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## **The impact of the COVID-19 pandemic on nursing practices and patient care**

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**Abstract**--Background: The COVID-19 pandemic, which began in late 2019, rapidly escalated into a global crisis, profoundly affecting healthcare systems worldwide. Nurses, as frontline workers, faced significant challenges due to the overwhelming number of COVID-19 cases, strained resources, and heightened stress levels. Despite numerous publications addressing these issues, there is a need for a systematic review to synthesize credible findings and better understand the challenges faced by nurses. Aim: This review aims to examine the impact of the COVID-19 pandemic on nursing practices and patient care, focusing on the major challenges encountered by nurses during the pandemic and the implications for nursing practice. Methods: A narrative review was conducted based on a literature search that identified 22 relevant studies, including quantitative surveys, qualitative studies, and mixed-methods research. Thematic analysis was employed to identify and synthesize recurring themes from the studies, focusing on physical and mental exhaustion, PPE-related challenges, psychosomatic disturbances, and effective mitigating strategies. Results: Key themes identified include severe physical and mental exhaustion among nurses, challenges with PPE shortages and usability, widespread psychosomatic disturbances, and various factors that could alleviate these challenges. Nurses experienced significant stress, anxiety, and physical discomfort due to extended work hours and inadequate PPE. Effective organizational and social support emerged as critical factors in mitigating these adverse effects. Conclusion: The COVID-19 pandemic imposed unprecedented challenges on nurses, affecting their mental health, physical well-being, and overall work conditions. Understanding these challenges is crucial for developing strategies to support nurses and enhance their preparedness for future crises. Continued research and policy development are essential to address these issues and improve nursing practices.

**Keywords**--COVID-19, nursing practices, patient care, personal protective equipment (PPE), psychosomatic disturbances, healthcare challenges, thematic analysis.

**Introduction**

COVID-19 emerged in Hubei Province, China, at the close of 2019. The virus's swift transmission prompted the World Health Organization (WHO) to declare it a "World Health Emergency" in late January 2020, followed by its designation as a Global Pandemic on March 12, 2020 [1]. Since then, millions of new cases have been reported, and the mortality rate continues to climb daily [2, 3]. During the initial phase of the pandemic, despite the extraordinary efforts to mobilize

resources and personnel to combat the crisis, healthcare systems were overwhelmed by the sheer number of patients requiring treatment, compelling them to operate beyond their existing capacities [4]. Healthcare professionals, particularly nurses, who were at the frontline of this crisis, bore the brunt of these pressures [5].

The challenges faced by nurses during the pandemic were extensive, spanning individual, organizational, and external domains [6–8]. Consequently, there has been a surge in scholarly articles and reports by scientists and health professionals attempting to address these challenges [9–11]. However, the rapid influx of publications, varying significantly in quality and reliability, has led to information overload, underscoring the need for a systematic review and synthesis of credible research to better understand the dynamics of the situation [12]. A thorough identification of the key challenges encountered by the nursing workforce is essential for enabling policymakers and officials to develop effective, real-time strategies, both in the present context and for future scenarios. This paper, therefore, offers a review of the existing literature to highlight the emerging challenges faced by nurses during the early stages of the COVID-19 pandemic. Given that the term "nursing challenges" encompasses a broad spectrum of sub-concepts, and that the available literature includes both qualitative and quantitative studies, a sufficient number of studies were incorporated to justify a narrative review, which identified recurring themes. Subsequent discussions focus on the potential implications for nursing practice.

The COVID-19 pandemic presented unprecedented challenges to healthcare systems globally, with nurses being among the most affected professionals. The rapid spread of the virus and the overwhelming number of cases strained healthcare resources and pushed nurses to their limits. As frontline workers, nurses faced a multitude of challenges across various domains, highlighting the need for immediate and long-term strategies to support the nursing workforce. The proliferation of research and publications during the pandemic, while informative, also contributed to information overload, making it crucial to identify credible sources and synthesize key findings. A comprehensive understanding of these challenges is vital for improving nursing practice and ensuring preparedness for future healthcare crises. Through this review, we have underscored the critical issues faced by nurses and the need for continued research and policy development to address these challenges effectively.

