ANALYSIS OF FACTORS RELATED TO OCCUPATIONAL STRESS ON HEALTH WORKERS DURING THE COVID-19 PANDEMIC (LITERATURE REVIEW)

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ABSTRACT
The COVID-19 pandemic that continues to this day puts great pressure on health workers as the front line in handling COVID-19. The great pressure experienced by health workers can cause mental health problems for health workers, such as stress, anxiety, symptoms of depression, insomnia, anger, and fear. This research is a literature review. The literature used in this study uses 4 electronic databases, namely Google Scholar, Science Direct, PubMed, and ProQuest, with the keywords "Occupational Stress on Health Workers," "Job Stress on Health Workers," "coronavirus," and "COVID-19". The literature results found that the factors of working hours/shifts and workload are the most widely stated factors that have a significant relationship with the incidence of work stress in health workers. The conclusion in this study is that from 10 kinds of literature obtained, 2 factors are most commonly stated as factors that have a significant relationship with the incidence of stress in health workers, namely the factor of hours/shift work with the workload. Research/literature is needed using systematic review and meta-analysis.

Keywords: Work stress, health worker, COVID-19 pandemic

INTRODUCTION
Coronavirus disease 2019 (COVID-19) was first reported in Wuhan, China in December 2019 causing an epidemic. In March 2020, the World Health Organization (WHO) declared COVID-19 a pandemic due to the rapid surge in cases worldwide with 241,915,631 cases causing 4,921,308 of them to die (Yoo et al., 2022). COVID-19 cases in the world as of March 8, 2022, have reached 445,096,612 cases, with 5,998,301 of them dying. The highest number of COVID-19 cases is in Europe, with 183,021,306 cases, and the lowest is in Africa with 8,450,266 cases. (World Health Organization, 2022c). In addition to causing high rates of infection and death, the COVID-19 pandemic has had an impact on people's lives, their health, and the food system. The negative impact on economic and social sectors is quite large, such as millions of people threatened by poverty and the increasing number of malnutrition which is currently estimated to have reached 690 million and can increase to 132 million(World Health Organization, 2020).

The COVID-19 pandemic, which spreads very quickly and prolonged, has also harmed a person's psychology. This is because the COVID-19 pandemic which spreads quickly and prolongedly has caused a considerable sense of fear and worry in the community, thereby increasing the level of stress (World Health Organization, 2022b). According to a scientific report conducted by WHO in the first year of the pandemic, the level of anxiety and depression increased by 25% (World Health Organization, 2022a).
Health workers are the profession that has the greatest level of stress in the presence or absence of a pandemic (Maraqa et al., 2020). The COVID-19 pandemic that continues to occur until now has put great pressure on health workers as the frontline in handling COVID-19. The great pressure experienced by health workers can disrupt their mental health of health workers, such as stress, anxiety, depressive symptoms, insomnia, anger, and fear (Kang et al., 2020).

In a study conducted in China from January – February 2020 on 1,257 health workers in 34 hospitals, as many as 50.4% of health workers experienced symptoms of depression, 44.6% experienced symptoms of anxiety, 34.0% experienced insomnia, and 71.5% experienced distress (Lai et al., 2020). Research conducted by Hong et al (2009) states that health workers who survive infectious diseases usually exhibit Post Traumatic Stress Disorder (PTSD) (Talaee et al., 2020). Based on research conducted by Singal, et al (2021), several factors cause work stress in health workers, namely age, length of work, and workload ($p$-value < 0.05). Meanwhile, in a study conducted by Bintang, et al (2021) there was a correlation between work stress and sleep quality in nurses who treated COVID-19 patients (Bintang et al., 2021). Research conducted by The Star, et al (2021) is in line with the research conducted by Susanti, et al (2017) which states that there is a significant relationship between the level of work stress and the quality of sleep in nurses ($p$-value = 0.000) (Susanti et al., 2017). In the research conducted by Lating and Soumena (2021), factors related to work stress include workload ($p$-value = 0.000) and workload ($p$-value = 0.000).

Based on the factors that have been described above, according to Eaton and Lynn (2009), stress is caused by a combination of various circumstances, some of which may not be related to work, and these conditions are allowed to accumulate over time. Factors that can contribute to stress at work are household relationships, financial conditions, and travel conditions when going to work (Eaton, 2009).

