

The Relationship between Nursing Work Environment and Quality of Patient Care in China: An Analysis of the Impact Path of Burnout

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Abstract: With the rapid development of society and advances in medical technology, health issues such as population aging and high prevalence of chronic diseases have become increasingly prominent in China. The increase in the elderly population and the growing complexity of health needs pose significant challenges to China's health care system. As an integral part of the healthcare system, nurses are responsible for ensuring the quality of patient care. However, the impact of the nursing work environment on nurse burnout and patient care quality has received increasing attention. This paper reviews relevant national and international studies and explores the complex relationship between the nursing work environment, occupational burnout, and patient care quality. It also provides policy recommendations to improve the nursing work environment, alleviate occupational burnout, and ultimately improve patient care quality.

1. Introduction

In China, the trend of population aging has become increasingly evident, with the rapid growth of the elderly population and the increasing prevalence of chronic diseases posing serious challenges to the healthcare system. The influence of the nursing work environment on the quality of patient care has become an important area of research. As the influence of nurse work environment and occupational burnout on patient care quality becomes increasingly apparent, understanding this area is critical to improving the quality of healthcare in China.

2. China's Aging Population and Its Challenges to the Healthcare System

With rapid social development and innovations in medical technology, health issues such as population aging and the high prevalence of chronic diseases have become increasingly prominent. By the end of 2022, the number of elderly people aged 60 and above will reach 280 million, accounting for 19.8% of the total population, while those aged 65 and above will reach 210 million, accounting for 14.9% of the population^[1]. The Ministry of Civil Affairs predicts that during the "14th Five-Year Plan" period, China's elderly population will exceed 300 million^[2]. In addition to

the accelerating aging trend, China's elderly are facing the problem of "long but unhealthy". By the end of 2021, more than 190 million elderly people in China will have chronic diseases, and more than 40 million will have disabilities and partial disabilities^[3]. Based on the development trends of China's population structure, it is predicted that by 2030, the number of disabled and partially disabled elderly people will reach 69.53 million, accounting for 17.44% of the elderly population^[4]. In addition, the healthcare behaviors and expectations of the Chinese population are gradually changing, with diverse and complex health needs becoming more prominent, posing significant challenges to the healthcare system.

3. Development and Current Status of the Nursing Work Environment in China

In recent years, China's nursing profession has made significant progress. By the end of 2020, the total number of registered nurses nationwide exceeded 4.7 million, an increase of 45% compared with 2015. By the end of 2022, the total number of registered nurses in China will exceed 5.2 million, with a ratio of 3.7 nurses per 1,000 people^[5]. From the perspective of the number of nurses and educational structure, China's nursing profession has been developing rapidly and continuously improving its professional service capabilities. However, on the other hand, as a high-risk frontline job closely related to patient safety, nursing work often puts nurses in a state of psychological stress, leading to empathetic fatigue and psychological burnout. During the COVID-19 pandemic, frontline clinical nurses faced immense physical and psychological stress. Despite their critical role in ensuring patient safety, it is undeniable that nurses' physical and mental health are under significant strain, directly affecting the quality of patient care.

Extensive research, both nationally and internationally, has shown that a healthy nursing work environment is a remedy for high nurse turnover and plays an important role in improving job satisfaction and reducing occupational burnout. Studies have also shown a strong relationship between the nursing work environment and the quality of patient care, with a good nursing work environment being associated with better nursing outcomes and quality of care^[6]. However, the above evidence is mainly from Western countries, and there is limited research in China on the relationship between nursing work environment and nursing work quality. Therefore, this paper reviews the existing domestic and international literature to explore the complex relationship between nursing work environment and patient care quality, and thoroughly analyzes the mediating role of occupational burnout in this relationship. It aims to provide insights for policy makers and hospital administrators in building a supportive nursing work environment, and provide important guidance for creating a healthy professional environment to ultimately improve the quality of patient care in healthcare institutions.

