Research Article

Sociodemographic Factors and Stress Levels Among Health Workers in Malang During Covid-19 Pandemic

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Abstract.
Many health agencies and medical personnel are overwhelmed with handling COVID-19 patients. Not even a few health workers are victims. In carrying out their duties in the field, health workers experience anxiety and stress about their work. Variations in different socio-demographic factors of health workers may be determinants of different psychosocial risks. Therefore, this study aims to determine the socio-demographic factors that can predict stress on health workers in Malang through quantitative research with a comparative design. The participants in this study were 102 health workers selected using a cluster sampling technique. The study used the depression, anxiety, and stress scale (DASS) instrument and a descriptive questionnaire for socio-demographic data. Data were analyzed using an independent sample *t*-test and one-way ANOVA. Variations in the concentration of socio-demographic factors have no role in the stress level of health workers.

Keywords: health workers, sociodemographic, stress

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1. BACKGROUND

At the end of 2019, the world was hit by *coronavirus disease* 2019 (Covid-19), first identified in Wuhan, China. *Coronavirus* is a virus that attacks the respiratory system. Most people exposed to this virus will have symptoms of fever, shortness of breath, cough, fatigue, and no appetite [1]. The virus can spread quickly due to its high transmission rate. Transmission of the coronavirus can occur through direct contact with the sufferer. The medium for transmission of the virus is through droplets released when the patient coughs, sneezes, or talks. Due to its effortless and fast transmission, in March 2020, the *World Health Organization* (WHO) declared the coronavirus outbreak a global pandemic [2].

Various measures have been taken to prevent the spread of the virus, such as establishing *social distancing,* mandatory wearing of masks when doing activities outside

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the home, and implementing *work-from-home* systems and online learning. However, the spread of the coronavirus remains unstoppable. Indonesia was ranked 13th with the most active cases worldwide [3]. With 4,190,000 cases and 140,000 deaths as of September 17, 2021, the COVID-19 pandemic has claimed many lives in Indonesia [4].

The number of casualties has caused hospitals in Indonesia to collapse due to the lack of supporting facilities and infrastructure [3]. Many health institutions and medical personnel are overwhelmed by handling Covid 19 patients, and not even a few health workers have become victims. Even so, medical personnel must continue to perform well because the pandemic is still ongoing. Health workers must perform well as the front guard breaks the covid 19 chain. The performance of health workers is crucial in pandemic conditions like today. The community will continue to demand extra performance for health workers in dealing with patients affected by covid 19.

In carrying out their duties in the field, health workers experience anxiety and stress about their work. Because they are in direct contact with patients affected by the covid 19 virus, whose transmission is effortless and fast. Research conducted by [5] showed that 65.8% health workers in Indonesia experienced anxiety due to the COVID-19 outbreak, of which 3.3% experienced severe anxiety and 33.1% experienced mild anxiety. Health workers who work in hospitals and care for COVID-19 patients experience more psychological disorders and are almost twice as likely to experience anxiety disorders than non-clinical staff. In comparison, health workers who experienced stress due to the COVID-19 outbreak were 55%, with severe stress of 0.8% and mild stress of 34.5%. Health workers who experienced depression were 23.5%, with severe depression at 0.5% and mild depression at 11.2%.

Stress most often refers to events or crises that occur in the environment around an individual that occur suddenly and tax available resources, and require an unusual response from the individual [6]. When viewed from this theory, stress in health workers can arise due to disturbances or crises in the health worker's environment. Coupled with the environmental conditions of the covid 19 pandemic, a disease that can spread quickly. So that various factors arise from the environment that can cause health workers in the field of handling covid 19 to experience psychological disorders.

Psychological conditions such as anxiety, stress, and depression in healthcare workers can arise due to various factors. Different characteristics within each individual can play a role in influencing that individual's stress levels. A series of socio-demographic factors such as gender, age, education level, and work situation have varying degrees of association with the level of stress felt during the COVID-19 crisis [7]. This is also

supported by research conducted by [8] that different socio-demographic groups of health workers can act as different determinants of psychosocial risk.

