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Original Research

The Relationship Between Substance use as a Coping Mechanism and Sleep Quality Among General Practitioners and Resident Doctors Serving Covid-19 Patients In Surabaya

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Abstracts

Introduction: During the 2020 period, the number of positive COVID-19 cases in Indonesia experienced a surge. It was reported in a study that 5.7% of healthcare workers needed sleep medication since COVID-19. Given the adverse impacts of COVID-19, an increase in symptoms and psychological disturbances, including depression, anxiety, stress, and substance use, has been observed. This research is aimed at analyzing the relationship between substance use as a coping mechanism and sleep quality among healthcare workers in the COVID-19 pandemic era. **Methods:** This study was conducted from March to August 2021 on general practitioners in the emergency room of hospitals/community health centers (PPDS) who worked as clinicians in the pandemic era in Surabaya. Purposive sampling technique was used. Coping strategies related to substance use were evaluated using the Brief Cope Inventory (BCI), while sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), and insomnia severity was measured using the Insomnia Severity Index (ISI). Data analysis was done using the Spearman correlation test ($p < 0.1$). **Results:** There was a relationship between substance use as a coping mechanism and sleep quality ($\alpha = 0.1$) based on the ISI questionnaire ($p = 0.096$, $r = 0.181$), but using the PSQI ($p = 0.568$, $r = 0.062$), substance use did not significantly affect sleep quality. Many factors influence sleep quality, one of which is mental health conditions related to coping mechanisms. Substance use can cause various sleep disturbances. **Conclusion:** This study a relationship between substance use as a coping mechanism and sleep quality, but due to the minimal sample size, it may not sufficiently represent the population. There is a need for detailed substance use and toxicology urine to support screening findings.

Keywords: COVID-19, Sleep Quality, Substance Use

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INTRODUCTION

Coronavirus Disease (COVID-19) has rapidly spread, including in Indonesia [1]. By December 30, 2020, the total global confirmed cases of COVID-19 had reached 80,783,035 cases, with 1,784,109 reported deaths. The Southeast Asian region ranked third with 12 million confirmed COVID-19 cases [2]. During the 2020 period, Indonesia witnessed a relentless surge in the number of positive COVID-19 cases on a daily basis. Until September 17, 2020, there were 232,628 confirmed positive cases spread across 34 provinces and 493 districts/cities. The number of suspected cases was 103,209, with 166,686 recoveries and 9,222 deaths. The number of cases in East Java until December 29, 2020, was 82,321, the second highest after DKI Jakarta [3]. The COVID-19 pandemic has profoundly influenced the mental and physical health of healthcare workers, thereby exerting a considerable impact on the global healthcare system [4].

Sleep plays a crucial role in immune maintenance; conditions affecting its quality are associated with decreased response to vaccines and increased susceptibility to infectious diseases. Impaired sleep during COVID-19 pandemic can lead to increased anxiety and stress, contributing to dysregulated inflammatory responses. Research revealed that healthcare workers experienced a sleep problem rate of 36.0%, whereas the general population reported a rate of 32.3%. It was reported in a study that 5.7% of healthcare workers needed sleep medication since COVID-19 [5]. Coping behaviors aimed at managing stress and anxiety, such as smoking, alcohol consumption, and decreased physical activity, are known to exacerbate or worsen the negative effects of sleep disturbances related to sleep duration and quality. Additionally, sleep deprivation can worsen inflammatory response conditions; the lack of control over inflammation exacerbates the risk of adverse outcomes in COVID-19 by impacting the disease's pathophysiology [6]. The adverse effects of the COVID-19 pandemic, increased symptoms and psychological disturbances, such as depression, anxiety, stress, worry, and substance use, have been observed [7], highlighting recent reports underlining the significance of addressing substance use problems in the context of COVID-19. Furthermore, by the negative reinforcement model of substance use, using substances to cope with heightened negative emotions (i.e., problem-solving motives) might be linked to the development and persistence of substance use problems [8].

