence were contained in one dimension and could explain 61.89% variation of all.

The MBI-GS Scale, translated into Chinese by Li Chaoping, was used for testing job burnout symptoms. The scale was conducted on 7 frequency (never, rarely, occasionally, often, frequently, almost every day, every day), with values ranging from 0 to 6 of each. In addition, the questionnaire included three dimensions, including Emotional Exhaustion (9 items, mainly evaluate the personal emotional response to work stress, with the score ranging from 0 to 54), Depersonalization (5 items, assess attitudes and feelings about the people they are serving as a result of job stress, with the score ranging from 0 to 30) and Lack of Personal Accomplishment (8 items, appraise how they feel about their jobs as a result of stress). For Emotional Exhaustion and Depersonalization, the higher the score, the higher the exhaustion; however, for Lack of Personal Accomplishment, the lower, the worse. Nevertheless, Maslach argued that there was only a limited link between the three aspects, so scores for each could be considered separately, without having to calculate the total score, or assessed using a separate subscale. So, Cronbach's Alpha of the whole MBI-GS scale was not be evaluated, and it was 0.88, 0.83 and 0.82 for each dimension.

The Organizational Injustice Scale was designed by Colquitt (2001), and it was used to measure employees' sense of organizational injustice. Studies have proved that the scale had

good reliability and validity for nursing population. The scale had a total of 20 items in 4 dimensions, including Distributive Justice (4 items), Procedural Justice (7 items), Interpersonal Justice (4 items) and Informational Justice (5 items). Likert 5-level scoring method was made a use to assign 1 to 5 points from "Totally Disagree" to "Totally Agree", with a total score of 20-100 points in this scale. In this study, the total mean score was used for analysis as well, and the higher the score, the less they perceived organizational injustice, on the contrary, the lower the score, the stronger. The Cronbach's Alpha of the scale was 0.92 for the whole scale, and 0.88 to 0.92 for each dimension. Additionally, the 4 categories accounted for 65.42% of the total variation.

In addition, we asked the respondents to rate their currently working situations, with the value from 1 to 5, to see if they were satisfied with their jobs.

Furthermore, in this study, since some variables may have effect on workplace violence, organizational injustice perception, job burnout symptoms, and job satisfaction, we are going to control this variables, including gender (1 = *male*, 2 = *female*, 3 = *not disclosing*), age (1 = *18-25 years old*, 2 = *26-35 years old*, 3 = *36-45 years old*, 4 = *more than 45 years old*), working hospital type (1 = *Grade 3A hospital*, 2= *others*), working department (1 = *out-patient department*, 2 = *common wards*, 3 = *emergency*, 4 = *operation room*, 5 = *ICU*, 6 = *nursing department*, 7 = *others*) and seniority (1 = *less than 1 year*, 2 = *1-5 years*, 3 = *6-10 years*, 4= *more than 10 years*). According to previous studies, working department were found to be associated to the happening frequencies of workplace violence (Jin et al., 2018; Liu et al., 2013); gender, age, working hospital type, and seniority may relate to their organizational injustice perception (Wang and Li, 2017); moreover, age, and seniority were about job burnout symptoms and job satisfaction (Cen, 2011). Thus, we considered these five variables as the control variables in this study.

At the end of the questionnaire, there were three open questions for respondents to make a brief description of their working hospitals, write down their personal opinions towards

violence from doctors or patients, and their suggestions about it.

Participants

Inclusion Criteria

Firstly, nurses who were selected as sample nurses should obtained the professional certificate of nursing. Then, they were over the age of 18 and on the job during the survey period. Lastly, they should not be an intern and agree to participate in this study.

Sampling Method and Sample Size

Data were collected between January and February in 2020, and nurses from all the selected cities were chosen by a non-probabilistic sampling strategy. We mainly used snowball sampling in each target city to identify individuals from the population of interest and obtained 116 replies. These individuals were used as informants to identify other members of the population, who were themselves used as informants, and so on. Additionally, all the study procedures were accepted by each study hospital and we provided the informed consent to all participants.

Online anonymous questionnaires were used in order to protect the privacy of the respondents better. Names and other personal identification of the respondents were not required during the survey. They voluntarily submitted and returned the questionnaire via the link after participating.

Data Analysis Methods

SPSS v.21.0 was used for all analysis. Values of $P < 0.05$ were considered significant.

Descriptive statistics method was used to calculate the frequency of the violence behaviors suffered by nurses in their workplace, the degree they perceived injustice, the level of job burnout symptoms and job satisfaction, as well as the socio-demographic characteristics of

the respondents. Then, based on Baron and Kenny (1986), hierarchical regression analysis was applied to predict the correlation among violence behaviors, organizational injustice perception, job burnout symptoms (in all the three dimensions) and job satisfaction on nurses, and the mediation test was also based on Baron and Kenny (1986) approach. Finally, Independent- Samples T Test and One-Way ANOVA were operated to compare the differences of organizational injustice perception, job burnout symptoms and job satisfaction levels of the sample nurses between each group according to their socio-demographic information.

Description of the samples

Socio-demographic Data

Investigation of nurses' socio-demographic information in this study constitute with: \Gender, Age, Hospital Types, Professional Title, Working Department, Seniority, Years of Working in Current Hospital, and their Working City.

For those who answered the survey, the majority of them were women (79.3%), half of them were between 18 and 25 years old, and more than three quarter worked in grade 3A hospitals in China (79.3%). In addition, there were 73.3% respondents were primary nurses, and was working in common wards (55.2%). In terms of their seniority, about two third of the sampling nurses had the experience of 1 to 5 years (65.5%), and the majority of them have been working in their current hospitals for 1 to 5 years (67.2%). Regarding their working cities, 31.9% of them were in Guangzhou, and 31.0% were in Shenzhen. Detail information are presented in Annex 1.

We believe that this sample can represent the target population qualitatively and quantitatively. This representation is taken into account because, in our sample, the representation ratio of all social population groups is similar to the way they spread in the original population (Lavrakas, 2008).

