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Psychological Distress among Nurses During Covid-19 Pandemic

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Abstract. *During Covid-19 pandemic, the workload of nurses has become much higher. The condition of Covid-19 cases rate that continues to increase, adaptation to HSE measures and strict procedures to prevent transmission put great pressure on the health workers who are on duty. This study aims to measure the level of psychological distress in the form of stress, depression, and anxiety experienced by nurses at XYZ Hospital in Pemalang, Central Java using DASS 42 measuring instrument. The data analysis was processed using IBM SPSS Statistics 24 application with multiple linear regression method. The population is all nursing staff at XYZ Hospital, totaling 198 people. By using the stratified random sampling technique, a sample of 133 people was obtained consisting of 84 people from non-Covid-19 work units and 49 people from Covid-19 work units. Psychological distress factors are associated with internal factors (gender, age, years of service, education level, level of use of personal protective equipment) and external factors (level of PPE use, limited PPE, no PPE changing room facilities, lack of training, no zoning area, minimal formal psychological support, low social support, inadequate facilities and infrastructure, minimal information on the development of Covid-19, high working hours, fear of infection, chronic illness, trauma because the family has been exposed). The results showed that 75.2% of nurses experienced stress, 51.9% of nurses experienced depression, and 78.2% of nurses experienced anxiety disorders. The foremost vital factor influencing depression is age, anxiety is level of PPE use, and stress is length of time worked.*

Keywords: *Covid-19 pandemic; DASS-42; nurses; psychological distress; SPSS.*

INTRODUCTION

Amid the Covid-19 pandemic, hospitals have become one of the service industries with pivotal role in health services and handling Covid-19, however many hospitals are very limited in terms of supporting infrastructure. The Covid-19 pandemic has caused hospitals to require changes and reorganization of work systems by the latest health protocols issued by the government related to the handling of Covid-19 and non Covid-19 patients to maintain occupational health and safety in the hospital environment and components (The Lancet, 2020; World Health Organization [WHO], 2020).

In the field, among other health workers, nurses have the most frequent contact with patients during nursing care (Utama et al., 2020).

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This certainly increases the risk of higher transmission of the virus among nursing personnel. This situation leads to fear and anxiety feelings to be infected with Covid-19 and transmit it to family or close relatives, resulting in various psychological disorders in nursing staff (Keller et al., 2008; Maunder et al., 2004). Nurse stress was found mainly due to the lack of protective equipment and basic equipment, especially in the early phase of the emergence of Covid-19 viral disease (Zhan et al., 2020). Internal factors coming from every individual in the form of sociodemographic characteristics such as gender, age, education level, tenure, type of work, social support, health status are also determining factors of the high and low levels of stress experienced by nursing staff since this is related to individual readiness in facing high work pressure in the Covid-19 pandemic period (Chen et al., 2020; Han et al., 2020; Pouralizadeh et al., 2020). Research conducted at the Toronto Hospital discovered that psychological stress was influenced by several factors, such as fear, social isolation, work stress, contact with SARS patients, the nursing profession, type of work, avoidance, dissatisfaction with systems and processes, and uncertainty about safety and protection self. Analysis of the magnitude of psychological distress experienced by nurses was performed using the Impact of Event Scale (IES) questionnaire and respondents' demographic data (Maunder et al., 2004). Another study was conducted on health staff in Wuhan China during the Covid-19 outbreak with a cross-sectional study of mental health using the Patient Health Questionnaire (PHQ-9) for depression, Generalized Anxiety Disorder (GAD-7) for anxiety, Insomnia Severity Index (ISI) for insomnia, and Impact of Event Scale-Revised (IESR) for assessing response to events (Kang et al., 2020).

XYZ Hospital is one of the Covid-19 referral hospitals line 3 located in one of the epicenters of the spread of Covid-19 in Central Java and is a referral center for patients with moderate to severe symptom categories who require intensive treatment in Pemalang and areas near to the premise. There are several health services provided including outpatient and inpatient installation services. Personal Protective Equipment (PPE) worn by most health workers in outpatient installations is PPE level 2 or 3 while PPE for health workers (nurses) in inpatient installations varies from levels 1, 2, and 3. For the Covid-19 management in form of zoning the Covid-19 area with non-Covid-19 areas, it appears that the hospital has not yet implemented it. XYZ Hospital still adapts the phase and preparation for a new work system by improving the assignment of human resources (HR) and preparing adequate infrastructure for public health services and Covid-19 handling. The difference between the work system prior to Covid-19 pandemic and the current pandemic conditions obliges hospitals and health workers to be able to adapt quickly. Apart from triggering fatigue and physical stress, this situation also triggers the occurrence of psychological problems or mental fatigue (Ikatan Dokter Indonesia (IDI), 2020; Kementrian Kesehatan Republik Indonesia (Kemenkes RI), 2020).

