

KNOWLEDGE, BEHAVIOR, EXPOSURE, AND PERCEPTION OF STRESS, ANXIETY, AND DEPRESSION AMONG HEALTH CENTER WORKERS DURING COVID-19

*Pengetahuan, Perilaku, Paparan, dan Persepsi terhadap Stres, Kecemasan,
dan Depresi pada Pekerja Puskesmas saat COVID-19*

**Gita Sekar Prihanti^{1*}, Anung Putri Illahika¹, Alifah Hasna², Ikmalun Natiq², Kartika
Lintang Hadiningtyas², Muhammad Furkan², Trio Rizal Wicaksono², Zhenna
Vinezha Linda Drestania²**

¹ Medical Education Department, Faculty of Medicine, University of Muhammadiyah
Malang

² Medical Doctor, Faculty of Medicine, University of Muhammadiyah Malang

*Email: sekar@umm.ac.id

ABSTRAK

Salah satu tantangan besar dalam pelayanan kesehatan yaitu krisis pandemi coronavirus disease (COVID-19). Petugas kesehatan di garis depan yang terlibat langsung dengan COVID-19 berisiko mengalami tekanan psikologis dan gejala kesehatan mental lebih tinggi ditambah dengan beban kerja yang semakin besar. Tujuan penelitian untuk mengetahui pengaruh pengetahuan, perilaku, paparan penyakit, persepsi risiko penyakit, dan ketakutan terhadap tingkat stres, kecemasan, dan depresi terkait COVID-19 pada petugas. Metode penelitian yang digunakan analitik observasional dengan desain cross sectional. Jumlah sampel 61 responden. Teknik sampling yang digunakan adalah total sampling. Sampel mengisi kuesioner dengan 61 item pertanyaan. Data dianalisis secara univariat untuk mengetahui karakteristik gambaran sampel, uji bivariat menggunakan uji chi-square untuk mengetahui hubungan antar variabel bebas terhadap variabel terikat, uji multivariat untuk mengetahui variabel bebas yang paling berpengaruh terhadap tingkat stres, kecemasan dan depresi. Hasil pada uji multivariat menunjukkan hubungan antara jenis kelamin perempuan dan tingkat stres ($p = 0,018$; OR = 14.026; CI = 1.564–125.741); terpapar terhadap tingkat stres ($p = 0,012$; OR = 16.319; CI = 1.848–144.095); dan persepsi risiko yang tinggi terhadap tingkat kecemasan ($p = 0,003$; OR = 25.288; CI = 2.953–216.543). Kesimpulan penelitian ini adalah terdapat faktor signifikan yang mempengaruhi tingkat stres petugas pada masa COVID-19, yaitu jenis kelamin, paparan, persepsi risiko penyakit dan ketakutan mempengaruhi tingkat kecemasan petugas.

Kata kunci: COVID-19, depresi, kecemasan, petugas kesehatan, stres

ABSTRACT

One of the biggest challenges in health care is the coronavirus disease (COVID-19) pandemic. Health workers on the front lines who are directly involved with COVID-19 are at risk of experiencing higher psychological stress and mental health symptoms coupled with an increasing workload. The objective of the study was to determine the effect of knowledge, behavior, exposure, and perception of stress, anxiety, and depression related to COVID-19 on staff. This study used observational analysis with a cross-sectional design. There were 61 respondents. The sampling technique used total sampling. Samples were given 61-item questionnaires. The data is analyzed univariately to understand the characteristics of the sample, bivariate analysis is conducted using the chi-square test to determine the relationship between the independent variables and the

dependent variable. Multivariate analysis is performed to identify the independent variables that most influence the levels of stress, anxiety, and depression. The results of the multivariate analysis indicate a relationship between female gender and stress level ($p = 0,018$; OR = 14.026; CI = 1.564–125.741); exposure to levels of stress ($p = 0,012$; OR = 16.319; CI = 1.848–144.095); and high-risk perceptions towards levels of anxiety ($p = 0,003$; OR = 25.288; CI = 2.953–216.543). The study concluded that gender, exposure, and perception are significant factors that affect the stress and anxiety levels of officers during COVID-19.