4. Research on the Relationship between Nursing Work Environment and Quality of Patient Care

In the early 1980s, McClure first proposed that the nursing work environment consists primarily of nurse autonomy, control over practice, and nurse-physician collaboration^[7]. In 1992, Zelauskas suggested enhancing nurses' autonomy through empowerment to build trust and a sense of control in their work^[8]. Aiken proposed that the nursing work environment include autonomous decision making, multidisciplinary collaboration, educational resources, and management support^[9]. The American Association of Critical-Care Nurses (AACN) believes that a healthy work environment can maximize nurses' potential and improve performance, and has identified six standards for a healthy work environment (skilled communication, genuine collaboration, effective decision-making, appropriate staffing, meaningful recognition, and authentic leadership)^[10]. Meanwhile, the American Nurses Association (ANA) states that a healthy work environment should be safe,

empowering, and satisfying, with managers supporting nurses physiologically, psychologically, and socially^[11]. The American Nurses Credentialing Center (ANCC) uses "Magnet Hospitals" as the standard for evaluating a healthy nursing work environment, requiring Magnet hospitals to meet five elements (transformational leadership; structural empowerment; professional nursing practice; new knowledge, innovation, and improvement; and empirical outcomes)^[12]. The Registered Nurses Association of Ontario (RNAO) in Canada believes that a healthy nursing work environment is one in which clinical leadership is visible and nurses have positive perceptions of their workplace^[13].

Lake developed the Nursing Work Index Practice Environment Scale, which thoroughly discusses factors for measuring the hospital nursing practice environment^[14]. The subscales derived from this practice environment have a strong conceptual and empirical foundation, emphasizing the importance of understanding the nursing practice environment. This innovative scale development provides the healthcare community with a powerful measurement tool to improve the quality of patient care and the nursing work environment. In addition, Sung-Hyun and his team conducted survival analysis to estimate survival curves and related factors, including personal and family, nursing education, hospital, and job satisfaction, and found that hospital environment and job satisfaction were significantly related to new graduate turnover rates^[15]. Bogaert conducted a cross-sectional survey to understand how the nursing practice environment, nurses' job characteristics, and occupational burnout affect their work outcomes, quality of care, and patient adverse events^[16]. The study highlighted the importance of the nursing unit environment. It confirmed that the nursing practice environment plays a critical role in influencing nurses' work outcomes and the quality of care they provide. Warshawsky and colleagues developed the Nursing Work Index Practice Environment Scale, which is used worldwide. This scale emphasizes that a good practice environment is critical to improving nurse retention, job satisfaction, and quality care^[17].

Inspired by foreign research, domestic scholars are increasingly focusing on the impact of organizational characteristics, such as the nursing work environment, on nurses. The focus has gradually shifted from the early characteristics of the physical environment to the organizational characteristics within the work environment. Qin Jianfen and colleagues believe that the nursing work environment refers to the environment composed of space, practice, place, and the people, things, and objects encountered while providing health care services to patients and their families or other groups^[18]. Subsequently, based on Herzberg's two-factor motivation theory, Bi Hongmei divided the elements of nursing work environment into satisfaction factors and dissatisfaction factors, including team cooperation, work compensation, management style, professional and personal development, nurses' participation in hospital affairs, planning principles, and work safety^[19]. Xie Xiaoge proposed a supportive nursing work environment, emphasizing a nurse-centered approach and creating a healthy nursing work environment from the organizational level, with elements including autonomy, workload, career development, peer cohesion, leadership and management, system maintenance and change, hardware resource conditions, power and protection, and recognition^[20]. On this basis, Shao Jing and colleagues proposed a healthy nursing work environment model and conducted a large-scale empirical study, identifying leadership and management, professional autonomy, career development, nurse-physician relationships, recognition atmosphere, sufficient staffing, and basic guarantees as the seven most influential work environment factors on nurses' work status^[21].

Since the 1980s, various scholars, organizations and institutions at home and abroad have elaborated the connotation and components of nursing work environment from different perspectives. Through decades of development and various scholars' thoughts and innovations on the nursing work environment, the concept and connotation of the nursing work environment have been continuously refined. Although different scholars have described the nursing work environment differently, their focus has generally been on organizational characteristics and nurses'

autonomy in the workplace, with the aim of maximizing nurses' health, improving nurses' work efficiency, and enhancing the quality of patient care^[22].

5. Research on the Relationship Between the Nursing Work Environment and Patient Care Quality

In the 1990s, researchers began to focus on the relationship between the nursing work environment and the quality of nursing care. A representative large-scale study was conducted by Aiken et al. who analyzed administrative data from 168 independent adult general medical facilities in Pennsylvania and information provided by 10,184 nurses. In 2009, the research team conducted a large-scale nursing workforce study (Registered Nurse Forecasting study, RN4CAST) in European countries involving more than 300 hospitals and more than 420,000 patients and 26,000 nurses^[23, 24]. The study results showed that for every additional patient assigned to a nurse, the likelihood of patient mortality within 30 days of admission increased by 7%; conversely, for every 10% increase in the proportion of nurses with a bachelor's degree, the likelihood of patient mortality within 30 days decreased by 7%. This high-quality evidence shows that nurse workload, a characteristic of nursing work, is closely related to patient safety.