This study aims to examine the relationship of psychological distress experienced by health workers, especially nurses during the Covid-19 outbreak. This research was conducted based on the results of a literature study, which only provides very limited research on mental health among health workers in Indonesia. For this reason, researchers attempt to analyze the level of depression, anxiety, and stress of health workers to assess the mental health status of health workers at XYZ Hospital. This study hypothesizes that there is a relationship between the independent factors (internal factors in the form of individual sociodemographic characteristics and external factors in form of PPE) with the incidence of depression, anxiety, and stress among Indonesian health workers during the Covid-19 pandemic. This research is expected to facilitate monitoring and evaluation of the mental health condition among Indonesian health workers in dealing with Covid-19, and provide alternative solutions to help reduce levels of depression, anxiety, and stress by minimizing or eliminating the causative factors and ensuring that there are no sequelae that will harm the health

of quality of life after the pandemic ceases.

METHOD

This study is a non-experimental quantitative study with a cross-sectional descriptive research design by identifying the sources of psychological distress experienced by nurses during the Covid-19 pandemic and finding solutions to the most urgent problems immediately. This research was conducted on nurses in an outpatient installation unit and an inpatient installation at a Covid-19 referral hospital in the Pemalang area, Central Java. Data were collected from 1 to 31 March 2021, when cases decreased in the first wave of Covid-19 in Indonesia.

The participants comprised nurses from the Pemalang general hospital, one of the 3rd line referral hospitals in the Central Java area and one of the hospitals with the most complete facilities in the Pemalang area. Nurses were selected based on the work unit, encompassing those working in Covid-19 units and those working in non-Covid-19 units. The inclusion criteria consisted of (a) nurses who were actively working during the Covid-19 pandemic, (b) nurses in the Inpatient and Outpatient installations of XYZ Hospital, and (c) nurses who gave consent to participate in the research after receiving an explanation of the study. Exclusion criteria included nurses who (a) were not actively working (on leave/sickness) during the study or (b) nurses who worked in the ER, ICU, NICU, and other service installations who were not allowed for research.

Determination of samples was based on the equation of the Slovin formula and used a stratified random sampling technique, which divides the population into strata based on the nurse's work unit and selects a random sample from each stratum with the size of the sample according to the calculation provisions. The sample in this study totaled 133 nurses, 84 nurses from non-Covid-19 work units and 49 nurses from Covid-19 work units (Notoatmodjo, 2015; Sugiyono, 2015).

The data collected in this study were in the form of sociodemographic data of respondents (including age, gender, tenure, education level, and the nurses' work unit) and data on the level of psychological distress experienced by nursing staff in relevant units using the DASS-42 questionnaire. Based on the initial research, the DASS-42 questionnaire obtained a reliability value of 0.91, which was processed based on Cronbach's Alpha assessment. In this study, the DASS-42 questionnaire had a reliability value of 0.82 and been proven to be valid and reliable (Lovibond & Lovibond, 1995).

Data analysis was performed using the IBM SPSS Statistics 24.0 version. The data analysis test was carried out in two stages, which are univariate analysis and bivariate analysis. Descriptive statistics were conducted to determine the frequency distribution of the respondents' nurse demographics and the distribution of depression, anxiety, and stress levels experienced. A Crosstab test was applied to determine the data distribution on the two variables studied. Multiple linear regression analysis tests were used to determine the significance of the factor effect and to investigate the relationship between the independent factors (internal factors in the form of individual sociodemographic characteristics and external factors in the form of personal protective equipment) and the dependent factors (level of stress, depression, and anxiety) studied. The t-test was employed to identify the influence of the factors partially and the F test was used to identify the factors simultaneously.

RESULTS AND DISCUSSION

The population of this study comprised all nursing staff at XYZ Hospital. The results showed the demographic characteristics of the respondents and the distribution of psychological distress levels. Following that, the results of multiple linear regression analysis tests were used to determine the significance of the influence of the factors and to see the relationship between the factors.