### **Methods and Selected Studies:**

Our literature search resulted in the identification of 22 articles, of which 21 were original research studies. The exception was one editorial letter [14], which, despite its format, adhered closely to the structure of an original article and provided valuable insights. The majority of the studies (n = 18) were quantitative surveys administered to healthcare workers (HWs). The remaining studies included three qualitative studies and one mixed-methods study. Geographically, the research predominantly originated from China (18 articles), with additional studies conducted in Singapore (2 articles), Vietnam (1 article), and Pakistan (1 article). Considering the research question and the nature of the selected literature, a narrative review was deemed appropriate. The first and second authors employed a qualitative-descriptive approach to data analysis, specifically

thematic analysis [15]. This process began with an in-depth engagement with the data, including thorough reading and reflective annotation. Subsequently, open coding was performed, wherein meaningful tags were assigned to words, phrases, events, and situations to distinguish them from the rest of the data [16]. As the analysis progressed, these initial codes were consolidated and abstracted into thematic categories. The emerging themes were then compared and contrasted to ensure clear differentiation. Both authors independently analyzed and interpreted the data, with final codes and themes determined through consensus. Open discussions were conducted to resolve disagreements, refine codes, and reconceptualize themes. This rigorous process resulted in the identification of four major themes: 1. Physical and mental exhaustion amid fear and uncertainty, 2. Shortages and usability issues of personal protective equipment, 3. Psychosomatic disturbances among nurses, and 4. Moderators to alleviate the challenges faced by nurses.

### **Selected Studies:**

**Kang et al. (2020)** conducted a study at Renmin Hospital of Wuhan, China, to explore the mental health status of medical and nursing staff. Using a quantitative approach with 944 healthcare workers (HWs) and tools like PHQ-9, GAD-7, ISI, and IES-R questionnaires, they found that 36.9% of nurses experienced subthreshold mental health disturbances, 34.4% mild, 22.4% moderate, and 6.2% severe. Limitations included reliance on self-reporting questionnaires and sample size.

**Chew et al. (2020)** examined the relationship between psychological outcomes and physical symptoms among HWs in five major hospitals in Singapore and India. The study, which included 906 HWs and used self-made and standardized questionnaires (DASS-21 and IES-R), reported that 10.6% experienced depression, 15.7% stress, 5.2% anxiety, and 7.4% PTSD. The study's limitations were the use of a self-made questionnaire without a validity check and the omission of socioeconomic status and education level in the data.

**Huang and Zhao (2020)** assessed the mental health burden of the Chinese public and healthcare workers during the COVID-19 outbreak. In this quantitative study involving 603 people and 183 HWs, the prevalence of anxiety, depressive symptoms, and sleep disorders was reported at 34.0%, 18.1%, and 18.1%, respectively. The study's limitation was the inability to assess participants' psychological conditions prior to the outbreak.

**Lai et al. (2020)** focused on the mental health outcomes and associated factors among healthcare workers in 34 hospitals across China. The study, with 764 nurses and 493 physicians using PHQ-9, GAD-7, ISI, and IES-R, found depression at 50.4%, anxiety at 44.6%, insomnia at 34.0%, and distress at 71.5%. A key limitation was the potential response rate bias.

**Xiao et al. (2020)** investigated the effects of social support on sleep quality and functioning among medical staff treating COVID-19 patients in selected hospitals in several Chinese provinces. The study involved 180 HWs and utilized tools like SAS, GSES, SASR, PSQI, and SSRS. It found that social support positively

influenced self-efficacy and sleep quality, while anxiety and stress negatively affected these outcomes. Limitations included the small sample size and caution in interpreting causal relationships from the cross-sectional study design.

**Cai et al. (2020)** explored the psychological impact and coping strategies among frontline medical staff in Hunan province, China. This quantitative study, involving 534 HWs using a self-made questionnaire, reported that 35.5%, 38.7%, and 10% of nurses felt slightly, moderately, and highly nervous or frightened in their wards, respectively. The study faced limitations such as the limited validity of the self-made survey, a cross-sectional design, small sample size, and time constraints.

**Mo et al. (2020)** investigated work stress and related factors among nurses at Guangxi hospital in China. Involving 180 nurses, the study used SOS and SAS questionnaires and found that the mean stress and anxiety scores were  $39.91 \pm 12.92$  and  $32.19 \pm 7.56$ , respectively. The study's limitations included the small sample size, cross-sectional design, and time constraints.

**Wu et al. (2020)** compared the frequency of burnout between physicians and nurses in frontline wards versus those working in usual wards at Hubei Cancer Hospital, China. The study, involving 220 HWs using the Maslach Burnout Questionnaire, found that burnout rates were 13% in frontline wards and 39% in other wards. Limitations included sample size, selection bias, and a low response rate.