Stress can reduce health workers' empathy for patients, reduce concentration and understanding, and affect the quality of services provided (García-Batista et al., 2021). Therefore, long-term stress, anxiety, and work fatigue experienced by health workers need to be considered because the impact of the COVID-19 pandemic greatly affects health care globally (Teo et al., 2021). Based on this background, it is necessary to conduct a systematic review of work stress on health workers, especially during the COVID-19 pandemic, related to factors related to work stress and the impact of work stress on health workers during the COVID-19 pandemic.

**METHOD**

This research is a literature research review. Research is conducted on writings/research sourced from publications around the world. This research was conducted from January 2022 – June 2022. This research uses data sourced from books, journals, reports, research, and scientific documents that can be trusted. The study population was a case of work stress during the COVID-19 pandemic, while the sample in this study was a case of work stress in health workers during the COVID-19 pandemic.
pandemic. The literature used in this study used 4 electronic databases, namely Google Scholar, Science Direct, PubMed, and ProQuest with the keywords "Work Stress on Health Workers", "Job Stress on Health Workers", "coronavirus" and "COVID-19". After the literature is collected, the researcher reads and studies the literature to select literature that meets the requirements according to the inclusion and exclusion criteria. The process of collecting literature refers to the PRISMA flow diagram, as follows:

Bagan 1. Diagram PRISMA flow

RESULTS AND DISCUSSION

After searching the database and through a process of inclusion and exclusion, thirteen studies were obtained that were used in this study. These studies were conducted in Indonesia and outside Indonesia with the least number of participants, namely 20 people and at most 746 people. The research was conducted starting in 2020 as the first time WHO designated COVID-19 as pandemic disease. When viewed based on research design, the entire study used a Cross-sectional research design. Here are the results of the literature that correspond to the title of the study:

Table 1. Results of a Literature Review of Work Stress in Health Workers during the COVID-19 Pandemic

