ISCTE Business School
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ICU Nurses' Burnout, Organizational Commitment, Turnover Intention and Hospital Workplace Violence

— A Study in Sichuan Province, China

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Abstract

The study aims to research the relationship between burnout, organizational commitment and turnover intention. Additionally, hospital workplace violence and its influencing factors were also explored. A quantitative analysis was conducted with a survey of 305 ICU nurses in tertiary hospitals in Sichuan Province, China. The results reveal that (1) burnout is positively related to turnover intention; (2) organizational commitment is negatively correlated with turnover intention; (3) organizational commitment negatively moderates the effect of emotional exhaustion on turnover intention; (4) continuance commitment has a negative moderation effect on the relationship between emotional exhaustion on turnover intention; and (5) 77.7% of ICU nurses have experienced hospital workplace violence, among which professional title, gender, length of service and employment form are contributors.

Keywords: burnout, organizational commitment, turnover intention, hospital workplace violence.

JEL Classification Systems: Labor Management (M54); Dissertations (Y40)

Resumo

O estudo tem como objetivo pesquisar a relação entre burnout, compromisso organizacional e intenção de turnover. Além disso, a violência no ambiente de trabalho hospitalar e seus fatores influenciadores também foram explorados. Uma análise quantitativa foi realizada com uma pesquisa de 305 enfermeiros de ICU em hospitais terciários na província de Sichuan, na China. Os resultados revelam que (1) o burnout está positivamente relacionado à intenção de turnover; (2) compromisso organizacional está negativamente correlacionado com a intenção de turnover; (3) compromisso organizacional modera negativamente o efeito do esgotamento emocional sobre a intenção de turnover; (4) compromisso de continuidade tem um efeito negativo de moderação na relação entre exaustão emocional na intenção de turnover; e (5) 77,7% dos enfermeiros da ICU sofreram violência hospitalar no local de trabalho, para a qual o título profissional, o gênero, o tempo de serviço e a forma de emprego são contribuintes.

Palavras-chaves: Desgaste (burnout), compromisso organizacional, intenção de rotatividade (turnover), violência no local de trabalho hospitalar.

JEL Classificação: Gestão do trabalho (M54); Dissertações (Y40)

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List of Abbreviations

BO	Burnout
EE	Emotional Exhaustion
Cy	Cynicism
RPA	Reduced Personal Accomplishment
TI	Turnover Intention
OC	Organizational Commitment
AC	Affective Commitment
CC	Continuance Commitment
NC	Normative Commitment
HWPV	Hospital Workplace Violence
ICU	Intensive Care Unit
CMB	Common Method Bias

Chapter 1. Introduction

With the increasing demand for people's health care services and the impact of population aging, the contradiction between supply and demand caused by the shortage of global nurses has become increasingly prominent. According to the World Health Organization (2013), there is a shortage of 17.4 million healthcare workers, among these workforces, the shortage of nurses and midwives is up to 9 million. The data from the US Bureau of Labor Statistics (2012) indicated that the nursing shortage will reach 1.05 million by 2022, and a looming nursing shortage is projected in the upcoming years (American Association of Colleges of Nursing, AACN, 2013). However, the shortage of nurses in China is even worse. Based on the World Health Report (2013), the world average nurse-to-population ratio is around 5 nurses per 1000 people. However, according to the National Bureau of Statistics of China (2016), the nurse-to-population ratio is 2.54 nurses per 1000 people, and the Long-term Development Planning for Medical and Health Personnel estimated that 4,450,000 registered nurses are needed by the end of 2020 (Ministry of Health of China, 2011).

The high turnover of nurses is an important contributor to the shortage of nursing staff (You, 2015) while turnover intention is a strong predictor of actual turnover (Hayeset al., 2012; Sjoberg and Sverke, 2000; Jovan, Jui and Shaio, 2003; Egan, Yang and Bartlett, 2004). According to the American Nurses Association (2010), 53% of nurses were considering leaving their positions and 13% of the newly nurses had left in the first year after work (Kovner, 2007). China also faces a high rate of nurse turnover intention. Researches showed that nurses turnover intention rate was 50% in Shanghai (east of China), 50.9% in Shenzhen (South of China), 35.2% in Beijing (North of China) and 21.32% in Zhengzhou (middle of China) (The report of Shanghai Nursing 2005; Ling, 2009; Cheng, 2012; Wang, 2009).

Sichuan is a province in southwest China with a population of 8,262 million, by the

end of 2016, the medical and health expenditure of Sichuan had reached 77.224 billion (RMB), ranking fourth in the country (National Bureau of Statistics of China, 2016). In May 2016, the National Health Commission of the People's Republic of China (PRC) and the Ministry of Finance of the PRC issued *Notifications of Identifying the Fourth Batch of Public Hospital Reform Pilot Cities and Relevant Work,* Sichuan Province has 18 cities as pilot cities (National Health Commission of the PRC, 2016). In January 2017, the Ministry of Human Resources and Social Security of the PRC, the Ministry of Finance of the PRC, the National Health Commission of the PRC and the State Administration of Traditional Chinese Medicine of the PRC jointly issued *Guiding Opinions on the Reform of Salary System in Public Pilot Hospitals.* Sichuan Province was one of the 11 pilot provinces (National Health Commission of the PRC, 2017). Despite the rapid development of health services with national policies in Sichuan Province, the total medical resources are insufficient and unevenly distributed (Health Commission of Sichuan Province, 2016). Based on the National Bureau of Statistics of China (2016), the nurse-to-population ratio is 2.5 nurses per 1000 people in Sichuan, just half of world average and even lower than Chinese average. In addition to the shortage of nurses, the turnover intention rate of nursing staff in Sichuan is still high (Ning, 2007), ranging from 12.6% to 77.2% (Mao, 2010; Duan, 2014). Therefore, reducing nurse turnover rate as well as the intention to turnover is a key approach to alleviate the shortage of nurses in Sichuan Province.

Inside of these problems, the shortage and turnover of nursing staff in Intensive Care Unit (ICU) are particular obvious (Buchan and Aiken 2008; Jastremski, 2006; Oulton, 2006). ICU is the intensive care base for critically ill patients, and is considered as the core of a hospital's comprehensive treatment capacity, which has become an important symbol of the modern hospital's overall medical strength (Bai, 2007). To some extent, the development level of ICU affects the long-term development of hospitals. For ICU nurses, they had a greater intention to leave than that of nurses working in other units (Zhang, 2013; Gu, 2006) since they confront the problem of

responsibility overload, end-of-life issues, and interpersonal conflicts (Brinkert, 2010). The turnover of ICU nurses will lead to a greater loss of costs because it takes more energy and time for hospitals to develop an ICU nurse than a general nurse, and it also influence adversely on an organization's capacity to meet patient demands and provide quality care (Shields and Ward, 2001), and affects the morale of nurses as well as the productivity of those who remain to provide service (Sofer, 1995). Considering the negative outcomes of turnover of ICU nurses on the patients and organization, efforts should be taken to retain ICU nurses.

There are various factors affecting ICU nurses' turnover such as burnout (Heinen et al., 2013; Lagerlund, 2015; Jourdain, 2010), and organizational commitment (Cooper et al., 2005). Additionally, workplace violence is also a factor related to nurse turnover (Wei, Chiou, Chien and Huang, 2016; Sofield and Salmond, 2003). Thus, it is very important to consider these factors when explore ICU nurses' turnover intention. However, to our knowledge, most known studies only analyzed impact factors of ICU nurse's turnover intention, but the comprehensive analysis of ICU nurse's turnover intention in Sichuan, China is not available. In this study, we intend to get an understanding of the relationship between burnout organizational commitment, and turnover intention, figuring out the hospital workplace violence experienced by ICU nurses. By doing so, we expect that we could provide some useful information in terms of how to manage job burnout and retain ICU nurses as well as some suggestions for workplace violence. Therefore, the present study aims to reach the following purposes:

1. In Sichuan province, China, does job burnout and organizational commitment have an impact on the turnover intention of ICU nurses?
2. In Sichuan Province, China, does organizational commitment influence the relationship between burnout and ICU nurse's turnover intention, if it is yes, how it works?
3. In Sichuan province, China, does ICU nurses experience workplace violence, if so, what are the contributing factors?

After this introduction follows a literature background and research hypotheses (chapter 2). In this section it is introduces burnout, turnover intention, organizational commitment and hospital workplace violence among ICU nurses and related research. Then, the relationship between burnout, organizational commitment and turnover intention is discussed. Afterwards, this study develops the research hypotheses as well as theoretical model. Chapter 3 describes the methodology used in this study, including the participants, procedures and analysis strategy. Chapter 4 presents the results. It starts with the analysis of the correlation between burnout, organizational commitment and turnover intention; then, it tests the moderator role of organizational commitment in the relationship between burnout and turnover intention; and finally, analyses the hospital workplace violence and its influencing factors. On chapter 5 it discusses the research results. First, the positive relationship between burnout and turnover intention, as well as the positive relationship between organizational commitment and turnover intention are discussed. Next, the moderators of organizational commitment and continuance commitment in the relationship between emotional exhaustion and turnover intention are focused, and the possible theoretical basis is proposed. Finally, the results of hospital workplace violence are discussed. The study closes with chapter 6 in which we draw the conclusions, present the management implications, limitations of the study, and make some suggestions for future research.

Chapter 2. Literature review

2.1 Burnout

Researches regarding burnout began in the 1970s. The term “burnout” was first proposed by the American clinical psychologist Freudenberger from a clinical point of view to describe the long-term emotional and interpersonal stress faced by medical staff, as “a state of exhaustion caused by long working hours, heavy workload and high working intensity of employees in the helping professions”(Freudenberger, 1974: 159), suggesting that burnout is a symptom of emotional exhaustion that is most likely to occur in the industry of helping others. When the work itself is excessively demanding of individuals’ ability, energy and resources, job burnout occurs (Freudenberger, 1974). Cherniss (1980) indicates that burnout refers to the process of individual professional attitude and behavior that change in an adverse form, the result of which is individual’s burnout, he emphasized the effect of organizational factors on job burnout and believed that job burnout was essentially caused by the “mismatch” between individual effort and reward.

Then, a three-factor definition of burnout was put forwarded by Maslach and Jackson in 1981. It is a physical, emotional and intellectual exhaustion syndrome manifested by negative attitude to professional life and other people with the development of an adverse self-esteem in the individual experiencing chronic fatigue and feelings of hopelessness and helplessness (Maslach, 1981). The three-dimensional concept of burnout contains emotion exhaustion, cynicism (depersonalization) and reduced (diminished) person accomplishment. Specifically, emotional exhaustion represents the stress dimension of burnout and is embodied in individual’s excessive consumption of emotional resources, energy loss and exhaustion, and it is regarded as the most representative indicator of burnout; cynicism focuses on an unserious work attitude due to dissatisfaction with the current situation; reduced personal accomplishment refers to the self-evaluation dimension and individual’s negative attitude to the value of work and their competencies, and this is an indicator of the

outcome of burnout. Shirom (2003) believes that burnout is an emotional state in which individual's energy exhaustion in their work and it is manifested in physical fatigue, emotional exhaustion and cognitive boredom. Etzion (2003) argues that burnout is a slow process, which develops before knowing it, however, if it develops to a certain degree, the individual may suddenly feel exhausted and begins to change his/her attitude to work and others.

Among these definitions, in this study, we adopt the three-dimensional concept of burnout proposed by Maslach and Jackson in 1981, which is widely known and used, and the burnout inventory (MBI-GS) based on this definition is also generally accepted in the academia. Besides, this definition of burnout is mainly for those who work for service industry, and many previous studies have researched the profession of nursing based on this definition (Maslach, 1984; Maslach, 2001). Furthermore, the three-dimensional burnout is suitable for Chinese context (Li, 2003; Li, 2006), and to our knowledge, almost all the research on nurses' burnout in China is based on this definition of burnout. Therefore, we believe that the three-dimensional definition of burnout developed by Maslach and Jackson (1981) is more relevant to our study.

Since the introduction of burnout, researchers have explained and predicted job burnout from different backgrounds and perspectives and develop many different theories. The main theories include the Ecological Model proposed by Carroll and White (1982), the Social Competence Model was proposed by Harrison (1983), the Theory proposed by Hobfoll and Freedy (1993), the Effort-Reward Model developed by Siegrist (1996), the Job-Person Fit theory proposed by Maslach and Leiter (1997) and the Conservation of Resources the Job Demands-Resources Model developed by Demerouti et al. (2001).

The *Ecological Model* was proposed by Carroll and White (1982) to explain burnout from an ecological point of view, suggesting burnout is an ecologically dysfunctional phenomenon and caused by individual and environmental variables. Then, Harrison

(1983) proposed the *Social Competence Model*, which was described as "the ability of individuals to interact with the social environment and influence the social environment"(Harrison, 1983: 30), indicating burnout is not an inevitable result of some jobs, but is related to personal perception of competence. The *Conservation of Resources Theory* (COR) was proposed by Hobfoll and Freedy in 1993, which elaborates burnout on the aspects of job requirements and resources. The fundamental proposition is that people are born to obtain and conserve some of the resources that they regard as valuable, like material goods, social resources and managerial resources, these resources can meet the needs of existing work and help prevent further depletion of resources, therefore, individuals are likely to protect and save these resources. Siegrist (1996) proposed *Effort-Reward Model* based on the Social Exchange Theory, and the basic assumption of this theoretical model is that the factors influencing the occurrence of burnout can be divided into two categories: work effort and work reward. Work effort mainly involves physical and psychological efforts in work, such as physical strength, time, emotional investment and other intangible losses while work reward basically includes salary, welfare, appreciation and intangible enjoyment. Despite a large number of studies have shown that there are many situational factors and personal factors that are related to burnout to different degrees, from the very beginning, the concept of burnout does not refer to the simple problem of personal stress, but the interaction between individuals and the work situation. According to this assumption, Maslach and Leiter (1997) proposed the *Job-Person Fit Theory*, which believes that the generation of burnout is not a unilateral effect or cause, but the matching or mismatch between individuals and work. In the light of COR theory, Demerouti et al. (2001) put forward the *Job Demands-Resources Model* (JD-R), arguing that job demands and job resources are two kinds of job characteristics that cause burnout. Job demands represent needing demands in the work and it is associated with psychological contribution, while job resources refers to characteristics that beneficial to achieve job goals, promote individual growth or decrease job requirements.

2.1.1 Burnout antecedents

In the light of literatures, six domains factors were explored in terms of employees' burnout. They are job dissatisfaction (AI-Ma'aitah et al., 1999; Armstrong-Stassen et al., 1994; Dolan, 1987), job stress (Shelledy et al., 1992; Lee and Ashworth, 1996), over workload and pressure (Aiken et al., 2002; Robinson et al., 1991), the involvement in the workplace (Garrett and McDaniel, 2001; Melchior et al., 1997), the perceived support from peers and supervisors (Fagin et al., 1995; Robinson et al., 1991) and the opportunities for career promotion (Armstrong-Stassen et al., 1994).

Nurses are particularly susceptible to burnout (Maslach et al., 2001), 40 % of nurses in four of five countries were dissatisfied with their jobs, which lead to burnout (Aiken, 2001). Factors related to ICU nurses' burnout including job stress, satisfaction, organizational commitment, and empowerment (Merlanie et al., 2011; Kim, 2010). According to literatures, the influencing factors of nurses' burnout mainly involve two categories, that is, demographic characteristics and work-associated factors (Maslach, 2001).

Age is one of key demographic variables that related to burnout, but the influence of this factor on nurses' burnout is not consistent. For instance, the level of burnout among nurses who are under 34 is higher than those who above 35 (Tunc et al., 2009), which was supported by the research from Sundin et al. (2007), suggesting that individuals' age was negatively associated with emotional exhaustion and depersonalization, this may due to the reason that senior nurses are more experienced and capable to deal with problems. In contrast, a study of ICU nurses indicated that the level of emotional exhaustion was higher among nurses who are older than 30 (Losa Iglesias, 2010), and burnout is more likely to happen to those senior nurses, as a result of the accumulation effect (Schaufeli, 1996).

Working years as a nurse is also a significant factor related to burnout, but different

scholars have different research results. According to Alacacioglu (2009), working years was positively correlated with nurses' burnout, while Sundin's (2007) study suggested that the shorter the working year, the higher the level of nurses' burnout. Different research outcomes may associate with the different cultures and backgrounds. In China context, nurses with working years between six to ten years are probably to experience burnout, especially in the aspect of emotion exhaustion and depersonalization (Hou, 2010).

The *marital status* is another demographic variable involves in this phenomenon. Nurses who got married were more likely to burnout compared with those who were unmarried (De los Rios-Castillo, 2007). In contrast, studies from Tunc (2009) and Sahraian (2008) found that nurses who were married experienced a lower level of burnout, possibly because they got more support from their spouse when facing occupational stress.

Studies on *personality factors* of nurses' burnout mostly target their strong personality traits. According to researches, strong personality could explain 35% of the variation in burnout and plays a mediator role in the relationship between job stress and job burnout (De Pew, 1999), it is negatively related to nurse burnout (Collins, 1996), but positively correlated with their antagonism, optimism (Hsieh, 2004). Additionally, neuroticism had a positive predictive effect on burnout while extroversion had a negative predictive impact on burnout (Shimizutani, 2008), and individuals with higher self-esteem as well as mental personality are more likely to experience the problem of burnout (Li, 2007; Zhou, 2010).

Individuals' *coping style* depends on their coping resources has an important influence on burnout. In the face of work pressure, positive coping style of nurse is negatively associated with depersonalization and positively correlated with personal accomplishment, while emotional coping style is positively related to depersonalization and negatively correlated to personal accomplishment (Ben-Zur,

2007; Jaracz, 2005). Furthermore, Gueritault's (2000) survey indicated that avoidance, pessimism and other coping styles had negative predictive effects on burnout while optimistic, and self-protection coping styles had positive predictive impacts on job burnout among nurses.

Regarding work-associated factors, *work stressors* become relevant since nurses who experienced patients' pain and death, poor interpersonal relationships, and overload work were more likely to report stress and burnout (Peyne, 2001; Garrosa, 2008). Furthermore, a multivariate regression analysis of burnout of 1102 nurses from private hospitals and public non-profit hospitals in Sweden found that overburden of work and role conflict were important predictors of emotional exhaustion (Hansen, 2009). However, compared with average nurses, ICU nurses also face the problem of responsibility overload, end-of-life issues, and interpersonal conflict (Brinkert, 2010), and they are more possibly to suffer from stress and burnout (Grandey, 2005).