Workplace Violence Against Nurses

As shown in Annex 2, the types of workplace violence behaviors suffered by the sample nurses in their workplace ranged from high to low were Verbal Violence, Hardship, Obstruction of Work, Defamation of Reputation, Intimidation and Threat, Physical Assault and Sexual Harassment. About 2/3 of the sample nurses suffered Verbal Violence and Hardship in the past 12 months. Verbal Violence including shouting and abusing by others. From the results, the mean of Verbal Violence ranks the highest among all the types of violence, which means that it is the most common violence behaviors suffered by nurses. Hardship means that patients and their family members put forward unreasonable work or time requirements, deliberately cause trouble and finding faults, distrust and not cooperate with nurses works. These can have negative effects on both physical and psychological parts of nurses and even have bad influence on their working quality. One third of the sample nurses suffered work obstruction from others in the past one year, in other words, hindered their works, for example, some patients and their family members encouraged other patients to protest or even destruct public facilities and disturbed the orders include taking unauthorized photography and videos of nurse (Zhang et al, 2016). 31,0% of the sample nurses occasionally, often, or frequently experienced Defamation of Reputation, such as groundless accusations or complaints, defamation, questioning of nursing staffs, dissemination of disreputable remarks, and so on. Nearly 1/4 nurses had experienced threats and physical assault from patients. Though with the lowest rate of sexual harassment of all types of violence behaviors, it is also alarming that 16,4% of nurses occasionally or often experienced sexual harassment from others.

In addition, it is important to point out that all the respondents in China ever suffered at least one kind of violence behaviors in their workplace within the past 12 months, no matter what kind of violence it was, which was even worse than previous studies, since according to Zhang's survey in 2016, the workplace violence occurrence rate against nurses was about 2/3 within one year, and it was 50% in Wu's (2012) research.

It's also worth mentioning that the enforcers of workplace violence against nurses including not only patients and their family members, but also doctors. From Annex 3, it illustrated that, there were 44,0% violence behaviors against nurses were perpetrated by patients and 50,0% were enforced by patients' family members. From the respondents, most of the nurses have ever suffered violence behaviors from patient and their family members, and they were more likely to be more serious violence behaviors, such as physical assault and intimidation and threat. However, there were 6% of the respondents told that they were rudely treated by doctors, which means that, even some doctors, those who were more likely to be well-educated, sometimes didn't treat nurses as their cooperator, but their command executors, and carried out some violence behaviors to them more or less, but those were only verbal violence in most situations.

Job Burnout Symptoms

Emotional Exhaustion was separated into three levels; score less than 19 was in low level, 19-26 was in medium and a score above 26 points indicated high burnout level. Depersonalization used 6 and 9 point as boundaries, when score was less than 6 point, it was in a relatively low level, and when the score was higher than 9, it was high. For the item Lack of Personal Accomplishment, the overall score from 34 to 39 point was in medium level of burnout, and below 34 was in high level. As it is shown in Annex 4, the average levels of respondents' emotional exhaustion, depersonalization and lack of personal accomplishment were all high, saying that the respondents' total average level of job burnout was high.

Organizational Injustice Perception

In Annex 5, we found that the organizational injustice perception was generally in a medium level, and the sample nurses perceived the least of procedural justice and distributive justice in their organization, which means that they believed their performance evaluation and salary income were not fair.

Job Satisfaction

Annex 6 displays that nurses' job satisfaction is about medium level, namely of average satisfaction. Meanwhile, it is worth noting that there were 10,4% of them were not satisfied with their jobs, with 7,8% were dissatisfied and 2,6% were very dissatisfied.

4. Findings

According to Table 1, means, standard deviations (SD) and zero-order correlations are displayed for all the studied variables. It is shown that, workplace violence against nurses was positively related to emotional exhaustion (r = .38, p<0.001), depersonalization (r = .35, p<0.001), and organizational injustice perception (r = .22, p<0.05); meanwhile, it was negatively associated to job satisfaction (r = -.29, p<0.01). Additionally, organizational injustice perception was in direct proportional to emotional exhaustion (r = .26, p<0.01), depersonalization (r = .24, p<0.05), and job satisfaction (r = -.34, p<0.001), and inversely to lack of personal accomplishment (r = -.21, p<0.05). Within the five control variables, no one (age, working department, seniority and gender[1]) was apparently correlated to workplace violence against nurses, job burnout symptoms and job satisfaction, except working hospital type. Thus, only working hospital type was used as the control variable in the following tests.

Test of Hypothesis

According to Baron and Kenny (1986), hierarchical regression analysis was applied to test the hypotheses we presented ahead. In Table 2, standardized coefficients (β) and t-statistics value (*t*) are shown as the results of hierarchical regression which forecasting nurses burnout symptoms. In Step 1, as the control variable, nurses' working hospital type was introduced to the model; then, we inserted workplace violence from doctors or patients suffered by nurses as the forecaster in step 2; lastly, organizational injustice perception was used to be the mediator. As it is shown in Table 2, H1a and H1b were verified since workplace violence against nurses is positively related to their job burnout of emotional exhaustion and depersonalization after controlling for working hospital type (β = .33, p<.001 and β = .33, p<.01 respectively); however, workplace violence against nurses was not related to the job burnout symptoms of "lack of personal accomplishment" after testing, which rejected H1c.

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[1]The One-way Anova for equal variance of "gender" is shown on Annex 7.

Table 1. Means, Standard Deviations and Correlations between the Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Workplace Violence	7.86	5.71	-									
2. Emotional Exhaustion	2.83	1.01	.38***	-								
3. Depersonalization	2.13	1.02	.35***	.67***	-							
4. Lack of Personal Accomplishment	3.36	1.36	-.02	.09	.07	-						
5. Organizational Injustice Perception	3.44	0.59	.22*	.26**	.24*	-.21*	-					
6. Job Satisfaction	3.23	0.73	-.29**	-.38***	-.30**	.39***	-.34***	-				
7. Age [a]	1.61	0.70	.07	.18	-.05	.14	.21*	.06	-			
8. Working Hospital Type [b]	1.21	0.41	.29**	.25**	.17	-.10	.08	-.22*	.07	-		
9. Working Department [c]	2.81	1.58	.03	.15	.16	-.19*	.14	-.10	-.07	-.09	-	
10. Seniority [d]	2.27	0.82	.11	.18	-.04	.18	.26	-.06	.67***	-.04	-.05	-

Notes: N = 116. [a]1 = 18-25 Years Old, 2 = 26-35 Years Old, 3 = 36-45 Years Old, 4 = More Than 45 Years Old. [b]1 = Grade 3A Hospital, 2 = Others. [c]1 = Out-patient Department, 2 = Common Wards, 3 = Emergency, 4 = Operation Room, 5 = ICU, 6 = Nursing Department, 7 = Others. [d]1 = Less Than 1 Years, 2 = 1-5 Years, 3 = 6-10 Years, 4 = More Than 10 Years. ***p < .001; **p < .01; *p < .05.