<table>
<thead>
<tr>
<th>No</th>
<th>Author</th>
<th>Research Title</th>
<th>Research Design</th>
<th>Sample, location, and time of the Study</th>
<th>Research Results</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Nia Nurzia, Desi Hariyani</td>
<td>Factors Related to the Occurrence of Work Stress in COVID-19 Health Workers at Sultan Thaha Jambi Airport in 2021</td>
<td>Cross-sectional</td>
<td>20 COVID-19 health workers, Sultan Thaha Jambi Airport, in 2021</td>
<td>There is a significant relationship between interpersonal relationships (P-value = 0.0004) and work stress in COVID-19 health workers. There was no significant relationship between</td>
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<td>2.</td>
<td>Padila, Juli Andri</td>
<td>Workload and Work Stress of Nurses during the COVID-19 Pandemic</td>
<td>Observational quantitative 31 nurses in the inpatient room of DKT Bengkulu Hospital</td>
<td>There is a relationship between workload and work stress in nurses (p-value = 0.029).</td>
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<td>3.</td>
<td>Christina Sudaryanti, Zahra Maulidia</td>
<td>Factors Causing Nurse Work Stress in Caring for COVID-19 Patients</td>
<td>Cross-sectional 191 nurses at Dharmais Cancer Hospital who are in charge of nursing care for COVID-19 patients, July 2021 – September 2021</td>
<td>There is a significant relationship between length of work (p-value = 0.001), interpersonal relationships (p-value = 0.043), and workload (p-value = 0.030) with work stress.</td>
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<td>4.</td>
<td>Nhan Phuc Thanh Nguyen, Duong Dinh Le, Robert Colebunders, et al</td>
<td>Stress and Associated Factors among Frontline Healthcare Workers in the COVID-19 Epicenter of Da Nang City, Vietnam</td>
<td>Cross-sectional 746 health workers, Da Nang City, Vietnam, 30 August – 15 September 2020 (DASS-21)</td>
<td>When viewed based on the level of stress in health workers in Da Nang, more than half of respondents experienced stress with a normal stress category with a score of ≤ 14 (55.4%) and only 3.3% of respondents experienced extreme work stress (score &gt; 33). There is a relationship between hours/length of work per week (p-value = 0.002), trust in available personal protective equipment (p-value = 0.011), knowledge of COVID-19 prevention and treatment (p-value = 0.031), profession (p-value = 0.039), and health facilities (p-value = 0.032). There is no relationship between support from co-workers, family support, and social support for work stress in health workers (p-value &gt; 0.05).</td>
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<td>5.</td>
<td>Da-Jeong Moon, Mi Ah Han, Jong Park, So Yeon Ryu</td>
<td>Post-traumatic Stress and Related Factors among Hospital Nurses during the COVID-19 Outbreak in Korea</td>
<td>Cross-sectional</td>
<td>300 Nurses at C University Hospital in Gwangju, W University Hospital, and G Medical Center in Jeollabukdo from September 03, 2020 – September 16, 2020 (Impact of Event Scale-Revised (IES-R)).</td>
<td>When viewed based on the characteristics of respondents, age factors, the status of having children, period of work, department of work, and salary/wages have a significant relationship to the incidence of post-traumatic stress (p-value &lt;0.05). However, there was no significant relationship between gender, marital status, education level, employment position, and status of residence (p-value &gt; 0.05). Meanwhile, when viewed based on aspects of the work environment, noise factors, workload, nurse staffing, and changing the frequency/hour of work following COVID-19 guidelines have a significant relationship with work stress (p-value &lt; 0.05). However, there is no relationship between the length of time off, overtime, the provision of adequate personal protective equipment, support from supervisors, and support from colleagues (p-value &gt; 0.05).</td>
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<td>6.</td>
<td>Ronghao Zheng, Yuren Zhou, Ming Qiu, et al</td>
<td>Prevalence and Associated Factors of Depression, Anxiety, and Stress among Hubei Pediatric Nurses during COVID-19 Pandemic</td>
<td>Cross-sectional</td>
<td>617 Nurses working in the pediatric department in Hubei Province, conducted from March 6, 2020, to March 9, 2020 (DASS-21)</td>
<td>When viewed based on the results of Multivariate logistic regression, factors that have a significant relationship with work stress in nurses in the pediatric department are working in an isolation ward (p-value</td>
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<td>7.</td>
<td>Adil Mansouri, Majda Sebbani, Latifa Adarmouch, et al</td>
<td>Perceptions and Stress Factors among Physicians in Pre-Graduate and Post-Graduate Training in Morocco: COVID-19 Pandemic Context</td>
<td>Cross-sectional</td>
<td>74 Doctors in pre-undergraduate training (internal doctors) and resident doctors at Marrakesh University hospital on the first Sunday of May 2020</td>
<td>Factors that have a significant relationship with the incidence of work stress during the pandemic are staff limitations (p-value = 0.001) and equipment limitations (p-value = 0.029). There is no relationship between meeting with SARS COVID-19 patients who die, not knowing when the pandemic is under control, risk of being infected with COVID-19, conflicts between work and personal safety, seeing stressed colleagues, lack of adequate protective measures, and wearing PPE every day (p-value &gt; 0.05).</td>
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<td>8.</td>
<td>Bugra Ilhan, Like Kupeli</td>
<td>Secondary Traumatic Stress, Anxiety, and Depression among</td>
<td>Cross-sectional</td>
<td>363 health workers in Turkey, on 01 April – 01 May 2021</td>
<td>Factors related to secondary traumatic stress are financial difficulties (p-value &lt; 0.001) and</td>
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<td>Emergency Healthcare Workers in the Middle of the COVID-19 Outbreak: A Cross-sectional Study</td>
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<td>consideration of career changes (p-value = 0.001). Meanwhile, there is no relationship between age, gender, job satisfaction, and the COVID-19 vaccine to work stress in health workers (p-value &gt; 0.05).</td>
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<td>9.</td>
<td>Hojjat Sheikhbardsiri, Mohammad Mahdi Doustmohammadi, Parya Jangipour Afshar, et al</td>
<td>Anxiety, stress, and Depression Levels among Nurses of Educational Hospitals in Iran: Time of Performing Nursing Care for Suspected and Confirmed COVID-19 Patients</td>
<td>Cross-sectional</td>
<td>403 nurses at Kerman University of Medical Science hospital in 2020 (DASS-21)</td>
<td>Based on the results of multiple regression, factors that have a significant relationship with work stress in nurses are gender, marital status, educational status, working hours, and work experience (p-value &lt; 0.05). Meanwhile, age and employment status do not have a significant relationship with work stress in nurses (p-value &gt; 0.05).</td>
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<td>10.</td>
<td>Dondu Sanliturk</td>
<td>Perceived and Source of Occupational Stress in Intensive Care Nurses during the COVID-19 Pandemic</td>
<td>Cross-sectional</td>
<td>252 ICU nurses, Across Turkey, November 01 – December 31, 2020 (PSS-14)</td>
<td>There is a subtle relationship between gender (p-value = 0.009), ICU experience (P-value = 0.033), and shift type/working hour (p-value = 0.021). When viewed based on regression tests, factors that have a significant relationship with work stress are working hours of more than 40 hours per week (p-value = 0.000), there are more than 3 patients treated by 1 nurse (p-value = 0.022), heavy workload and prolonged fatigue (p-value = 0.015), and failures in patient treatment (p-value = 0.022).</td>
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Based on the results of the literature obtained, the literature stating workload has a significant relationship with work stress in health workers many as 4 literature. For the variable hours/shifts work has a significant relationship to work stress in health workers as many as 5 articles, but there is 1 article that states that there is no significant relationship between work hours/shifts and work stress in health workers. The variable of staff shortage/limitation has a significant relationship with the incidence of stress in health workers in as much as 1 article, while the other article does not discuss the relationship between staff shortages/limitations and the incidence of stress in health workers. For the wage variable, there is 1 article that states that wages have a significant relationship with the incidence of stress in health workers, but there is 1 article that states that the financial difficulties experienced by health workers have a significant relationship with work stress in health workers. In the interpersonal relationship variable, there are 2 articles that state that there is a significant relationship between interpersonal relationships and the incidence of stress in health workers.