Keywords: anxiety, COVID-19, depression, health workers, stress

INTRODUCTION

Since 2019, the COVID-19 outbreak has spread worldwide [1]. It was first reported in Wuhan and was expected to affect the mental health of local medical and nursing staff, leading them to ask for help [2] and due to its long duration, the pandemic has put unprecedented pressure on all areas of activity [3], especially health workers [4]. The COVID-19 pandemic has harmed public health systems worldwide [5]. The biggest challenge currently occurs when work-related stress is a potential cause of concern for healthcare workers. It is associated with decreased job satisfaction, anxiety [5], [6], [7] depression [5], [6], [7], barely noticeable medical errors [6] because of excessive workload [8], [9], [10], a challenging work environment and traumatic events [9]. The prevalence of depression, anxiety, and stress among healthcare workers is very high [11].

The Indonesian Doctors Association (IDI) reports that there is a trend of rising COVID-19-related deaths among healthcare workers in 2021, amid a spike in cases and rising bed occupancy rates in many of the nation's COVID-19 referral hospitals. Most of the Java region's provinces also reported rising COVID-19-related cases and deaths [12]. On March 28, 2020, the Mayor of Kediri announced the first positive coronavirus case in the Kediri City area. With the positive coronavirus case, Kediri City is included in the red zone [13]. Inadequate preparedness was linked to higher levels of stress that nurses experienced [14]. On the other hand, doctors' knowledge, attitudes, and practices regarding infectious diseases can influence the severity of the disease, the extent of its spread, and the overall mortality rate [15][16]. Compared to county health departments, hospitals and health clinics have greater concerns because their employees work near patients and are exposed to them continuously throughout their shifts [17]. Hospital workers in high-risk environments (frontliners) experience significantly higher levels of "infection anxiety" and "workload" than workers in low-risk work environments (non-frontliners) [3].

Working in a riskier environment may be the reason for the tendency to view the workplace as a more dangerous place. Alternatively, exposure to COVID-19 patients or being placed under quarantine may have resulted in elevated anxiety and a subjective perception of the risk of infection [18]. Due to the spread of COVID-19, their work routines are changing or changing significantly, mainly due to prolonged use of PPE, work tension, increased work activities, and the inability to carry out normal activities in their free time after work [19]. Each participant reported experiencing mild to moderate symptoms of anxiety, depression, and distress, indicating significant psychological problems [19]. Depression, anxiety, difficulty sleeping, and deep regret are more common in women, those with a history of mental illness, and people receiving psychological support during the COVID-19 pandemic [20]. Health workers' compliance with prevention and control measures is influenced by their knowledge, attitudes, and

psychological responses to COVID-19 [21]. Knowledge about the benefits of vaccines will likely increase vaccine acceptance among health workers [16] [22].

Increased levels of anxiety were reported in nurses and those with a history of COVID-19 infection [16]. Being a woman and working on the front line were found to be potential risk factors for stress [20]. Additionally, despite poor vaccination rates, adequate knowledge, positive attitudes, and perceptions towards the COVID-19 vaccine were reported [16]. High anxiety and depression are reported to be more common in women than men [10]. Most health workers have good work practices and consider preventive measures adequate because they are aware of their exposure and risk of infection [17]. Chronically ill participants and those with mood or anxiety disorders reported higher levels of anxiety and depressive symptoms during the COVID-19 pandemic [23].

The research aims to investigate the relationship between knowledge, behavior, exposure, and perception of stress, anxiety, and depression among health center workers during the COVID-19 pandemic, specifically focusing on health workers and Ngletih Health Center officers in Kediri City. The key variables to be explored include knowledge about COVID-19, behavioral practices related to COVID-19 prevention measures, level of exposure to COVID-19, and perception of stress, anxiety, and depression among health center workers. The objectives of the study are to assess the level of knowledge among health center workers regarding COVID-19, examine their behavioral practices in adhering to COVID-19 prevention measures, evaluate their level of exposure to COVID-19, and understand their perception of stress, anxiety, and depression during the pandemic. Through these objectives, the study aims to provide insights into the factors influencing the mental health of health center workers and inform interventions to support their well-being during the COVID-19 crisis.

METHODS

The type of research used in this study is analytic observation with a cross-sectional approach. The research was conducted in the working area of the Ngletih Public Health Center, Pesantren District, Kediri City. This research was conducted at the Ngletih Health Center in Kediri City from July 14 – July 19, 2021. The population in this study were all officers of the Ngletih Public Health Center in Kediri City, totaling 61 people with a total sample of 61 respondents.