**Saqlain et al. (2020)** examined the knowledge, attitude, and practice regarding COVID-19 among HWs in Pakistan. The quantitative study, involving 414 HWs using a KAP questionnaire, found that 93.2% of HWs had good knowledge, 8.43 mean score on attitude, and 88.7% demonstrated good practice regarding COVID-19. The study was limited by time constraints and the use of an online survey.

**Zhu et al. (2020)** assessed the immediate psychological impact of the pandemic on HWs at Tongji Hospital in China. The study, with 5062 HWs using IES-R, PHQ-9, and GAD-7 questionnaires, reported that 29.8% experienced stress, 13.5% depression, and 24.1% anxiety symptoms.

**Shi et al. (2020)** evaluated the knowledge and attitudes of medical staff in two selected mental health centers in China. The study, involving 141 psychiatrists and 170 psychiatric nurses using a 33-item KAP survey, found that 89.51% had extensive knowledge of COVID-19, and 64.63% received relevant training. Limitations included selection bias, small sample size, and reliance on self-reported questionnaires.

**Giao et al. (2020)** assessed the knowledge and attitude of HWs in Vietnam towards coronavirus disease. The study, involving 327 HWs using a self-made questionnaire, reported an 88.4% level of knowledge and attitude among participants. The study's limitations included sample size and the limited validity of the self-made survey.

**Zhou (2020)** investigated the knowledge, attitude, and practice (KAP) regarding COVID-19 among HWs in 10 hospitals across Henan province, China. The study involved 1357 HWs and found that 89% had sufficient knowledge, over 85% feared self-infection, and 89.7% followed correct practices. A limitation was the potential imprecision in KAP measurement due to the limited number of survey items.

**Liu et al. (2020)** explored anxiety among HWs in different regions of China. The study, involving 512 healthcare workers using the SAS questionnaire, found that 12.5% experienced anxiety, with 10.35% suffering from mild anxiety, 1.36% from moderate, and 0.78% from severe anxiety. The study faced limitations such as selective bias in non-random data collection and the cross-sectional study design.

**Yifan et al. (2020)** investigated the symptoms and causes of somatic disorders among ICU nurses treating COVID-19 pneumonia in Wuhan, China. The study, involving 140 ICU nurses using the ICF questionnaire, identified five major symptoms: chest discomfort and palpitation (31.4%), dyspnea (30.7%), nausea (21.4%), headache (19.3%), and dizziness (17.9%). Limitations included selection bias and a low response rate.

**Lan et al. (2020)** estimated the prevalence, clinical features, and risk factors of skin damage among HWs in tertiary hospitals in Hubei, China. The study, with 542 physicians and nurses using self-made online questionnaires, found that 97.0% (526 out of 542) experienced skin damage due to enhanced infection-prevention measures. The study's limitations included the exclusion of possible daily life risk factors and the limited validity of the self-made survey.

**Jin et al. (2020)** identified influencing factors, psychosocial changes, and management procedures for COVID-19-infected HWs in a tertiary acute care hospital in Wuhan, China. The qualitative study involved 105 HWs using a validated questionnaire and found that 84.5% believed they were infected at work, with 41.8% attributing it to protective equipment. Additionally, 88.3% experienced psychological changes during their isolation. Limitations included potential memory biases among participants.

**Liu et al. (2020)** described the experiences of HWs during the early stages of the outbreak in Hubei province, China. This qualitative study involved 9 nurses and 4 physicians through telephone interviews, exploring three major themes: responsibility, challenges, and resilience. Limitations included the use of telephone interviews, a semi-structured interview guide that was not piloted, and a small sample size.

**Sun et al. (2020)** explored the psychology of nurses caring for COVID-19 patients at the Hospital of Henan University, China. The qualitative study involved 20 nurses and found negative emotions, such as fatigue, present in the early stages, while growth under pressure and simultaneous positive emotions were also observed. Limitations included a small sample size and time constraints.

**Yin and Zeng (2020)** explored the psychological needs of nurses caring for COVID-19 patients at a tertiary general hospital in Wuhan, China. The qualitative

study involved 10 nurses through a semi-structured, personal, in-depth interview and identified relatedness needs, humanistic concerns, family needs, and a strong need for knowledge. Limitations included time constraints for data collection and analysis and a small sample size.

**Ong et al. (2020)** determined PPE-associated problems and their impact on HWs at the National University Hospital in Singapore. The quantitative study involved 158 HWs using a self-made questionnaire and found that pre-existing primary headaches combined with PPE usage for more than 4 hours per day were associated with de novo PPE-related headaches. Limitations included the use of a self-administered questionnaire and the omission of other risk factors for headaches.