Table 2. Results of the Hierarchical Regression Analysis on Relationship between Workplace Violence Against Nurses and Nurses' Job Burnout Symptoms (mediation)

	Nurses' Job Burnout Symptoms					
	Step 1		Step 2		Step 3	
	β	t	β	t	β	T
Emotional Exhaustion						
Working Hospital Type	.25**	2.77	.16	1.75	.15	1.74
Workplace Violence Against Nurses			.33***	3.68	.29**	3.23
Organizational Injustice Perception					.18*	2.12
ΔR^2	.06**		.15***		.17***	
Depersonalization						
Working Hospital Type	.16	1.71	.06	.70	.06	.67
Workplace Violence Against Nurses			.33**	3.58	.29**	3.16
Organizational Injustice Perception					.17*	1.92
ΔR^2	.02		.11**		.13***	
Lack of Personal Accomplishment						
Working Hospital Type	-.10	-1.09	-.11	-1.08	-.10	-1.06
Workplace Violence Against Nurses			.01	.15	.06	.60
Organizational Injustice Perception					-.21*	-2.23
ΔR^2	.00		.01		.03	

Note: ***p< .001; **p< .01; *p< .05

Then, the consequence of hierarchical regression which was testing the relationship between workplace violence suffered by nurses and their organizational injustice perception is displayed in Table 3. Working hospital type was used to be the control variable as well in step 1; secondly, we entered workplace violence against nurses as the predictor. From Table 3, workplace violence against nurses was in a direct proportion with organizational injustice

perception after controlling for working hospital type (β = .21, p< .05); hence, H2 was confirmed.

Table 3. Results of the Hierarchical Regression Analysis on Relationship between Workplace Violence Against Nurses and Organizational Injustice Perception

	Organizational Injustice Perception			
	Step 1		Step 2	
	β	*t*	β	*T*
Working Hospital Type	.08*	.84	.02	.19
Workplace Violence Against Nurses			.21*	2.21
R^2	.01		.05	

Note: *p< .05

Regarding H3, organizational injustice perception was expected to have positive relationship with nurses' job burnout symptoms in all the three dimensions.

Firstly, working hospital type was entered to be the control variable in Step 1; then, the predictor (organizational injustice perception) was implanted in Step 2. According to Table 4, organizational injustice perception was positively related to nurses' job burnout symptoms of emotional exhaustion after controlling for working hospital type (β = .21, p< .05).

In addition, nurses' organizational injustice perception was also directly proportional to their depersonalization (β = .21, p< .05). However, when using the working hospital type as the control variable, organizational injustice perception did not significantly correlated to the job burnout symptoms of lack of personal accomplishment (β = .08, p> .05). Thus, H3a and H3b were supported and H3c was rejected.

Table 4. Results of the Hierarchical Regression Analysis on Relationship between Organizational Injustice Perception and Nurses' Job Burnout Symptoms

	Nurses' Job Burnout Symptoms			
	Step 1		Step 2	
	β	*t*	β	*T*
Emotional Exhaustion				
Working Hospital Type	.24**	2.66	.23*	2.55
Organizational Injustice Perception			.21*	2.38
Δ R²		.08**		.12**
Depersonalization				
Working Hospital Type	.12	1.14	.10	1.14
Organizational Injustice Perception			.21*	2.32
Δ R²		.01		.04*
Lack of Personal Accomplishment				
Working Hospital Type	.03	.32	.02	.25
Organizational Injustice Perception			.08	.83
Δ R²		.01		.01

Note: **p< .01; *p< .05

As for H4, organizational injustice perception of nurses was predicted to be the mediator between workplace violence and job burnout symptoms. Primarily, the predictor (workplace violence against nurses) was tested to see if it can affect the mediator (organizational injustice perception), since it should be the initial condition for the creation of a mediation (Baron and Kenny, 1986). However, it was already confirmed above in H2 according to Table 3. Consequently, the first condition has been met.

Moreover, a test for the relationship between the predictor (workplace violence against nurses) and criterion variable (nurses' job burnout symptoms) was implemented before, as well as the relationship between the mediator (organizational injustice perception) and criterion variable

(nurses' job burnout symptoms), which should be the second and third requirements for having a partial mediation according to Baron and Kenny (1986). Actually, in line with Table 2, workplace violence against nurses was only in a positive relation with nurses' job burnout symptoms of emotional exhaustion and depersonalization, but not with the dimension of lack of personal accomplishment, and in Table 4, organizational injustice perception of nurses was discovered to be positively related to these two dimensions as well. Hence, all the settings were prepared for having a partial mediation based on Baron and Kenny (1986) with job burnout symptoms of emotional exhaustion and depersonalization .

Apparently, in Table 2, in accordance with Baron and Kenny (1986) the outcomes of the linear regression analysis substantiate a partial mediation model, since the correlation between workplace violence against nurses and job burnout symptoms of emotional exhaustion and depersonalization were still positive and significant after inserting organizational injustice perception into the model (β = .29, p< .01 and β = .29, p< .01 respectively).

Meanwhile, the regression models were verified that they could explain 17% and 13% of the nurses' job burnout variance in the symptoms of emotional exhaustion (R^2 Adjusted = .17; *F* (9.08) = 68.62; p< .001) and depersonalization (R^2 Adjusted = .13; *F* (6.70) = 22.82; p< .001). Therefore, H4a and H4b were verified and H4c was rejected.