Lake et al. believe that improving the hospital organizational environment can improve nursing quality and patient safety by increasing nurses' autonomy, work control, and nurse-physician collaboration^[14]. Therefore, some scholars have further explored the relationship between organizational characteristics in nursing work environment and patient care quality through empirical research. Rebecca R.S. Clark and colleagues surveyed 1,165 nurses from 166 obstetrics and gynecology units in four states in the United States. The study results showed that in a poor work environment, less than one-sixth of nurses would rate overall safety as "excellent. Nurses working in a poor work environment were more likely to rate the overall safety of their units as "poor"^[25]. An empirical study also indicated that compared to poor work environments, nursing homes with good work environments had 1.8% fewer pressure ulcers per 100 residents per year ($p=.05$), nurses were one-tenth as likely to report job dissatisfaction ($p<.001$), and they were one-eighth as likely to report burnout ($p<.001$)^[26]. Lake et al. conducted a meta-analysis of 17 high-quality studies and found a significant relationship between hospital nurses' work environment and nurses' attitudes, safety and quality ratings, patient outcomes, and patient satisfaction. Nurses working in healthy work environments were significantly less likely to report negative outcomes (mean OR=0.71), unit safety or quality ratings (mean OR=0.65), negative patient outcomes (mean OR=0.93), and higher patient satisfaction (OR=1.16) than those in poor work environments^[27].

In addition, Stalpers et al. conducted a systematic review of the relationship between factors in the nursing work environment and common nursing-sensitive indicators and found that good nurse-physician collaboration and adequate nursing staffing significantly reduced the incidence of patient falls and pressure ulcers^[28]. Katia Furtado et al. examined the relationship between the nursing work environment and the quality of pressure ulcer wound care and found that adequate nurse staffing could improve the quality of pressure ulcer wound care^[29]. Cristina Gasparino and colleagues used structural equation modeling for cross-sectional and correlational research to understand which characteristics of the professional nursing work environment most influence patient outcomes. The results of the study showed that nurse leadership, management and leadership, staffing, and adequate resources were the most influential nursing work environment characteristics on patient outcomes^[30]. Domestic scholars conducted a survey of 1,890 ICU nurses in 134 hospitals, which showed that nurses perceived a significant improvement in the quality of care in a better work environment^[31].

The above studies show that the nursing work environment is a key factor in improving the

quality of patient care. Commonly used patient care quality indicators in research include nurses' perceptions of care quality, patient fall rates, pressure ulcer incidence and other adverse events, and nurse-sensitive indicators. In the current economic climate, identifying and optimizing key elements of the nursing work environment will help create a healthy nursing work environment, thereby improving the quality of health care while maximizing the efficiency of resource use.

6. The Impact Path of Occupational Burnout on the Relationship between the Nursing Work Environment and Patient Care Quality

The issue of occupational burnout among nurses has received increasing attention in the healthcare sector. As work pressures continue to increase, this challenge has become more pronounced. Occupational burnout not only affects the personal well-being of nurses but, more seriously, has a profound and widespread impact on the quality of patient care. These effects cut across personal and professional domains, touching the heart of the healthcare system. Poghosyan's research examined this issue globally, involving 53,846 nurses from the United States, Canada, the United Kingdom, Germany, New Zealand, and Japan^[32]. The results of the study showed a strong correlation between the high levels of occupational burnout experienced by nurses in these countries and the decline in quality of care. This finding reveals a thought-provoking phenomenon: occupational burnout has transcended regional and cultural boundaries to become a global challenge that broadly affects the core quality of nursing services. Amaliyah, E.'s research focused on nurses in public hospitals in Banten Province, Indonesia, and included nurses involved in direct care in medical, surgical, obstetric, and pediatric wards^[33]. This study used precise linear regression analysis to show a significant relationship between nurses' occupational burnout and patients' perceptions of quality of care. The results emphasize that nurses' occupational burnout has a direct impact on patients' perceptions of quality of care, further demonstrating the seriousness of the occupational burnout problem and its critical role in healthcare quality.