**Zhang et al. (2020)** analyzed the actual work hours and preferred work hours per shift among nurses in several hospitals in China and explored factors influencing the preferred work hours. The mixed-method study involved 109 nurses who completed a self-made questionnaire and 44 nurses who responded to open-ended questions. The study found that actual work hours per shift among frontline nurses exceeded their preferred work hours, influenced by factors such as circumstances, PPE, nurses' physical and emotional needs, safety needs, and work intensity. Limitations included the cross-sectional design, use of a self-designed questionnaire, time constraints, and subjective measurement of work hours.

### **Thematic Analysis:**

#### **1. Experiencing Physical and Mental Exhaustion Amid Fear and Uncertainty**

The pandemic placed immense pressure on healthcare systems, particularly on nurses, in an unprecedented situation [6, 7, 17, 18]. According to Liu et al. [6], it was a "completely new context" where nurses were "overwhelmed and exhausted by the workload and protective gear." Saqlain et al. noted that overcrowding in emergency wards became a significant obstacle [19], while Zhou et al. reported that approximately half of their nurses were overworked, frequently exceeding 8-hour shifts, leading to significant fatigue [17]. Similarly, Zhang et al. demonstrated that the actual working hours of frontline nurses greatly surpassed their preferred working hours, and Mo et al. identified this as a major contributor to perceived stress among nurses [18, 20]. Caring for COVID-19 patients presented challenges rarely encountered before due to the virus's rapid deterioration, pathogenicity, and high transmission rate [21]. Critically ill patients with COVID-19 often had unstable conditions and multiple complications leading to organ failure [6]. Sun et al. found that nursing in this new situation was characterized by high-intensity work and fatigue [7]. It involved managing both routine and extraordinarily difficult situations, which became extremely physically and emotionally demanding, especially when combined with excessive working hours, a common occurrence during the pandemic [20]. Liu et al. also noted that many COVID-19 patients experienced severe anxiety, making emotional support an essential aspect of nursing care, emphasizing the need to "treat the patient, not just the disease" [6]. Additionally, Cai et al. found that the

emotional burden of witnessing patients die in front of them was profoundly stressful for nurses [8].

Due to the highly contagious nature of COVID-19, studies indicated that nurses faced uncertainty and limited interpersonal relationships, primarily due to the fear of infection [6]. Cai et al. revealed that nearly 80% of healthcare workers, most of whom were nurses, were highly or moderately concerned about making mistakes or being inattentive, leading to the infection of others or themselves [8]. Consequently, it was not surprising to observe that once routine events in intensive care units, such as sputum splashes, urine/feces splashes, and urine/feces clearance, were perceived as risk factors for various psychosomatic symptoms [22]. Yin and Zeng found that disrupted interpersonal relationships were a significant issue for nurses, as one frontline nurse expressed: "I miss the days when we could talk to each other without face masks" [23].

## **2. Shortage and Usability Challenges of Personal Protective Equipment (PPE)**

A prominent theme in the reviewed literature was related to the issues surrounding PPE, particularly the shortages and usability problems [6, 8, 23, 24]. Yin and Zeng emphasized that the "need for safety" and "everyday availability of PPE" were critical concerns for frontline nurses [23]. Liu et al., in their qualitative study, identified "sufficient protective supplies are the most significant" as a recurring theme [6]. Similarly, Cai et al. reported that nearly 90% of their healthcare workers, the majority of whom were nurses, often faced shortages of medical equipment and resources, including PPE [8]. In response to such scarcity, the same survey indicated that adequate protective equipment provided by hospitals was the most significant motivating factor for healthcare workers [8]. Since the onset of the pandemic, there has been a significant increase in the frequency of PPE usage. Ong et al. reported that nurses had to wear both masks and protective eyewear for an average of 5.7 hours per day, with even longer durations in isolation wards [24]. Prolonged exposure to protective clothing introduced considerable challenges to nursing. Liu et al. reported that nurses were overwhelmed and exhausted due to serving long hours in protective suits without the ability to take essential breaks [6]. Zhang et al. noted that another difficulty with PPE use was the time-consuming process of donning and doffing, which made taking breaks challenging [20]. Additionally, they found that fogging on goggles obstructed nurses' vision [20]. Consequently, studies revealed that the shortage of PPE, combined with its low usability, placed nurses in uncomfortable situations, adversely affecting their health and performance [20, 24].