Considering H5, after testing the relationship between organizational injustice perception and nurses' job satisfaction, the hierarchical regression results are existing on Table 5. In Step 1, working hospital type was using as the control variable in the model; afterwards, organizational injustice perception was entered as the predictor; lastly, nurses' job burnout symptoms in each dimension was entered as the mediator.

According to Table 5, as shown in Step 2, organizational injustice perception was negatively associated with nurses' job satisfaction after controlling for working hospital type (β = -.33, p< .001), so H5 was supported.

Table 5. Results of the Hierarchical Regression Analysis on Relationship between Organizational Injustice Perception and Nurses' Job Satisfaction (mediation)

	Nurses' Job Satisfaction					
	Step 1		Step 2		Step 3	
	β	*t*	β	*t*	β	*t*
Working Hospital Type	-.22*	-2.44	-.20*	-2.28	-.13	-1.55
Organizational Injustice Perception			-.33***	-3.79	-.26**	-3.04
Emotional Exhaustion					-.28***	-3.13
Δ R²	.04*		.14***		.20***	
Working Hospital Type	-.22*	-2.44	-.20*	-2.28	-.17*	-1.97
Organizational Injustice Perception			-.33***	-3.79	-.28**	-3.22
Depersonalization					-.21*	-2.33
Δ R²	.04*		.14***		.17***	
Working Hospital Type	-.22*	-2.44	-.20*	-2.28	-.17*	-2.07
Organizational Injustice Perception			-.33***	-3.79	-.27**	-3.18
Lack of Personal Accomplishment					.32***	3.76
Δ R²	.04*		.14***		.23***	

Note: ***p< .001 **p< .01; *p< .05

We assumed that nurses' job burnout symptoms had negative relationship with nurses' job satisfaction in H6 (H6a, H6b and H6c). In order to test the hypothesis, we put working hospital type as the control variable as well in Step 1 and entered the three dimensions of job burnout symptoms severally as the predictors in the next step. In Table 6 the results indicate that, nurses' job burnout was inversely related to their job satisfaction; therefore, H6a, H6b and H6c were accepted.

Similarly, job burnout symptoms were expected to be the mediators between organizational injustice perception and nurses' job satisfaction in H7 (H7a, H7b and H7c). To confirm the hypothesis, using the same method in H4, which was given by Baron and Kenny (1986), we

firstly tested if organizational injustice perception (predictor) has the ability to affect job burnout (mediator) in each dimension to fulfill the first condition for set up a mediation, and it was established in H3 and the results was obtainable on Table 4 (H3a and H3b were accepted and H3c was rejected.

Table 6. Results of the Hierarchical Regression Analysis on Relationship between Nurses' Job Burnout Symptoms and Nurses' Job Satisfaction

	Nurses' Job Satisfaction			
	Step 1		Step 2	
	β	*t*	β	*T*
Working Hospital Type	-.22*	-2.44	-.14	-1.54
Emotional Exhaustion			-.34***	-3.87
ΔR^2	.04*		.15***	
Working Hospital Type	-.22*	-2.44	-.18*	-2.02
Depersonalization			-.27**	-3.03
ΔR^2	.04*		.11**	
Working Hospital Type	-.22*	-2.44	-.19*	-2.18
Lack of Personal Accomplishment			.37***	4.31
ΔR^2	.04*		.17***	

Note: ***p< .001 **p< .01; *p< .05

Then, in order to satisfy the second condition of having a mediation, the organizational injustice perception (predictor) was tested to see if it has effect on nurses' job satisfaction (criterion variable). Lastly, we tested whether nurses' job satisfaction is affected by job burnout (mediator) in all the three dimensions, which should be the third condition. As a matter of fact, based on Table 5, organizational injustice was negatively associated with nurses' job satisfaction. In Table 6, nurses' job burnout in dimensions of emotional exhaustion and depersonalization was found to have inversely proportion with job satisfaction, and the dimension of lack of personal accomplishment was positively related to it after controlling the

variable of working hospital type, which means that, generally, nurses' job burnout had negative correlation with job satisfaction. Subsequently, all the conditions of having a mediation were carried out.

In Table 6, the outcomes of the linear regression analysis approved a partial mediation model according to Baron and Kenny (1986), because the negative connection between organizational injustice perception and nurses' job satisfaction was still significant after leading in nurses' job burnout in the dimensions of emotional exhaustion, depersonalization, and lack of personal accomplishment (β = .26, p< .01; β = .28, p< .01; β = .27, p< .01 respectively). However, because H3c was rejected before, the job burnout dimension of lack of personal accomplishment could not be considered as the mediator, as it did not fulfill all the requirement of having a partial mediation model at the same time. What's more, on the basis of Table 6, the model could explain 20% and 17% of nurses' job satisfaction variance, using the two job burnout dimensions as the mediators respectively, including emotional exhaustion (R^2 $_{Adjusted}$ = .20; F (4.55) = 10.81; p< .001) and depersonalization (R^2 $_{Adjusted}$ = .17; F (3.96) = 9.09; p< .001). Therefore, H7a and H7b were confirmed.

5. Discussion and Conclusion

In this research, we analyzed how workplace violence against nurses could affect their job burnout symptoms and organizational injustice perception. In addition, we tested the mediator role that organizational injustice perception could play on explaining the relationship between workplace violence and job burnout symptoms. Furthermore, we analyzed the correlation between nurses' organizational injustice perception and job burnout symptoms, as well as job satisfaction level. We also examined if nurses' job burnout symptoms could be the mediators between organizational injustice perception and job satisfaction. These above premises established our hypotheses. Though some of these elements have already been studied before in other researches, no one have tested the mediating effects that we proposed here.

Firstly, after testing the relationship between workplace violence against nurses and job burnout symptoms, we found workplace violence was positively correlated with nurses' job burnout symptoms in the dimensions of emotional exhaustion and depersonalization, but had no significant relationship with the dimension of lack of personal accomplishment. Hence, we generally assumed that when nurses face more violence in their workplace, they have higher level of emotional exhaustion and depersonalization, even after taking working hospital type into consideration. These results are consistent with previous studies (e.g. Liu et al., 2018).