The research sample was all staff of the Ngletih Public Health Center in Kediri City, totaling 61 people who were recorded in the secondary data in 2021. The sampling technique used in this study was total sampling. Total sampling was used because the sampling was less than 100 [24]. Inclusion criteria for sampling include criteria for participants in this study were all officers of the Ngletih Center in Kediri City. This includes individuals who are actively working at the health center during the study period and are directly involved in patient care, administrative duties, or other responsibilities related to the functioning of the health center all male and female officers who are active in the Ngletih Community Health Center, Pesantren District, Kediri City; can read; can access google forms [25], [26], [27]; and willing to be a respondent in this study [15], [28], [29]. Exclusion criteria for participants in this study may involve individuals who were not actively working at the Ngletih Public Health Center during the specified study period, such as those on extended leave (e.g., maternity leave, medical leave) or individuals who were not directly involved in patient care, administrative duties, or other responsibilities pertinent to the functioning of the health center. Additionally, individuals who did not provide consent to participate in the study or those with incomplete or missing data may also be excluded from the analysis.

The instrument used in this study was a questionnaire with a total of 61 question items divided into (I) Socio-Demographic Characteristics [30],[31] with 7 question items; (II) Knowledge [25], [30] with 15 question items; (III) Behavior [15], [32] with 6 question

items; (IV) Perception [18], [19], [33] and fear with 7 question items; (V) Exposure [2], [18], [28], [34] with 5 question items; (VI) DASS-21 [11], [28], [35] with 21 question items.

This research was conducted ethically, with approval obtained from the local Scientific Ethics Committee of the Brahmada Lentera Chakra Institute (No. 067/015/IX/EC/KEP/Lemb.Candle/2021). All participants provided informed consent before participation, ensuring their voluntary involvement. Participants were assured of anonymity and the confidentiality of their information. Moreover, the survey allowed participants to withdraw at any time without consequences. Data collection involved the use of Google Forms for online respondents and the distribution of questionnaires to those unable to access the online platform.

The variables assessed by the questionnaire include the dependent variable, namely the level of stress, anxiety, and depression with 21 question items using the DASS-21 instrument. Everyone can participate in the questionnaire voluntarily. By assigning an identification number to each participant, only the research team can know, the anonymity and confidentiality of the data is guaranteed. The questionnaire contained detailed research objectives, and explanations indicated agreement. Data analysis encompassed univariate and bivariate analyses, including chi-square tests, followed by multivariate testing through logistic regression using SPSS version 24 for Windows.

The study on knowledge, behavior, exposure, and perception of stress, anxiety, and depression among health center workers during COVID-19 in Ngletih Public Health Center in Kediri City may face several limitations. The sample size of 61 participants, while representing the entire population of the health center, might limit the generalizability of findings to broader contexts. Moreover, the study's cross-sectional design restricts the ability to establish temporal relationships between variables, hindering causal inference.

The results of the assessment are divided into normal (not stressed) if the score on the questionnaire is 7 and stressed if 8; anxious if 3 and normal (not anxious) if 2; depressed if 4 and normal (not depressed) if 3 [11], [27], [28], [36], [37]. The independent variables include the age variable, there are three items divided into 18-25 years; 26-30 years old; 31-40 years, and >40 years, the gender variable has two items male and female [3], [25], [28], [38], the education variable has five items divided into Senior High School; Undergraduate; and others [30], work division variables include health workers and non-health workers [26], variable length of work <5 years; 5-10 years; 11-20 years old; and >20 years [4], [6], [15], [37], [39], [40], the variable working hours is 20 hours/week and >20 hours/week [15], the knowledge variable includes good knowledge if the score on the questionnaire is 12 and bad knowledge is <12 [41], the behavioral variable includes good behavior if the score on the questionnaire is 20 and bad behavior if 19 [26], exposure variables include exposed if 1 and not exposed if 0 [3], and the variables of perception include high perception if 18 and low perception if 17 [24].

RESULTS

Univariate analysis was conducted to describe the sample picture through tabulation (Table 1). Based on the results of the questionnaire that has been obtained, information is obtained in the form of data on age, gender, last education, division of work, length of work, working hours, knowledge, behavior, perception, exposure, stress levels, anxiety, and depression.