The issue of nurse burnout has received widespread attention in the healthcare field, with implications that go far beyond personal well-being. In fact, occupational burnout has a profound effect on nursing performance and patient perceptions of quality of care. This impact is multifaceted, ranging from nurses' personal psychological states to an overall decline in patient care quality, reflecting the broad negative consequences of occupational burnout. An, M.'s study in the context of tertiary hospitals in South Korea found that occupational burnout among nurses was closely related to reduced productivity and efficiency in nursing work^[34]. The negative emotions and attitudes caused by occupational burnout, as well as the lack of concentration at work, directly affected nurses' ability to provide quality care. These effects are not limited to the individual level; they can also lead to patient safety issues, thus affecting the overall performance of the organization and the quality of patient care. Schlak's research also examined the direct impact of occupational burnout on patient safety^[35]. In this study, hospitals with high nurse burnout scores had significantly increased risks of patient mortality, failure to rescue, and longer hospital stays. This finding highlights that occupational burnout not only weakens the quality of care, but also directly threatens patient safety, underscoring the urgency and importance of addressing the issue of occupational burnout. In healthcare, effective identification and management of occupational burnout is not only a necessary condition for improving the quality of care, but also a critical measure for ensuring patient safety. Notably, Schlak's study also found that a good work environment could significantly weaken the association between nurse burnout and poor patient outcomes^[35]. This provides hospital management with a clear intervention direction: improving the work environment can effectively reduce occupational burnout among nurses, thereby improving the quality of patient care.

Professional burnout has a direct and negative impact on the quality of patient care. The direct

and negative impact of occupational burnout on the quality of patient care cannot be ignored. Buckley, L.'s research focused on pediatric nurses and found significant associations between occupational burnout and nurses' turnover intentions, decreased quality of life, increased fatigue, and negative attitudes toward colleagues and work^[36]. These burnout-related work outcomes, such as compassion fatigue, secondary traumatic stress, and PTSD among colleagues, negatively impacted quality of care. More seriously, occupational burnout was also associated with missed care and an overall decline in quality of care, particularly in the high-pressure environment during the COVID-19 pandemic. El-Sol's research further emphasized that healthcare providers, especially nurses, exhibited high levels of occupational burnout symptoms when caring for critically ill patients, especially those with COVID-19^[37]. This burnout included physical, psychological, and spiritual symptoms that directly led to reduced quality of care and increased risk of fatal medical errors. This highlights the broad impact of occupational burnout on the quality of patient care. Heo, Y.'s research complemented El-Sol's findings by further demonstrating how nurses' willingness to provide care under excessive pressure was affected, ultimately leading to a decline in quality of care^[37,38]. The anxiety, despair, and constant stress that nurses experienced while providing care affected their communication and decision-making skills, leading to indifference and unfriendly attitudes toward patients. These problems not only reduced the quantity and quality of care, but also decreased patient satisfaction. In summary, occupational burnout is a multifaceted issue that goes beyond the personal health and well-being of nurses and affects the efficiency of the entire healthcare system and the quality of patient care.

Reducing nurse burnout is critical to improving the quality of patient care. This requires not only improving the working conditions and well-being of nurses, but also that healthcare institutions and policy makers provide the necessary support and resources. Nantsupawat, A.'s research revealed a significant negative association between nurses' levels of occupational burnout and quality of patient care in Thai community hospitals^[39]. All three subscales of the Maslach Burnout Inventory were associated with low quality of care, increased patient falls, medication errors, and infections. This association highlights that occupational burnout not only affects nurses personally, but also poses a direct threat to patient safety. The relationship between occupational burnout and medication errors is particularly important because medication errors are directly related to patient safety and outcomes. Nantsupawat, A. further emphasized in 2023 that after the COVID-19 pandemic, occupational burnout among nurses remained high^[40]. This burnout was closely related to issues of "missed care" or "limited care". This suggests that under extreme stress and tense working conditions, nurses' care tasks were overlooked, affecting the quality and effectiveness of care. Reducing nurse burnout and improving the nursing work environment are critical to improving patient safety. Montgomery, A.'s research showed that burnout affects nurses' health and brain structure and function, including cognitive function, potentially leading to decreased job performance and patient safety issues^[41]. This study suggests that burnout is not just a personal health issue for nurses, but a serious problem that affects the quality of patient care. The decline in cognitive function among nurses can lead to distracted attention and impaired judgment, increasing the risk of medical errors and directly threatening patient safety. Improving the work environment for nurses can significantly improve patient safety. This shows that healthcare organizations play a critical role in reducing nurse burnout and improving patient safety. To address this issue, policymakers, administrators, and nurse managers must provide organizational support. This includes ensuring adequate staffing levels, a safe work environment, appropriate personal protective equipment, and the provision of mental health support services. These measures are essential to maintain nurses' well-being and quality of care^[40].