Social support is another work- associated variable that associated with nurses' burnout. Perceived support from colleagues had a stronger negative effect on individuals' emotional exhaustion and depersonalization (Jenkins, 2004). Additionally, Sundin's (2007) survey of 1561 nurses in Sweden indicated that support from colleagues and patients were negatively related to every dimension of nurses' burnout and this conclusion was supported by Ben-Zur (2007).

Finally, *authorization.* According to Organizational Authorization Theory from Kanter (1993), individual work attitudes and behaviors are determined by the social structure of the workplace rather than individual preferences. When employees feel that the organization provide them with growth opportunities and meet their work needs, they feel empowered. By contrast, as individuals' work needs are not met by the organization, they may feel unauthorized, which would affect the work efficiency and result in job burnout and job satisfaction (Kanter, 1979). Similarly, authorization is negatively related to emotional exhaustion and depersonalization, and positively

related to person accomplishment (Tersa, 2004), and the support of authorization had the highest correlation with job burnout, which could be used as a protective factor against burnout (Hochwalder, 2008).

2.1.2 Burnout outcomes

A large amount of studies has been conducted to clarify the outcomes of job burnout. Research evidence believes that burnout is harmful to individuals in terms of both physical and psychological illness (McGrath et al., 1989), as well as detrimental to the organization in which they are working for such as absenteeism (Schaufeli et al., 2009), poor job performance and declined citizenship behavior (Cropanzano and Byrne, 2003; Iverson and Erwin, 1998), high turnover rate and low job satisfaction (Jayaratne and Chess, 1984; Abu-Bader, 2000), less productive and poor work efficiency (Maslach and Jackson, 1981; Schaufeli, 2003). Consequently, burnout is a pervasive challenge not only for employees, but also for organizations (Özbağ, et al., 2014).

Freudenberger (1974) pointed out that burnout is a kind of disease related to the long-term emotional and interpersonal stress, and Schaufeli et al. (2001) described it as neurasthenia, which was defined in the International Classification Diseases (ICD-10, 1994). Simultaneously, Schaufeli (2003) positioned burnout as a psychiatric disorder, indicating that in some nations, burnout is regarded as a significant issue of occupational medicine. Besides, burnout is a form of mental dysfunction and a distinctive form of mental ill-health (Maslach, 2001; Schaufeli, 1993), which associated with more than 100 diseases or symptoms (Golembieski, 1981) such as coronary heart disease (Maslach, 2001).

For individuals, burnout seriously affect their health and gradually develops into a negative and sentimental mood and psychology diseases such as depression, helpless and anxiety, which further damages and threatens their physical and mental health and

affects the quality of life (Duquette, 1994; Parker, 1995; Lee, 1993). In order to cope with these problems, some of them may use alcohol and drugs which could eventually cause health-impairing behaviors (Robinson, 1991; Maslach, 2001). Healthcare workers' emotional demands, excessive workload and poor working conditions led to depression through growing high job burnout (Hakanen et al., 2008), and owing to high level of burnout, employees suffered from psychosomatic symptoms, such as headaches, cardiovascular diseases (Schaufeli and Bakker, 2004). According to Maslah (2001), burnout has been associated with the personality dimension of neuroticism and the psychiatric profile of job-related neurasthenia. Nevertheless, a more widely believed hypothesis is that burnout lead to mental dysfunction, which can result in negative impacts on mental health, such as anxiety, depression, low self-esteem.

Declining job performance is considered one of the most common negative consequences of job burnout (Maslach, 1982), and it seems that it is unable for healthcare organizations with high levels of burnout among employees could achieve the goal of performance characteristics such as patient-centeredness put forward by the medicine organization as a goal to improve the service quality (Vahey, 2010). As a professional group serving the public, nurses are more likely to show inferiority, indifference, aversion to work and indifference in their work, their poor job performance leads to a decline in work efficiency (Parker, 1995). In addition to this, burnout plays a mediating role in the relationship between occupational stress and job performance (Woodhead, 2016), and a significant inverse relationship between burnout (emotional exhaustion) and job performance has also been found (Wright and Bonett 1997; Wright and Cropanzano, 1998), therefore, nurses with high level of burnout can hugely affect their job performance and further contribute to poor patient outcomes (Aiken, 2002).

Furthermore, high levels of burnout are also associated with employees' low levels of job satisfaction, which lead to mistakes in judgment and reduces work efficiency of

employees during the work (Rosales and Labrague, 2013) as well as lower productivity (Maslach, 2001). Apart from this, burnout of nurses seriously affects nursing quality such as difficulties of offering better service and guaranteeing patients' safety (Morse et al., 2012), which adversely influence the satisfaction of patients (Gravlin, 1994; Halbesleben, 2008).

Burnout can lead to many patterns of job withdrawal (Leiter and Maslach, 2009), and is recognized as a critical factor on nurses' intention to leave (Aiken et al., 2002). Study on burnout among healthcare workers, nurses in particular, suggests that work stressors and burnout are important determinants of turnover intention, and eventually voluntary turnover (Aiken, 1997; Lake, 1998; Maslach, 1982; Maslach, 1986; Pearlin, 1978). Additionally, Spence (2009) indicated that authorization, disrespectful behavior at work and burnout can together explain 28% of the variation in nurses' turnover intention. It is true that individuals who experience burnout have a lower level of satisfaction and become less committed to the organization (Moore, 2000; Singh, Goolsby and Rhoads, 1994), but the worst outcome is turnover (Drake and Yadama, 1996). Furthermore, burnout also affects the morale of nurses who remain to provide service (Sofer, 1995) and is involved with their decision to leave the job (Leiter and Maslach, 1988).

2.2 Turnover intention

Turnover intention has been researched in a variety of fields including health care industries and nurse specialties. The term of "turnover intention" is described as various terms with different perspectives, such as intent to leave, intention to leave, intention to quit and withdraw, although the names are slightly different, turnover intention is widely regarded as the most effective predictor of employees' turnover (Steel and Ovale, 1984; Carsten and Spector, 1987; Mobley, 1977). The term of "turnover" was first proposed by Rice (1950) as a social process in which the interaction between an individual and an organization increases once the individual enters the organization, if

the motivation and interaction between the two do not match properly, the individual will have the turnover behavior. Turnover intention is a psychological state before turnover, and a withdrawal behavior after employee experience dissatisfaction (Porter and Steers, 1973). Furthermore, Mobley (1977) defined turnover intention as a behavior of an employee considering deliberately leave the organization after working for a specific organization for a period of time, which is a general performance of being dissatisfied with the current job, and the tendency to look for other jobs and the possibility of finding another job (Mobley and Hollingsworth, 1978; Miller and Katerberg, 1979).

March and Simon (1959) propose a model based on Maslow's Hierarchy of Needs Theory and Herzberg's Two-Factor Theory, in attempt to explore the real reasons for individuals to leave their jobs, and emphasize the decision whether to quit or not according to the perceived desire of individuals. The model takes full account of impact of the labor market on individuals, and believes that if employees are dissatisfied with their jobs, they will compare alternative job opportunities in the labor market, specifically, they will make a balance between the advantages and disadvantages and compare the current job with the job available in the market, and then choose the right job for them.

Another model was developed by Price (1977), who considered two important factors, namely, job satisfaction and job opportunities. If the level of satisfaction of employees decreases and external job opportunities are available, employees are probably to turnover. Price mentioned that job satisfaction will be affected by the initial variables such as remuneration, interpersonal relationship, performance feedback, two-way communication and centralized management. Based on the Expectation Theory and Social Exchange Theory, Price and Mueller developed the Price-Mueller Turnover Model (2000), indicating that employees enter an organization with specific expectations and values, when the expectations and values are satisfied, employees will satisfied with their work and make a commitment to the organization, so they are more

likely to stay in the organization (Kim, Price and Mueller, 1996; Price, 2001).

In 1977, Mobley proposed the Intermediate Linkage Model (Mobley, 1977), which mainly explained the whole thinking process when an employee decided to leave. This model illustrates the specific process and mechanism of action between job satisfaction and employee's final voluntary turnover, such as assessing current situation and perceived satisfaction, considering turnover, assessing the expected utility and cost of search behavior as well as the willingness to search, evaluating other job opportunities, comparing with the status quo, generating turnover intention and actual turnover behavior.

Generally, turnover can be divided into two types according to whether employees voluntary leave the organization, namely, voluntary turnover and involuntary turnover (Price, 1977). Voluntary turnover refers to the turnover of employees based on their wishes while involuntary turnover represents the act of forcing employees to leave an organization rather than the will of themselves. Reasons for involuntary turnover can be attributed to personal factors (e.g., the individual is not competent for work or violates relevant laws and regulations) and organizational factors (e.g., the need to reduce the number of employees due to mismanagement or restructuring). Dalton et al. (1979) further divided voluntary turnover into functional turnover and dysfunctional turnover. Functional turnover suggests that individuals want to leave, and the organization agree with the idea, which has a positive impact on the organization, such as solving many problems of firing employees. By contrast, dysfunctional turnover refers to individuals want to leave but the organization hopes that they could stay because these employees contribute to the organization in their work, and their leaves is detrimental to the organization. Additionally, Abelson (1987) classified turnover into four categories: avoidable voluntary turnover, inevitable voluntary turnover, avoidable involuntary turnover and inevitable involuntary turnover. Specifically, avoidable voluntary turnover indicates that employees change their turnover intention to stay after the organization try its efforts and some effective measures were implemented such as

improving the working condition and increasing the level of salary; inevitable voluntary turnover refers to employees want to leave the organization because of pregnant, immigration and so on; avoidable involuntary turnover involves mandatory turnover of employees by the organization such as firing compulsory retirement, while inevitable involuntary turnover means employees do not want to leave but the organization is unable to control the situation such as employees get sick or die.

2.2.1 Influencing factors of nurses' turnover intention

Individual factors. Factors related to nurses' turnover intention are various and complicated (Huang, 1996). Inside of these, demographic variables such as gender, age and marital status have been found associated to this phenomenon. Maslach (2001) found that the turnover rate of male nurses was much higher than that of female nurses, which may be because there are fewer men engaged in nursing work, and they think that their values are not reflected, therefore, they are prone to alienation. Age is another reason for nurse's turnover. Younger nurses are more likely to leave than older nurses, possibly because younger staff are less experienced while older nurses find it more difficult to find jobs as they get older, and they have to shoulder more family responsibilities (Coomber and Barriball, 2007). Furthermore, unmarried nurses have a higher turnover rate than married ones since they have fewer family and financial burdens (Shimizu et al., 2005), and due to shifts of nursing, many nurses choose to turnover as they cannot meet the needs of family roles, and are affected by the family values when family-work conflict occurs (Huang, 2015).

Work-associated factors. Based on a report from the UK (Office of Manpower Economics, 1999), about 10 % of newly registered nurses left their jobs within a year of registration because difficulty in adapting to the work. Inside of work- associated factors, work overtime is an important contributor for nurses' leave (Shoorideh et al., 2015). Length of service is another significant consideration, which has an inverted "U" relationship with turnover intention (Larrabee, 2003), and with the extension of tenure,

nurses start to quit (Cao, 2000). Additionally, nurses in different positions have different attitudes toward turnover. The higher position of nurse, the more resources available, and therefore, the greater their mobility (Dear, 1982). In contrast, Guo (2010) found that nurses with higher positions were less likely to turnover than nurses with lower positions. Frequency of shifts is another key source of turnover, with 25% of nurses chose to turnover because of night shifts (Stone, 2006). Furthermore, the mismatch between job reward and job effort is also a critical factor in the turnover of nurses in Europe (Hasselhorn, 2004).

Occupational factor. Nurses' turnover intention is also related to the particularity of their work to some extent. A survey of 500 nurses indicated that more than 45% of nurses work more than 8 hours a day, 35% of them work more than 5 days a week and the excessive labor poses a great threat to the physical and mental health of these nursing staff, resulting in serious job burnout and turnover (Cheng, 2011). Nurses also feel overwhelmed by job evaluations. According to Wang (2012), nurses working for tertiary hospitals were tired of variety of assessment and examination, which directly led to the turnover. Furthermore, occupational disease susceptibility increases job risk, and the turnover rate of nurses increased sharply after the outbreak of Severe Acute Respiratory Syndrome (SARS) in 2003 (Chang, 2006). In addition, nurses with high self-actualization needs also tend to turnover because of poor career prospects and limited career development opportunities (Sharon, 2003).

Environmental factor. There are both internal and external environments influence the turnover of nursing staff. The relationship between leaders and colleagues as the internal environment, while the relationship between patients is the external environment. Among internal environment, organizational support and relationship between colleagues are main elements associated with turnover. When nurses receive organizational support and appreciation, they will show higher work enthusiasm, and their intention to leave will decrease accordingly (Guo, 2010). By contrast, nurses prefer to leave their jobs because of stress and lack of support (Finlayson, 2007), and

strict management (Stone, 2006). Additionally, teamwork is also closely related to turnover, positive colleague relationship is an important factor for nurses' retention, but the turnover of colleagues has a negative impact on on-the-job nurses (Larrabee, 2003; Wang, 2011). In the external environment, doctor-patient relationship is a direct factor affecting the turnover, nurses who have been abused, threatened or attacked showed high level of work stress, declined sense of identity and strong tendency to leave (Hou, 2010).

2.2.2 Outcomes of nurse's turnover

When nurses leave their positions, the organization will recruit new nurses to take over the work of the turnover nurses, the arrival of these new nurses infuse fresh blood into the organization since they may have more passion and motivation to work, and generate new ideas and innovations, which to some extent promote the development of the organization (O'Brien-Pallas et al., 2006). However, many studies have shown that nurses' turnover adversely impacts the economic, patient outcomes and nursing quality.

Currently, even though there is no unified definition and standard measurement of *economic impact* of nurse turnover, the turnover of nursing staff is an obvious huge loss for hospital (O'Brien-Pallas et al., 2006). According to a report from 237 Healthcare Organizations (HCOs, 2007), organizations spend $300,000 annually in nurse turnover costs for every 1% increase in turnover, and the cost to replace a medical-surgical nurse and a specialty nurse is $42, 000 and $64, 000, respectively (Strachota et al., 2003). There are direct costs and indirect costs associated with nurse turnover. Direct costs indicate the financial expenditure directly borne by an organization that occurred during the hiring process, including replacement cost such as advertising cost, recruitment cost (O'Brien-Pallas et al., 2010). Indirect costs, another major cost of an organization, should not be ignored due to the combined effect of declined productivity of the new workers and lower staff morale (O'Brien-Pallas et al., 2010). Here, indirect costs can be divided into four parts: the vacancy cost caused by turnover of nurses (when nurses

leave the job, the workload and the cost of overtime of other nurses will increase and the lack of nurses will lead to the delay of patient check-in and decline of nursing service quality); the cost of not getting a return on previous human capital investment for employees; the learning curve cost (new employees are less productive and more likely to make mistakes at work, the difference between the performance of new and old nurses result in the loss of time, medical materials and financial costs caused by the patient fails to receive treatment in time or the decline of medical service quality); efficiency costs (low efficiency costs before nurses leave the job; cost of loss of excellent skills and experience, and loss of efficiency caused by frequent turnover of excellent nurses to other nurses in terms of morale and organizational cohesion, therefore, nurses who are still on the job to provide service may gradually decrease their passion and enthusiasm as well as morale, and eventually turnover.) (Bliss, 2000; Fitzenz, 1998; Brown, 2000; Cheryl, 2004).

As can be seen from above, among the turnover costs of nurse, direct costs account for a small proportion while indirect costs make up a large percentage of whole costs. From finding a new employee to developing an experienced one, the cost of employee turnover is 2.7 times than the cost of replacement, and the cost of a good technician leaving is even higher (Fitz-Enz, 1997). Nevertheless, the replacement cost is only part of the direct cost, when calculating the cost of a nurse's turnover, the direct cost and the indirect cost should be added, therefore, the cost of a nurse's turnover is staggering.

A second type of impact is on *patient outcome and nursing quality*. The high turnover rate of nurses not only affects the cost of hospital, but also impacts patient safety and the prognosis of patients (Beecroft et al., 2001), probably because the turnover of nursing staff contributes to a decline in nurse-to-patient ratios before organizations recruit qualified new nurses. Based on a research by the America Department of Health Care Quality and Research (AHRQ, 2008), the nurse-to-patient ratio has a strong relationship with the nursing quality of care, and a reduction in the nurse-to-patient rate lead to patients' poor prognosis, such as urinary infections, pneumonia,

shock, upper gastrointestinal bleeding, prolonged hospitalization, and mortality. Research by Evidence-Based Medicine Practice Center (EPC, 1992) also suggested that hospital nonfatal adverse outcomes such as hospital infections, pressure sores, and patient falls are closely associated with the number of nursing staffing. Besides, Aiken's (2002) survey of 168 hospitals found that when nurse-to-patient ratio rose from 1:4 to 1:8, the patient mortality rate increased by 7%. With fewer nurses, patients' acuity and demand increased accordingly (O'Brien-Pallas, 2001), and hence, the remaining nurses have to compress their nursing time as they serve more patients, which can lead to the occurrence of nursing errors and accidents (Aiken, 2002). Additionally, nurse's turnover decreases the morale and job satisfaction of in-service nurses, increases their workload, thus affects the quality of nursing care and patient satisfaction, and further affects the economic and social benefits of the hospital (Zboril-Benson, 2000; Cheng, 2006).

2.2.3 The relationship between burnout and turnover intention

In western nations, various researches have showed the positive correlation between nurses' burnout and turnover intention (Hasselhorn, 2005; Jourdain and Chenevert, 2010). In China, the relationship between these two variables on nurses has become a heated topic in recent years (Bao et al., 2016; Duan et al., 2017; Liu, 2018). Surveys indicate that the emotional exhaustion of job burnout has a predictive effect on turnover intention, and with the aggravation of burnout, nurses are more likely to leave (Li, 2007; Su, 2009); Li, 2009).