In the study, the majority of respondents were aged 31-40 years old (52.5%) and mostly female (67.2%). Most had other higher education besides undergraduate and senior high school (59%), with the majority working in the health sector (83.6%) and having 11-20 years of work experience (47.5%). The majority worked more than 20 hours per week (80.3%), had good knowledge of COVID-19 (98.4%), and exhibited good behavior towards COVID-19 (98.4%). The majority reported exposure to COVID-19 while

working (65.6%). Regarding mental health, none experienced depression, but some respondents experienced anxiety (37.7%) and stress (39.3%).

Table 1. Socio-Demographic Data Sample

Variable	Category	Total	Percentage (%)
Age	18-25 years	5	8.2
	26-30 years	7	11.5
	31-40 years	32	52.5
	>40 years	17	27.9
Gender	Male	20	32.8
	Female	41	67.2
Education	Senior High School	7	11.5
	Undergraduate	18	29.5
	Others	36	59.0
Occupation	Health Workers	51	83.6
	Non-Health Workers	10	16.4
Experience Years	<5 years	3	4.9
	5-10 years	17	27.9
	11-20 years	29	47.5
	>20 years	12	19.7
Working hours per week	<20 hours/week	12	19.7
	>20 hours/week	49	80.3
Knowledge	Poor	1	1.6
	Good	60	98.4
Behavior	Poor	1	1.6
	Good	60	98.4
Perception	Poor	25	41.0
	Good	36	59.0
Exposure	Not Exposed	21	34.4
	Exposed	40	65.6
Depression	Normal	61	100
	Depression	0	0
Anxiety	Normal	38	62.3
	Anxiety	23	37.7
Stress	Normal	37	60.7
	Stress	24	39.3

(Source: Processed primary data)

Based on Table 2, there is a significant relationship between gender and perception variables and levels of stress and anxiety among community health center workers. The results show that the gender variable has a significant influence on stress levels ($p = .000$) and anxiety ($p = .005$), with ORs of 12,644 and 8,048 respectively. Apart from that, the perception variable was also significantly related to levels of stress ($p = .001$) and anxiety ($p = .000$), with ORs of 11.402 and 18.129 respectively. However, the variables age, education, employment, work experience, working hours, knowledge and behavior did not show a significant relationship with stress and anxiety levels ($p > 0.05$). The variables of gender, perception, and exposure to COVID-19 showed a significant value of $p < 0.05$ on stress and anxiety levels for further logistic regression testing. These findings provide deeper insight into the factors that influence stress and anxiety levels among community health center workers, allowing for a more comprehensive understanding of the findings of this study. The analysis of the independent variables on depression cannot be tested because the data are constant.

Table 2. Relationship with Level Research Variables Stress and Anxiety

Variable	Stress		Anxiety	
	Value	Sig	Value	Sig
Age	5.427	0.143	4.2	0.241
Gender	12.644	0.000	8.048	.005
Education	.437	0.804	1.3915	.499
Occupation	-	0.726	-	1.000
Experience Years	-	0.497	3.804	.283
Working hours per week	-	0.344	-	1.000
Knowledge	-	1.000	-	1.000
Behavior	-	1.000	-	1.000
Perception	11.402	0.001	18.129	.000
Exposure	13.915	0.003	9.076	.003

(Source: Primary data processed)

Table 3, obtained a constant value of -4724, then it may be the logistic regression equation $y = -4,724 + 2,641$ (gender) (1) + 2,792 (exposure) (1) with a result of 0.67 or 67% equivalent. Thus the probability of female officers who are exposed to have the opportunity to experience stress is 67.02%. Assessing the statistical significance by assessing the p-value and confidence interval of the OR, it can be concluded that the variables of gender and exposure are significantly related to the stress level of officers. The OR gender value is 14,026, meaning that female respondents have the opportunity to experience stress, which is 14,026 times experiencing stress from male respondents. The OR value of exposure is 16,319, which means that respondents who are exposed to have the opportunity to experience stress are 16,319 times that of respondents who are not exposed.

These findings highlight the critical role of gender and exposure in influencing stress levels among health center workers, emphasizing the need for targeted interventions and support mechanisms to address these factors and promote the well-being of health center personnel.