[9] state stress as a relationship between the environment and the individual where the stress we have depends on the individual's judgment and ability to adapt to environmental demands. Stress is more accurately seen as a specific type of transaction or relationship between two systems (person and environment), or between two or more intraindividual systems (id, ego, and superego processes) as in the psychoanalytic approach to conflict [10]. In addition, stress can also be viewed as the relationship between the input/stimulus and the response or stress reaction that the stimulus elicits [10]. [11] stated that the dominant stressor that causes stress in individuals comes from the environment.

Socio-demographic factors which are characteristics within the individual have a role in individual stress levels, the coping process begins with assessing the threats that arise and the availability of coping responses within the individual [12]. Individuals who have certain characteristics in themselves can make these characteristics a tool / ability to adapt to stressors that come from their environment. In addition, these characteristics also affect how individuals behave towards stressors that come from the environment. These differences affect the perception and interpretation of events around the individual which contributes to their experience of stress, and affects the individual's decision on what to do to cope with stress [13]. Thus, differences in individual characteristics can play a role in determining the individual's actions to cope with stressors from the environment. Mental health problems experienced by healthcare workers can impair attention, cognitive function, and decision-making in carrying out tasks and have a lasting effect on the general well-being of healthcare workers [14]. As a result, medical errors can occur, ultimately putting patients at risk.

Socio-demographic factors have a role in stress levels in health workers, especially in socio-demographic factors such as age, gender, education level, marital status, and tenure [15–19]. However, in some studies, different results were obtained where not all socio-demographic factors have different roles in determining the level of stress in health workers. Gender, profession, education level, marital status, and language in the workplace did not play a role in the stress level of health workers in Saudi Arabia [20]. Another study also stated that income, shift type, having an acute illness, and personal diagnosis of Covid-19 [21], as well as wards and work units, have no role in the stress level of health workers [22].

Therefore, this study aims to determine the socio-demographic factors that can predict stress in health workers in Malang. The benefit of this study is to find out that

variations in socio-demographic factors owned by health workers are one of the factors that play a role in determining the stress level in health workers. In addition, this research can be used as a reference in providing further interventions to health workers who experience stress in situations similar to the Covid-19 pandemic. The difference between this study and previous studies is that only some studies in Indonesia examine the direct influence of stress and socio-demographic factors on the health worker profession.

2. RESEARCH METHODS

2.1. Research design

This study uses a non-experimental quantitative approach using a comparative research design. *Comparative research design* is a research design that aims to find similarities and differences between two (or more) objects [23]. In this case, researchers want to know the effect of socio-demographic factors on the stress possessed by health workers in the field of handling covid-19.

2.2. Research Subject and Sampling Method

The population in this study were health workers in Malang City who were taken from 5 hospitals in Malang City. Health workers in this research were selected based on who has experience in the field of handling covid 19. The sampling technique used is *probability sampling* technique using *cluster sampling.* Cluster sampling is selecting a random sample of clusters from the population and inviting all members of each selected cluster to participate [24]. The research sample comprised 102 health workers divided into four professions: doctors, nurses, midwives, and pharmacists, obtained from 5 hospitals in Malang. The randomization process was carried out by identifying some hospitals in Malang and then randomizing them with the help of the random.org website. The five hospitals obtained from the randomization process are Brawijaya University Hospital, Panti Waluya Sawahan Hospital, RSIA Muhammadiyah Malang, Lavalette Hospital Malang, and Aisyiyah Islamic Hospital Malang.