Compared with average nurse, ICU nurse take on more responsibilities and stress, and are more likely to suffer from burnout and turnover (Shoorideh et al., 2015), thus, the burnout and turnover of ICU nurses should be paid more attention (Dai et al., 2011). However, in the light of literatures, only few studies have explored the relationship between ICU nurses' burnout and turnover intention in China, and to our knowledge, no study on ICU nurse's burnout and turnover intention has been found in Sichuan

province, China. Thus, this study will try to explore the relationship between burnout and turnover intention among ICU nurses in Sichuan province, according to the research mentioned above, we propose that in Sichuan, China:

Hypothesis 1a: Emotional exhaustion is positively correlated to ICU nurse's turnover intention

Hypothesis 1b: Cynicism is positively correlated to ICU nurse's turnover intention

Hypothesis 1c: Reduced personal accomplishment is positively correlated to ICU nurse's turnover intention

2.3 Organizational commitment

The term of organizational commitment was first proposed by American sociologist Becker (1960) as a psychological phenomenon that employees have to stay in the organization with their "unilateral investment" increases, which reflects a psychological contract between an employee and an employer. The concept of organizational commitment has gradually formed two basic theories during years of research and development, namely, behavioral theory and attitudinal theory (Mowday, Steers and Porter, 1979). The former one views that organizational commitment is a promise that employees have to stay in the organization in order not to lose the return of years of investment, which concerns primarily with how individuals affect attitudes consistent with behavior; and attitudinal theory believes that organizational commitment is an individual's attitude to the organization or inner identity tendency, and it is a relative degree of an individual's emotional attachment to the organization, or participation in the organization, which can be divided into three aspects: first, employees identify with and believe in the organization's goals and values; next, staff are willing to devote more energy to the work of the organization; and finally they are proud to be members of the organization. Owing to different research backgrounds, different researchers have otherness understandings on the concept of organizational commitment. Table 2-1 shows some definitions.

Table 2-1. List of definition of organizational commitment

Scholars (Year)	Definition
Kanter (1968)	OC is an emotional orientation that reflects the fundamental emotional connection between individuals and groups.
Hall, Sehneider, Sinygren (1970)	OC is the process of the integration of organizational goals and individual goals.
Sheldon (1971)	OC is an attitude of an employee to the organization, which combines the individual's identification with the organization.
Hrebiniak, Alutto (1972)	It is an employee' unwillingness to leave, and a structural phenomenon after the transaction cost balance between an individual and the organization.
Porter, Steer (1974)	OC is an individual's attitude or positive inner disposition towards an organization.
Mowday (1982)	OC is the relative strength of individual identity and participation in a particular organization.
Winener (1982)	OC is a normative pressure to internalize of individuals, which makes the individual's behavior consistent with the organization's goals and interests.
O'Reilly, Chatmen (1986)	It is a psychological contract between employees and the organization, which is an implicit contract and expectation.
Meyer, Allen (1991)	OC is the psychological connection between employees and the organization, and this connection can reduce the loss of employees.
Robbins (1997)	OC is an attitude of employees to a specific organization and its goals, and they want to maintain their organizational membership.
Robbins (2001)	OC is the degree of loyalty, identity and participation in organizational activities.
Mathews, Shepherd (2002)	OC is a strong desire of individuals to work hard and stay in the organization to achieve organizational goals and values.
Hulpia, Devos, Rosseel (2009)	OC is the relative degree to which an individual identifies with and invests in a particular organization.

Source: Data collected by the author

Chinese scholars put forward some specific definitions based on Chinese culture.

According to Liu (2001), organizational commitment refers to employees' recognition and devotion to their organization in terms of ideology, emotion, psychology and their willingness to share all responsibilities and obligations involved as a member of the organization, and work hard with a sense of ownership and dedication. Ling (2000) believed that organizational commitment is an attitude that can be used to explain why employees want to stay in the enterprise, he proposed a five-factor structure Chinese employee organization commitment scale. Furthermore, Lu (2005) defined organizational commitment as that employees internalize organizational goals and values into their own goals and values, have a strong sense of identity to the organization and a high motivation to work, and are willing to stay in the organization and to make contributions.

2.3.1 The structure of organizational commitment

Based on the economic exchange, Becker (1960) pointed out that organizational commitment is a contractual relationship between employees and the organization, and it is the result of side-bet to maintain the activity coherence. In an organization, this kind of side-bet can refer to anything of value such as welfare, energy and skills, the more employees invest in the organization, the less they want to leave. In the light of Porter et al. (1976), organizational commitment is more of an emotional attachment of employees to the organization than an economic tool that Becker (1960) highlights, but it is actually a single-factor emotional commitment. Wiener (1982) viewed that organizational commitment is a normative pressure to internalize individuals, while Staw and Salanick (1977) regarded it as a behavioral commitment from the perspective of social psychology.

Angle and Perry (1981) believed that organizational commitment represents an attitude towards the organization and put forward three forms of organizational commitment, namely compliance, identification and internalization**.** Compliance is an act or attitude of receiving a particular reward; identity is an individual's acceptance of the power of

building and maintaining satisfying relationships; internalization is the acceptance of influences arising from the consistency of attitudes and actions with existing values. However, subsequent studies found that it was difficult to distinguish identity from internalization since they were highly correlated, and they combined identity and internalization to normative commitment.

The three-factor structure model of organizational commitment was put forward by Allen and Meyer (1991) based on a comprehensive analysis and review of results of previous studies, which contains affective commitment, continuance commitment and normative commitment. Affective commitment refers to the strength of personal identification and participation in a particular organization, adherence to and acceptance of the organization's goals and values, and the willingness to work for the organization and the desire to stay in the organization. This kind of commitment emphasizes employees' attitudes and their adherence. Continuance commitment represents individuals' recognition to the organization, if they leave the organization, they will lose the unilateral investment of existing value; and normative commitment stems from the socialization of individuals, and is marked by family, culture and employment organizations. When employees join an organization, they draw from their early family and the culture around them, gradually, they show desires to achieve a level of loyalty to the organization. If the organization provides a better benefit, employees' responsibilities will continue until they have paid off the organization's debts. Meyer and Allen (1991) viewed employees' affective commitment as they want to keep employment relationship with the organization, and employees with high levels of affective commitment want to stay with the organization; continuance commitment involves employees' perception of the costs of leaving the organization, employees with high levels of continuance commitment believe that they need to stay in the organization, while normative commitment reflects the sense of responsibility that employees continue to employ, and employees with high levels of normative commitment feel that they ought to stay in the organization.

After years of research on organizational commitment, Chinese scholars found that the structure of organizational commitment of Chinese employees is differ from that of western employees (Liu, 2006), in this circumstance, Ling et al. (2000) proposed the five-factor structure of organizational commitment, namely, ideal commitment, economic commitment, opportunity commitment, affective commitment and normative commitment. Among these commitments, the first three commitments are unique to Chinese employees, while the latter two commitments are the same as those in the west (Ling, 2006). Ideal commitment indicates that individuals value their own growth and pursuit the realization of ideal, thus, they pay great attention to whether their expertise can be used in the organization, and whether the organization can provide them with various working conditions, learning and promotion opportunities to achieve the ideal. Economic commitment refers to employees stay in the organization for fear of financial losses if they leave; opportunity commitment represents staff stay in the current organization because they cannot find other satisfied organization or they have no chance to find another job due to their low technical level (Ling, 2000). The difference between the three-factor model developed by Meyer and Allen (1991) and the five-factor model proposed by Ling (2000) lies in the different concepts of organizational commitment (Ling, 2006).

2.3.2 The relationship between organizational commitment and turnover intention

Organizational commitment is negatively correlated with turnover intention, that is, the higher the organizational commitment, the lower the turnover intention (Atchison and Lefferts,1972; Kraut, 1975; Steers, 1977; Sheridan and Abelson, 1983; Michaels and Spector, 1982; Rabinowitz, 1993). Additionally, organizational commitment plays a greater role than job satisfaction in predicting employees' turnover intention (Porter, 1974; Steers, 1977; Angel and Perry, 1981), and actual turnover behavior (Egan et al., 2004), because it is a more holistic and persistent evaluation response rather than a transient emotional response to a job (Porter, 1974). Therefore, organizational

commitment is more influential than job satisfaction in turnover decision (Kraut ,1975; Michael and Spector, 1982; Robbins, 2005). In China, some studies have showed that organizational commitment is significant negatively correlated with turnover intention (Ye, 2005; Cui, 2003; Kuang, 2009). However, the body of research concerning the relationship between organizational commitment and turnover intention among ICU nurses in China remains relatively small. According to the studies above, we hypothesized that in Sichuan, China:

Hypothesis 2a: Affective commitment is negatively correlated to ICU nurse's turnover intention

Hypothesis 2b: Continuance commitment is negatively correlated to ICU nurse's turnover intention

Hypothesis 2c: Normative commitment is negatively correlated to ICU nurse's turnover intention

2.3.3 The relationship between burnout, organizational commitment and turnover intention

Organizational commitment refers to the attitude of employees to the organization in which they work for (Meyer and Allen, 2001), staff with high level of organizational commitment can deepen their loyalty to the organization and willing to stay (Cooper et al., 2005), by contrast, employees who are less committed to their organization have more tendencies to make mistakes in the work, experience burnout and tend to be absent (Tan and Akhtar, 1998; Wright and Hobfoll, 2004). Organizational commitment has been regarded as one of the most often used predictors of turnover (Allen and Meyer, 1996; Cohen, 1993; Price and Mueller, 1981; Steers, 1977). If employees feeling emotionally exhausted by their jobs, are developing depersonalized views of the customer they serve, and are feeling no sense of achievement, then they would probably become less motivation and pursuit the organization's goals, and more likely to withdraw from work both psychologically and physically (Leiter,

1988). Therefore, organizational commitment may lead to burnout, and ultimately cause job withdrawal and turnover (Jackson et al., 1986; Lazaro, Shinn and Robinson, 1984).

Through a large amount of literature review, Price (2001) proposed the Price-Muller Turnover Model, indicating that organizational commitment has a mediating effect on the relationship between job burnout and turnover intention. Similarly, empirical researches showed the same results (Yu, 2012; Bian, 2004). From the above research, we can know that organizational commitment is an important factor for employees' burnout and turnover intention, and some studies suggest it plays a mediating role in job burnout and turnover intention. However, the number of researches regarding the moderator role of organizational commitment in the relationship between job burnout and turnover intention among nurses remains limited, and to our knowledge, in Sichuan, China, the correlation between organizational commitment, burnout and turnover intention in ICU nurses has not been retrieved. Therefore, from these backgrounds, we hypothesized that in Sichuan, China, organizational commitment moderates the effect of ICU nurses' burnout on turnover intention such that the negative relationship between burnout and turnover intention is weaker among ICU nurses with higher organizational commitment than among those with lower organizational commitment. Specifically,

Hypothesis 3a: Organizational commitment negatively moderates the effect of ICU nurse's burnout($3a_1$), emotional exhaustion($3a_2$), cynicism($3a_3$), reduced personal accomplishment($3a_4$) on turnover intention.

Hypothesis 3b: Affective commitment negatively moderates the effect of ICU nurse's burnout($3b_1$), emotional exhaustion($3b_2$), cynicism($3b_3$), reduced personal accomplishment($3b_4$) on turnover intention.

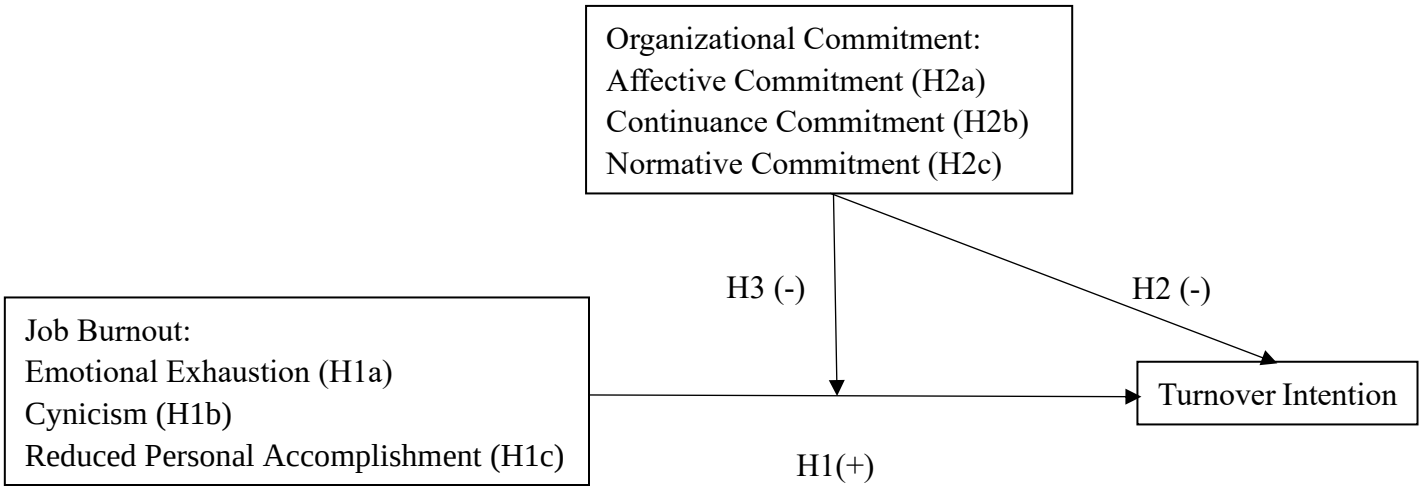
Hypothesis 3c: Continuance commitment negatively moderates the effect of ICU nurse's

burnout($3c_1$), emotional exhaustion($3c_2$), cynicism($3c_3$), reduced personal accomplishment($3c_4$) on turnover intention.

Hypothesis 3d: Normative commitment negatively moderates the effect of ICU nurse's burnout($3d_1$), emotional exhaustion($3d_2$), cynicism($3d_3$), reduced personal accomplishment($3d_4$) on turnover intention.

Therefore, based on the literature review and the above hypotheses, the model of the relationships between burnout and organizational commitment and turnover intention regarding to the ICU nurse is depicted in Figure1:

Figure 1. Hypothetical model of the relationships between burnout and organizational commitment and turnover intention regarding to the ICU nurses in Sichuan Province, China



2.4 Workplace violence

Recent years, workplace violence (WPV) has been a rising issue worldwide (Abualrub and Khawaldeh, 2014; Kitaneh and Hamdan, 2012; Sato et al., 2013), different organizations have different definitions of workplace violence. According to National Institute for Occupational Safety and Health (NIOSH, 1996), workplace violence

involves violent acts, including physical assaults and threats of assault, directed toward persons at work or on duty. Based on the US Department of Transportation (2004), workplace violence has been regarded as assaults, other type of violent acts or threats which happen in or are associated to the workplace and entail a substantial risk of physical or emotional harm to individuals, or damage to government resources or capabilities. Furthermore, the International Labor Office, the International Council of Nurses, the World Health Organization, the Public Services International jointly develop the *framework guidelines for addressing workplace violence in the health sector* and defined workplace violence as "incidents where employees are abused, threatened or assaulted in the environment associated with their work … involving an explicit or implicit threaten to their safety, well-being or health" (ICN/WHO/PSI, 2003: 2). WPV is a multifaceted issue, which concerning several aspects such as verbal attack (e.g., insulting), physical attack (e.g., hitting) and sexual harassment and assault (Cooper and Swanson, 2002). The source of violent behaviors ranges from patients, patients' families and friends, colleges to supervisors (Cooper and Swanson, 2002).

2.4.1 Nurses' workplace violence

Workplace violence has been a widely phenomenon in healthcare sector, and nurses are more likely to experience WPV (National Institute for Occupational Safety Health, 1996; Warren, 2011; Hills and Joyce, 2013; Lanctôt and Guay, 2014). Based on the report from Bureau of Labor Statistics, Census of Fatal Occupational Injuries and the World Health Organization (WHO), healthcare professionals were 16 times more likely to be suffered from violence than other industries (Elliott, 1997). Inside of these, nurses are most at risk of experiencing workplace violence (Kamchuchat et al., 2008), with the annual rate of violent victimization for nurses was 8.1 and this figure is likely to grow (Catalano, 2004). Previous studies indicated that more than 50% of nurses have suffered from workplace violence (AbuAlRub and Al- Asmar, 2014; Kitaneh and Hamdan, 2012; Pai and Lee, 2011), and the figure for Asia was 57.6% (Spector et al., 2014).

China faces a similar situation. For example, Zhang's study (2017) on 4,125 Chinese nurses from seven geographical regions indicated that 25.77% of nurses suffered from physical violence and 63.65% of them experienced non-physical violence. Additionally, a survey from Wei (2016) targeted nurses in Taiwan suggested that 49.6% of 26,979 nurses had experienced workplace violence and 46.3% of them had been exposed to non-physical violence. It is worth noting that compared with other nurses, ICU nurses had a higher prevalence of workplace violence, especially in physical violence (Park et al., 2011; Wei et al., 2016).

2.4.2 Workplace violence antecedents

According to literatures, contributors to workplace violence can be classified as follows: (1) Organizational factors such as the attributes of department (e.g., ICU or emergence department). Patients in these departments are in a critical and urgent condition, and any cases like long waiting times and uncertainty regarding patient treatment could cause conflict and violence between patients and medical staff (Camerino et al., 2008). (2) Individual characteristics such as being younger and less experienced (Wei et al., 2016; Weaver, 2013), and lack of communication skills and empathetic communication skills may also increase the incidence of contradiction (Hojat et al., 2015). Furthermore, individuals' personalities such as nurses with negative emotions are also crucial adversely influence the nurse-patient relationship (Cooper and Swanson, 2002). (3) Psychosocial factors, including low cohesion, less teamwork, low organizational injustice (Neumann and Baron, 1998), lack of support from supervisors and colleges (Calabro and Baraniuk, 2003) and the shortage of training in how to respond to violence are involving factors result in WPV (Duxbury and Whittington, 2005).

2.4.3 Workplace violence outcomes

Workplace violence has various negative consequences both to individuals and the

organization they are working for. For individuals, WPV directly causes physical and psychological harm to nurses such as post-traumatic stress disorders, anxiety and burnout (Rippon, 2000), which further adversely impact on their job satisfaction and performance (Schat and Frone, 2011), therefore, these nurses become less motivative and in low morale as well as less creativity, which significantly hinders the development of health systems, especially those in developing nations (Martino, 2002; Jackson and Ashley, 2005).

With respect to organizations, they may face the problem of increasing absenteeism, less productivity and growing turnover intention of employees (Jiao et al., 2015). According to the Bureau of Labor Statistics, the incidence of injury related to days away from work because of violence was 14.4 per 10,000 healthcare workers, more than twice the industry average (Bureau of Labor Statistics, 2015), as a result, WPV become costly to organizations (Speroni et al., 2014) since they have to pay for relevant costs such as worker's compensation (Camerino et al., 2008) and recruit new employees. Furthermore, WPV also result in tension between medical staff and patients (Lin et al., 2015) and negative patient outcomes owing to the poorer quality of care and nursing provided (Roche et al., 2010), which further adversely influence the long development of hospitals.