Table 3. Test Results Multivariate Linear Regression Analysis on Stress Levels

Variable	Stress		
	B	Sig.	Exp (B)
Gender	2,641	.018	14 026
Exposure	2,792	.012	16 319
Constant	-4 724	.001	.009

(Source: Primary data are processed)

From Table 4, the constant value is -4.111, then the regression equation can be made logistic $y = -4.111 + 3.230$ (perceived disease risk and fear) with a result of 0.293 or equivalent to 29.30%. Thus the probability of officers with a high of experiencing anxiety is 29.30%. Assessing the statistical significance by assessing the p-value and confidence interval of the OR, it can be concluded that the perception variable is significantly related to the level of anxiety of the officers. The OR value of perceived 25,288 is that respondents with a high perception have the opportunity to experience anxiety, which is 25,288 times that of respondents with a low perception of disease risk and fear.

This underscores the importance of addressing perceived disease risk and fear in interventions aimed at supporting the mental health of health center workers. By recognizing and addressing these concerns, policymakers and healthcare institutions can develop targeted interventions and support mechanisms to mitigate anxiety levels and promote the well-being of health center workers during and beyond the pandemic

Table 4. Test Results Multivariate Linear Regression Analysis on Anxiety Level

Variable	Anxiety		
	B	Sig.	Exp(B)
Perception	3.230	.003	25.288
Exposure	1.610	.075	5.005
Constant	-4.111	.001	.016

(Source: Processed Primary Data)

The findings of this study on knowledge, behavior, exposure, and perception of stress, anxiety, and depression among health center workers during the COVID-19 pandemic provide valuable insights into the mental health challenges faced by healthcare workers. These results contribute to the existing literature on mental health among healthcare workers during the COVID-19 pandemic by highlighting the prevalence of stress and anxiety among this population. Additionally, the findings underscore the importance of addressing mental health issues among healthcare workers and implementing support systems to mitigate the impact of the pandemic on their well-being.

The unexpected finding in the study was the lack of a significant relationship between stress and anxiety levels among health center workers and variables such as age, education, employment status, work experience, working hours, knowledge, and behavior related to COVID-19. This unexpected result may suggest that other unexplored factors could be influencing stress and anxiety levels among this population, or that the measures used to assess these variables may not fully capture their impact.

Additionally, the inability to test the relationship between depression and independent variables due to constant data warrants further investigation into potential factors contributing to the lack of variation in depression levels among health center workers. Depression may be influenced by different factors not captured in the current study, such as personal life stressors or coping mechanisms.

Furthermore, while significant relationships were found between gender, exposure to COVID-19, and perception of disease risk and fear with stress and anxiety levels, it is important to acknowledge the limitations of the study. These limitations include the cross-sectional nature of the data, which limits causal inference, and the potential for response bias or confounding variables that were not accounted for in the analysis.

DISCUSSION

The mental well-being of health workers has been negatively impacted by the COVID-19 pandemic, resulting in depression, anxiety, and stress, especially at the Ngletih Community Health Center, Kediri City. This study presents the results of the gender variable with a significance value of $p < 0.05$ on stress and anxiety levels. This is the same as other research that gender is related to health workers' anxiety factors during the COVID-19 pandemic [14], [40], [42]. Participants who had "resilience" were more likely to be male, tend to be older, and have more years of professional experience [43]. Meanwhile, women were associated with higher levels of anxiety [18], [44]. Regarding the classification of anxiety severity according to gender, women had higher rates than men in the mild (22.1% vs. 15.0%), moderate (9.6% vs. 3.1%), and severe groups (2.1% vs 1.0%) anxiety [44]. In contrast to this study, there were no significant differences in the types of depression, anxiety, and stress between genders [45]. Not only stress, but the gender variable also accounts for 5.0% of the variance in PTSD symptoms [31].

Perceptions related to COVID-19 in our study still dominated good perceptions, namely 59.0%. This gives significant results $p < 0.05$ on stress and anxiety levels. The OR value of perception is 25.288, that is, respondents with a high perception of disease risk and fear have a 25.288-fold chance of experiencing anxiety. Other research shows that subjective risk experiences and perceptions regarding the dangers of infection are

significant predictors of health workers' work-related stress and anxiety in response to COVID-19. The tendency to perceive the workplace as a more dangerous place may be due to working in a riskier environment, whereas increased anxiety and subjective perception of the danger of infection may be due to the experience of encountering COVID-19 patients or undergoing quarantine. Overall, healthcare workers who worked with infected patients were more depressed, perceived their workplace as more dangerous, and experienced more work-related anxiety and stress [18]. In contrast, other studies showed that no statistically significant differences were found between different groups regarding the perception of family members' risk of being infected ($p = 0.06$) [19]. Healthcare workers working in ICUs (OR:2.59), had higher scores on "perceived vulnerability to the COVID-19 outbreak" (OR:1.41), "perceived severity of the pandemic" (OR:1.25), and "perceived barriers in wearing a mask" [42].