## **3. Psychosomatic Disturbances Among Nurses**

Among the 22 original articles reviewed, the most prominent theme was psychosomatic disturbances among nurses, as reflected in 16 of them (two qualitative and 14 quantitative studies). This theme showed a significant trend in the published literature. Moreover, out of the 22 articles, 12 focused on mental health issues, while five investigated physical or somatic distress. Notably, only one paper addressed both physical and mental health issues simultaneously.



### 3.1. Psychological Disturbances Among Nurses

Based on the reviewed articles (10 surveys and two qualitative interview studies), fear, discomfort, stress, anxiety, insomnia, and depression were the most prevalent psychological disturbances among nurses, reflecting how they truly felt about facing the pandemic [7, 18, 21, 25–30]. Anxiety was the most frequently investigated symptom ( $n = 9$ ), while burnout was the least mentioned. Two qualitative studies explored the experiences of nurses caring for COVID-19 patients using a phenomenological approach [6, 7]. Sun et al. showed that negative emotions, including fear and anxiety, were dominant among frontline nurses due to extreme concern for themselves, their patients, and family members, which, in turn, led to fatigue, helplessness, and discomfort [7]. Similarly, Liu et al. found that fear and anxiety for family members were recurring themes among nurses [31]. One nurse stated, "I lived at home. I was anxious, wondering if I brought the virus home and spread it to my family. My child is so young, what if she is infected?" [6]. Supporting these qualitative findings, a survey among healthcare workers revealed that nearly half of the nurses were highly or moderately frightened or nervous while working in their units, significantly more than doctors and medical technicians ( $P < .05$ ) [8].

Surveys investigating psychological distress among healthcare workers provided a substantial body of literature, most of which were conducted in China (9 out of 10). Anxiety and depression were prominent psychological symptoms among healthcare workers, particularly nurses. Frontline healthcare workers involved in direct diagnosis, treatment, and care of COVID-19 patients experienced higher rates of depression (OR, 1.52,  $P < .01$ ), anxiety (OR, 1.57,  $P < .001$ ), insomnia (OR, 2.97,  $P < .001$ ), and distress (OR, 1.60,  $P < .001$ ) [28]. Similarly, Liu et al. found that the prevalence of anxiety among healthcare workers was 12.5%, with frontline staff reporting higher anxiety scores [21]. Furthermore, a study among Chinese nurses revealed that the prevalence of mild, moderate, and severe depression levels was 34.4%, 22.4%, and 6.2%, respectively [32]. Additionally, a study in Wuhan found that psychological disturbances affected healthy nurses, and most infected nurses experienced psychological stress or emotional changes during their isolation and after being diagnosed with COVID-19 [30].

Contrary to the above findings, a survey of 191 medical staff, including physicians and nurses from Hubei, showed that frontline workers had a lower frequency of burnout (13% vs. 39%;  $P < 0.000$ ) and were less worried about being infected with coronavirus compared to those working in other units. The authors suggested that this might be due to a deeper sense of personal achievement among frontline staff, greater access to timely and accurate information, or greater control over their jobs due to direct care for COVID-19 patients [33]. The literature also indicated that perceived psychological challenges in nursing were mitigated by several factors, including personal and family safety [8], work experience, age, and medical history [25], concern for patients and family members [7], sleep quality [29], proximity to infected patients [21], and having children and work hours [18].

### **3.2. Physical Distress Among Nurses**

Five papers (four quantitative surveys and one qualitative survey) investigated physical symptoms among nurses. According to the qualitative study, heating and sweating were among the challenges experienced by nurses on the frontlines, resulting from wearing non-user-friendly PPE. One nurse mentioned, "I sweat after wearing the protective gear for a while or when I move, such as turning patients. Then I feel clammy" [6]. On the quantitative side, Ong et al. focused on the adverse outcomes of prolonged exposure to PPE during the COVID-19 pandemic [24]. They found that out of 158 participants, 128 (81.0%) reported de novo PPE-associated headaches, mostly due to the exacerbation of preexisting headache disorders. Similarly, Yifan et al. reported a high prevalence of headaches among ICU nurses (19.3%), partly attributed to protective glasses. Other common symptoms reported included chest discomfort, palpitations, dyspnea, nausea, and dizziness [22]. Another study involving 526 frontline healthcare workers, including physicians and nurses, revealed a high prevalence of skin damage caused by enhanced infection-prevention equipment, with 97.0% reporting some form of skin damage. The most affected areas were the nasal bridge (83.1%), cheeks (78.7%), hands (74.5%), and forehead (57.2%). Additionally, healthcare workers wearing personal protective devices (N95 masks and goggles) for more than six hours were at higher risk of skin damage at contact sites compared to those with less exposure time [14]. Furthermore, a study among Singaporean and Indian healthcare workers found that headaches (31.8%), rash (27.7%), and breathing difficulties (23.2%) were the most commonly reported symptoms [34].