2.4.4 The workplace violence is more complex in China

WPV is a serious and particular issue in China (Liu et al., 2015; Xing et al., 2016). Unlikely other countries, WPV is more complicated in Chinese culture owing to the phenomenon of intentional organized disturbances, which was considered as "Yinao" (Zhang et al., 2017). Yinao is a particular situation in China and can be described as the behaviors of a large number of people with a designated leader intentionally exerting pressure on hospital and profiting from it through various means such as threaten and assault medical staff, damage facilities, and disturb normal medical activities (Hesketh et al., 2012). Recent years have witnessed numerous incidents of

Yinao in China, and many medical personnel have been injured and sacrificed in these events (The Lancet, 2012). Additionally, some gangs travel between hospitals try to seek “business opportunities” to obtain high compensation from hospitals by joining with patients’ families (Hesketh et al., 2012).

Among these WPV events, nurses are the most vulnerable (Carter 2000). Traditionally, nursing in China is considered as subordinate to medical work and the social status of Chinese nurses is relatively low (Wang, 2008; Liang, 2011). More or less, nurses act as the “public face” and “intermediaries” of hospital, are usually the first person that directly to patients and their families. When patients and family members are not satisfied with the medical services and outcomes, they blame and even beat nurses rather than doctors, because they are afraid that violence toward a physician may negatively affect medical care and effect of patients, therefore, nurses become the scapegoat (Lin and Liu, 2005). Nevertheless, there is little information about workplace violence among Chinese nurses and to our knowledge, the research on workplace violence of ICU nurses in Sichuan was not retrieved in the database. Therefore, beyond the model mentioned above, in this study, we also explore the situation of workplace violence among ICU nurses in Sichuan, China, and hope that we can put forward some useful suggestions for hospital managers.

Chapter 3. Methodology

3.1 Setting

In this study, ICU nurses from seven tertiary hospitals in Sichuan province, China were selected as research objects, and convenient sampling method was adopted. Tertiary hospitals are the highest level of hospitals in mainland China. They represent the highest medical and nursing service, medical quality and safety, technical level and efficiency in China's medical system. Generally, only tertiary hospitals are equipped with advanced ICU wards.

3.2 Questionnaire

There are five questionnaires in this study: Demographic Information, Burnout, Organizational Commitment, Hospital Workplace Violence and Turnover Intention. In this research, only Maslach Burnout Inventory General Survey (MBI-GS) and Hospital Workplace Violence Questionnaire (HWVQ) have Chinese version, so the Organizational Commitment Scale and Measure of Turnover Intention was translated into Chinese according to the procedures recommended by Brislin (1993), and both translated versions were pre-tested with 30 ICU nurses to ensure it clarity. Some items were adjusted according to the feedbacks from the pretests. Afterwards, a second bilingual student back-translated the items into English. Discussions with the translators were held when the original version was found to be different from the back-translated version and some items were modified based on comments and suggestions from the original developer of these scales until the meanings of the original English version, Chinese version, and back-translated version were equivalent as judged by an English native speaker and by another bilingual student who were unrelated to this study and blind to the English original version (Brislin,1993). After three rounds, the translated versions were considered equivalent to the original version by the above standards. Measurements used in this study are depicted below:

(1) **Burnout Scale**

The Maslach Burnout Inventory-General Survey (MBI-GS) is by far the most widely used and accepted measure tool for burnout and has proven good reliability and validity (Schutte, Toppinen and Kalimo et al., 2000). With authorized by the original scale authors, the Chinese version of MBI-GS was translated and revised by Li (2002), it shows good reliability and validity (Tang, 2007), and the internal consistency coefficient of the three dimensions was 0.88, 0.83 and 0.82, respectively (Li, 2002). Some Chinese researchers have used the Chinese version of MBI-GS in their empirical research. For instance, Zhu et al. (2007) tested the validity and reliability of the MBI-GS among 319 nurses and the Cronbach's α coefficients of MBI-GS and its dimensionality were 0.672-0.872. In Jiang's research (2004) on bank employees, the coefficients of internal consistency of Emotional Exhaustion, Cynicism and Reduced Personal Accomplishment were 0.86, 0.82 and 0.82 respectively. Based on this, we adopted the Chinese version of MBI-GS, which contains three subscales and 15 items: Emotional Exhaustion (5 items), Cynicism (4 items) and Reduced Personal Accomplishment (6 items). Subjects answered the questionnaire using the 5-point Likert scale, ranging from "never" to "everyday". The level of burnout increased with the increase of scores.

(2) **Organizational Commitment Scale**

The study applies the three-dimensional of organizational commitment developed by Allen and Meyer in 1990, which has been widely accepted in the academic scope. The Organizational Commitment Scale including two versions: the original version contains eight items for each subscale (Allen and Meyer,1990) and the revised version contains six items for each subscale (Meyer et al., 1993). The major difference between the two versions is in the Normative Commitment Scales (Yao, 2006); compared with the eight-item version, the six-item version is intended to measure and emphasize more clearly the sense of employees' obligation to remain in the current specific organization, which is characteristic of normative commitment as

conceptualized by Meyer and Allen in1991 (Meyer and Allen, 1993). Furthermore, review of revised version indicates that both exploratory and confirmatory factor analysis validated the three-factor model and the factors are stable over time (Allen and Meyer, 1996), the reliability coefficients ranges from 0.74 to 0.83 (Meyer and Allen, 1993), and the structure of the three-factor model fits the Chinese culture well (Cheng and Stockdale, 2003). Therefore, in this study, the revised six-item version was used. Each question is answered on a 5-point Likert scale, and the degree of approval increases gradually from 1 to 5. Scale scores were obtained by calculating the average of total items, the higher the score, suggesting the higher level of organizational commitment.

(3) **Turnover Intention Scale**

The three-item turnover intention scale was developed by Camman, Fichman, Jenkins and Klesh (1979). In this study I used this scale because Lee et al. (1993), Abraham (1999), Shaw (1999), LeBlanc and Kelloway (2002) adopted a similar procedure to research turnover intention among employees. Respondents were asked to show how accurately each statement described them. Response options range from “1” (extremely disagree) to “5” (extremely agree). The higher scores representing fewer turnover intentions. The internal reliability of this scale was 0.70 (LeBlanc et al., 2002). Items are (1) “I often think of leaving the organization” (2) “It is very possible that I will look for a new job next year” and (3) “If I could choose again, I would choose to work for the current organization (R)”.

(4) **Hospital Workplace Violence Questionnaire**

The original Hospital Workplace Violence Questionnaire (HWPVQ) was developed by Chen Zuhui according to the World Health Organization on violence in workplace (Chen, 2011). The scale consists of 3 parts and 35 items, which has been widely used in the study of workplace violence of medical staff in China (Wang et al., 2007; Zhao et al., 2011; Yang and Xiao, 2005).

In this study, follow Yang's (2009) procedures, which means dropping some items (item 4- 7, emphasizing the consequences of physical violence rather than whether the respondent has experienced violence, therefore, should be deleted). Besides, item 12 and item 24-31of the original HWPV questionnaire are demographic variables, including gender, age, education level etc., they are the same as the demographic information used in this study. Therefore, should be deleted.

After discarding above items, the shortened version of HWPV questionnaire was reviewed by 7 head nurses and 5 nursing experts from three tertiary hospitals in Sichuan in order to fit the study. During the review, some experts expressed that item 8 and item 9 of the original HWPV questionnaire had similar meanings, and could be classified as one item (The original item 8: Sexual harassment or teasing, including language, movement, behaviors or exposure of sexual organs by heterosexual; the original item 9: Sexual assault, such as being strongly pulled, hugged, kissed, or touched the sensitive part by heterosexual; the revised item 8: Sexual harassment and sexual assault, including attacked by language, or behaviors like being vigorously pulled, hugged, kissed or touched the sensitive area by heterosexual). Additionally, according to reviewers, item 10 could be dropped because of sensitive words (item 10: Rape or attempted rape), and the changes express the same meaning as the original questionnaire, but could reduce the amount of pain and discomfort of those who had been sexually assaulted, and could stop victims from reminding of painful memories and details of the sexual assault. After that, I did a pre-test among 30 ICU nurses before issuing the questionnaire to found out whether items in the shortened version are reasonable or not, and collected feedback information of the respondents for timely improvement.

The shortened version of Hospital Workplace Violence Questionnaire including 3 parts and 20 items: the first part is the frequency of violence in various types of workplace (item 1-4); The second part is the description of the most impressive violence in the workplace, including time, place and characteristics of the perpetrator

(item 5-16); The final part is the attitudes and cognitions of nurses toward hospital workplace violence (item 17-20).

(5) **Demographic Information**

The demographic information principally contains two aspects: 1) respondents' characteristics, including age, gender, marital status, length of service, monthly income; 2) the characteristics of the department in which the respondents come from, such as the annual number of patients in the department, the average hospital stay of patients in the department, and the nurse-patient ratio. Each type of answer has a corresponding code for quantitative analysis.

3.3 Sampling and Procedure

Common Method Biases (CMB)

Due to the covariation between predictor variables and criterion variables caused by the same data sources or scorers, the same measure environment, the project context and the features of the project itself, common method bias occurs (Zhou, 2004). CMB widely exists in psychological and behavioral science research, especially in the research using questionnaire method, it is one of the main sources of measurement error, which threatens the validity of the result and potentially misleading the conclusion (Bagozzi and Yi, 1991; Nunnally, 1978; Spector, 1987). There are two approaches to control common method bias, that is, procedural remedies and statistical remedies. Procedural remedies refer to control measures taken by researchers during the process of research design and measure, by obtaining predictor variables and criterion variables from different sources such as separating them in terms of temporal, proximal; improving scale items to eliminate ambiguity and educing social desirability bias in item wording (Podsakoff, MacKenzie and Podsakoff, 2012). Statistical remedies suggest that researchers use statistical approaches to check and control CMB like adopting unmeasured latent method factor, correlation-based marker variable method and CFA marker technique (Podsakoff,

MacKenzie and Podsakoff, 2012).

Procedural remedies should be given priority by researchers because these methods are designed directly against the source of common method bias (Zhou, 2004). Inside of these, temporal separation (e.g., a time delay between measures) between predictor variables and criterion variables removes the saliency of any contextually provided cues in the retrieval stage of the response process (Feldman and Lynch 1988; Podsakoff, MacKenzie and Podsakoff, 2012), making respondents are less likely to use previous answers to fill in gaps in what is recalled and to infer missing information, thus reducing consistency motifs and demand characteristics (Podsakoff, MacKenzie and Lee, 2003). Several studies have shown positive results of temporal separation. For instance, Ostroff et al. (2002) compared predictor and criterion variable correlations gained after one-hour and one-month delay, indicating the average correlations were 32% lower after one-month delay than they were in the concurrent condition. Similarly, Johnson et al. (2011) checked the impacts of a three-week delay on the correlation between a latent predictor construct and a latent criterion construct, and found that the correlation between the constructs was 43% smaller after a three-week delay than it was when both were measured at the same time.

Therefore, in order to avoid CMB, I introduced one-month temporal separation between predictor variables and criterion variable. Questionnaires were coded, and collected by field survey and online survey. Before issuing questionnaires, I explained the purpose of the study to the participants and guaranteed that any responses and all the information collected in this study would be held confidentially. From July 12, 2018 to August 9, 2018 (time1), the Demographic Information, the Burnout Scale, the Organizational Commitment Scale and the Hospital Workplace Violence Scale were sent to ICU nurses of 7 tertiary hospitals in Sichuan. From August 17, 2018 to September 11, 2018 (time2), the Turnover Intention Scale was sent to the same respondents. Regarding field survey, after the questionnaires were completed, I

collected the questionnaires uniformly. In terms of online survey, questionnaires were sent to me by respondents through the internet (by e-mail, wechat, QQ and other types of internet communication).

I distributed questionnaires to 700 ICU nurses, and 462 of them filled out and returned questionnaires. The response rate is 66%, after removing questionnaires with missing information, there were 436 complete responses. In time1, I sent independent variable questionnaires to 700 ICU nurses of 7 tertiary hospitals in Sichuan, including 200 traditional paper-and-pencil questionnaires and 500 online questionnaires, and received full traditional responses and 397 online questionnaires, after deleting questionnaires with missing information, there were198 paper-and-pencil responses and 373 online responses. In time2, I distributed dependent variable questionnaires to the same paper-and-pencil respondents (the original 198 respondents were reduced to 169 because of the missing 29 respondents could not complete the questionnaire due to vacation or took a sick leave), and the same 373 online respondents, and got 169 field responses and 267 online responses.

After further check, I found that some answers of online surveys collected at time1 were regular answers (online survey results were automatically rather than manually entering the dataset). It is believed that questionnaire studies have a bias due to incorrect answers or regular answers and that together these can be substantial (Sjostrom, Holst and Lind, 1999), and respondents fail to answer questionnaires according to the actual situation can affect the validity of questionnaire uses in the study (Sjostrom and Holst, 2002). Thus, I dropped these responses with regular answers. Specifically, path: Open dataset-Home-Choose “B2”(the first row is questionnaire title, data starts from the second row, the location of B2 is in the second row and second column of the whole dataset)-Conditional formatting-Highlight cell rules-Other rules-Use a formula to determine the cell to format-Enter “=B2=A2” (the location of A2 is in the second row and first column of the whole dataset) in the “set the format for the value that conforms to this formula” box-Format-Fill-Choose a

color-Yes-Choose “B2”- Format brush is used in the whole data. In this way, the cells for the same answer will be the same color, delete responses that have the same color in 7 or more consecutive cells, which means delete 7 or more consecutive answers in a row, thus 131 responses were deleted.

With respect to why 7 or more consecutive answers were chosen as the exclusive criteria, the maximum number of items of burnout and organizational commitment subscales uses in this study is 6, if there are 7 or more consecutive answers in the same questionnaire, respondents are likely to fail to complete the questionnaire carefully, which may not reflect the authenticity of answers, and also affect the discriminant among dimensions. An exploratory factor analysis (EFA) of the original 436 questionnaires showed that burnout had two dimensions rather than three, when forced to be three-dimensional, the cynicism dimension had only one item, and the Cronbach’s alpha for this dimension was 0.465. Besides, in the dimension of emotional exhaustion, the factor load of each item was low, and one of which was cross loading (Table 3-1).

Table 3-1. Forcing burnout as three dimensions

Rotated Component Matrix[a]			
	Component		
	1	2	3
BO_RPA_Q14	.748		
BO_RPA_Q12	.729		
BO_RPA_Q15	.722		
BO_RPA_Q13	.696		
BO_RPA_Q11	.695		
BO_RPA_Q10	.671		
BO_EE_Q5	.668	.596	
BO_Cy_Q6	.647		
BO_Cy_Q7	.486		
BO_EE_Q2		.778	
BO_EE_Q3		.718	
BO_EE_Q4		.653	
BO_EE_Q1		.616	
BO_Cy_Q8		.572	
BO_Cy_Q9			.821

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Similarly, the EFA of the original 436 questionnaires presented that organizational commitment had four dimensions, after forcing it as three dimensions, the result was even worse (Table 3-2). Additionally, confirmatory factor analysis of 436 samples showed both unacceptable fit indices.

Table 3-2. Forcing organizational commitment as three dimensions

Rotated Component Matrix[a]			
	Component		
	1	2	3
OC_NC_Q15	.813		
OC_NC_Q18	.801		
OC_NC_Q16	.778		
OC_AC_Q2	.751		
OC_AC_Q1	.688		
OC_NC_Q17	.653		
OC_AC_Q6	.649		
OC_AC_Q5		.874	
OC_AC_Q4		.735	
OC_NC_Q13		.679	
OC_AC_Q3	.	.568	
OC_CC_Q9			.838
OC_CC_Q10			.813
OC_NC_Q12			.637
OC_CC_Q8			.527
OC_CC_Q11			.470
OC_CC_Q7			.453
OC_CC_Q14			.405

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

From what has been mentioned above, 131 regular answers of online survey collected in time1 were deleted. Finally, 169 valid paper-and-pencil responses and 136 valid online responses, that is, a total of 305 valid complete responses were collected.

3.4 Participants

Among the 305 valid questionnaires received, female (208, 68.2%) accounted for the majority of total respondents. The sample consists of predominantly 31-40-year-old nurses (45.2%), the majority of them (196, 64.3%) were single. 172 participants (56.4%) were primary title; 161 participants (52.8%) were in N3-N5 category, and 228 (74.8%) of them performed as clinical nurse. In this study, participants have different education level, over half of them have a bachelor degree (174, 57.0%). When assessing the participant representativeness in terms of departments, 155 participants (50.8%) came from surgical ICUs. Considering salary, 139 participants (45.6%) gained 5000-15000 Yuan, and most of the them (132, 43.3%) have been working for 5-10 years in the current hospital, and a large number of them (219, 71.8%) were contract employees.

The majority of respondents (43.6%) worked in large hospitals with over 2,000 beds. As for the nature of hospital, the percentage of employees belong to hospitals affiliated to college was 60.3%. Regarding the ICU size, 75.7% of respondents were working in the ICUs with less than 30 beds, and 42.0% of their departments received over 600 patients (in 2017). The proportion of nurses in the department with a less than 10% patient mortality rate was 58.4%; and the percentage of nurses in the department with an average length of stay of patients between 10-30 days made up 65.9%. Furthermore, the number of respondents in the ICUs with 40-60 nurses accounted for 55.1%, and 57.4% of nurses came from ICUs with a 2.1-4.0:1 patient-to-nurse ratio. Respondents' demographic information was showed in the Table 3-3.