Actually, we aimed to find out the mechanism to clarify why nurses who suffered more workplace violence from others may have higher level of job burnout. The testing results verified our hypothesis, in which was indicated that workplace violence against nurses might result in organizational injustice perception, which has been approved to be the factor that may facilitate feelings of job burnout symptoms in the dimensions of emotional exhaustion and depersonalization. Moreover, workplace violence against nurses and organizational injustice perception were considered as the predictor and mediator respectively in our model. In this study, we verified that there was a positive relationship between these two variables, which declared that workplace violence promoted nurses' perception of unfairness in their

organizations, and it is in line with Pekurinen's (2017) study. The reason is that when nurses suffered violence behaviors from others, they believed that they didn't obtain their deserved treatment and respect, thus they produced injustice senses (St-Pierre and Holmes, 2010). In China many people considered that nurses have lower social status than doctors, that's why nurses often get distinguished and inadequate treatment from others (Lu et al., 2015; Gao et al., 2012; Yau et al., 2012) and most of the nurses believed that they didn't perceive organizational justice since they were doing the works which were as important as doctors and received less. What's more, organizational injustice perception was approved to be positive and significant correlated with nurses' emotional exhaustion and depersonalization, meaning that when nurses believed that they were treated unfairly in their organizations, they felt emotional exhausted, had less motivation, enthusiasm and job achievement (Zhang and Sun, 2013). In short, these findings clarified how the workplace violence against nurses relates to their job burnout symptoms, through organizational injustice perception.

Another goal of our study is to test the relationship between the variables we mentioned before and nurses' job satisfaction. From the previous results, a negative relationship was confirmed between organizational injustice perception and job satisfaction. With the development of the society, people's ideology has changed from simple obedience to diversified thinking. Its prominent feature is that people's self-consciousness has been enhanced, which is reflected in the improvement of self-development needs (Jung et al., 2015). This change is also reflected in the work of nurses, that is, nurses are not only satisfied with getting paid, but also pursue the realization of self-worth in the organization, which is valued and concerned by the organization (Afsar et al., 2018).Therefore, it is appropriate to believe that when nurses have unfair senses within their organizations, they are more likely to be less satisfied with their works (using working hospital type as the control variable). Virtually, fostering nurses' feeling of organizational justice is essential to job satisfaction (AI-Zu'bi, 2010), and employees who perceive more organizational fairness may have lower absenteeism and turnover rate (Alsalem and Alhaiani, 2007). As a result, it is not surprising that nurses' organizational injustice perception is negatively associated with job satisfaction,

which is consistent with previous studies (e.g. Masterson et al., 2000; Bakhshi et al., 2009). Furthermore, we tested if nurses' job burnout symptoms can be the mediators between organizational injustice perception and job satisfaction, which has not been studied in other researches before.

As a matter of fact, the results supported our hypothesis which displayed that organizational injustice perception may result in nurses' job burnout of emotional exhaustion and depersonalization, and in turn, lead to the decrease of job satisfaction. According to Zhang and Sun (2013) when nurses believed that they were treated unfairly, since they were doing high-risk jobs, but did not get corresponding returns in salary, bonus, and respect, they were dissatisfied about their work. In addition, nurses' job burnout symptoms were recognized to have a negative relationship with job satisfaction (Hinderer et al., 2014), which means that when nurses have higher level of job burnout, they are more likely to be less satisfied with their works. In a word, our findings explained how organizational injustice perception relates to nurses' job satisfaction, through job burnout symptoms.

In conclusion, the results from the sample nurses confirmed our hypotheses and it has evidence to prove partial mediation models from Baron and Kenny (1986), in which organizational injustice perception is the mediator between workplace violence against nurses and job burnout symptoms (in the dimensions of emotional exhaustion and depersonalization), and emotional exhaustion and depersonalization are mediating the relationship between organizational injustice perception and job satisfaction. Indeed, workplace violence against nurses promoted nurses' organizational injustice perception, which by its turn had directly proportion with nurses' job burnout symptoms of emotional exhaustion and depersonalization. Apart from that, workplace violence suffered by nurses was positively and significantly associated with nurses' job burnout symptoms. The same situation happened among organizational injustice perception, nurses' job burnout symptoms and job satisfaction. Thus, H1a, H1b, H2, H3a, H3b, H4a, H4b, H5, H6, H7a and H7b were verified.

Theoretical Contributions

Although many previous studies have examined the consequences of workplace violence against nurses (e.g. Zhang et al., 2016; Wu et al., 2012; Warren, 2011); however, none of them have explored the association between workplace violence against nurses and both organizational injustice perception and job burnout symptoms, and their effects on job satisfaction. Hence, the first theoretical contribution was to find out the positive and significant relationship between workplace violence against nurses and their job burnout in dimension of emotional exhaustion and depersonalization. Secondly, we also found that workplace violence against nurses actually had influence on nurses' organizational injustice perception according to the sample nurses. Through the findings, it was plausible to see the impact on nurses after suffering workplace violence, mainly to their organizational fairness senses and to their mental health, which were in line with the previous studies (e.g. Rahim and Cosby, 2016; St-Pierre and Holmes, 2010).

In addition, workplace violence against nurses was analyzed on previous studies, but mainly been investigated in two dimensions: physical violence and psychological violence (e.g. Park et al., 2015; Pich et al., 2010); nevertheless, in this research, we tested workplace violence suffered by nurses in seven different dimensions, including Verbal Violence, Physical Assault, Sexual Harassment, Defamation of Reputation, Hardship, Obstruction of Work, Intimidation and Threat. Thus, this might explore in greater depth the manners and frequency in which nurses experience workplace violence, rather than roughly dividing them into two categories.

Furthermore, we also analyzed the association between nurses' organizational injustice perception and job burnout symptoms and discovered a positive and significant relationship between them. These results are in accordance with the pervious findings as well (e.g. Cole et al., 2010; Li and Shi, 2003). Plus, we believed that nurses' job burnout symptoms can the considered as the consequence of organizational injustice perception (Cole et al., 2010).

