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Progress in Research on the Psychological Well-Being of ICU Nurses in the Context of COVID-19

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Abstract: During the COVID-19 pandemic, frontline healthcare workers experienced significant negative psychological impacts, which can seriously impair both their mental and physical well-being, as well as their job performance. As critical contributors to pandemic response, the mental health of ICU nurses warrants focused attention. This review examines the current mental health status of ICU nurses amidst the COVID-19 context and explores the key factors influencing their psycho-logical well-being. The goal is to provide insights that may aid in enhancing the mental health of ICU nurses actively engaged in epidemic prevention and control efforts in China.

Keywords: COVID-19; mental health; intensive care units nurses; review

1. Introduction: The Current Mental Health Status of ICU Nurses Amid the COVID-19 Pandemic

Studies indicate that frontline healthcare workers are among the top three groups requiring psychological support during the epidemic [1]. ICU nurses, as key defenders on the front lines, are particularly in need of mental health attention. Research has found that nurses working in emergency departments, psychiatry, and ICUs generally exhibit poorer mental health compared to other hospital staff, with ICU nurses showing even higher levels of depression and anxiety [2]. At the onset of the COVID-19 outbreak, ICU nurses faced intensified workloads, shortages of protective equipment, and elevated risks of occupational exposure. These challenges contributed to a diminished sense of psychological security, persistently poor mental health, and heightened mental health issues. Addressing these concerns requires urgent societal focus and support.

1.1. Psychological Distress: Anxiety and Depression Among ICU Nurses

Research from China revealed that nurses working directly against COVID-19 had an average anxiety score (SAS) of 56.39 ± 6.99, with nearly 80% experiencing mild anxiety symptoms [3]. This indicates that frontline nursing staff faced substantial psychological pressure, which could negatively impact their routine patient care. ICU and respiratory unit nurses reported the highest levels of anxiety compared to other departments treating infectious diseases, likely due to their increased exposure risk [4]. Studies by Ai-Qin Li and Xuan-Xuan Liu further found that, under pandemic conditions, nurses were more vulnerable to anxiety, panic, depression, and even suicidal thoughts [5]. These findings highlight the heightened susceptibility of ICU nurses to mental health challenges during epidemic control efforts.

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Furthermore, public health crises often lead to moderate burnout among nurses, driven by infection risks, social stigma, and other stressors [6]. The ongoing pandemic has compelled ICU nurses to face difficult experiences, such as the inability to save patients, amplifying their emotional burden. The surge in infection and death rates intensifies these psychological effects. Collectively, existing research confirms that ICU nurses experience marked psychological distress amid the COVID-19 outbreak, which not only threatens their personal well-being but also compromises their caregiving capacity and essential frontline roles.

1.2. Limited Psychological Resilience Among ICU Nurses

A study by Chunhua Fu et al. found that ICU nurses generally exhibit relatively low psychological resilience, which is influenced mainly by their educational background, years of experience, and night shift duties [7]. This lack of resilience is reflected in difficulties adapting effectively to changes in work environment, job responsibilities, and schedules, often resulting in negative emotional responses. The COVID-19 pandemic has further challenged nurses, as some have been redeployed to epidemic-specific sites, exacerbating their adaptation difficulties. ICU nursing is already more demanding than other departments, and staff shortages caused by the pandemic have increased the workload burden. Research also indicates a negative correlation between mental health and sleep quality [8]; thus, extended night shifts during the pandemic contribute to deteriorated mental health among ICU nurses. Moreover, pandemic-related social pressures have added family responsibilities to nurses, many of whom worry about the health of their relatives due to increased infection risks linked to their frontline work [9].

1.3. Post-Traumatic Stress Disorder (PTSD) in ICU Nurses

PTSD is a severe psychological condition characterized by prolonged or delayed distress following direct, witnessed, or indirect exposure to traumatic events [10]. Studies show that the positive detection rate of PTSD among frontline COVID-19 caregivers reached 50.73% [11], exceeding rates observed in emergency healthcare workers during previous non-influenza outbreaks [12]. Furthermore, healthcare workers stationed in high-risk areas such as isolation wards are two to three times more likely to develop PTSD compared to those without such exposure [13]. Contributing factors include the duration of frontline duty, workload intensity, availability of protective equipment, and access to relevant information about the virus. At the start of the COVID-19 outbreak, the lack of effective treatments and limited global understanding of the virus placed ICU nurses in prolonged, high-pressure, and high-risk environments, fostering fear and anxiety around the unknown disease. The ongoing risk of infection coupled with intense workloads heightened these negative emotions. The mandatory long-term use of protective gear to prevent infection often caused physical discomfort and injury, further increasing vulnerability to PTSD. Additionally, frequent encounters with patient deaths despite resuscitation efforts inflicted psychological trauma on ICU nurses, intensifying stress and elevating the risk of PTSD.