Table 3-3. Demographic information of the participants

Variable	N=305	%
Gender		
Female	208	68.2
Male	97	31.8
Age		
18-30	119	39.0
31-40	138	45.2
>40	48	15.7
Marital status		
Married	77	25.2
Single	196	64.3
Others (e.g., Divorced)	32	10.5
Professional title		
Primary title	172	56.4
Intermediate title	104	34.1
Deputy senior and above	29	9.5
Hierarchy of nurse		
N0- N2*	144	47.2
N3- N5*	161	52.8
Job duty		
Clinical nurse	228	74.8
Administrative nurse and others	77	25.2

Education level		
Junior college graduate or below	110	36.1
Bachelor degree holder	174	57.0
Master degree holder and above	21	6.9
Department		
Internal medicine ICU	113	37.0
Surgical ICU	155	50.8
Other ICUs	37	12.1
Monthly salary (Yuan)		
<5000	121	39.7
5000-15000	139	45.6
>15000	45	14.8
Length of service (Years)		
<5	114	37.4
5-10	132	43.3
>10	59	19.3
Employment form		
Non-contract employee	86	28.2
Contract employee	219	71.8
Attribute of hospital		
Hospital affiliated to universities	184	60.3
Hospital non-affiliated to universities	85	27.9
Others	36	11.8

Number of hospital beds		
500-1000	45	14.8
1001-2000	127	41.6
>2000	133	43.6
Number of ICU beds		
<30	231	75.7
30-50	45	14.8
>50	29	9.5
Number of patients admitted in your department (in 2017)		
<400	56	18.4
401-600	121	39.7
>600	128	42.0
Patients mortality in your department (%, in 2017)		
<10	178	58.4
10-30	116	38.0
>30	11	3.6
The average length of stay in your department (Days)		
<10	79	25.9
10-30	201	65.9
>30	25	8.2
The number of nurses in your department		
<40	103	33.8

40-60	168	55.1
>60	34	11.1
The patient-to-nurse ratio in your department		
1-2 :1	109	35.7
2.1-4.0 :1	175	57.4
>4:1	21	6.9

Note: 1. N0: nursing staff who have graduated from nursing but have not signed a labor contract; N1: nurses who have passed the qualifying examination and completed registration; N2: nurses who have been qualified for three years as N1 nurses; N3: nurses who have obtained intermediate titles and are able to undertake various clinical/teaching tasks and a certain managerial duty; N4: nurses who have acquired deputy senior title or above and are able to undertake the work of quality management, teaching management; N5: nurses who have acquired senior title and are able to complete the work of guidance and review. 2. Because of rounding, the total percentage of some variables is around 100 instead of 100.

3.5 Statistical Analysis

The questionnaire data was processed using Harman's single-factor analysis, factor analysis, descriptive statistics, T-Test analysis, multiple regression analysis techniques, Chi-square test and binary logistic regression. First, Harman's single-factor analysis with SPSS 22.0, and the unmeasured latent method factor technique with AMOS 22.0 were used to test the CMB of the scales in this study. Then, samples were randomly divided into two parts, the first sample was analyzed by exploratory factor analysis, and the second sample was processed by confirmatory factor analysis with AMOS 22.0 to confirm the factor structures of the first sample obtained by the exploratory factor analysis. Thereafter, we calculated the correlations coefficients and internal consistency reliability of studied variables. Then, multiple regression analysis was used to test how the variation in each of the explanatory variables impacts on the dependent one. Next, PROCESS v 3.1 (Hayes, 2014; Hayes, 2017) was used to test whether moderation variables exist in the independent variables and dependent variable. Beyond the model, Chi-square test was used to identify significant variables associated with hospital workplace violence. Next, binary logistic regression was conducted to further clarify the effect of variables on workplace violence.

Chapter 4. Results

4.1 Common method bias test

In this study, questionnaires for all study variables were provided by the same subject, despite procedural remedies such as temporal separation, anonymous pattern and reverse items were used, the problem of CMB may still exist. Follow Zhou (2007) and Podsakpff's (2003) suggestion, we used Harman's single-factor and unmeasured latent method factor technique to test CMB. Harman's single-factor is perhaps the most common test to identify CMB (Chang, Van Witteloostuijn, and Eden, 2010), it loads all items from each of the constructs into an exploratory factor analysis to see whether one single factor does occur or whether one general factor does make up a majority of the covariance between the measures (Harman, 1967; Podsakoff and Oran, 1986). The results of Harman's single-factor analysis of this study showed that we had seven factors, the same number as included in our model, and the first factor accounted for 16.642% of the variance (Table 4-1), smaller than the critical value of 40%, indicating that the CMB was not obvious (Ashford and Tsui, 1991).

Table 4-1. Harman's single-factor analysis

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.991	16.642	16.642	5.991	16.642	16.642
2	4.163	11.563	28.205	4.163	11.563	28.205
3	3.762	10.451	38.656	3.762	10.451	38.656
4	3.531	9.809	48.465	3.531	9.809	48.465
5	2.899	8.053	56.518	2.899	8.053	56.518
6	2.681	7.448	63.966	2.681	7.448	63.966
7	1.447	4.019	67.984	1.447	4.019	67.984

8	.851	2.365	70.349
9	.745	2.070	72.420
10	.702	1.949	74.368
11	.628	1.746	76.114
12	.599	1.665	77.779
13	.568	1.577	79.356
14	.519	1.441	80.797
15	.500	1.388	82.185
16	.488	1.356	83.541
17	.464	1.288	84.829
18	.438	1.216	86.045
19	.429	1.192	87.237
20	.401	1.113	88.350
21	.378	1.049	89.399
22	.369	1.025	90.424
23	.342	.950	91.374
24	.338	.938	92.312
25	.326	.906	93.218
26	.308	.854	94.073
27	.305	.847	94.920
28	.288	.799	95.719
29	.254	.705	96.425
30	.233	.646	97.070
31	.216	.600	97.671
32	.202	.561	98.232
33	.190	.527	98.759
34	.176	.489	99.248
35	.152	.421	99.669
36	.119	.331	100.000

Note: Extraction Method: Principal Component Analysis.

Additionally, we adopted the unmeasured latent method factor technique by adding an unmeasurable variation factor (Podsakoff et al., 2012). Specifically, the common method bias is taken as a latent variable enter the structural equation model, allowing all identified variables to be loaded on this latent variable, and comparing the model fitting degree before and after control (Zhou, 2007). If the main fitting indexes of the unmeasurable variation factor model are significantly superior to the model without unmeasurable variation factor before control, it indicates that there are serious common method biases among variables (Hu and Bentler, 1999).

Since the fitting index cannot be directly compared, this study uses the Chi-square criterion of structural equation model test developed by Wen (2004), who believes that nested model comparison should use chi-square test, and different critical values are selected for different sample sizes (Table 4-2).

Table 4-2. Critical value of Chi-square criterion

Sample size (N)	Critical value (α)
≤150	.01
=200	.001
=250	.0005
≥500	.0001

Source: Wen, Hau and Marsh (2004)

Table 4-3. Results of Common Method Bias

Model	χ^2	Df	χ^2/df	RMSEA	IFI	CFI	PNFI	PGFI
Model before control	916.041	573	1.599	.044	.943	.943	.784	.744
Model after control	915.298	572	1.600	.044	.943	.943	.782	.743

According to Table 4-3, the changes of main fitting indexes of the two models are not significant; $\triangle df=1$, $\triangle\chi^2=.743$, $p=.389>.0005$ ($N=305$, $\alpha=.0005$ as critical value), which indicates that the model is not significantly changed after adding an unmeasurable variation factor, therefore, there is no significant common method bias in this study.

4.2 Factor analysis and Internal consistency

4.2.1 Burnout inventory

To test the validity of the questionnaire, we randomly divided the dataset into two parts, namely Burnout1 (N=153) and Burnout2 (N=152). Burnout1 was used for exploratory factor analysis, and Burnout2 was used for confirmatory factor analysis. T-Test analysis was performed and suggested that there was no significant difference in age, gender, length of service and other variables between the two parts of data (all $p>0.05$).

In this study, an exploratory analysis (principal component analysis with varimax rotation) was conducted to confirm the factor structure of the items of Burnout1 and three principal components were extracted (Table 4-4) explaining 69.627% of the initial variance (KMO=.838, Bartlett's $\chi^2=1301.081$, $p=.000$). The EFA of Burnout1 revealed that this scale consists of three dimensions, that is, Emotional Exhaustion-5 items, Cynicism-4 items and Reduced Personal Accomplishment-6 items (Table 4-5).

Table 4-4. Total Variance Explained of Burnout1

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Sum of Squares of Rotating Loads		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.027	26.849	26.849	4.027	26.849	26.849	3.863	25.755	25.755
2	3.555	23.700	50.549	3.555	23.700	50.549	3.635	24.231	49.986
3	2.862	19.078	69.627	2.862	19.078	69.627	2.946	19.642	69.627
4	.781	5.204	74.831						
5	.576	3.840	78.671						
6	.508	3.388	82.059						
7	.428	2.856	84.915						
8	.384	2.558	87.473						
9	.340	2.269	89.742						
10	.314	2.093	91.836						
11	.301	2.007	93.843						
12	.271	1.806	95.649						
13	.244	1.624	97.274						
14	.217	1.445	98.718						
15	.192	1.282	100.000						

Note: Extraction Method: Principal Component Analysis

Table 4-5. Principle Component Analysis of Bournout1

Rotated Component Matrix[a]			
	Component		
	1	2	3
BO_RPA_Q11	.883		
BO_RPA_Q15	.828		
BO_RPA_Q13	.805		
BO_RPA_Q12	.800		
BO_RPA_Q14	.757		
BO_RPA_Q10	.683		
BO_EE_Q4		.870	
BO_EE_Q5		.865	
BO_EE_Q2		.842	
BO_EE_Q1		.838	
BO_EE_Q3		.820	
BO_Cy_Q6			.911
BO_Cy_Q9			.875
BO_Cy_Q7			.821
BO_Cy_Q8			.800

Note: Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

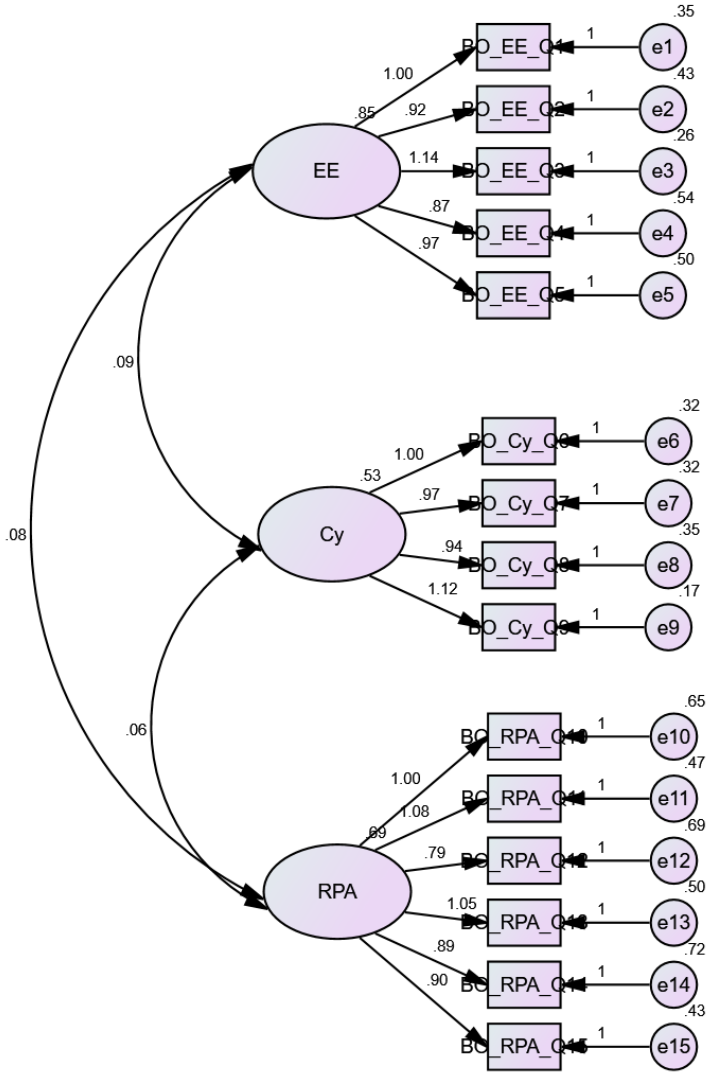
Thereafter, Burnout2 was conducted by confirmatory factor analysis (CFA) to verify the three-factor structure of Burnout1 got by the exploratory factor analysis. To determine the goodness of fit of the scales, we use threshold levels proposed by Hu and Bentler (1999), complemented by Hair et al. (2010) as illustrated in the Table 4-6. The CFA showed acceptable fit indices (CFI=.959; SRMR=.0656; RMSEA=.061). The Cronbach's α for the whole scale and each dimension was .798; .903 (EE); .877 (Cy); .874 (RPA), respectively.

Table 4-6. Model Fit Criteria

Indices	Criteria
CFI	>.90
RMSEA	<.08
SRMR	<.08

Source: Hu and Bentler (1998)

Figure 2. The standardized path map of the three-factor structure of Burnout2



4.2.2 Organizational commitment scale

Similarly, organizational commitment samples were randomly divided into two parts: OC1 (N=153) and OC2 (N=152), OC1 was conducted by exploratory factor analysis, while OC2 was used for confirmatory factor analysis. T-Test analysis was performed and suggested that there was no statistical difference in demographic variables between the two groups (all P>0.05). The EFA on OC1suggested that three principal components were extracted (Table 4-7) explaining 64.202% of the initial variance (KMO=.811, Bartlett's χ^2=1653.824, p=.000), and the three dimensions were presented in Table 4-8.

Table 4-7. Total Variance Explained of OC1

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Sum of Squares of Rotating Loads		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.173	28.738	28.738	5.173	28.738	28.738	3.936	21.865	21.865
2	3.999	22.217	50.955	3.999	22.217	50.955	3.871	21.507	43.372
3	2.384	13.246	64.202	2.384	13.246	64.202	3.749	20.829	64.202
4	.889	4.940	69.141						
5	.730	4.058	73.199						
6	.666	3.700	76.899						
7	.634	3.521	80.420						
8	.589	3.273	83.694						
9	.506	2.812	86.506						
10	.447	2.482	88.989						
11	.441	2.449	91.438						
12	.342	1.899	93.337						
13	.309	1.718	95.055						
14	.268	1.490	96.545						

15	.223	1.241	97.786
16	.156	.867	98.653
17	.140	.775	99.428
18	.103	.572	100.000

Note: Extraction Method: Principal Component Analysis

Table 4-8. Principle Component Analysis of OC1

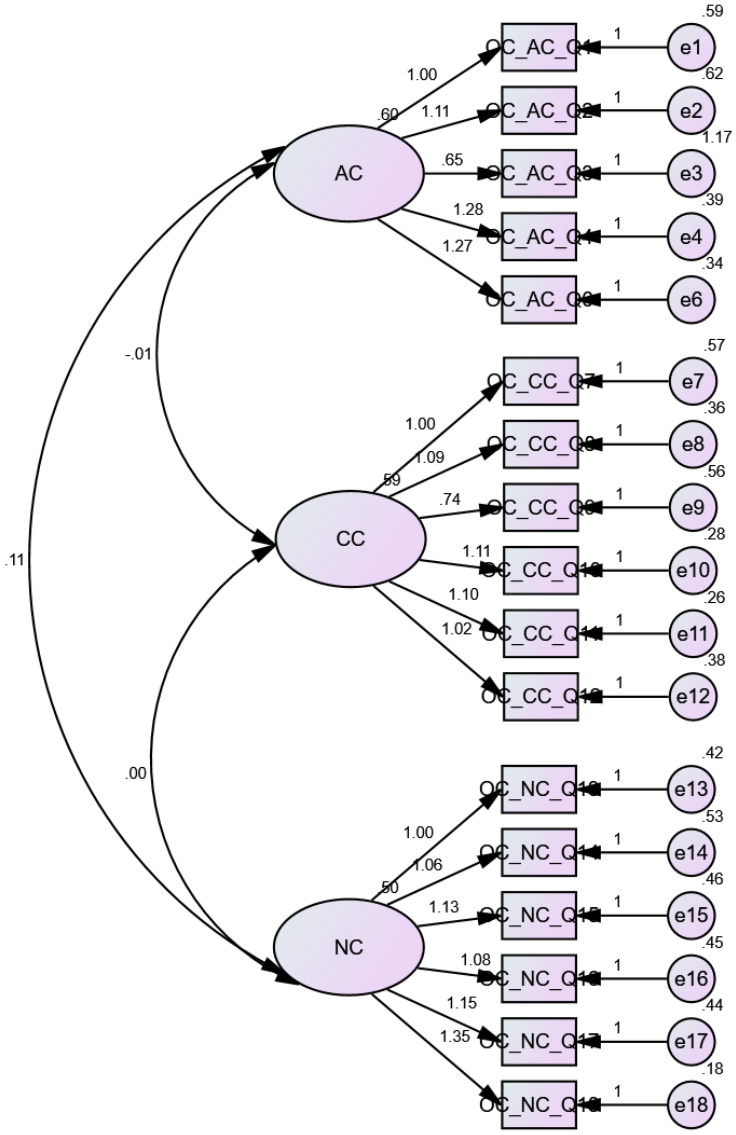
Rotated Component Matrix[a]			
	Component		
	1	**2**	**3**
OC_CC_Q8	.881		
OC_CC_Q11	.831		
OC_CC_Q10	.811		
OC_CC_Q12	.802		
OC_CC_Q7	.763		
OC_CC_Q9	.715		
OC_NC_Q18		.910	
OC_NC_Q17		.785	
OC_NC_Q16		.784	
OC_NC_Q15		.768	
OC_NC_Q13		.735	
OC_NC_Q14		.715	
OC_AC_Q6			.879
OC_AC_Q4			.866
OC_AC_Q1			.797
OC_AC_Q2			.765
OC_AC_Q5			.715
OC_AC_Q3			.535

Note: Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Afterwards, a confirmatory factor analysis was performed on OC2 to validate the three-dimensional structure of OC1 achieved by the exploratory factor analysis. The CFA showed unacceptable fit indices (CFI=.916; SRMR=.0627; RMSEA=.085). After removing the fifth item of Affective Commitment, a further CFA showed improved indices (CFI=.949; SRMR=.0598; RMSEA=.069). Therefore, we excluded the fifth item in the further analysis. The Cronbach's α for the whole scale and each subscales was .806; .835 (AC); .899 (CC); .900 (NC).

Figure 3. The standardized path map of the three-factor structure of OC2



4.2.3 Turnover intention Scale

Likewise, turnover intention samples were randomly spilt in two: TI1 (N=153) and TI2 (N=152), TI1 was analyzed by EFA, and TI2 was processed with CFA. T-Test analysis was conducted and indicated that there was no significant difference in demographic variables between the two samples (all P>0.05). The EFA on TI1 suggested it was a one-dimensional structure (Table 4-9) explaining 75.570% of the initial variance (KMO=.722, Bartlett's χ^2=180.466, p=.000).

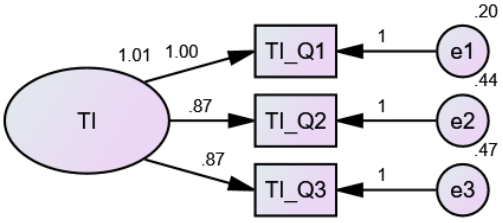
Table 4-9. Total Variance Explained for TI1

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.267	75.570	75.570	2.267	75.570	75.570
2	.407	13.575	89.145			
3	.326	10.855	100.000			

Note: Extraction Method: Principal Component Analysis

Based on this, CFA was performed on TI2 to confirm the one-dimensional structure of TI1 got by the exploratory factor analysis, and the result suggested good fit indices (CFI=1; SRMR=.0000; RMSEA=.0710). The Cronbach's α =.855.