Demographic Characteristics of Respondents

Table 1 describes the sociodemographic characteristics of the respondents. The results of data processing indicate that there were 2 (two) types of respondent work units: nurses in non-Covid-19 service units as many as 84 people (63.2%) and nurses in Covid-19 service units totaling 49 people (36.8%), consisting of 45 male (33.8%) and 88 female (66.2%). The age of the respondents in this study ranged from 17 to > 55 years with the oldest respondents in the age range of 26-35 years as many as 50 people (37.6%). A total of 51 people (38.3%) obtained an undergraduate education level while the remaining 82 people (61.7%) had a D-III (diploma) education level. Based on the standard guidelines for the use of personal protective equipment (PPE) issued by the Ministry of Health of the Republic of Indonesia (Kemenkes RI), there are 3 levels of protection, namely level 1,2,3, and in this study, the majority of respondents wore PPE Level 2 (48.9%).

Table 1.
Frequency Distribution of Sociodemographic Respondents

Characteristics	Category	Frequency (n)	Percentage (%)
Work Unit	Non-Covid-19 Unit	84	63.2
	Covid-19 Unit	49	36.8
Gender	Male	45	33.8
	Female	88	66.2
Age	17-25 Years	16	12
	26-35 Years	50	37.6
	36-45 Years	48	36.1
	46-55 Years	16	12
	> 55 Years	3	2.3
Tenure	<5 Years	61	45.9
	5-10 Years	51	38.3
	> 10 Years	21	15.8
Education Level	D-III	82	61.7
	S-1	51	38.3
Level of Using Personal Protective Equipment (PPE)	PPE Level 1	21	15.8
	PPE Level 2	65	48.9
	PPE Level 3	47	35.3

The results of the characteristic distribution display similarities with the research conducted by Han et al. (2020) involving 21,199 nurses who worked in 14 hospitals in China during the Covid-19 pandemic. The study showed that there were more women (98.6%) than men (1.4%), the education level of most of the nurses consisted of D-III (51.9%), undergraduate (43.8%),

and the remaining only had high school/vocational (4.3%) certificate. Most nurses had less than 5 years of tenure (36.4%) followed by nurses with 5-10 years of service (35.2%). This research is also corroborated by Zhan et al. (2020), in which the research was conducted in Wuhan, China on 2,667 nurses who were on the first line of handling Covid-19. The results found that the highest frequency of nurse gender was female (96.96%), with a dominant age range of 26-35 years (50.99%), and tenure of less than 5 years (38.62%).

Multiple Linear Regression Analysis

t-Test Partial. The test was conducted to determine the significance and influence of the independent variable on the dependent variable. To investigate whether the coefficient value of the independent variable has a significant relationship or otherwise on the dependent variable, it can be seen from its significance. If the significance value is <0.05, Ha received and H0 is rejected. Results of t-test statistics for depression, anxiety, and stress variable can be seen in Table 2 below. Numbers in bold indicate the value of the factor with a significant effect.

Table 2.
The Results of The t-test

Factor	Depression		Anxiety		Stress	
	t	Sig.	t	Sig.	t	Sig.
(Constant)	2.217	0.029	5.760	0.000	4.934	0.000
Nurses Work Unit	2.650	0.009	4.705	0.000	4.746	0.000
Nurse Gender	1.534	0.128	0.036	0.971	0.547	0.585
Age	5.044	0.000	-0.742	0.460	1.682	0.095
Long Period of Work	0.732	0.466	-1.825	0.071	-2.626	0.010
Level of Education	-2.114	0.037	-4.759	0.000	-2.749	0.007
Level of Use of PPE	1.987	0.049	4.209	0.000	1.441	0.152
Limitations of PPE	-2.136	0.035	-0.316	0.752	-1.058	0.292
No PPE locker room	-0.303	0.763	-1.815	0.072	-0.385	0.701
Less intensive training	1.593	0.114	-0.620	0.536	-0.526	0.600
No restriction region	-0.355	0.723	0.169	0.866	-1.584	0.116
Less formal psychological support	-0.339	0.735	1.955	0.053	1.424	0.157
Low support from coworkers and supervisor	0.331	0.741	0.924	0.358	-0.253	0.800
Facilities and infrastructure are less supportive	-0.719	0.473	-0.699	0.486	-2.030	0.045
Lack of information	-2.098	0.038	-1.612	0.110	-0.934	0.352
Increased working hours	-1.257	0.211	-1.779	0.078	-1.241	0.217
Infected Fears	0.828	0.409	0.751	0.454	0.742	0.460
Having a chronic disease	-0.210	0.834	1.535	0.128	-1.474	0.143
Psychological trauma	-1.394	0.166	-2.995	0.003	-1.134	0.259

F-Test Simultaneous. The test was conducted to determine whether the independent variables collectively and significantly affected the dependent variable. For the hypothesis to be accepted is when the significance <0.05. If the significance value is <0.05, H1 is received and H0 is rejected. The results of the F statistical test for depression, anxiety, and stress variables can be seen in Table 3 below. Numbers in bold typing indicate the value of the factor with a significant effect.