The study that is conducted by Kumara et al., revealed that 81 students experienced sleep disturbances, with first-semester students being more affected (33.5%) compared to seventh-semester students (24.2%). Additionally, sleep disturbances were most prevalent among 18-year-olds and were more commonly observed in female students [9]. Researchers chose different objects because they are related to the COVID-19 disaster and want to see the stress levels and coping mechanisms among general practitioners and resident doctors serving COVID-19 patients in Surabaya. Considering the prevalence of sleep disorders among healthcare workers during the pandemic era and its close relationship with coping mechanisms. This research is aimed at analyzing the relationship between substance use as a coping mechanism and sleep quality among healthcare workers in the COVID-19 pandemic era. With increasing information and knowledge, it is hoped to be one of the initial steps towards addressing sleep disorders and other mental health issues among healthcare workers, able to adopt appropriate coping mechanisms to effectively manage insomnia can be managed among general practitioners and residents so that they are able to lead a productive adequate academic and professional life.

METHODS

This study was conducted over a period of 6 months (March-August 2021) to examine the relationship between coping mechanisms

and sleep disturbances. This study aimed to determine the relationship between substance use, practiced by general practitioners and resident doctors since COVID-19 cases hit Indonesia, and sleep quality as a consequence of these coping mechanisms in response to existing stressors. This study has been ethically approved by the Faculty of Medicine UKWMS (Ref: 135/WM12/KEPK/DOSEN/T/2021). Questionnaires related to coping mechanisms and sleep disturbances were distributed from March 15th to April 30th, 2021. This research used an analytical survey research method. Analytical surveys attempt to explore how and why health phenomena occur. The approach used was cross-sectional. This design was chosen based on the data collection process, which was only conducted once. Cross-sectional is the most suitable type of research used in studying phenomena, situations, and problems by conducting one-time data collection on participants. The inclusion criteria in this study were respondents who worked as general practitioners in the emergency room of hospitals/community health centers/residency training programs (PPDS) and actively worked as clinicians in the pandemic era, while the exclusion factor was respondents who had suddenly agreed to be unavailable or changed their minds so that they could not participate in the study. The sample was acquired using purposive sampling methodology, which involved selecting population members that meet the criteria determined by the researcher (inclusion criteria) using the minimum sample formula of Slovin with a tolerance limit of 0.1. Coping mechanisms were assessed using the Brief Cope Inventory (BCI), which includes 14 coping mechanism subscales that can be assessed. Sleep quality was evaluated using the Pittsburgh Sleep Quality Index (PSQI), which is a validated instrument utilized to assess sleep quality and patterns. The PSQI was specifically designed to distinguish individuals with good sleep quality from those experiencing poor sleep quality [10]. In addition, the severity of insomnia was assessed using the Insomnia Severity Index (ISI) questionnaire. ISI questionnaire (Insomnia Severity Index) is a brief subjective instrument for measuring insomnia symptoms and consequences. ISI consists of 7 items [11]. The scales of sleep disturbances and insomnia severity are ordinal. Data processing uses the IBM Statistical Package for the Social Sciences (SPSS) Statistics 25.0 program. Data will be analyzed descriptively and processed into distribution tables according to the variables studied. The descriptive data to be processed include the distribution of healthcare workers' gender, coping mechanisms used, sleep quality, and insomnia severity. Additionally, data will be presented in table form and analyzed using the Spearman statistical method to determine the relationship between substance use as a coping mechanism and sleep quality among doctors in the COVID-19 pandemic.

RESULTS

Respondents in this study were general practitioners and resident doctors in Surabaya who practiced handling COVID-19 patients. Here is an overview of the respondents in this study:

Table 1. Characteristics by Gender

Gender	(n)	(%)
Woman	54	62.79
Man	32	37.21
	86	100.0

It can be seen in Table 1. The percentage of women is greater than men, namely 62.79%.