Figure 4. The standardized path map of the one-factor structure of TI2



4.3 Correlation analysis

From Table 4-10 we knew that burnout, emotional exhaustion, cynicism and reduced personal accomplishment were significantly positive related to turnover intention (r=.401, p<0.01; r=.370, p<0.01; r=.161, p<0.01; r=.194, p<0.01, respectively), which indicated that the positive correlation between burnout, its each dimension and turnover intention had been preliminarily proved. In addition to this, organizational commitment, affective commitment, continuance commitment, and normative commitment were significantly negative correlated to turnover intention (r=-.384, p<0.01; r=-.258, p<0.01; r=-.218, p<0.01; r=-.232, p<0.01, respectively). Therefore, the negative correlation between organizational commitment, its each dimension and turnover intention had been preliminarily proved.

Table 4-10. Correlation Matrix

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1 EE	2.830	.920									
2 Cy	2.343	.805	.078								
3 RPA	2.436	.884	.095	.006							
4 BO	2.536	.533	.667**	.552**	.611**						
5 AC	3.350	.899	-.159**	-.024	-.215**	-.223**					
6 CC	2.726	.824	-.023	-.024	-.005	-.028	-.001				
7 NC	3.116	.840	-.068	-.012	-.060	-.078	.180**	.028			
8 OC	3.064	.527	-.139*	-.032	-.157**	-.183**	.663**	.535**	.648**		
9 TI	2.690	.920	.370**	.161**	.194**	.401**	-.258**	-.218**	-.232**	-.384**	

N=305, ** Correlation is significant at the 0.01 level (2-tailed).

4.4 Hypothesis testing

To test hypothesis 1, we conducted a multiple regression analysis to further see if

there is a significant relationship between each dimension of burnout and turnover intention. Turnover intention as the dependent variable, the three dimensions of burnout as the independent variables, the stepwise regression analysis was performed, and α=.05 as the inclusion criteria while α=.10 as the exclusion criteria of variable for the regression equation.

Table 4-11. Regression Analysis (EE, Cy, RPA and TI)

Independent variable	TI (dependent variable)				
	B	**S. E.**	**β**	**t**	**p**
EE	.345	.053	.345	6.552	.000
RPA	.167	.055	.160	3.056	.002
Cy	.153	.060	.134	2.553	.011

Note: N=305, R^2=.180, F=6.519, p=.011

Based on the Table 4-11, the three factors of burnout were screened by the model and all entered the regression equation. R^2=.180, that is, the proportion of the variance that can be explained by this regression model is 18.0% of the total variation. F=6.519, p=.011, indicating that the regression equation is statistically significant. Emotional exhaustion is significantly related to turnover intention and has the greatest impact on turnover intention (β=.345, p=.000), and positive significant correlations were found in reduced personal accomplishment and turnover intention (β=.160, p=.002), as well as cynicism and turnover intention (β=.134, p=.011). Hence, hypothesis 1is supported.

To test hypothesis 2, a multiple regression analysis was conducted to see the relationship between the three dimensions of organizational commitment and turnover intention. Turnover intention as the dependent variable, the three dimensions of organizational commitment as the independent variables, the stepwise regression analysis was performed, and α=.05 as the inclusion criteria while α=.10 as exclusion criteria of variable for the regression equation.

Table 4-12. Regression Analysis (AC, CC, NC and TI)

Independent variable	TI (dependent variable)				
	B	**S. E.**	**β**	**t**	**p**
AC	-.230	.055	-.225	-4.152	.000
CC	-.238	.059	-.213	-4.006	.000
NC	-.204	.059	-.186	-3.437	.001

Note: N=305, R^2=.148, F=11.815, p=.001

It is shown in Table 4-12, the three factors of burnout were screened by the model and all factors were entered the regression equation, R^2=.148, namely, the proportion of the variance that can be explained by this regression model is 14.8% of the total variation. The regression equation is statistically significant (F=11.815, p=.001), and the significantly negative correlations were found in the relationship between affective commitment, continuance commitment, normative commitment and turnover intention (β=-.225, p=.000; β=-.213, p=.000; β=-.186, p=.001, respectively). Therefore, hypothesis 2 is supported.

To test hypothesis 3, we conducted in SPSS using the PROCESS macro with 5000 boot-strap samples (Model 1), which is a path-analysis method to moderation that simultaneously models multiple conditional effects with ordinary least squares regression for continuance outcomes. Bootstrap bias-corrected confidence intervals (95%) are estimated to guide inference, and if the confidence interval contains nonzero, the effect is significant (Zack et al., 2015). In this model, TI as dependent variable; gender, age, educational level, department and other demographic variables were included as covariates, we conducted 16 separate models—burnout and each dimension of burnout (BO, EE, Cy, RPA as independent variable) corresponds in turn to organizational commitment and each dimension of organizational commitment (OC, AC, CC, NC as moderator variable). Results were showed below:

Table 4-13. The role of OC in the relationship between EE and TI

Variable	Coefficient	S.E.	t	LLCI	ULCI
Gender	-.1330	.0995	-1.3371	-.3288	.0628
Age	-.0299	.0683	-.4377	-.1644	.1046
Marital status	.0898	.0847	1.0607	-.0769	.2565
Professional title	.1072	.0715	1.4993	-.0335	.2480
Hierarchy of nurse	.1783	.1084	1.6445	-.0351	.3918
Job duty	-.1380	.1294	-1.0664	-.3926	.1167
Educational level	-.3093	.0800	-3.8669***	-.4667	-.1518
Department	-.0127	.0713	-.1787	-.1530	.1275
Monthly salary	.0328	.0760	.4315	-.1168	.1824
Length of service	.0425	.0674	.6300	-.0903	.1752
Contract form	-.0215	.1156	-.2174	-.2527	.2024
Type of hospital	.0787	.0693	1.1360	-.0577	.2151
EE	.8458	.2787	3.0349***	.2973	1.3943
OC	-.0701	.2751	-2.8150**	-.1518	-.0792
EE×OC	-.2317	.2564	-2.4038**	-.4505	-.0328

Note: N=305; CI=95%. **p<.01, ***p<.001.

In Hypothesis 3, it was predicted that in Sichuan, China, organizational commitment moderates the effect of ICU nurse's job burnout on turnover intention such that the negative relationship between emotional exhaustion and turnover intention is weaker among ICU nurses with higher organizational commitment than among those with lower organizational commitment. From Table 4-13, results indicate that organizational commitment does moderate the effect of emotional exhaustion on turnover intention, consistent with Hypothesis $3a_2$, the predictor for the effects of organizational commitment on the slope of emotional exhaustion was significant and negative for turnover intention (β=-.2317, p=.0239). According to Aiken and West (2001), the mean values of emotional exhaustion and organizational commitment

were added or subtracted by one standard deviation to enter the regression model and plotted, to test whether the moderation effect of organizational commitment was consistent with the previous theoretical expectation. As Figure 5 shows, when a low level of organizational commitment exists, there is a strong positive correlation between emotional exhaustion and turnover intention, while when the organizational commitment level is high, there is a weak positive relationship between emotional exhaustion and turnover intention. Hence, Hypothesis $3a_2$ is supported.

Figure 5. Moderating effect of OC on the relationship between EE and TI

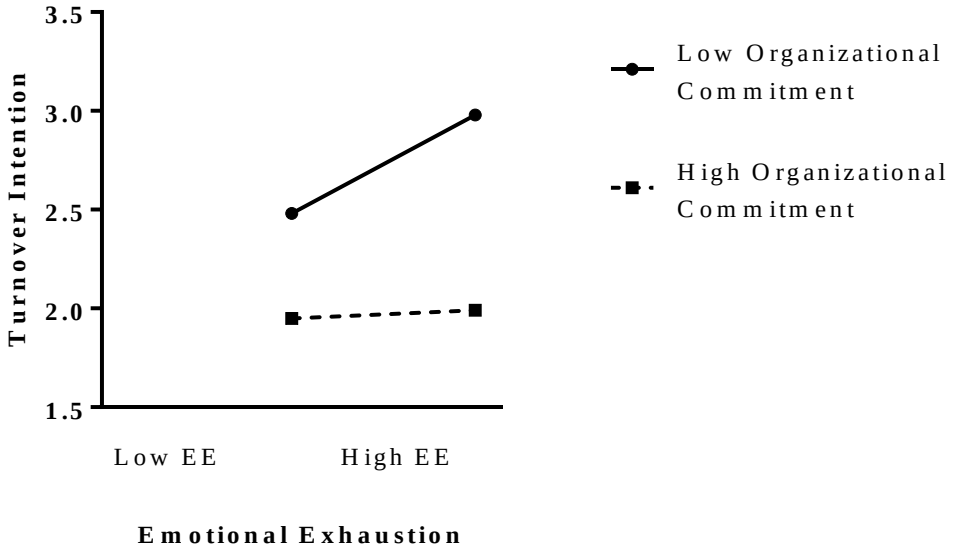


Table 4-14. The role of CC in the relationship between EE and TI

Variable	Coefficient	S.E.	t	LLCI	ULCI
Gender	-.1914	.1035	-1.8496	-.3951	.0123
Age	-.0600	.0716	-.8381	-.2009	.0809
Marital status	.0570	.0884	.6444	-.1171	.2311
Professional title	.0774	.0754	1.0274	-.0709	.2257
Hierarchy of nurse	.1635	.1140	1.4345	-.0608	.3879
Job duty	-.0426	.1314	-.3180	-.3066	.2213

Educational level	-.3408	.0835	-4.0841***	-.5051	-.1766
Department	-.0393	.0746	-.5272	-.1862	.1075
Monthly salary	.0491	.0795	.6179	-.1073	.2056
Length of service	.0473	.0705	.6700	-.0916	.1861
Contract form	-.1118	.1201	-.9305	-.3482	.1247
Type of hospital	.0374	.0722	.5177	-.1047	.1795
EE	.6649	.1708	3.8929***	.3287	.0121
CC	-.1343	.1898	2.7075**	-.2393	-.1129
EE×CC	-.1546	.0681	-2.1437**	-.2369	-.1573

Note: N=305; CI=95%. **p<.01, ***p<.001.

Likewise, from Table 4-14, results show that continuance commitment moderates the effect of emotional exhaustion on turnover intention, consistent with Hypothesis $3c_2$, the predictor for the effects of continuance commitment on the slope of emotional exhaustion was significant and negative for turnover intention (β=-.1546, p=.0471).

Figure 6 indicates the moderation effect in which high/low levels of continuance commitment are described as the means of emotional exhaustion and continuance commitment were added or subtracted by one standard deviation. The simple slope representing the association between emotional exhaustion and turnover intention was positive and significant at one standard deviation above/ below the mean of continuance commitment. When the level of continuance commitment is low, the positive relationship between emotional exhaustion and turnover intention is stronger; while the positive relationship between emotional exhaustion and turnover intention is weaker when the level of continuance commitment is high.

Figure 6. Moderating effect of CC on the relationship between EE and TI

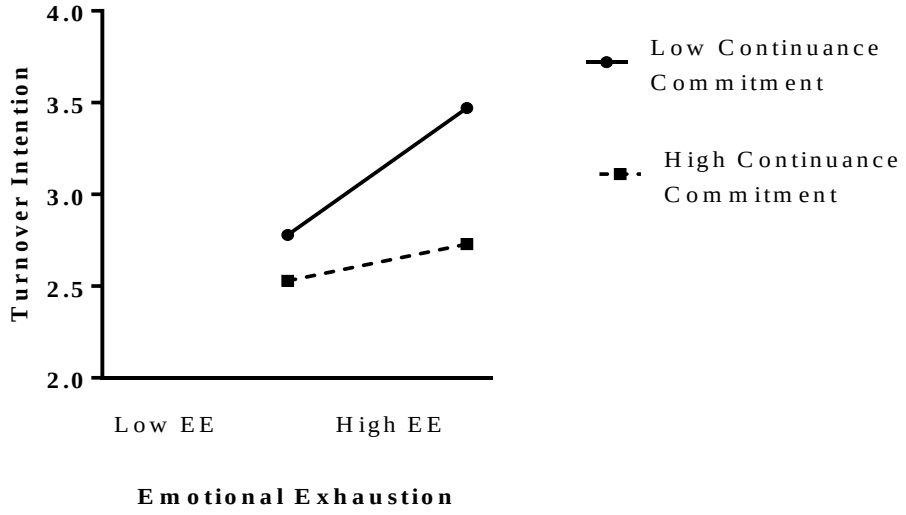


Table 4-15. The role of CC in the relationship between Cynicism and TI

Variable	Coefficient	S.E.	t	LLCI	ULCI
Gender	.2611	.1077	2.4251*	.0492	.4730
Age	-.0648	.0749	-.8652	-.2121	.0826
Marital status	.0508	.0923	.5505	-.1309	.2326
Professional title	.0384	.0778	.4939	-.1147	.1916
Hierarchy of nurse	-.1376	.1190	-1.1557	-.3719	.0967
Job duty	- .0734	.1407	-.5214	-.3503	.2036
Educational level	-.3603	.0873	-4.1287***	-.5321	-.1885
Department	-.0795	.0779	-1.0213	-.2328	.0737
Monthly salary	.0993	.0831	1.1942	-.0643	.2629
Length of service	-.0218	.0737	-.2956	-.1669	.1233
Contract form	.1233	.1256	.9811	-.1240	.3705
Type of hospital	.1423	.0748	1.9013	-.0050	.2896
Cy	-.4494	.1978	-2.2464*	-.8431	-.0561
CC	-.8062	.1853	-4.3503***	-1.0610	-.4417
Cy×CC	.2421	.0709	3.4133***	.1032	.3831

Note: N=305; CI=95%. *p<.05, ***p<.001.

From Table 4-15, we know that the result is contrary to our prediction, the predictor for the effects of continuance commitment on the slope of cynicism was significant but positive for turnover intention (β=.2421, p=.0009), which means that there is an interaction but it goes in the opposite direction from the hypothesis $3c_3$. Therefore, hypothesis $3c_3$ is not supported. In conclusion, we found no other moderation effects in the study variables except the moderation effects mentioned above. Thus, the other hypotheses are not supported.

4.5 Hospital workplace violence

Surveys indicated that 237 (77.7%) of the respondents had experienced impressive workplace violence, and non-physical violence was the most commonly pattern, with 51.8%, including verbal abuse (28.9%) and threats (22.9%), followed by physical violence (9.5%) and sexual assault (7.5%). Of the three forms of WPV, the proportion of "having experienced the violence for once" was the largest (Table 4-16).

Table 4-16. The incidence of workplace violence in ICU nurses

Types of workplace violence	**Type**	**The overall situation**	
		Number	%
Have you suffered workplace violence?	No	68	22.3
	Yes	237	77.7
Non-Physical			
Verbal abuse	0	217	71.1
	1	45	14.8
	2-3	29	9.5
	>3	14	4.6
Threats	0	235	77.0
	1	37	12.1

	2-3	22	7.2
	>3	11	3.6
Physical	0	276	90.5
	1	23	7.5
	2-3	6	2.0
	>3	-	-
Sexual assault	0	282	92.5
	1	16	5.2
	2-3	7	2.3
	>3	-	-

Note: Because of rounding, the total percentage of some variables are nearly 100 instead of 100.

According to the result (Table 4-17), nearly half of WPV events occurred in the day shifts (44.3%), and in the nursing station/office (43.0%); family members (39.7%) were the main perpetrators, 62.4% of them were male, and 45.6% of them were middle-aged. Top three reasons for WPV were: did not meet its unreasonable requirements (81.9%); the condition of the patient did not improve or mistakenly thought that there was no improvement (71.3%); not satisfied with the service (65.8%). Among the responses of nurses to WPV, explain patiently accounted for 49.4%, followed by tolerate to avoid (41.4%) and give tit for tat (23.6%), while no one chose “Call the police”.

Regarding impacts of WPV on nurses, 72.6% of them felt wronged, 65.4% of them experienced anxiety, depression or indignation, and have the intention to turnover (43.5%). Furthermore, 37.1% of the respondents were unable to work for less than one day; 19.4% of the participants have seen a doctor due to the violence; and 47.7% of the them admitted that another victim involved in this event.

Interestingly, over half (57.0%) of the respondents chose to be silent about the event and reasons for this including: a) 23% of respondents thought that even if they told someone, others could not solve it, therefore, they chose to tolerate and forget; b) 18% of participates believed that it was a disgraceful thing and did not want to tell others; c) the perpetrator was a delirious patient and unable to communicate effectively (7%); d) the violence was caused by colleague's mishandling of the situation, and the exposure of the event could lead to discord among colleagues (6%); e) WPV occurred in the process of telephone interview and the perpetrator rejected the respondent's explanation and ended the interview with a verbal attack (3%).

74.1% of the respondents have heard the term of WPV before, while 12.5% of them thought it was not worth a fuss. Inside of measures to prevent WPV, the proportion of "media should properly oriented and advocates respect for medical work" made up 70.8%, followed by hospitals should strengthen management and improve relevant systems (63.0%), and legislation (58.0%). Considering whether it is necessary to establish an institution that deals with the WPV, most of the respondents agreed (87.9%).