Table 3.
F Test Results (Anova)

Model		Sum of Squares	df	Mean Square	F	Sig.
Depression	Regression	60.766	18	3.376	15.519	0.000[b]
	Residual	24.798	114	0.218		
	Total	85.564	132			
Anxiety	Regression	75.738	18	4.208	25.009	0.000[b]
	Residual	19.180	114	0.168		
	Total	94.917	132			
Stress	Regression	103.139	18	5.730	20.623	0.000[b]
	Residual	31.673	114	0.278		
	Total	134.812	132			

Based on the results of the regression test in the table above, the significance level of the three variables was 0.000, which means it is less than 5%. This implies that with a 95% confidence level, the independent variables significantly affected the dependent variable, namely the level of depression, anxiety, and stress simultaneously.

Coefficient of Determination Test (R Square). The magnitude of the factor effect simultaneously can be shown by the value of the R square. With a total of 18 factors, the adjusted R square value can describe the value of the magnitude of the factor effect simultaneously. The magnitude of the factor effect simultaneously on the level of depression, anxiety, and stress is presented in Table 4.

Table 4.
The Magnitude of The Influence of Factors Simultaneous on
The Level of Depression, Anxiety, and Stress

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate	Durbin-Watson
Depression	0.835a	0.698	0.650	0.476	1.927
Anxiety	0.893a	0.798	0.766	0.410	1.889
Stress	0.875a	0.765	0.728	0.527	1.916

Effective Contribution and Relative Contribution of Independent Variables.

Table 5.
Effective Contribution and Relative Contribution of Independent Variable

Variable	Depression		Anxiety		Stress	
	EC	RC	EC	RC	EC	RC
Nurses Work Unit	2.11	3.02	5.17	6.48	6.28	8.21
Nurse Gender	4.26	6.11	0.84	1.05	1,98	2.58
Age	22.23	31.85	-1.88	-2.35	5.35	7.00
Tenure	-2.59	-3.71	4.12	5.16	10.96	14.33
Level of Education	11, 12	15.93	20.99	26.31	10.91	14.26
Level of Use of PPE	6.25	8.96	26.88	33.68	3.82	4.99
Limitations of PPE	7.53	10.79	0.93	1.17	8, 79	11.49

Variable	Depression		Anxiety		Stress	
	EC	RC	EC	RC	EC	RC
No PPE locker room	2.11	3.02	5.17	6.48	6.28	8.21
Less intensive training	4.26	6.11	0.84	1.05	1,98	2.58
No restriction region	22.23	31.85	-1.88	-2.35	5.35	7.00
Less formal psychological support	-2.59	-3.71	4.12	5.16	10.96	14.33
Low support from coworkers and supervisor	11, 12	15.93	20.99	26.31	10.91	14.26
Unsupportive facilities and infrastructure	6.25	8.96	26.88	33.68	3.82	4.99
Lack of information	7.53	10.79	0.93	1.17	8, 79	11.49
Increased working hours	2.82	4.04	2.62	3.29	2.36	3.09
Fear of getting infected	-0.88	-1.25	-0.78	-0.97	-0.74	-0.97
Having a chronic disease	0.13	0,18	-0.84	-1.06	2.12	2.77
Psychological trauma	3.06	4.39	6.24	7.82	2.05	2.68

Based on the results of SPSS data processing shown in Table 5, the results imply that the dependent variable level of depression was significantly influenced by the independent variable the age of the nurse with an effective contribution value of 22.23%, the dependent variable anxiety level was significantly influenced by the independent variable level of use of personal protective equipment (PPE) at work with an effective contribution value of 26.88%, and the dependent variable stress level was highly influenced by the independent variable the length of service with an effective contribution value of 10.96%.

Frequency Distribution of Nurses Depression, Anxiety and Stress Levels

Table 6 describes the frequency distribution of stress, depression, and anxiety levels experienced by nurses. The results obtained that 75.2% of nurses experienced stress, 51.9% of nurses suffered from depression, and 78.2% of nurses experienced anxiety disorders.