After concluding the relationships studies, we put forward a mediation proposal, in which workplace violence against nurses could enlarge their organizational injustice perception, which sequentially raise up the experience of job burnout symptoms. Actually, no study has ever studied this mediation model before, thus, according to our findings of being significant and adequate, it should be regarded as a contribution of the framework.

Moreover, nurses' job satisfaction was tested and analyzed in this study. In other studies, the correlation of organizational injustice perception and job satisfaction of nurses was examined (e.g. Islam et al., 2014), which was confirmed to be negative and significant. However, in this research, we focused on the mediating effect of nurses' job burnout symptoms in the relationship between organizational injustice perception and job satisfaction, which were never been mentioned in other studies before as well. The relationship between nurses' job burnout symptoms and job satisfaction were found to be negative and significant in our study, which was in line with Rahim and Cosby's study (2016); besides, we affirmed that nurses' job dissatisfaction can be an outcome of job burnout symptoms (Rosales et al., 2013). Thus, combing these findings with the relationship between organizational injustice perception and job burnout symptoms, as well as the relationship between organizational injustice and job satisfaction that we mentioned above, the partial mediation model we proposed should be valid. Therefore, it might be another theoretical contribution.

Limitations and Future Research

Though there were some contributions we made in this study, some limitations still appeared.

Firstly, data collection of our study was affected due to COVID-19, since nurses work context and conditions have changed more or less in this period.

Then, we only investigated 116 nurses who worked in different public hospitals in China, including 14 cities. It only covered a few provinces in China, and most of the data was

collected in hospitals in Guangdong province, especially in Guangzhou and Shenzhen cities. Since the sample is small, we should be cautious in generalizing these results. However, the results would be the same if the sample size is larger, because the results we obtained have a normal distribution. In terms of variable selection, demographic factors, such as marital status, educational background, and contract types had not been discussed, and the conclusion may have some limitations.

Thirdly, we used self-report method to conduct the questionnaire survey, since it has strong operability and is simple and easy to interpret; nevertheless, there are many disadvantages, for instance, the stability of self-report method is poor, because an individual's behavior changes over time, the behavior measured by the personality test is less stable than the ability test; the testers may falsify their answers; and respondents tend to choose answers that society expects (Podsakoff et al., 2003), so the predictive validity is unsatisfactory. Meanwhile, moderator variables were not included in the study, which would buffer the impact of organizational injustice perception or nurses' job burnout symptoms, for example, spiritual life after work.

In this study, we broadened the types of violence behaviors suffered by nurses in public hospitals in China. Doctors, patients, or their families' behaviors that directly or indirectly threaten nurses' safety, well-being, and health fall into the category of violence behaviors in the hospital workplace and have a negative impact on nurses' physical and mental health, but we did not discuss them in depth, thus, it would be relevant to study the different kinds of violence separately in future studies.

Furthermore, similar Likert scales and number of points were used to evaluate all the variables, which may cause repliers to have similar responds to different variables (Podsakoff et al., 2003). Hence, for future researches, we suggest using more scales in different forms.

Plus, more consideration should be given to nurses' organizational injustice perception and

job burnout symptoms, since these variables are not always consistent, they change over the time, and analyzing the regulations of them and the factors that influence the fluctuations would be important.

In addition, there are 661 cities in China with more than 12,000 public hospitals, for future researches, the sample size should be large enough to be representative of the reality. Also, more objective testing methods should be used for investigation, except using only self-report method.

Finally, working hospital type was the control variable we used in our study, but actually it was not taken into consideration in other researches before. Therefore, in future researches, the impact of working hospital type in other similar studies could be tested, given the lack of research on this particular variable.

Practical Implications

This study investigated the frequency and types of violence behaviors, as well as its outcome which nurses suffered in public hospitals in China through questionnaires. After analyzing the results, they revealed the prevalence of violence behaviors in nurses' workplace, the low perception of organizational justice of nurses, high nursing job burnout level and low job satisfaction, and the possible mechanism of these actions. It found that nurses' perception of organizational injustice was directly proportional to the frequency of violence behaviors, that is, the more times they were treated violently, the lower they perceived organizational fairness. Nursing managers need to pay attention to nurses' perception of organizational fairness, truly to realize fair distribution, stimulate the nurse work enthusiasm and professional identity, and thus improve the level of nurses' job involvement, to stabilize the nursing team and cultivate high quality talents. Workplace violence of nurses also had a positive effect on nurses' job burnout symptoms, with the increasing of suffering violence behaviors, their job burnout symptoms became stronger, then reduced their job satisfaction.

It is hoped that all the managers and other stakeholders should pay attention to the doctor-nurse and nurse-patient relationship and rebuild the trust between them. Harmonious doctor-nurse and nurse-patient relationship are the premise of maintaining the work of nurses and providing high-quality nursing care. However, violence behaviors from doctors, patients or their family members may not only destroy the trust among them, but also wasted a lot of mental energy and resources of nurses, thus threatening the physical and mental health of nurses. Therefore, it is particularly important to prevent violence and at the same time to care about employees' emotions.

Furthermore, from the surveys, most of the respondents commented their jobs and working places in words "tired and busy", "very stressful", "too much emphasis on patient satisfaction, but not on staffs' satisfaction", "unevenly distributed of bonus", "low salary and bad working conditions", "the workload was not proportional to the salary", "high risk", "neglected of nurses", and "hard to mix well with old employees", but only a little of them mentioned they received "psychological care" and considered their hospital as "humanized". Then, when talking about their views on violence behaviors in workplace by doctors or patients, remarkably, a large number of hospitals in China forced nurses to apologize to doctors, or patients and their families no matter what kind of accidents it was. The majority of public hospitals emphasized on patients first, ignored the fairness between nurses and others, and it is difficult to safeguarding nurses' rights. In China, nurses' social status was relatively low, and less attention was paid towards them, comparing with doctors. Violence incidents between doctors and nurses were often ended up by nurse's compromise, with the doctor continuing to work as if nothing had happened; and the violent events between nurses and patients were usually dominated by the compromise of the hospital, they compensated money to patients in order to keep the incident quiet and then transferred the nurse to another department.