## **4. Moderators to Mitigate Nurses' Challenges**

The scope of the reviewed articles not only included challenges but also highlighted several factors that could benefit nurses and mitigate the adversity of their novel working conditions. Organizational and social support, training, knowledge, and attitude were identified as prominent moderators that could help shield against these challenges.

### **4.1. Organizational and Social Support**

Based on the evidence, nurses identified multiple support systems as significantly beneficial, including their hospitals, colleagues, families, friends, and society. Liu et al. found that with strong logistical support from their organization, nurses had a sense of safety and trust toward their hospital. Similarly, a survey of 5,062 healthcare workers (HWs) showed that the "provision of adequate logistical support and accommodation by hospitals" was a significant determinant of reducing stress ( $P < .001$ ), anxiety ( $P < .001$ ), and depression ( $P < .001$ ). Logistical support included providing medical protective supplies, accommodations, transportation, food, medicines, and subsidies. For instance, many healthcare workers (71%) believed that "receiving free lunch and milk tea prepared by the hospital for frontline staff" often reduced their stress levels. Additionally, most healthcare workers claimed that tangible support, such as the availability of guidelines for controlling infection or recognition of their efforts by the hospital, were other facilitators that helped them perform their job and lower their stress.

Evidently, by providing tangible and intangible support, hospitals could play a key role in arming their nurses to face the current battle.

Regarding social support, various articles (two qualitative studies and five surveys) mentioned the protective nature of receiving support from colleagues, family, or friends. Sun et al. demonstrated that nurses who cared for and helped each other and showed support for stress relief in challenging situations felt that collective power and team cohesion were stronger. This was concisely communicated by a nurse: "Many colleagues called me to encourage me, and I felt that there were many people who cared about me". They also showed that "receiving support from their families" was a significant form of support emphasized by nurses. These results were supported by another study, where nurses stated that "talking to their significant others about their work experiences" was also helpful as another form of support.

The benefits of support from family and colleagues were also reported in three survey studies conducted on healthcare workers in general. Zhu et al. found that living with family members was a positive protective factor against psychological disturbances, while the "feeling of being avoided by family members and friends" was a factor leading to stress, anxiety, and depression. Similarly, Xiao et al. demonstrated that a low social support score was closely related to the occurrence of stress, anxiety, and insomnia. In a study by Cai et al., 88% of nurses reported that chatting with family and friends alleviated their stress levels. The literature supports the notion that social support can positively affect the adverse psychological burdens of nursing, helping nurses tackle difficult situations. It is noteworthy that all the above-mentioned studies regarding support were from China, and no similar studies from other regions were published yet.

#### **4.2. Training, Knowledge, and Attitude**

Nurses are the backbone of the health system, and being at risk of infection is a critical challenge not only for them but also for their organization and society. To address this challenge, four survey studies investigated the effect of knowledge and attitude about the COVID-19 pandemic on healthcare workers. Two of the studies were from China, and the remaining two were from Vietnam and Pakistan. Zhou et al. argued that knowledge was a prerequisite for establishing prevention beliefs and forming positive attitudes, which, in turn, leads to proper practice. Moreover, they found a significant relationship between COVID-19 knowledge and healthcare workers' attitudes; the greater the knowledge, the more self-assured they were in overcoming obstacles (OR: 1.41; CI: 95%). They concluded that teaching necessary knowledge should be organized by considering different factors such as work experience and educational attainment.

In another study on psychiatry nurses, training was revealed to be an independent variable associated with a greater willingness to care for COVID-19 patients. Nurses who received advanced training regarding COVID-19 were significantly more enthusiastic about caring for patients. Additionally, Saqlain et al. demonstrated that sufficient knowledge was not only associated with good attitudes but also led to better precautionary practices. However, some studies

revealed that although most healthcare workers had sufficient knowledge and a good attitude toward COVID-19, there were discrepancies among occupations, indicating that nurses had the lowest knowledge level compared to doctors or pharmacists. According to these studies, knowledge is an essential factor that fuels the attitude and willingness of nurses and inspires appropriate precautionary practices.