As expected, we also found that healthcare workers had more exposure to or contact with patients with COVID-19. Health workers who are directly exposed to COVID-19 patients are more likely to experience stress. The results of our research reveal that exposure to COVID-19 shows a significance value of $p < 0.05$ on stress and anxiety levels. Meanwhile, other research shows that internal medicine specialists and nurses who were on the front line during the pandemic had the highest levels of stress (very severe) during the pandemic - 8.4% and 7.6%, compared to surgical specialties, which were only 4% with correlation significance (P value = 0.016). It was also found that those who had more exposure or contact with patients suffering from COVID-19 [28]. Regarding exposure to COVID-19, frontline workers felt they had a higher workload than non-frontline workers ($\beta = 0.75$, $p < .001$) [3].

Our research on the number of women is a factor that can predict health workers' work-related stress and anxiety in response to COVID-19. Reveals that female officers who are exposed have a 67.02% chance of experiencing stress. This is comparable to the results of regression analysis of other studies which showed that male health workers experienced significantly less anxiety symptoms than their female colleagues ($\beta = \beta 0.25$; $p < 0.0001$). Similarly, men experienced significantly fewer depressive symptoms than their female counterparts ($\beta = \beta 0.45$; $p < .0001$), and, in general, depressive symptoms experienced by healthcare workers were positively associated with fear of contracting COVID-19 ($\beta = 0.02$; $p = 0.0006$) [19]. Regarding perceived stress, the cumulative prevalence was 13.2%. Women are more stressed than men, and younger workers (<30 years) have lower levels of stress than their older counterparts (<30 years) [38]. Women were found to have a significantly higher median score of commonly experienced stress symptoms than men (p -value < 0.001) [6]. Gender as a stress factor, female health workers were twice as likely to experience stress as men (pooled AOR 2.02, 95%CI 1.23 to 2.80) [40]. Another study revealed that gender, women had higher levels of anxiety than men for factor 1, "anxiety about infection" ($\beta = 1.18$, $p < .001$). Nurses and others had higher levels of anxiety about infection than doctors for occupational categories (nurses: $\beta = 1.30$, $p = .002$; others: $\beta = 1.69$, $p < .001$). Regarding exposure to COVID-19, those on the front lines felt they had higher levels of anxiety than those who were not on the front lines ($\beta = 0.68$, $p = .010$) [3]. Overall, nurses, women, and frontline healthcare workers experienced more stress, anxiety, and depression ($P < 0.001$) [46]. Nurses had significantly higher levels of anxiety ($P = 0.003$), while the cumulative anxiety score was significantly higher in health workers who had a positive history of COVID-19 infection ($P = 0.026$) [16]. For anxiety symptoms, medical worker occupation was the only variable that had statistical significance ($P = 0.006$) [29]

Fear of infection and/or exposure of daily workers to the dramatic impact of the spread of COVID-19 occurred in our research, which was shown by the results of perceptions of experiencing anxiety at 29.30%. This research is also similar to the results of other studies, fear of being exposed to COVID-19 is also positively related to the severity of anxiety symptoms ($\beta = 0.01$; $p = 0.0001$). Finally, there was a positive relationship

between health workers' anxiety symptoms and the likelihood of transmission to other people living with them ($y = 0.004$; 1 ; $p = 0.0018$) [19]. Health workers working in COVID-19 isolation centers are three times more likely to experience anxiety than their colleagues [40].