In China, occupational burnout among nurses is gradually becoming a core issue in the healthcare sector. It not only affects the personal health and well-being of nurses, but also has a

profound impact on the quality of patient care. In exploring the differences between occupational burnout among nurses in China and internationally, Guo, Y.'s research uncovered interesting differences in the relationship between occupational burnout, stress resilience, and turnover intentions among nurses in Australia and China^[42]. Although the Chinese nurses showed strong stress resilience, their occupational burnout still led to increased turnover intentions. This finding suggests that even in environments with seemingly high stress resilience, occupational burnout may be a hidden threat that affects the stability of healthcare teams and the quality of care. Lin, F.'s research further emphasized the role of nursing work environment factors in occupational burnout^[43]. Relationships with colleagues and supervisors, personal and professional support, and work-life balance were key factors in mitigating occupational burnout. This suggests that improving the quality of nurses' work environment and relationships, and providing necessary support and resources are critical to preventing and mitigating occupational burnout. The study also examined the relationship between occupational burnout among nurses in Chinese hospitals and social support and socio-demographic factors. The study found that older, married nurses with higher positions and professional titles experienced higher levels of emotional exhaustion, the core element of occupational burnout. Meanwhile, social support had a buffering effect on occupational burnout. Support from family, friends, colleagues, and managers significantly reduced occupational burnout among nurses, highlighting the importance of strengthening and maintaining social support networks in reducing occupational burnout among nurses.

In recent years, the issue of professional burnout among nurses has received widespread attention and is in urgent need of effective management and solutions. The reasons for this problem are complex and multifaceted, and recent research has provided us with a deeper understanding. In particular, Ma, Y.'s research has highlighted the importance of understanding and preventing occupational burnout among oncology nurses. Not only is this critical to ensuring the health of healthcare workers, but it also relates to work performance and the stability of healthcare teams^[44]. The study showed that more than 20% of oncology nurses planned to leave their job due to high emotional exhaustion caused by occupational burnout. Occupational burnout may also lead to destructive behaviors such as interpersonal conflicts and relationship breakdowns, which indirectly affect the quality of patient care. Meanwhile, Guo, W.'s research focused on occupational burnout among hemodialysis (HD) nurses and its influencing factors^[45]. Factors such as night shift, work environment, interpersonal relationships, and personal life circumstances were closely related to occupational burnout. These factors not only affect nurses' physical and mental health, but also directly or indirectly influence their turnover intentions and negatively affect the quality of care and the medical environment. In particular, the positive correlation between emotional exhaustion and depersonalization suggests that as emotional exhaustion increases, depersonalization occurs, leading to negative attitudes toward work and the workplace and feelings of detachment from work. Taken together, these studies suggest that nurses' occupational burnout directly affects their job satisfaction and retention intentions, which ultimately affects the quality of patient care. High turnover intentions among nurses not only lead to staff turnover, but can also affect team stability and continuity of care. In addition, professional burnout can lead to negligence and errors in nursing care, which can affect patient safety and outcomes^[44,45].

The quality of patient care is an important indicator for assessing the quality of nursing work. Identifying core elements of the nursing work environment that affect patient care quality is of great theoretical importance for clinical management. Therefore, based on existing research, this study systematically explores the complex relationship between occupational burnout, nursing work environment, and patient care quality through a literature review and analyzes the potential mechanisms by which the work environment influences patient care quality.

6. Policy Recommendations and Future Research Directions

To improve the quality of health care in China, policy makers and hospital administrators should focus on improving the nursing work environment, especially by alleviating nurses' occupational burnout. Increasing nurse autonomy, strengthening nurse-physician collaboration, providing more educational resources, and offering management support can effectively improve the quality of care. Future research should further explore how specific elements of the nursing work environment influence occupational burnout and its impact on patient care quality to provide more precise intervention measures.

7. Conclusion

The relationship between the nursing work environment and patient care quality is complex and tightly intertwined. Occupational burnout, as an important mediator in this relationship, warrants further research and attention. Improving the nursing work environment and reducing nurses' occupational burnout can significantly improve the quality of patient care. This not only contributes to improving the overall level of health care in China, but also provides effective strategies for addressing health issues in an aging society.

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