2.3. Research Instruments

Stress will be measured using the *Depression Anxiety Stress Scale* developed by Lovibond and Lovibond (1995) and adapted into Indonesian by Onie *et al.* (2020) with

a reliability value on the *depression subscale* α = .794, *anxiety subscale* ⬜ = .785, and *stress subscale* α = .800 with a total of 21 items. The DASS 21 scale uses 4-point Likert-type questions, ranging from 0 ('Never') to 3 ('Almost Always'), meaning the higher the score, the greater the level of depression, anxiety, and stress. The DASS 21 scale was used to determine the stress level possessed by health workers in handling covid-19.

The socio-demographic factors taken are gender, and marital status. Along with socio-demographic factors, professional features such as contribution in handling covid-19, duration of time working in the covid ward, covid-19 infected status, current shift, a shift that has many challenges are also included.

2.4. Data Collection Procedures

The procedure in this study went through three stages as follows: The preparation stage, at this stage, the researcher determines the phenomenon, conducts a theoretical study by determining the research variables, and studies the theories related to the variables to be studied; the researcher then prepares the research instrument, namely the stress scale. The scale researchers use is already in the Indonesian context, so it does not require adaptation or try-out.

In the implementation stage, at this stage, the research spread the scale to health workers in the field of handling covid-19 who work in 5 hospitals in Malang City. Hospitals were selected using *cluster sampling*. Of the total 24 hospitals in Malang, after being subjected to *cluster sampling*, five hospitals were obtained, namely, Brawijaya University Hospital, Panti Waluya Sawahan Hospital, RSIA Muhammadiyah Malang, Lavalette Hospital Malang, Aisyiyah Islamic Hospital Malang. The scale was distributed offline using booklets and online media using *Google Forms*. The data collection stage took place from January 2022 to March 2021 and obtained a research sample of 102 samples.

2.5. Data analysis technique

The data obtained were processed through *Microsoft Excel* for data categorization and score normalization and *SPSS 16* for one-way *ANOVA* and *independent sample t-test* analysis to test differences between two or more groups. Prior to the data analysis test, normality and homogeneity assumptions were tested. A normality test was conducted using *skewness-kurtosis*. The *Zskewness* value is .941 in the stress variable, and *Zkurtosis* -1.45. Based on the *Zskewness* and *Zkurtosis* values, the stress

variable has a standard data distribution because it meets the conditions -1.96> x < 1.96. A homogeneity test was conducted by testing stress variables with socio-demographic variables. Variance is homogeneous (*p>.05*) for the stress variable and socio-demographic data, gender (*p* = .135), marital status (p = .557), current shift (*p* = .586), shifts that have many challenges (p = .963), contribution in handling covid-19 (*p* = .867), duration of time working in the covid ward (*p* = .876), and covid-19 infected status (p = .544) seen from the Levene test.

3. RESULT

The following are the results of data analysis from 102 health workers who participated in this study. When viewed in Table 1 through socio-demographic characteristics, stress levels are in the normal category. In the characteristics of gender, women have a higher stress level in the category, namely the *moderate* category, with a ratio of 2.3% and 0% with the male gender. In the marital status category, the married group had a higher stress level than the other groups, which was 2.9%. In the Profession category, Nurses (*f* = 2.2%) have a higher stress level in the Moderate category than other groups. In the category of experience in the covid-19 field, officers who have never worked in the covid-19 field (*f* = 87.5%) are more in the normal category of stress levels than health workers who have worked in the field of handling covid-19 (*f* = 87%). While in the socio-demographic variable of work duration in the covid-19 field, the group that has a work duration of <3 Months has the highest percentage in the *moderate* stress category (*f* = 7.7%), and the status of covid-19 infection in health workers is mainly in the normal stress category in the group that has never been infected with covid-19 (*f* = 90.9%). The *moderate* stress category in the current work shift variable is mainly in the night shift group (*f* = 6.7%) and the morning shift group (*f* = 2.3%). Shift variables considered more challenging are in the *moderate* stress category in the night shift (*f* = 1.9%) and morning shift (*f* = 2.6%).