"Every incident of violence may be a reason for the nursing staff not to continue as nurses,

then the country may face a huge crisis", said by a participant. In conclusion, it is an urgent to establish laws and regulations, hired more security guards, set up specialized organizations to deal with practical issues, resist such things and protect nurses' safety and basic rights in public hospitals in China to prevent violence against nurses.

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Annex A

Annex 1. General Information of Sample Nurses (n=116)

Items	Categories	Number of people	Percentage (%)	Items	Categories	Number of people	Percentage (%)
Gender	Male	18	15.5	Seniority	6-10	13	11.2
	Female	92	79.3		1-5	76	65.5
	Not disclosing	6	5.2		>10	15	12.9
Age (years old)	18-25	58	50.0	Years of	<1	18	15.5
	26-35	46	39.7	Working in	1-5	78	67.2
	36-45	11	9.5	Current Hospital	6-10	8	6.9
	>45	1	0.9		>10	12	10.3
Hospital Types	Grade 3A	92	79.3	Working	Guangzhou	37	31.9
	Others	24	20.7	City	Shenzhen	36	31.0
Professional Title	Assistant Nurse	12	10.3		Beijing	17	14.7
	Primary Nurse	85	73.3		Zhuhai	6	5.2
	Medium-grade Nurse	16	13.8		Shantou	4	3.4
	High-grade Nurse	3	2.6		Meizhou	3	2.6
Working	Out-patient Department	12	10.3		Nanchang	3	2.6
Department	Common Wards	64	55.2		Foshan	2	1.7
	Emergency	8	6.9		Chongqing	2	1.7
	Operation Room	14	12.1		Shijiazhuang	2	1.7
	ICU	9	7.8		Qingdao	1	0.9
	Nursing Department	2	1.7		Shanghai	1	0.9
	Others	7	6.0		Qingyuan	1	0.9
Seniority	<1	12	10.3		Hefei	1	0.9

Annex 2. Workplace Violence Against Nurses in Public Hospital in China

Type	Categories	Frequency	Percentage (%)	Mean (SD)	Type	Categories	Frequency	Percentage (%)	Mean (SD)
Verbal	Never	16	13.8	1.84 (1.07)	Defamation of	Frequently	2	1.7	
Violence	Rarely	20	17.2		Reputation	Every day	-	-	
	Occasionally	55	47.4		Hardship	Never	22	19.0	1.69 (1.12)
	Often	18	15.5			Rarely	21	18.1	
	Frequently	6	5.2			Occasionally	51	44.0	
	Every day	1	0.9			Often	17	14.7	
Physical	Never	57	49.1	0.76 (0.89)		Frequently	3	2.6	
Assaults	Rarely	35	30.2			Every day	2	1.7	
	Occasionally	20	17.2		Obstruction of	Never	44	37.9	1.06 (1.02)
	Often	3	2.6		Work	Rarely	33	28.4	
	Frequently	1	0.9			Occasionally	28	24.1	
	Every day	-	-			Often	10	8.6	
Sexual	Never	63	54.3	0.64 (0.80)		Frequently	1	0.9	
Harassment	Rarely	34	29.3			Every day	-	-	
	Occasionally	17	14.7		Intimidation and	Never	62	53.4	0.83 (1.05)
	Often	2	1.7		Threat	Rarely	23	19.8	
	Frequently	-	-			Occasionally	22	19.0	
	Every day	-	-			Often	7	6.0	
Defamation of	Never	45	38.8	1.05 (1,06)		Frequently	2	1.7	
Reputation	Rarely	35	30.2			Every day	-	-	
	Occasionally	23	19.8		Total grade				7.86 (5.71)
	Often	11	9.5						

*0=Never; 1=Rarely (several times a year of less); 2=Occasionally (once a few months); 3=Often (once a few weeks); 4=Frequently (several times a week); 5= Every day

Annex 3. Preparators of Violence Behaviors Against Nurses

	Frequency	**Percentage (%)**
Doctors	7	6
Patients	51	44
Patients' Family Member	58	50

Annex 4. Mean of Job Burnout Symptoms

	Minimum	**Maximum**	**Mean (SD)**
Emotional Exhaustion	7	49	25.49 (9.12)
Depersonalization	0	25	10.63 (5.12)
Lack of Personal Accomplishment	11	48	26.84 (6.78)

Annex 5. Mean of Organizational Justice Perception

	Minimum	**Maximum**	**Mean (SD)**	**Rank**
Distributive Justice	1.25	5.00	3.37 (0.73)	3
Procedural Justice	1.57	5.00	3.32 (0.66)	4
Interpersonal Justice	1.00	5.00	3.70 (0.73)	2
Informational Justice	1.00	5.00	3.47 (0.77)	1
Total	1.40	4.65	3.44 (0.59)	

Annex 6. Descriptive Statistics of Job Satisfaction

	Minimum	Maximum	Mean (SD)
Job Satisfaction	1	5	3.23 (0.73)

Annex 7. One-way Anova for equal mean of gender (workplace violence, organizational injustice perception, job burnout symptoms and job satisfaction)

	Gender (male, female, not disclosing)
	F
Workplace Violence	.08
Organizational Injustice Perception	.40
Emotional Exhaustion	1.17
Depersonalization	2.46
Lack of Personal Accomplishment	.31
Job Satisfaction	2.34

Notes: ***p< .001; **p< .01; *p< .05

Annex B

Investigation of Violence Suffered by Nurses in Public Hospitals in China

Form Filling Explanation:

1. This survey is anonymous, the information is only used for this study, and the information provided by you is absolutely confidential;

2. Please tick the appropriate box. There is no right or wrong choice;

3. This survey is voluntary, please fill it out carefully according to your actual situation.

1）Investigation of Workplace Violence Against Nurses

Please refer to your actual experience in the past year (12 months), answer the questions and tick the blanks accordingly.