Table 2. Characteristics by Mechanism Coping

	N	Minimum	Maximum	Mean	Std. Deviation
Active Coping	86	3.00	8.00	5.8953	1.02932
Instrumental Support	86	3.00	8.00	5.7588	1.00512
Positive Reframing	86	5.00	8.00	6.4767	.76276
Planning	86	4.00	8.00	6.0000	.84017
Emotional Support	86	3.00	8.00	5.7442	1.06480
Venting	86	2.00	8.00	5.0349	1.22184
Humor	86	3.00	8.00	5.4302	1.04646
Acceptance	86	5.00	8.00	8.8256	.87032
Religion	86	4.00	8.00	8.4535	1.28939
Self Blame	86	2.00	6.00	3.8851	1.21217
Self Distraction	86	3.00	8.00	5.5698	.97668
Denial	86	2.00	6.00	2.8488	.98837
Substance Use	86	2.00	4.00	2.1977	.57024
Behavioral Disengagement	86	2.00	5.00	3.3140	.89786
Valid	86				

Based on Table 2, it can be seen that the highest mean coping mechanism used by respondents is acceptance (mean 6.82), while the lowest is substance abuse (2.19).

Table 3. Characteristics based on Sleep Quality

Sleep Quality	(n)	(%)
Good Sleep Quality	41	47.7
Poor Sleep Quality	45	52.3
	86	100.0

It can be seen in Table 3 that 52.3% of respondents experienced poor sleep quality, measured by the PSQI questionnaire.

Tabel 4. Characteristics of Severity Insomnia

Severity Insomnia	(n)	(%)
No clinically significant insomnia	55	64
Sub threshold Insomnia	27	31.3
Moderate Insomnia	4	4.7
	86	100.0

Based on the results in Table 4, it was found that 31.3% of respondents had subthreshold insomnia, and 4.7% had moderate insomnia based on the ISI questionnaire.

This study found a relationship between substance use as a coping mechanism and sleep quality (α=0.1) based on the ISI questionnaire ($p = 0.096$, $r = 0.181$), but using PSQI ($p = 0.568$, $r = 0.062$), substance use does not significantly affect sleep quality.

DISCUSSION

Every individual has their own mechanisms for coping with stressful conditions [12]. Healthcare workers have a high risk of both physical and mental health disorders, especially during the COVID-19 pandemic. Coping mechanisms are among the factors influencing an individual's mental resilience [13]. The ability to cope with the myriad

challenges presented during the COVID-19 pandemic doesn't manifest abruptly. Coping is a gradual process, shaped by concerted effort and the implementation of diverse strategies to address each source of stress [14]. Coping is a person's cognitive and behavioral efforts in dealing with specific pressure or stress, both internal and external, that are considered to exceed their abilities [15]. Psychological resilience is mediated by factors such as early experiences, genetics, coping mechanisms, optimism, social support, and learning. It may be mediated by genetics, neuroendocrine reactivity, sleep, environment, nutrition, etc. An individual's perception and processing of stress by the brain, along with mechanisms governing psychological and physiological resilience, play pivotal roles in determining both the duration and magnitude of the physiological stress response [15]. Coping strategies can be classified into problem-focused coping, emotion-focused coping, and dysfunctional coping. Dysfunctional coping involves strategies that may seem helpful initially but become ineffective when used in the long term. Individuals tend to employ a balanced mix of adaptive and maladaptive coping mechanisms.

Considering the scale of consequences and the pressure associated with the burden, the COVID-19 pandemic can be seen as a mass trauma, leading to psychological issues, changes in health behavior, and addiction problems, including alcohol consumption. Alcohol-related disorders pose significant social problems, especially during the COVID-19 pandemic. Alcohol consumption over an extended period acts as a stress trigger on the body and complicates homeostatic maintenance [16]. The immediate benefits of alcohol consumption may mask long-term harmful effects. Often, adults justify their alcohol consumption by claiming it helps reduce mental stress, maintain a state of physical and mental relaxation, and also improve their social behavior. However, due to the effect of ethanol on the central nervous system, high-dose alcohol consumption leads to inhibition effects, including decreased alertness and weakened attention and memory. Thus, it becomes a risk factor that changes behavior and decision-making. The increased prevalence of substance use among vulnerable populations, coupled with psychosocial distress, anxiety, and depression, along with overall poor mental health, can complicate treatment and support efforts [8]. The physiology behind different coping styles is related to serotonergic and dopaminergic inputs from the medial prefrontal cortex and nucleus accumbens [17].