Table 4-17. The situation of workplace violence suffered by ICU nurses

Items	Type	Number	%
Time	Day shift	105	44.3
	Night shift	89	37.6
	After work	43	18.1
Location	Ward	68	28.7
	Doctor's office	53	22.4
	Nursing station/office	102	43.0
	Treatment room	-	-

	Others	14	5.9
The main perpetrator	Patient's family members	94	39.7
	Patient	38	16.0
	Patient's friend	62	26.2
	Others	43	18.1
The gender of the perpetrator	Male	148	62.4
	Female	89	37.6
The age group of the perpetrator	The juvenile	45	19.0
	The youth	52	21.9
	The middle-aged	108	45.6
	The old	32	13.5
The situation when the perpetrator commits violence (Multiple)	The patient died	70	29.5
	The patient's condition did not improve or mistakenly thought that there was no improvement	169	71.3
	Alcohol or drug abuse	58	24.5
	Mental disorder	33	13.9
	Seeking financial compensation	68	28.7
	The cost was too high	121	51.1
	The waiting time was too long	62	26.2
	Not satisfied with the service	156	65.8
	Did not meet its unreasonable requirements	194	81.9
	Others	78	32.9

Response to the incident (Multiple)	Tolerate to avoid	98	41.4
	To explain patiently	117	49.4
	Give tit for tat	56	23.6
	Try peaceful means before resorting to force	11	4.6
	Turn to others	29	12.2
	Call the police	-	-
	Others	-	-
The impact of this incident (Multiple)	No effect	65	27.4
	Feel wronged	172	72.6
	Declining work enthusiasm	97	40.9
	Do not dare to go to work alone	71	30.0
	Intention to turnover	103	43.5
	Insomnia	78	32.9
	Anxiety/depression/indignation	155	65.4
	The idea of suicide	19	8.0
	Others	61	25.7
Unable to work for this incident. (Day)	No	97	40.9
	<1	88	37.1
	1-2	50	21.1
	3-7	2	0.8
	>7	-	-
Have you seen a doctor because of this incident?	Yes	46	19.4
	No	191	80.6

Have you ever discussed this incident with your leaders or colleagues	Yes	102	43.0
	No (If no, the reason is ___)	135	57.0
Are there any other victims besides you in this incident?	No	85	35.9
	1	113	47.7
	≥2	39	16.5
Have you heard of the WPV before?	Yes	226	74.1
	No	79	25.9
Do you think the WPV is not worth a fuss?	Yes	38	12.5
	No	267	87.5
What measures do you think may prevent the occurrence of the WPV? (Multiple)	Hospitals strengthen management and improve systems	192	63.0
	Institutions provide targeted training to staff to improve their capacity to respond to violence	143	46.9
	Relevant institutions conduct education and advocate comity	92	30.2
	Medical staff improve service attitude and communication skills	128	42.0
	Medical staff improve professional skills and remediation skills	115	37.7
	The media properly oriented and respect for medical work	216	70.8

	Legislation	177	58.0
	Others	65	21.3
Do you think it's necessary to establish an institution that deals with the WPV?	Yes	268	87.9
	No/ Indifferent	37	12.1

Note: Because of rounding, the total percentage of some variables are around 100 rather than 100.

Regarding factors influencing WPV, we first did univariate analysis. Whether hospital workplace violence occurs was a dependent variable (1=Yes, 0=No), nurse characteristics (e.g., age, gender, department) and attitudes were independent variables. Chi-square test was used to preliminarily determine the influencing variables. Results were described in Table 4-18.

Table 4-18. The influence of nurses' characteristics on the occurrence of WPV

Items		**Is there a WPV?**		χ^2	**p**
		Yes	**No**		
		N=237	**N=68**		
Gender	Female	152	56	8.086	.004**
	Male	85	12		
Age	18-30	98	21	2.436	.296
	31-40	103	35		
	>40	36	12		
Marital status	Married	63	14	5.405	.067
	Single	145	51		
	Others (i.e.Divorced)	29	3		

Professional title	Primary title	143	29	34.768	.000***
	Intermediate title	84	20		
	Deputy senior and above	10	19		
Hierarchy of nurse	N0- N2	109	35	.636	.425
	N3- N5	128	33		
Job duty	Clinical nurse	173	55	1.741	.187
	Administrative nurse and others	64	13		
Education level	Junior college or below	95	15	7.472	.024*
	Bachelor diploma	127	47		
	Master diploma	15	6		
Department	Internal medicine ICU	87	26	.211	.900
	Surgical ICU	122	33		
	Others	28	9		
Monthly salary	<5000	98	23	1.251	.535
	5000-15000	105	34		
	>15000	34	11		
Length of service	<5	98	16	13.982	.001**
	5-10	103	29		
	>10	36	23		
Employment form	Contract employee	178	41	5.725	.017*
	Non-contract employee	59	27		

Type of Hospital	Hospital affiliated to universities	143	41	3.713	.156
	Hospital non-affiliated universities	62	23		
	Others	32	4		

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

Table 4-19. The influence of nurses' attitudes on the occurrence of WPV

Items		**Is there a WPV?**		χ^2	**P**
		Yes	**No**		
		N=237	**N=68**		
Have you heard of the WPV before?	Yes	179	47	1.131	.288
	No	58	21		
Do you think the WPV is not worth a fuss?	Yes	25	13	3.557	.059
	No	212	55		
Is it necessary to establish an institution to deals with the WPV?	Yes	209	59	.100	.752
	No/ Indifferent	28	9		

Based on Table 4-18 and Table 4-19, we found that there were significant differences in the influence of gender, professional title, education level, length of service, employment form on the occurrence of workplace violence.

To further clarify the effect of variables on workplace violence, we did a multifactor analysis, the independent variables included all the significant variables in the univariate analyses, and the exposure to workplace violence as dependent variable

(1=Yes, 0=No). Multiple categorical variables were set as dummy variables and assigned values to fit the binary logistic regression model, the stepwise regression (Forward: LR) analysis was performed, and α=.05 as the inclusion criteria while α =.10 as exclusion criteria of variable. Table 4-21 illustrates the result.

Before fitting the model, it is necessary to check whether there is a distinct multicollinearity between independent variables. According to Hair's (1995) colinear diagnostic criteria, it is acceptable when the tolerance of the independent variable is greater than 0.1 and the Variance Inflation Factor (VIF) is less than 10, which indicates that there is no colinear problem between independent variables (Li, 2010). Therefore, we conducted collinearity diagnostics and the result showed that these independent variables are acceptable (Table 4-20).

Table 4-20. Collinearity diagnostics

Independent variable	Tolerance	VIF
Professional title	.938	1.066
Gender	.994	1.006
Educational level	.982	1.018
Length of service	.916	1.092
Contract form	.973	1.027

Table 4-21. Multifactor analysis of workplace violence

Variable	B	S.E.	Wald	P	OR	95% CI
Primary title[1)]	2.349	.502	21.858	.000	10.474	3.913 to 28.038
Intermediate title[1)]	2.067	.526	15.456	.000	7.898	2.819 to 22.128
Male [2)]	1.026	.386	7.075	.008	2.790	1.310 to 5.944
Junior college degree or below[3)]	1.124	.620	3.288	.070	3.076	.913 to 10.363
Bachelor degree holder[3)]	-.091	.594	.024	.878	.913	.285 to 2.923
Length of service <5 years[4)]	1.254	.433	8.404	.004	3.504	1.501 to 8.180
Length of service 5-10 years[4)]	1.087	.399	7.410	.006	2.965	1.356 to 6.486
Non-contract form[5)]	-.758	.334	5.161	.023	.469	.244 to .901
Constant	-1.897	.765	6.158	.013	.150	

Note: **1)** reference category is duty senior and above; [2)] reference category is female, [3)] reference category is Master degree holder and above; [4)] reference category is length of service is >10 years; [5)] reference category is contract form. Nagelkerke R^2=.284.

From Table 4-21, we found that the odds increased with lower professional titles suggest that nurses with primary title (OR=10.474, p=.000) and intermediate title (OR=7.898, p=.000) were more likely to suffer from violence than senior title nurses; and male nurses tended to have higher odds of experiencing violence (OR=2.790, p=.008). Regarding university degree, there was no statistically significant difference. We also found that working year was a contributor to WPV, nurses who worked less than 5 years or 5-10 years were more vulnerable to experience WPV (OR=3.504, p=.004; OR=2.965, p=.006). Nevertheless, compared to the reference group, non-contract nurses had lower odds of suffering any type of violence (OR=.469, p=.013).

Chapter 5. Discussion

In this study, the relationship between burnout, organizational commitment and turnover intention was researched. Apart from this, we also investigate the occurrence and influencing factors of hospital workplace violence of ICU nurses. First of all, the relationships between turnover intention and burnout, as well as organizational commitment were examined. Next, the moderator role of organizational commitment in the relationship between burnout and turnover intention was tested. Finally, we analyzed the occurrence of hospital workplace violence and figured out its affecting factors. Results are discussed as follows:

The positive relationship between burnout and turnover intention

Our results suggest that burnout and its dimensions are predictor of ICU nurse's turnover intention in Sichuan, China. These findings corroborate Lee and Chelladurai's (2018) research, which explained that employees who have shown higher levels of burnout were more likely to leave the organization, and each dimension of burnout, namely, emotional exhaustion, cynicism and reduced personal accomplishment has a positive effect on staff's turnover intention (Gharakhani and Zaferanchi, 2019; Boamah and Laschinger, 2016). Furthermore, we found that in this study, emotional exhaustion has the biggest impact on turnover intention, which is supported by Leiter and Maslach (2004), who believed that emotional exhaustion is regarded as the main factor of burnout, which then lead to cynicism and reduced personal accomplishment. Among three dimensions, nurses with higher levels of emotional exhaustion showed more tendency to turnover (Boamah and Laschinger, 2016).

Regarding ICU nursing employees, compared with general nurses, they are under a highly stressful environment (Poncet et al., 2007) with increased work intensity, huge responsibility, end-of-life problems, and role conflicts (Brinkert, 2010), in this

situation, they are more likely to exposure to a high burnout (Donchin and Seagull, 2002; Soupios and Lawry, 1987). Based on a meta-analysis (Chuang et al., 2016), the prevalence rate of burnout of ICU staff is as high as 47%, and the final consequence of burnout among ICU employees is absenteeism and high turnover rates (Ackerman, 1993; Zhang, 2013; Gu, 2006).

Our findings also suggest that ICU nurses' burnout is a significant factor causing their intention to leave, and if no specific measures are taken to deal with the burnout, it may further aggravate the shortage of ICU nurses in China. Based on the *National Nursing Career Development Plan (2016 to 2020)*, the ratio of nurse-to-patient in tertiary hospital should be increased from the current 0.6:1 to 0.8:1 by the end of 2020 (National Health Commission of the People's Republic of China, 2016). However, each ICU nurse care for an average of 6-8 patients (Yang, 2016), and the figures for nurse-to-patient ratio was 1: 2.1-4.0 and more than1:4 in ICUs in this study accounted for 57.4% and 6.9%. This means that compared with nurses in general wards, a majority of ICU nurses care not only for more critically ill patients, but also for a larger number of patients. As a result, they take on heavier work, shoulder greater responsibilities and deal with more complex interpersonal relationships. In this circumstance, they have to compress their limited nursing time for the purpose of serving more people in some cases, therefore, they are vulnerable to suffer from burnout and have the intention to turnover.

The negative relationship between organizational commitment and turnover intention

In hypothesis 2, we found that each dimension of organizational commitment is negatively related to turnover intention. As stated in literature review, many previous researches have supported this result (Gatling, Kang and Kim, 2016; Demirtas and Akdogan, 2016; Labrague et al., 2018; Gharakhani and Zaferanchi, 2019). Western researches on organizational commitment and turnover intention are relatively mature,

but in the Chinese healthcare field, there is little research on organizational commitment and turnover intention of ICU nurses, probably because the relatively backward development of nursing management, nurses have not learned the concept of organizational culture more broadly (Pan, 2007). Nevertheless, as we found in this study, organizational commitment is an important factor reducing turnover intention (Imran, Allil and Mahmoud, 2017; Chan and Ao, 2019; Masud and Daud, 2019), hospital managers should cultivate ICU nurses' organizational commitment, enhance their sense of responsibility and obligation, play their role of ownership and reduce the turnover tendency, thus stabilize the nursing team (Wang, 2012).

Additionally, we found that affective commitment has the most significant influence on ICU nurse' s turnover intention in this study, which corroborate several past findings (Meyer and Allen, 1997; Redditt et al., 2019). Affective commitment of employees plays the role of "desire" in the organizational commitment, which is manifested as staff's attachment to the organization (Xu, 2016). This is in harmony with Chinese culture as Chinese traditional culture pays attention to the overall spirit, attaches importance to the emotional experience component of the whole process, and concerns more the authenticity of feelings, emphasizes "a drop of water shall be returned with a burst of spring "(Even if it is just a little help from others, you should return the favor with all you can when others are in need). Therefore, employees experience the care and kindness of the organization in work, which becomes an emotional attachment of loyalty to the organization (Tan, 2003). Thus, managers should have an in-depth understanding of ICU nurses' organizational commitment, especially affective commitment, and use this knowledge to improve their management style and win highly committed employees.

5.1 Moderation effects

Organizational commitment

Organizational commitment is considered by the employees as identify with and accept the values, goals and beliefs of the organization, and hope to continue to work in that organization (Allen and Meyer, 1993). On the one hand, organizational commitment is a significant inhibitor of burnout (Maher, 1983), and has a negative effect on burnout (King and Sethi,1997; Wright, 2004; O'driscoll and Gillespie,1998). On the other hand, organizational commitment has an adverse impact on turnover intention (Rabinowitz, 1993). Staff with a high level of organizational commitment have a deeper feeling for the organization and are willing to continue to be a member of the organization (Cooper et al., 2005), while employees with lower organizational commitment are more prone to burnout and turnover (Tan and Akhtar,1998; Wright and Hobfoll, 2004). Additionally, according to Leiter (1988), when employees have low organizational commitment during their work, they feel emotionally exhausted to serve customers, and lose confidence and motivation for work gradually, and eventually have the intention to turnover. Therefore, organizational commitment may lead to burnout, and ultimately cause job withdrawal and turnover (Maslach and Jackson, 1984).

Nevertheless, to our knowledge, the moderator role of organizational commitment in the relationship between burnout and turnover intention has not available. Without support by previous studies, I cannot assert the theoretical framework behind it, but one possible explanation could be the Price-Muller Turnover Model (Price, 2001), which is based on the Expectation Theory and Social Exchange Theory. According to these theories, employees enter an organization with certain expectations and values, and if their values and expectations are satisfied by the organization, they will have a sense of satisfaction and commitment to the organization and tend to stay in the organization. Besides, there is an exchange relationship between employees and the organization, that is, employees contribute their labor and services to the organization during their tenure, and the organization will give corresponding returns. In Price-Muller Turnover Model (2000), there are four turnover related variables, including environmental variables, individual variables, structural variables and endogenous

variables. Among them, job engagement is included in individual variables, which refers to the degree of efforts made by employees for work (Price, 1977). Price (2001) regarded that job engagement can affect job satisfaction and organizational commitment as highly engaged employees often work harder and may receive more rewards from the organization, which in turn leads to higher job satisfaction and organizational commitment to the organization, thus, they are less likely to leave. Therefore, it is possible that employees who are fully involved in work will experience different levels of burnout (Freudenberger, 1980; Cherniss, 1980; Griffin et al., 2010), and if their efforts are rewarded by the organization (such as compensation, promotion and authorization), they may generate a sense of organizational commitment and loyalty, and under the influence of organizational commitment and loyalty, their original sense of burnout may be eliminated (Tan and Akhtar,1998; Li et al., 2014), and the turnover intention caused by burnout may be weakened. However, once their efforts are not getting the rewards they deserve, their sense of burnout may increase, and with the low sense of organizational commitment, they may leave. That is to say, even though employees experience burnout, if they have a high organizational commitment to the organization or if they are influenced by high organizational commitments, the turnover intention caused by burnout may decrease, or the relationship between burnout and turnover intention may become weaker. In this study, we found that organizational commitment has a negative moderation effect on the relationship between emotional exhaustion and turnover intention, indicating that stronger organizational commitment may help buffer the effect of emotional exhaustion on turnover intention. Besides, emotional exhaustion is regarded as the most representative indicator of burnout (Maslach and Jackson, 1981), therefore, our result to some extent supports the possibility of the theoretical basis.

Continuance commitment

Continuance commitment is a commitment that employees have to stay in the organization in order not to lose their existing position and the benefits (accumulated

side bets and organization-dependent investments) they have received over the years (Meyer and Allen, 1991). Continuance commitment is based on economic principles and has a strong exchange characteristic (Meyer and Allen, 1984). Similar to the possible theoretical basis mentioned above, when employees experience emotional exhaustion at work, if they are unwilling to lose years of resources and accumulated inputs in the current organization, and are more worried about the lack of skill transfer ability and the availability of job alternatives, they will overcome the existing emotional exhaustion (Allen and Meyer, 1996) and continue to work for that organization. By contrast, if employees feel emotional exhaustion, and are ready to abandon years of work accumulation and investments, they tend to leave. In other words, even employees suffer burnout, they may not choose to leave or the relationship between burnout and turnover intention may become weaker if they have a strong sense of continuance commitment to the organization, or they are affected by high continuance commitments. From the analysis, we found that continuance commitment has a negative moderation effect on the relationship between emotional exhaustion and turnover intention, suggesting that high continuance commitment can negatively moderate the effect of emotional exhaustion on turnover intention. Thus, to a certain degree, this further supports the possibility of the theoretical basis.

Additionally, based on the results, we knew that as a whole construct, organizational commitment (β=-.2317, p=.0239) has a stronger moderation effect than continuance commitment (β=-.1546, p=.0471) on the relationship between emotional exhaustion and turnover intention, which means that the three dimensions of organizational commitment together can produce stronger organizational identity among ICU nurses, and generates a stronger moderation effect on the relationship between emotional exhaustion and turnover intention than single continuance commitment. Therefore, while taking measures to balance the relationship between emotional exhaustion and turnover intention, nursing supervisors should also improve their overall organizational commitment to retain and stabilize these subordinates.

In addition to this, we also tested the moderation effect of continuance commitment on the relationship between cynicism and turnover intention, but this moderation effect goes in the opposite direction from our hypothesis. That is, when the level of continuance commitment is high, the relationship between cynicism and turnover intention is stronger; on the contrary, when the level of continuance commitment is low, cynicism has a less influence on turnover intention. One possible explanatory reason could be that continuance commitment has a positive relationship with cynicism (Sethi, Barrier and King, 1999; Lambert, Kelley and Hogan, 2013; Smyth, Healy and Lydon, 2015). According to Griffin (2010), organizational commitment has a blur effect on job burnout, this is possibly because on the one hand, organizational commitment may protect those who are closer to the organization from burnout, and on the other hand, employees who are highly committed to the organization are more likely to make greater efforts, so they may suffer from greater amounts of stress and burnout (Mathieu and Zajac, 1990), this is because when these employees fail to see the results they want, they become disillusioned (Griffin et al., 2010). Another likely reason may have to do with social desirability, as people tend to choose Likert points that are more positive, for instance, respondents tend to choose positive answers in cynicism subscale, even if these answers could not reflect the reality. Consequently, it can mislead study results (Fisher, 1993), such as attenuate, inflate, and moderate variable relationships (Zerbe and Paulhus, 1987), and generate unwarranted theoretical or practical conclusions (Peltier and Walsh, 1990).