0= Never;1= Rarely (several times a year or less);

2= Occasionally (once within several months);

3= Often (once within several weeks);

4= Frequently (several times a week);

5=Every day

Items	0	1	2	3	4	5
1-1. Verbal Violence (e.g. affront, insults, loud voices, angry expressions, yelling, etc.)						
1-2. Physical Assault (e.g. bite, hit, push, smash, rob, spit and other aggressive behaviors)						
1-3. Sexual Harassment (e.g. talk repeatedly about sexual privacy or sexual behavior, intentional touching and other forms of sexual harassment)						

Items	0	1	2	3	4	5
1-4. Defamation of Reputation (e.g. Groundless accusation or complaint, libel, slander, private dissemination of damaging remarks, etc.)						
1-5. Hardship (e.g. giving an excessively severe rebuke, accusation, etc.)						
1-6. Obstruction of Work (e.g. use violence or threats to hinder nurses' normal work)						
1-7. Intimidation and Threat (e.g. threats involve personal and property safety, threats of complaints, tailgating, etc.)						

Please describe one of the most memorable time when you were subjected to violence behavior:

1-8. Who did the violence behaviors to you?

A. Doctors; B. Patients; C. Patients' family members

2）Job Burnout Symptoms Assessment

The following table lists the problems that nurses may face. Please read each one carefully and choose the appropriate option based on your actual experience in the past year (12 months). Requirement: independent self-report.

0= Never;

1= Rarely (Several times a year or less);

2= Occasionally (Once a month or less);

3= Often (Several times a month);

4= Frequently (Once a week);

5= Almost every day (several times a week);

6= Every day

Items	0	1	2	3	4	5	6
2-1. I feel emotionally drained from my work.							
2-2. I feel used up at the end of the workday.							
2-3. I feel fatigued when I get up in the morning and have to face another day on the job.							
2-4. I can easily understand how my recipients feel about things.							
2-5. I feel I treat some recipients as if they were impersonal objects.							
2-6. Working with people all day is really a strain for me.							
2-7. I deal very effectively with the problems of my recipients.							
2-8. I feel burned out from my work.							
2-9. I feel I'm positively influencing other people's lives through my work.							
2-10. I've become more callous toward people since I took this job.							
2-11. I worry that this job is hardening me emotionally.							
2-12. I feel very energetic.							
2-13. I feel frustrated by my job.							
2-14. I feel I'm working too hard on my job.							
2-15. I don't really care what happens to some recipients.							
2-16. Working with people directly puts too much stress on me.							

ITEMS	0	1	2	3	4	5	6
2-17. I can easily create a relaxed atmosphere with my recipients.							
2-18. I feel exhilarated after working closely with my recipients.							
2-19. I have accomplished many worthwhile things in this job.							
2-20. I feel like I'm at the end of my rope.							
2-21. In my work I deal with emotional problems very calmly.							
2-22. I feel recipients blame me for some of their problems.							

3）Organizational Injustice Perception Assessment

The following table lists the problems that nurses may face. Please read each one carefully and choose the appropriate option based on your actual experience in the past year (12 months). Requirement: independent self-report.

1= Totally Disagree;

2= Disagree;

3= Neutrality;

4= Agree;

5= Totally Agree;

Items	1	2	3	4	5
Distributive Justice **3-1.** The evaluation of my performance provides a good assessment of the effort I have put into my work.					
3-2. The evaluation of my performance provides an appropriate assessment of the work I have completed.					

Items	1	2	3	4	5
3-3. The evaluation of my performance assesses what I have contributed to the organization.					
3-4. My performance evaluation is justified, given my performance.					
Procedural Justice **3-5.** I am able to express my views and feelings about my organization's procedure.					
3-6. I have influence over the assessments made as a result of my organization's procedures.					
3-7. The procedures used in my organization have been applied consistently.					
3-8. The procedures used in my organization are free of bias.					
3-9. The procedures used in my organization are based on accurate information.					
3-10. I am able to appeal the assessments made by procedures used in my organization.					
3-11. The procedures used in my organization uphold ethical and moral standards.					
Interpersonal Justice **3-12.** My supervisor treats me in a polite manner.					
3-13. My supervisor treats me with dignity.					
3-14. My supervisor treats me with respect.					
3-15. My supervisor refrains from improper remarks or comments.					
Informational Justice **3-16.** My supervisor is candid in his/her communication with me.					

Items	1	2	3	4	5
3-17. My supervisor explains procedures thoroughly.					
3-18. My supervisor's explanations regarding procedures are reasonable.					
3-19. My supervisor communicates details in a timely manner.					
3-20. My supervisor tailors his/her communications to my specific needs.					

4）Job Satisfaction Assessment

4-1. Please rate your current work situation (up to 5)

A. 1 point-Very dissatisfied; B. 2 point-dissatisfied; C.3 point-ordinary;

D. 4 point-satisfied; E. 5 point-very satisfied

5）Socio-demographic Investigation

5-1. Your gender

A. Male; B. Female; C. Not disclosing

5-2. Your age

A. 18-25 years old; B.26-35years old□

C. 36-45 years old; D.>45 years old

5-3. The type of your working hospital

A. Grade 3A Hospital; B. Others

5-4. Your currently professional title

A. assistant nurse; B. primary nurse; C. medium-grade nurse; D. high-grade nurse

5-5. Your working department

A. Out-patient Department; B. Common Wards;

C. Emergency; D. Operation Room; E. ICU; F: Nursing Department F. Others_____

5-6. How long have you been a nurse?

A. <1 year; B. 1-5 years; C.6-10 years; D. >10 years

5-7. How many years have you worked in current hospital?

A. <1 year; B. 1-5 years; C.6-10 years; D. >10 years

5-8. Where is your working city?

A. Guangzhou; B. Shenzhen; C. Beijing; D. Zhuhai; D. Shantou;

E. Meizhou; F. Nanchang; G. Foshan; H. Chongqing; I. Shijiazhuang;

J. Qingdao; K. Shanghai; L. Qingyuan; M. Hefei

6) Comments and Suggestions

6-1. Could you briefly describe your working hospital?

6-2. Please talk a little bit about your opinions and feelings toward workplace violence suffered by nurses.

6-3. Please give us your suggestions about the solutions of workplace violence on nurses.

Thank you and please check if it has any errors or omissions!