2. Influencing Factors on ICU Nurses' Mental Health During the COVID-19 Pandemic

2.1. External Factors

2.1.1. Working Conditions

The abrupt emergence of the COVID-19 pandemic caused a severe shortage of medical resources, leading to hospitals facing bed shortages and a sharp rise in ICU nurses' workloads. Since ICU patients are usually critically ill and their conditions can deteriorate rapidly, the ICU environment is typically enclosed. Coupled with strict isolation ward protocols, ICU nurses must wear protective gear for extended periods, which can cause hypoxia and other physical discomforts. Additionally, limitations on drinking water and

restroom breaks increase nurses' concerns about their health, adding to their psychological stress and potentially creating a prolonged negative feedback loop [17].

2.1.2. Job Nature

Research indicates that clinical nurses working on the epidemic frontline face a higher risk of infection [14]. The hidden and complex transmission routes of the novel coronavirus have elevated the occupational risk for ICU nurses. Given that ICU patients are critically ill, nurses must constantly monitor vital signs and remain highly vigilant. This sustained high-alert work state often leads to increased psychological strain, manifesting as irritability and anxiety.

2.1.3. Staffing and Workload

Studies have found that ICU nurses' mental health deteriorates as their workload increases [12]. The COVID-19 outbreak required hospitals to assign more nurses to frontline epidemic tasks, increasing the per capita workload of ICU staff. Simultaneously, the growing number of critically ill COVID-19 patients has intensified nursing demands, placing significant psychological pressure on ICU nurses.

2.1.4. Interpersonal Interaction

Due to the critical condition of ICU patients, the unit often operates under strict closed management to ensure optimal treatment conditions. This isolation reduces opportunities for communication between ICU nurses and other departments. The COVID-19 outbreak further limited interpersonal exchanges among doctors, nurses, patients, and families, especially given isolation ward protocols. This reduction in social interaction contributes to heightened psychological pressure and predisposes ICU nurses to negative emotions [10].

2.1.5. Social Environment and Information Access

During the pandemic, ICU nurses in isolation wards could only access epidemic-related information via mobile devices. Exposure to fluctuating COVID-19 case numbers, misinformation, and reports of infections within clinical settings made it difficult for nurses to verify the accuracy of information. The psychological impact of either accepting or denying such information, especially when sourced from a limited range over an extended period, adversely affects nurses' mental well-being [3].

2.2. Internal Factors

2.2.1. Work Experience

Research indicates a positive relationship between nurses' professional competence and their length of service, with more experienced nurses demonstrating stronger skills [11]. ICU nurses with fewer years of experience tend to have lower stress resilience and weaker application of professional knowledge, making them more susceptible to anxiety and other negative psychological effects [5].

2.2.2. Educational Background

Studies show that frontline nurses experience higher levels of anxiety during epidemic responses compared to doctors. This anxiety is positively correlated with their educational attainment. Physicians often have a stronger grasp of protective measures and greater confidence in self-protection, while nurses' limited education and knowledge about infectious diseases contribute to increased psychological stress [12].

2.2.3. Gender

Female nurses generally exhibit greater psychological sensitivity than their male counterparts [6], making them more vulnerable to negative emotions during epidemic work. Male nurses tend to possess a stronger sense of mission and derive more job satisfaction, which helps them better manage stress [7]. Additionally, women often bear multiple social roles, increasing their exposure to various stressors during the pandemic.

2.2.4. Marital Status

During the COVID-19 outbreak, ICU nurses working on the frontline require strong family support. Married nurses often face greater pressure due to family responsibilities and identity transitions. In cases of poor family communication, lack of understanding and support can further hinder their work performance [10]. Some studies suggest married nurses receive more family assistance, enabling better engagement in their roles [12]. However, healthcare workers living with children may experience heightened anxiety and depression due to worries about their children's health alongside intense nursing duties [3]. Differences in study outcomes may stem from sample size and methodologies, but all confirm that marital status significantly influences ICU nurses' mental health.

3. Conclusion

In conclusion, the mental health of ICU nurses during the COVID-19 pandemic requires urgent improvement and greater societal attention. Poor mental well-being adversely affects both the nurses themselves and the quality of care they provide. Various factors influence their psychological health, including work environment, job nature, staffing, interpersonal relationships, gender, education, and marital status. Healthcare institutions should prioritize mental health support for ICU nurses and adopt comprehensive approaches to address these factors. By exploring these influences from multiple angles, psychological interventions can be more effectively tailored to enhance the mental health of ICU nurses in the future.

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