Regarding the hypotheses that were not supported, I think one possible explanation to this may be associated with the characteristics of ICU nurses in tertiary hospitals. For one thing, tertiary hospitals represent the highest nursing level in Chinese healthcare field, and in general, ICU nurses have more comprehensive clinical practice ability than ordinary nurses. When they suffer burnout, they may tend to turnover without hesitation, because for them, as ICU nurses who have worked in tertiary hospitals, they are more

likely to get positions in alternative hospitals than other nurses. For another thing, ICU nurses in tertiary hospitals face more pressure, in addition to excessive clinical work, they also need to complete required scientific research, training, examination and grade review and so on. When the efforts are not rewarded correspondingly (e.g., promotion, authorization, respect and salary), they probably show a strong desire to leave without considerations. In this case, some commitments like normative commitment or affective commitment may not buffer the effect of ICU nurses' burnout on turnover intention. Another possibility may also relate to the social desirability, as there may be untrue answers, we cannot draw the desired conclusion.

5.2 Hospital workplace violence

From the analysis, we knew that 77.7% of ICU nurses in this study have experienced hospital workplace violence, and non-physical was the main commonly experienced type. Violence usually occurred in nursing stations during daytime, and middle-aged male relatives were the most common perpetrators. Victims regarded the failure to meet their unreasonable demands was the main reason for violence. In the face of violence, most nurses patiently explained to perpetrators; they felt wronged, but most of them chose not to tell others. Furthermore, nearly half of the violence involved more than two victims, some of whom were unable to go to work, and sought medical treatment. Most ICU nurses have heard of HWPV, but some of them thought it is not a big deal. As for preventive measures, the victims believed that the media's objective reports should be placed first. Besides, most nurses insisted that it is necessary to set up special institutions to deal with violence and protect their interests.

Nurses' hospital workplace violence is a common phenomenon in the industry on a global scale (Hinson and Shapiro, 2004; Teymourzadeh et al., 2014). However, nurses in China are suffering more violence (Zhang et al., 2017; Wei et al., 2016), among which ICU nursing staff bear the brunt (Lynch, Appelboam and McQuillan, 2003). As found in our study, 43.5% of ICU nurses who have experienced workplace violence

had the intention to turnover. It is true that patients in ICUs are in a critical and urgent condition. Generally, the high cost and long hospital stay of ICU patients are not proportional to the expectation of treatment of patients' families. Thus, any cases like long waiting times and uncertainty regarding patients could cause conflicts and violence (Camerino et al., 2008). What makes the situation worse is, in China, some family members deliberately create dissatisfaction and treat medical personnel with violence to obtain financial compensation from the hospital. Thus, to ensure a stable medical order and provide a safe working environment for medical staff and retain nursing staff, all sectors of society should work together to effectively address the problem of hospital workplace violence.

According to our study, professional title, gender, length of service and employment form were influencing factors contribute to workplace violence. Based on The International Labor Department, one of the two core risk factors that related to workplace violence is the face-to-face contact of clients (Chappell and Martino, 2000). In China, generally, the work content of nurses with intermediate titles or above is nursing management. As managers, they have fewer opportunities to directly contact with patients and their relatives than clinical nurses, and they usually have better interpersonal skills (Yang, 2009) and the ability to identify early warning signs of violence (Zhang et al., 2017). Thus, as our study found, nurses with lower professional titles are more likely to suffer violence than nurses with higher professional titles. Besides, male nurses had a higher incidence of violence than female nurses in this study, which is supported by previous studies (Farrell et al., 2006). One possible explanation is that male nurses are usually arranged to take care of patients who are more seriously ill (Campbell et al., 2011; Pompeii et al., 2013), and cope with violence conflicts, they tend to feel more protective of female nurses (Yang et al., 2018). Regarding length of service, nurses with shorter working years had a higher risk of violence, which is consistent with past researches (Abbas et al., 2010; Shields and Wilkins, 2009; Rowe and Sherlock, 2005; Weaver, 2013). A likely reason is that nurses who work longer are better at communicating effectively with

patients and their relatives, and are more experienced than less experienced nursing staff in knowing how to deal with potential violence (Kowalenko et al., 2005). In terms of employment form, we found that contract employees had a higher risk of experiencing violence, partly because they typically do major clinical work and spend more time with patients than non-contract staff. In this study, non-contractors refer to nurses who have not obtained the nursing license (mainly nursing student), and nurses who are re-employ after retirement. For one thing, nursing students cannot perform clinical work alone without the guidance of nursing teachers, nor can they communicate with patients and their families without authorization; for another, rehired nurses after retirement are usually nursing experts and nursing managers who are mainly engaged in guidance and research work. As a result, these two groups have fewer direct contacts with patients, and are therefore less likely to be violent.

Chapter 6. Conclusions

The aim of this study is to investigate the moderation effect of organizational commitment in the relationship between ICU nurse's job burnout and turnover intention. We also investigate the hospital workplace violence among ICU nurses. The results reveal that each dimension of burnout is positively related to turnover intention, and every factor of organizational commitment is negatively correlated with turnover intention. Furthermore, organizational commitment has a moderation effect on the relationship between emotional exhaustion and turnover intention; as well as continuance commitment has a negative moderation effect on the relationship between emotional exhaustion and turnover intention. Additionally, 77.7% of ICU nurses have experienced hospital workplace violence in the past year; professional title, gender, length of service and employment form are influencing factors related to this violence.

6.1 Implications

The turnover of ICU nurses can cause a huge loss of costs (O'Brien-Pallas et al., 2006) and affects the long-term development of hospitals (Shi et al., 2013). As found in this study, both job burnout and organizational commitment have a significant impact on turnover intention, thus, hospital managers or department heads should first identify the causes for ICU nurses' job burnout and low organizational commitment, and then deal with them according to these reasons, thereby reducing the turnover intention. One reason that can lead to job burnout and low organizational commitment of ICU nurses is that they think their daily work is boring, and most of them have no specific and motivated work goals (Han, 2008; Zheng, 2014). Generally, ICU nurses in tertiary hospitals have higher degrees of achievement and want to engage in moderate challenges and autonomous work. Therefore, one option for hospital policy makers is to help nurses set specific and appropriate goals based on their personal wishes and values when designing nurses' job, so as to exert their strengths, stimulate their potential and enable them to enjoy the experience at work. When nurses achieve

milestones, they can be encouraged to communicate and share their successful experiences, pass this positive emotion between employees to create a good working atmosphere. In this way, these measures may reduce ICU nurses' job burnout to a certain extent, and enhance their commitment to the organization.

Organizational commitment and continuance commitment have a negative moderation effect on the relationship between emotional exhaustion and turnover intention, this means that increasing the level of organizational commitment and continuance commitment can mitigate the relationship between ICU nurses' emotional exhaustion and turnover intention. Thus, nursing supervisors should improve ICU nurses' organizational commitment and continuance commitment, and this may be achieved through promotion and authorization. As we all know, promotion brings about positive changes in management power, social status, job content and compensation; and authorization allows employees to play the role of a master (Han, 2008). Therefore, on the one hand, providing fair promotion opportunities for ICU nurses is an important way to attract and retain them. Managers can establish a comprehensive promotion mechanism and expand promotion channels to meet the needs of employees' self-development. For example, the promotion channels can be divided into different categories, such as management, technology and scientific research, so that nurses with different jobs and specific expertise have their own promotion channels. On the other hand, empowered by the organization is another option to retain these nurses since they feel that they are valued and respected by the organization. Thus, where possible, some ICU nurses can be fully empowered by hospital administrators, and provided by the hospital with necessary financial, material and human support for their creative work, enabling them to put their ideas into practice. Consequently, nurses may be more engaged in work with enthusiasm, which could increase their organizational commitment and the attachment to the organization, thus may reduce turnover intentions.

As for hospital workplace violence, considering its serious consequences and several

negative effects, multiple directions should attach importance to it and work together to solve it, and the priority is to clarify the root causes of workplace violence and take corresponding measures for these specific causes. In the face of violence, timely and proper handling by all parties is critical, but prevention of (potential) violence from the source is more important. Among these preventive measures, at the national level, the government ought to adopt legislative approaches to prevent violence and severely punish those who deliberately commit violence in order to generate a deterrent effect on potential perpetrators with intentional purposes. Besides, the media and public opinion should correctly evaluate medical personnel and report medical events objectively and impartially instead of disseminating negative and untrue information in order to attract more public attention. Furthermore, hospitals should conduct employee-specific training to strengthen their ability to respond to violence, and set up special institutions to deal with violence, encourage employees to report any violence to the institution, and timely, properly handle these events so as to protect the interests of medical staff. For nurses themselves, for one thing, they should improve their communication skills with patients (relatives), timely discover and effectively prevent violence; for another, they should adopt a “zero tolerance” attitude towards violence, handle it calmly and seek help form others (leaders, colleagues, and police) in time to ensure their personal safety and legal rights.

6.2 Limitations and Further studies

Due to limited time, personal energy, financial resources and in order to reduce the difficulty in collecting questionnaires, 7 tertiary hospitals in Sichuan Province have been selected with convenience sampling, therefore, they are not widely representative. Subsequent studies can target ICU nurses at different levels of hospitals in different provinces to enhance the representativeness of the study.

With respect to scales, the organizational commitment scale and turnover intention scale adopted in this study are mature questionnaires but developed by foreign scholars.

Although these questionnaires are widely used in studies and have good validity and reliability, Chinese social and economic structure and traditional culture are greatly different from those of foreign countries. Therefore, questionnaires suitable for Chinese actual conditions can be developed gradually.

In terms of research samples, the sample selected in this study is not large enough, resulting in too few samples of some demographic variables. For the convenience of analysis, items with a small number of samples have to be merged, which may affect the effect of demographic variables on the relevant variables. Simultaneously, 131 online samples were dropped because of regular answers, causing waste of samples. Future studies can be based on a larger sample to achieve a more valid result and conclusion. Field investigation can be used as much as possible to collect responses that may be more effective with the help of department leaders.

As for research variables, unfortunately, only two moderation effects were supported in this study. Subsequent studies can try to add mediation variables or more moderation variables to enrich the study.

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Annexes: Questionnaires

These questionnaires are an academic research on ICU nurses' burnout, organizational commitment, turnover intention and hospital workplace violence. There is no right or wrong answers and please answer carefully according to your actual situation. All data will be kept strictly confidential. It will take around 15 minutes of your time. Thank you for your support and kind help!

Part I ***(Part I-Part IV were issued at time1)***

Basic information

1. Gender: Male□ Female□
2. Age: 20-30 years□ 31-40 years□ >40 years□
3. Marital status: Single□ Married□ Others (i.e. Divorced)□
4. Professional title: Primary title□ Intermediate title□ Deputy senior and above□
5. Hierarchy of nurse: N0□ N1□ N2□ N3□ N4□ N5□
6. Job duty: Clinical nurse□ Administrative nurse and others□
7. Education level: Junior college graduate or below□ Bachelor degree holder□ Master degree holder and above□
8. Department: General ICU□ Neurological ICU□ Surgical ICU□ Pediatric ICU□ Respiratory ICU□ Cardiac ICU□ Others□
9. Monthly salary (Yuan): <5000□ 5000-15000□ >15000□
10. Length of service (Years): <5□ 5-10 years□ >10 years□
11. Employment form: Contract employee□ Non-contract employee□
12. Type of Hospital: Hospital directly affiliated to colleges and universities□ Hospital non-directly affiliated to colleges and universities□ Others□

13. Number of hospital beds: 500-1000□ 1001-2000□ >2000□

14. Number of ICU beds: <30□ 31-50□ >50□

15. Number of patients admitted in your department (in 2017):
    <400□ 401-600□ >600□

16. Patients mortality in your department (%, in 2017): <10□ 10-30□ >30□

17. The average length of stay of patients in your department (Days):
    <10□ 10-30□ > 30□

18. The number of nurses in your department: <40□ 40-60□ >60□

19. The Patient-to-Nurse ratio in your department: 1-2 :1□ 2.1-4.0 :1□ >4:1□

Part II

Questionnaire on Burnout

(Please indicate the occurrence frequency of the following situation according to your own reality with √ under the respective number. "1" represents "never" and "5" stands for "every day", with the frequency increases from 1 to 5.)

Assessment Indicators		Never	Very few	Several times a month	Several times a week	Everyday
		1	2	3	4	5
Q1	I feel emotionally drained from my work;					
Q2	I feel used up at the end of the workday;					
Q3	I feel fatigued when I get up in the morning and have to face another day on the job;					
Q4	Working with people all day is really a strain for me;					
Q5	I feel like I am at the end of my rope;					
Q6	I have become more callous towards people since I took this job;					
Q7	In my work, I deal with emotional problems very calmly;					
Q8	I worry that this job is hardening me emotionally;					
Q9	I do not really care what happens to some recipients;					
Q10	I can easily create a relaxed atmosphere with my recipients; (R)					
Q11	I think contribution I made is valuable for the company; (R)					
Q12	I deal very effectively with the problems of my recipients; (R)					
Q13	I feel exhilarated after working closely; (R)					
Q14	I have accomplished many worthwhile things in this job; (R)					
Q15	I can easily understand how my recipients feel about things; (R)					

Part III

Questionnaire on Organizational Commitment

(Please score according to your approval degree, with "1" representing "strongly disagree", "5" representing "strongly agree" and the degree of approval increases gradually from 1 to 5. Please select the appropriate number.)

Assessment Indicators		**Strongly disagree**	**Slightly disagree**	**Neither disagree nor agree**	**Slightly agree**	**Strongly agree**
		1	**2**	**3**	**4**	**5**
Q1	I would be very happy to spend the rest of my career with this organization.					
Q2	I really feel as if this organization's problems are my own.					
Q3	I do not feel a strong sense of belonging to my organization. (R)					
Q4	I do not feel emotionally attached to this organization. (R)					
Q5	I do not feel like part of the family at my organization. (R)					
Q6	This organization has a great deal of personal meaning for me.					
Q7	Right now, staying with my organization is a matter of necessity as much as desire.					
Q8	It would be very hard for me to leave my organization right now, even if I wanted to.					
Q9	Too much of my life would be disrupted if I decided to leave my organization now.					
Q10	I feel that I have too few options to consider leaving this					

	organization.	
Q11	If I had not already put so much of myself into this organization, I might consider working elsewhere.	
Q12	One of the few negative consequences of leaving this organization would be the scarcity of available alternatives.	
Q13	I do not feel any obligation to remain with my current employer. (R)	
Q14	Even if it were to my advantage, I do not feel it would be right to leave my organization now.	
Q15	I would feel guilty if I left this organization now	
Q16	This organization deserves my loyalty.	
Q17	I would not leave my organization right now because I have a sense of obligation to the people in it.	
Q18	I owe a great deal to my organization.	

Part IV

The Hospital Workplace Violence Scale

(Please answer the following questions according to your own reality with √ under the respective number)

Section 1:

1. Have you suffered the hospital workplace violence in the past 12 months? Yes□ No□

(*If your answer is "Yes", please follow the question number and answer the question. If your answer is "No", please skip to question 17 and continue.*)

2. **Non-physical attack**

2a. **Verbal abuse:** condemns, insults, demeans, or others words that are detrimental to the dignity of the individual (by the way of face to face, phone, letter or leaflet, etc.), without physical contact.

No□ 1 time□ 2-3 times□ >3 times□

2b. **Threats:** (by the way of words, spitting, throwing a fist, stomping etc.), without physical contact, threatening content involving personnel property safety and complaints.

No□ 1 time□ 2-3 times□ >3 times□

3. **Physical attack** (contact with the body or attack with something), including hitting, kicking, pushing, biting, throwing, twisting arm, pulling hair, etc.

No□ 1 time□ 2-3 times□ >3 times□

4. **Sexual harassment and sexual assault**, including attacked by language, or behaviors like being vigorously pulled, hugged, kissed or touched the sensitive area by heterosexual

No□ 1 time□ 2-3 times□ >3 times□

Section 2: Please describe the situation in which the most deeply remembered event occurred:

5. Time of the incident: Day shift□ Night shift□ After work□

6. Location of the incident: Ward□ Doctor's Office□ Nursing Station/Office□ Treatment Room□ Others□

7. The main perpetrator is: Patient's family members□ Patient□ Patient's friends□ Others□

8. Gender of the perpetrator: Male□ female□

9. The age of the perpetrator: The juvenile□ The youth□ The middle-aged□ The old□

10. The situation when the perpetrator commits violence (Multiple)
The patient died□ The of the patient's condition did not improve or mistakenly thought that there was no improvement□
The perpetrator:
Alcohol or drug abuse□ Mental disorder□ Seeking financial compensation□
The cost was too high□ The waiting time was too long□
Not satisfied with the service□ Did not meet its unreasonable requirements□ Others□

11. Your response to this incident:
Tolerate to avoid□ To explain patiently□ Give tit for tat (for example, fight)□
Try peaceful means before resorting to force□ Turn to colleagues/securities/leaders□
Call the police□ Others□

12. The impact of this incident on you (Multiple):
No effect□ Feel wronged□ Declining work enthusiasm□
Do not dare to go to work alone□ Intention to turnover□ Insomnia□
Anxiety, depression or indignation□ The idea of suicide□ Others□

13. How many days have you been unable to work due to this incident (such as injuries or others reasons)（days）? No□ <1□ 1-2□ 3-7□ >7□

14. Have you seen a doctor because of this incident? Yes□ No□

15. Have you ever discussed this incident with your leaders or colleagues?
Yes□ No□ (If no, it is because:)_____

16. Are there any other victims besides you in this incident? No□ 1 person□ ≥2 people□

Section 3: Please fill in your situation and suggestions for "the Violence in Hospitals":

17. Have you heard of *the Workplace Violence* before? Yes□ No□

18. Do you think *the Workplace Violence* is not worth a fuss? Yes□ No□

19. What measures do you think may prevent or reduce the occurrence of *the Hospital Workplace of Violence* (Multiple)?
Hospitals strengthen management and improve relevant systems□
Relevant institutions provide targeted training to medical staff to improve their capacity to respond to violence□
Relevant institutions conduct education and advocate comity□
Medical staff improve service attitude and interpersonal communication skills□
Medical staff improve professional skills and remediation skills□

The media should properly oriented and advocates respect for medical work□
Legislation□ Others□

20. In order to protect the rights and interests of medical staff, do you think it is necessary to establish an institution or organization that deals with *the Violence in Hospitals*?
Yes□ No□ Indifferent□

Part V ***(This part was issued at time2)***

Turnover Intention Scale

(Please score according to your approval degree, with "1" representing "strongly disagree", "5" representing "strongly agree" and the degree of approval increases gradually from 1 to 5. Please select the appropriate number.)

Assessment Indicators		Strongly disagree	Slightly disagree	Neither Disagree nor agree	Slightly agree	Strongly agree
		1	2	3	4	5
1	I often think of leaving the organization.					
2	It is very possible that I will look for a new job next year.					
3	If I could choose again, I would choose to work for the current organization. (R)					