3.1. Hypothesis Test

The results of the analysis in Table 2, which is between the gender variable and the stress variable, showed that the gender of Males (*M* = 9.71*; SD* = 3.49) and Females (*M* = 9.40*; SD* = 4.85) did not differ significantly on the stress level of Health Workers, *t*(100) = .226, *p* = .882.

TABLE 1: Description of Research Variables.

Characteristics	n	f (%)
Gender		
Male	14	13.7
Female	88	86.3
Marriage Status		
Married	70	68.6
Unmarried	28	27.5
Divorce Life	3	2.9
Death Divorce	1	1.0
Profession		
Doctor	4	3.9
Nurse	90	88.3
Midwife	5	4.9
Pharmacist	3	2.9
Working in the Field of Covid-19		
Never	56	54.9
Ever	46	45.1
Duration of Work in the Covid-19 Field		
Never	56	54.9
<3 Months	13	12.7
>3 Months	33	32.4
Positive Covid-19		
Never	55	53.9
Ever	47	46.1
Current Work Shift		
Morning Shift	43	42.2
Day/Noon Shift	24	23.5
Night Shift	15	14.7
All Shifts	17	16.7
Morning Shift & Day/Noon Shift	3	2.9
More Challenging Shifts		
Morning Shift	38	37.3
Day/Noon Shift	9	8.8
Night Shift	53	52.0
All Shifts	2	2.0

In the variable of contribution in handling Covid-19 with the stress variable, the results showed that Health Workers who have never worked in the field of handling Covid-19 (M = 9.17; SD = 4.71) and Health Workers who have worked in the field of handling Covid-19 (M = 9.78; SD = 4.66) do not have a significant difference in stress levels, t(100) = -.647, p = .519.

Analysis of the variable of Covid-19 infected status with stress variable, the results showed that Health Workers who have never been infected with Covid-19 (*M* = 9.05; *SD* = 4.56) and Health Workers who have been infected with Covid-19 (*M* = 9.91; *SD* = 4.80) have no significant difference in stress level, *t*(100) = -.925, *p* = .357.

TABLE 2: Independent Sample t-test.

Variables	Stress		t	df	p(Sig.)
	M	SD			
Gender					
Male	9.71	3.49	.226	100	.882
Female	9.40	4.85			
Contribution to the handling of covid-19					
Never	9.17	4.71	-.647	100	.519
Ever	9.78	4.66			
Covid-19 infected status					
Never	*9.05*	*4.56*	-.925	100	.357
Ever	*9.91*	*4.80*			

The results of the first *one-way ANOVA* test on socio-demographic variables of marital status with stress showed no significant difference in concentration, *F*(3, 98) = 1.458, *p* = .231 between the groups married (*M* = 9.08; *SD* = 4.66), unmarried (*M* = 9.78; *SD* = 4.69), living divorce (*M* = 14.66; *SD* = 3.05), and death divorce (*M* = 10; *SD* = -).

The results of the second *one-way ANOVA* test on the socio-demographic variable of the duration of time working in the covid -19 ward with stress did not have a significant difference in concentration, *F* (2, 99) = .493, *p* = .612 between the groups never (*M* = 9.17; *SD* = 4.71), <3 months (*M* = 10.61; *SD* = 5.18), and >3 months (*M* = 9.45; *SD* = 4.47).

The results of the third *one-way ANOVA* test on the socio-demographic variables of current shift with stress showed no significant difference in concentration, *F*(4, 97) = .715, *p* = .583 between the morning shift group (*M* = 8.83; *SD* = 4.54), day/afternoon shift (*M* = 9.25; *SD* = 4.56), night shift (*M* = 10.26; *SD* = 5.70), all shifts (*M* = 10; *SD* = 4.12), and morning shift & day/afternoon shift (*M* = 12.66; *SD* = 6.11).