Sleep plays a crucial role and is intimately linked to closely intertwined with the immune function , particularly amid the COVID-19 pandemic. Several factors, including anxiety levels, stress, and adaptation patterns, influence sleep quality. Substandard sleep quality can adversely impact one's quality of life and may lead to physical complications. Many factors affect sleep quality, one of which is an individual's mental health condition related to their coping mechanisms [9].

There was a relationship between substance use as a coping mechanism and sleep quality ($\alpha = 0.1$) based on the ISI questionnaire ($p = 0.096$, $r = 0.181$), but using the PSQI ($p = 0.568$, $r = 0.062$), substance use did not significantly affect sleep quality. A PSQI global score greater than 5 yielded a sensitivity of 98.7% and a specificity of 84.4%. For the ISI Clinical sample, a cut-off point of 11 was linked with a sensitivity of 97.2% and a perfect specificity of 100%. Regarding substance use motives, the study's findings suggest that concerns related to COVID-19, rather than fear, are linked with coping motives. While somewhat unexpected, these results align with prior research by Shoal et al. (2005), which found that worry, not fear, was connected with substance use influence orientation over time. Therefore, it's plausible that when worry and fear are considered together, individuals may resort to substance use due to their apprehensions about

the future outweighing concerns about their current situation (i.e., worry being more prevalent than fear). These findings hold significant clinical implications. COVID-19 has led to a significant surge in mental health service utilization. Given the disparities observed in COVID-19-related concerns and fears, evaluating these constructs in a clinical setting could help identify groups most susceptible to substance use and, consequently, substance use disorders. Early identification of such individuals enables clinicians to implement preventive measures aimed at mitigating the repercussions associated with affect-oriented coping strategies in response to COVID-19. As the pandemic continues to evolve, it becomes increasingly vital to develop targeted interventions addressing COVID-specific mental health and substance use issues [18]. The relationship between substance use disorders and insomnia varies based on factors such as the type of substance used, whether the use is acute or chronic, and whether the individual is actively using the substance or undergoing withdrawal. Generally, chronic substance use is associated with greater sleep disturbances, including prolonged time to fall asleep and reduced total sleep duration [19]. Insomnia is associated with substance use, including alcohol, nicotine, and cannabis. Worldwide, people consume an average of one alcoholic drink per day. One-fifth of adults in the US and Europe smoke, and a quarter to half of them have tried cannabis. Both suffer from insomnia, and substance use has serious consequences for health and well-being. Understanding the etiological processes underlying this association may provide clues to prevention and intervention. One of the primary tasks is learning coping skills to address life issues without alcohol or other drugs and learning to ask for help [20]. Lifestyle interventions addressing improvements in sleep disturbances and sleep are needed before pandemics due to reduced life expectancy from unhealthy behaviors, socio-ecological factors, and preventable diseases [21]. Substance use can lead to various sleep disorders due to multiple factors, including biological, psychological, social, and environmental aspects [22].

CONCLUSION

From this study, it was found that 52.3% of respondents had poor sleep quality, 31.4% had subthreshold insomnia, and 4.7% experienced moderate insomnia. Several coping mechanisms show a significant relationship with sleep quality and insomnia severity, with some coping mechanisms exhibiting both positive correlations and negative correlations.

Future research could involve prospective cohort studies based on existing data, starting by examining the coping mechanisms of respondents. It is hoped that the research can be further developed in terms of sample size and methods. Cohort methods can be used in future research on coping mechanisms and sleep quality.

It is hoped that the results of this research can be a media an educational medium for the public and especially health workers about stress, sleep disorders, and the severity of insomnia as related to coping mechanisms, our views or perceptions of existing stressors, so that it is hoped that together we can try to be able to implement better coping mechanisms. adaptive in the future.

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CONFLICT OF INTEREST

The author stated that there are no potential conflicts of interest regarding the research, authorship, and/or publication of this article.

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