### **Overall Findings:**

During the early stages of the current pandemic, our study sought to identify emerging nursing challenges by conducting a narrative review of the existing literature. We primarily aimed to highlight the challenges nurses faced by examining highly credible research. A total of 22 articles were included, the majority of which were survey studies from China. Synthesizing these studies, we identified four overarching themes:

1. Being physically and mentally drained in the face of fear and uncertainty.
2. Shortage of personal protective equipment (PPE) and usability issues.
3. Psychosomatic disturbances among nurses.
4. Moderators to mitigate nurses' challenges.

By the time this review was conducted, there was no cure for COVID-19.

Like other new infectious diseases (e.g., Ebola), patient care was predominantly "supportive nursing care". Consequently, the pandemic transformed the profession of nursing into a challenging entity, pressuring nurses physically and mentally as they worked long hours caring for highly demanding patients to compensate for the existing shortage of manpower. Moreover, nurses not only had to care for the disease but also needed to boost the morale of anxious patients, which, in turn, cost them emotionally. Similar observations were reported during previous pandemics, such as MERS and H1N1 influenza, where nurses were under heavy workload due to the seriousness of the diseases or a staffing shortage. Such overstretching can lead to burnout and reduced quality of care. To counter this situation, administrators must be prepared in advance for possible system overload during grueling times, such as by block booking contract or agency nurses in advance for help in a pandemic emergency. It is also suggested to limit annual leave during this time and increase ancillary staff levels to manage extra cleaning duties and provide support for repositioning patients [37-39].

In addition to the laborious duties of nursing, what truly impacted nurses and their efforts were the uncertainty and fear of the disease, which had similarities to reports from previous pandemics. It is well known that fear can negatively impact effectiveness or even lead to the avoidance of patients. Although a certain level of fear is inevitable and cannot be entirely eliminated, it is suggested that providing healthcare workers (HWs) with adequate PPE, sharing information about its quality, and providing necessary training on how to use it can largely diminish fear.

PPE shortage was another problem highlighted during the current pandemic. The scale of the bio-disaster was so vast that many health systems were overwhelmed. It is recommended to make institutional plans in advance to supply protective equipment when there is a surge in demand. Non-user-friendly PPE and

prolonged exposure to it were other sources of dissatisfaction among nurses, leading to serious physical distress such as heat, sweat, headaches, skin problems, and lethargy. Unfortunately, inferior usability of PPE has been a recurring issue common to recent pandemics, which remains to be addressed. For example, during the human swine influenza outbreak in Hong Kong, Lam and Hung found PPE uncomfortable and time-consuming. Similarly, PPE usage in Australia was reported to be irritating and created unnecessary duties during the outbreak. Any discomfort and annoyance from PPE is undesirable since it can undermine healthcare workers' compliance in using protective equipment, potentially posing a threat to public health. Therefore, it is crucial that medical equipment companies design PPE according to ergonomic principles and obtain feedback from nurses on usability to create more user-friendly equipment [37-47].

Not surprisingly, healthcare workers, especially nurses, experienced high levels of stress, anxiety, and depression during the pandemic. This observation is similar to that of nurses who cared for patients during Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS), or Human Swine Influenza (HSI) outbreaks, where they expressed high levels of stress, anxiety, and psychological trauma during and after caring for patients. A study during the MERS outbreak showed that psychological strains could adversely affect nurses' intention, professionalism, and psychological morale. Therefore, a system is needed to help manage nurses' psychological disturbances and provide necessary support. Additionally, a mental health and stress control program is needed for nurses, especially frontline staff, to prevent psychological trauma. Rajkumar presented several therapeutic interventions and strategies that can be considered when designing mental health services [47-49].

Various essential mediators were identified in the studies to combat challenges and difficulties during the pandemic. Among them, receiving proper support from organizations, colleagues, and relatives, including family, was emphasized. Studies from past epidemics have shown that poor social support from family, colleagues, and superiors is related to adverse outcomes, including stress, burnout, dissatisfaction, and intention to leave. Two significant aspects of organizational support were adequate logistic provision and recognition of nurses' efforts. Similar to other studies, these two factors were found to be significant facilitators of nurses' well-being. During a pandemic, it is critical to protect the nursing community by evoking appropriate support from the right people through social campaigns or organizational policies. To enhance the impact of such movements, it is suggested to provide social support while considering national and cultural factors [49-53].