In this study, age, experience years, working hours per week, knowledge, and behavior did not have a significant relationship with depression, anxiety, and stress. This study was similar to other studies, there was a negative but not significant relationship between nursing staff's knowledge about COVID-19 and their total anxiety score ($r = -0.116$, $p = 0.054$) [21]. However, in our study, there was no significant relationship between working hours per week and stress and anxiety. This is in contrast to research that shows the number of weeks a health worker works is positively related to anxiety symptoms ($\bar{y} = 0.20$; $p = 0.0012$) [19]. Previous research also shows that those who work shifts are more likely to suffer from anxiety and stress than those who work regular hours (8 hours/day) [11]. Regarding stress, it is different from other studies which showed that increasing the nurse's age ($P = 0.001$) and history of physiological problems ($P = 0.03$) were significantly associated with high-stress scores [36]. Anxiety disorders such as fatigue or anxiety that occur as the pandemic progresses can harm the performance of health workers. Ironically, psychological resilience [15]. Younger healthcare workers (aged 20–39 years) experienced more work-related stress, but the longer they worked, the less they experienced depression, anxiety, and insomnia. Considering that age is related to working years, younger age and shorter working years make individuals more vulnerable to mental health problems such as depression, anxiety, insomnia, and higher levels of work stress [18]. This is different from other studies which show significant results that anxiety and depression occur more often in participants with low education compared to participants with higher education ($p = 0.01$; $p = 0.03$) [45]. Meanwhile, other research states that there is a weak negative relationship between nursing staff's knowledge about COVID-19 and their total fear score ($r = -0.218$, $p = 0.000$), but there was a positive relationship between nursing staff's fear of COVID-19 and their total anxiety scores [21].

Based on the findings of this study, it is evident that gender, perception of COVID-19, and exposure to infected patients significantly impact the mental well-being of health workers. Interventions aimed at addressing stress, anxiety, and depression among healthcare workers should consider these factors and prioritize support mechanisms tailored to the needs of different demographic groups, particularly women and those with high perceived disease risk and fear. Additionally, efforts to mitigate anxiety and stress among frontline healthcare workers should focus on reducing exposure to COVID-19 and providing adequate resources and support to manage fear and anxiety related to infection.

CONCLUSION

COVID-19 pandemic healthcare workers have faced high levels of burnout which can result in conditions of anxiety, stress, and depression. These findings show that gender, perceived risk and fear of disease, and exposure to COVID-19 show significant values for stress and anxiety levels of the officers at the Ngletih Public Health Center, Kediri City. In terms of gender, female officers who are exposed are more likely to experience stress than men. Respondents who are exposed are more likely to experience stress.

In light of the study findings, targeted interventions and strategies are crucial for supporting the mental well-being of health center workers. Firstly, initiatives should be developed to provide gender-sensitive support, recognizing the increased vulnerability of female officers, especially those exposed to COVID-19, to stress and anxiety. This may include tailored counseling services, peer support networks, and stress management programs specifically designed for female healthcare workers.

Secondly, efforts to address perceptions related to COVID-19 should focus on providing accurate information, enhancing risk communication strategies, and promoting resilience-building activities. Educating healthcare workers about infection control measures, providing access to mental health resources, and fostering a supportive work environment can help alleviate fears and reduce anxiety levels among officers.

Despite the valuable insights gained from this study, it is essential to acknowledge its limitations. The use of qualitative assessments limited our ability to quantify the severity of stress, anxiety, and depression among health center workers. Future research should consider incorporating quantitative measures and objective assessments, such as physiological indicators like blood pressure, to provide a more comprehensive understanding of mental health outcomes.

Additionally, this study was conducted with a specific sample of officers at the Kediri Public Health Center, which may limit the generalizability of the findings. Future research should aim to explore a broader range of factors influencing mental health outcomes, including the use of personal protective equipment, attitudes, marital status, and income, to better inform interventions and support mechanisms.

In the broader context of global efforts to support the mental health of healthcare workers, our study contributes to the growing body of literature highlighting the importance of addressing mental health challenges during public health crises. By aligning our findings with existing research and initiatives aimed at supporting frontline workers, we can advocate for comprehensive strategies and policies that prioritize the well-being of healthcare professionals, both during the COVID-19 pandemic and beyond.

ACKNOWLEDGEMENT

We would like to thank all the workers who agreed to participate in this study. We are thankful to the supervisor lecturers and staff of the Faculty of Medicine, Muhammadiyah Malang University, Ngletih Community Health Center, and the Kediri City Health Office for their support and guidance during the preparation of this publication. Also Administrative Officer Deva for providing her instruction for analyzing data in SPSS.

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