Table 6.
Frequency Distribution of Respondents' Stress, Depression, and Anxiety Levels

Characteristics	Category	Frequency (n)	Percentage (%)
Stress	Normal	33	24.8
	Mild	52	39.1
	Moderate	34	25.6
Depression	Severe	10	7.5
	Extremely Severe	4	3.0
	Normal	64	48.1
	Mild	48	36.1
	Moderate	17	12.8
Anxiety	Severe	4	3.0
	Extremely Severe	0	0
	Normal	29	21.8
	Mild	57	42.9
	Moderate	39	29.3
	Severe	8	6.0
	Extremely Severe	0	0

The results of data processing showed that women had higher stress levels (66.2%) than men (33.8 %), and there was no relationship between gender and stress levels (p = 0.340). The same result was shown by a study conducted by Verma and Mishra (2020) in India which examined the correlation between demographics and the incidence of stress in the general population during the Covid-19 pandemic. There results found that there was no relationship between gender and stress, but the distribution of stress in women (12.3%) was higher than men (10.9%). Women are more prone to stress than men because women prioritize emotional (feelings) rather than rational, for example, feeling guilty for leaving their family to work, feeling pressured because of limited time and too much workload, and obnoxious work situations during the Covid-19 pandemic. There is no relationship between gender and stress levels because there is no consistent difference in the ability to think, adapt to the work environment, motivational skills, and analysis.

The results of data processing also indicated that the most stress was experienced by nurses in the age range of 26-35 years (37.6%), followed by those in 36-45 years category (33.8 %), nurses aged 17-25 years, and those with age of 46-55 years with the same percentage (12%), and lastly nurses aged >55 years (2.3%). There was no relationship between age and stress levels (p = 0.097). Research conducted by Maraqa et al. (2020) in Palestine on hospital workers during the Covid-19 pandemic showed corresponding results as this study, which did not find any relationship between age and stress levels during the pandemic, but the comparison suggests that respondents aged <35 years experienced more stress than respondents aged> 35 years.

Furthermore, the results of data showed that the highest stress level was encountered by nurses with <5 years of tenure (45.7%) followed by those with 5-10 years of service (38.5%), and the rest of nurses with >10 years of tenure (15.8%). There was a relationship between gender and stress levels (p = 0.005). The absence of a relationship between the tenure and stress levels during the Covid-19 pandemic were also found in research conducted by Rosyanti and Hadi (2020) that the Covid-19 pandemic triggered restructuring and reorganization in hospitals, therefore employees at homesick people (hospital?), both those with the short or long tenure, are required to change prevailing work patterns and adapt to the new environment due to the impact of the Covid-19 pandemic.

The results of data also exhibited that out of 133 respondents with a diploma education level (D-III) had a moderate stress level of 24.8% and an undergraduate education level experienced mild stress of 16.5%. The number of respondents with a D-III education level had a higher moderate stress level than undergraduate and above because, in the field, most of the active nurses came from diploma nurses (D-III), while nurses with S1/undergraduate degrees served as management nurses. There was a significant relationship and influence between education level and stress level (p = 0.014). The results of this study contrast with the research conducted by Kuo et al. (2020), where the results of their research found that there was no relationship between the level of education and the stress experienced by workers in hospitals during the Covid-19 pandemic. The Covid-19 pandemic has created new problems that have never been faced before, thus employees with a high or low level of education, especially those who work in hospitals, experience the same negative psychological effects (Handayani et al., 2020). However, the difference in assignments in this research case can be used as a consideration for the difference in results because the active nurses do have direct responsibility for the patient and must communicate closely in nursing care to further increase feelings of stress, depression, and anxiety among nurses.

CONCLUSION

The result analysis of the psychological distress of nursing workers at XYZ Hospital throughout the Covid-19 pandemic era showed that nurses who had stress symptoms consisted of 75.2% or as several as a hundred individuals from a complete of 133 nurses, those who experienced symptoms of depression were found 51.9% or as many as sixty nine people from a total of 133 nurses, and nurses who suffered from anxiety disorders were 78.2% or as many as 104 people from a total of 133 nurses. The variable quantity with the foremost vital result on the dependent variable of depression is age, indicating there was a tendency that the older the age of the nurse, the higher the risk of depression would be. The variable quantity with the foremost vital result on the dependent variable of tension is the level of private protective equipment (PPE) use, showing the higher the extent use of PPE, the higher the level of anxiety would be. The independent variable with the most significant effect on the dependent variable stress is tenure, in which the results found that nurses who had a brief or inexperienced tenure were more likely to expertise higher levels of stress. This condition is, of course, at a risky stage because more than 50% of workers experienced real psychological distress. Therefore, it is necessary to propose effective solutions to overcome these problems in diminishing the level of pressure experienced by nurses. The proposed solutions that can be done are scheduling or allocating the use of personal protective equipment (PPE), selecting and debriefing nurses on duty, especially in the Covid-19 unit, and establishing a response team for colleagues.

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