Factors such as working hours/shifts and workload are the factors that are most widely stated to have a significant relationship with the incidence of stress in health workers. From the literature obtained most (5 literature) states that working hours have a significant relationship with the incidence of stress in health workers. According to the International Labour Organization (ILO) a good working time is 7 hours worked/day or 40 hours worked/week for 6 working days in one week, or 8 working hours/day or 40 working hours/week for 5 working days in 1 week (Julia, 2017). Health workers, during the COVID-19 pandemic, their average working hours are more than 40 hours/week, which means that it is not following the established standards. Based on research conducted by (Arafa et al., 2021) it was found that workers who got emergency and night shifts had a high probability of experiencing stress. High work stress is experienced by many female nurses who work night shifts, this is due to guilt/failure to fulfill their responsibilities at home (Döndü, 2021). The research is supported by research conducted by (Liljestrand & Martin, 2021) on nurses who handle COVID-19 patients, out of 4 respondents to the case study, 2 of them stated that one of the causes of work stress experienced during the COVID-19 pandemic was extra shifts or additional work shifts during the COVID-19 pandemic (Liljestrand & Martin, 2021).

Based on research conducted by (Wong et al., 2019), Short sleep duration is the biggest problem caused by long working hours with OR = 1,909 (1,502 – 2,427) which means that workers who have long working hours have an almost 2 times greater risk of lack of sleep compared to workers who have working hours according to established standards. Lack of sleep experienced by workers causes a stress response (Caruso, 2015).

Work stress in health workers is mainly caused by an increased workload. The increased workload is due to increased work schedules, time restrictions on using personal protective equipment for each patient, and staff shortages (Liljestrand & Martin, 2021). Based on research conducted by Lulli,
et al (2021), as many as 43% of studies state that changes in workload and job demands are risk factors for workers experiencing stress, depression, anxiety, and fatigue. (Lulli et al., 2021). The increase in workload is experienced by health workers who serve at the frontline of COVID-19, where the workload can greatly affect their life balance (Gül & Kılıç, 2021; Norful et al., 2021). In the research conducted by (Gül & Kılıç, 2021) in nurses in 3 hospitals, it was found that nurses with a significant increase in workload since the beginning of the pandemic (always overtime) experienced the anxiety of 3.22; 5,2; and 2.27 times greater when compared to nurses who never, rarely, occasionally, and often overtime ($P$-value $= 0.010$). Considering the balance between the demands of the work and the resources and the possibility to perform and complete the work is an important aspect that needs to be considered. Heavy workloads if not balanced with adequate resources will trigger stress on workers (Ingusci et al., 2021).

**CONCLUSIONS AND SUGGESTIONS**

This study obtained 10 kinds of literature associated with stress during the COVID-19 pandemic. 2 factors are most widely stated as factors that have a significant relationship with the incidence of stress in health workers, namely the factor of working hours/shifts with the workload. Continue using systematic review and meta-analysis.

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**REFERENCES**


Garcia-Batista, Z. E., Guerra-Peña, K., Kandany, V. N., Marte, M. I., Garrido, L. E., Cantisano-