Training, knowledge, and attitude were other identified moderating factors that could ease nursing challenges. Possessing the necessary knowledge was reported to foster a positive attitude toward obstacles and lead to appropriate practices. Moreover, proper training to enhance such knowledge was revealed to facilitate this process. The significance of training during pandemics has been highlighted in the literature. Possessing the necessary knowledge should be of great concern during an outbreak when there is a turbulent flow of information, and information overload becomes an obstacle to providing proper care. Effective training, including evidence-based knowledge and clinical skills applicable to

patient care, should target nurses in particular, as they were reported to be less knowledgeable compared to other healthcare workers [54-63].

## Conclusion

In conclusion, this review sought to underline major nursing challenges during the COVID-19 pandemic. Despite the severe situation and the immense responsibility of providing care for demanding COVID-19 patients, a lot can be done to ameliorate the situation. First, administrators should be prepared in advance for unpredictable disasters by considering backup resources, including personnel and equipment. They should also set up systems to monitor and support nurses' mental health during and after the pandemic. Second, a significant proportion of nursing distress can be mitigated by providing nurses with adequate, user-friendly (ergonomic) PPE, designed with feedback from nurses. Third, administrators should support nurses through effective training, proper logistics, and recognizing their efforts during the pandemic. However, supporting nurses is not only the responsibility of their respective organizations; society at large, especially their families and coworkers, can also play a major role in their support.

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## أثر جائحة كوفيد-19 على ممارسات التمريض ورعاية المرضى.

### الملخص:

**الخلفية:** جائحة كوفيد-19، التي بدأت في أواخر عام 2019، تصاعدت بسرعة إلى أزمة عالمية، وأثرت بشكل عميق على أنظمة الرعاية الصحية في جميع أنحاء العالم. واجه الممرضون، باعتبارهم العاملين في الخطوط الأمامية، تحديات كبيرة بسبب العدد الهائل من حالات كوفيد-19، وضغط الموارد، وارتفاع مستويات التوتر. على الرغم من العديد من المنشورات التي تناولت هذه القضايا، هناك حاجة لمراجعة منهجية لتجميع النتائج الموثوقة وفهم أفضل للتحديات التي يواجهها الممرضون.

**الهدف:** تهدف هذه المراجعة إلى دراسة أثر جائحة كوفيد-19 على ممارسات التمريض ورعاية المرضى، مع التركيز على التحديات الرئيسية التي واجهها الممرضون خلال الجائحة والآثار المترتبة على ممارسات التمريض.

**الطرق:** تم إجراء مراجعة سردية بناءً على بحث أدبي حدد 22 دراسة ذات صلة، بما في ذلك الاستطلاعات الكمية، والدراسات النوعية، والبحوث المختلطة. تم استخدام التحليل الموضوعي لتحديد وتلخيص الموضوعات المتكررة من الدراسات، مع التركيز على الإرهاق البدني والعقلي، والتحديات المتعلقة بالمعدات الواقية الشخصية، والاضطرابات النفسية الجسدية، واستراتيجيات التخفيف الفعالة.

**النتائج:** تشمل الموضوعات الرئيسية التي تم تحديدها الإرهاق البدني والعقلي الشديد بين الممرضين، والتحديات المرتبطة بنقص واستخدام المعدات الواقية الشخصية، والاضطرابات النفسية الجسدية المنتشرة، وعوامل مختلفة يمكن أن تخفف من هذه التحديات. عانى الممرضون من توتر كبير، وقلق، وعدم راحة بدنية بسبب ساعات العمل الطويلة وعدم كفاية المعدات الواقية الشخصية. برز الدعم التنظيمي والاجتماعي الفعال كعوامل حاسمة في التخفيف من هذه الآثار السلبية.

**الخاتمة:** فرضت جائحة كوفيد-19 تحديات غير مسبوقة على الممرضين، أثرت على صحتهم العقلية، ورفاههم البدني، وظروف عملهم بشكل عام. إن فهم هذه التحديات أمر حاسم لتطوير استراتيجيات لدعم الممرضين وتعزيز استعدادهم للآزمات المستقبلية. تعتبر الأبحاث المستمرة وتطوير السياسات أمراً ضرورياً لمعالجة هذه القضايا وتحسين ممارسات التمريض.

**الكلمات المفتاحية:** كوفيد-19، ممارسات التمريض، رعاية المرضى، المعدات الواقية الشخصية، الاضطرابات النفسية الجسدية، تحديات الرعاية الصحية، التحليل الموضوعي