The results of the final *one-way ANOVA* test on the socio-demographic variable of shifts that have many challenges with stress showed no significant difference in concentration, *F*(3, 98) = .241, *p* = .868 between the morning shift group (*M* = 9.42; *SD* = 5.07), day/afternoon shift (*M* = 10.66; *SD* = 4.58), night shift (*M* = 9.24; *SD* = 4.47), and all shifts (*M* = 10; *SD* = 5.65).

TABLE 3: One Way ANOVA Test.

Variables	Stress		df	F	p(Sig.)
	M	**SD**			
Marriage Status					
Married	9.08	4.66	3, 98	1.458	.231
Unmarried	9.78	4.69			
Divorce Life	14.66	3.05			
Death Divorce	10	-			
Duration of time working in the covid ward					
Never	9.17	4.71	2, 99	.493	.612
<3 Months	10.61	5.18			
>3 Months	9.45	4.47			
Current Shift					
Morning Shift	8.83	4.54	4, 97	.715	.583
Day/Noon Shift	9.25	4.56			
Night Shift	10.26	5.70			
All Shifts	10	4.12			
Morning Shift & Day/Noon Shift	12.66	6.11			
Shifts that have many challenges					
Morning Shift	9.42	5.07	3, 98	.241	.868
Day/Noon Shift	10.66	4.58			
Night Shift	9.24	4.47			
All Shifts	10	5.65			

4. DISCUSSION

The results prove that the hypothesis is rejected, namely that there is no concentration variation from socio-demographic factors to the level of stress that health workers have. According to the results of this study, the socio-demographic factors used in this study, namely, gender, marital status, current shift, shifts that are considered more challenging, contribution in handling covid-19, duration of time working in the covid ward, and covid-19 infected status have no difference in concentration in the level of stress possessed by health workers in Malang City.

Gender between men and women does not make a difference in the concentration of stress levels of health workers in Malang City. Stress has different impacts depending on individual characteristics. However, in certain situations where the source of stressors received by both sexes is identical, sex differences show similar coping reactions to the source of stressors [25]. In the case of this study, health workers with both male and female gender have identical stressors. This is also supported by research showing that when women and men occupy the same social role, they generally have no differences

in the way they (men/women) cope with stress [26]. Health workers, regardless of gender (male/female), have similar social roles, especially in Covid-19 situations.

The stress level of health workers has no difference in concentration in groups that are married, unmarried, divorced alive, and divorced dead. The results of this study are in line with several studies [13,27]. Further research is needed to look at the role of marital status on stress. This is because, in [28]'s research, it is known that unmarried individuals have better mental conditions than individuals who are unhappy in their marriage. In the living divorce and death divorce groups, there is no difference in stress levels from the married group, and the dominant stress level is at an average level, which the stress of divorced Health Workers can cause. This is supported by research by [29], where stress caused by divorce only occurs in a short time (2 years).

The participation of health workers in the field of covid does not provide a significant difference from health workers who are not in the field of handling Covid-19. This is not in line with several studies that say health workers who are in the field of handling Covid-19 are more prone to stress disorders [30] and experience more severe mental health conditions [31]. Research by [32] states that health workers who do not handle Covid-19 have the same risk of Covid-19 transmission. This is because those in the field of handling Covid-19 have more complete protective equipment. Research conducted by [33] states that health workers who work under Covid-19 and use PPE (personal protective equipment) ultimately have been proven to reduce stress levels. Therefore, the dominant stress level at an average level can be due to a feeling of security because it has complete protective equipment to prevent contracting the virus. Some studies are in line with the results of the study, which show that nurses who are on the front lines have significantly reduced *secondary traumatic stress* compared to nurses who are not in the field of handling Covid-19 during the COVID-19 pandemic [34,35]. Some factors that cause this are a lack of information about the Covid-19 outbreak and a lack of knowledge and training regarding personal protective equipment and infection control measures [34,35]. This can also support the results of the study, which state that there is no difference in the variable group of tenure in the field of handling Covid-19 (never, <3 months, and >3 months) with the stress level.

Work shifts (current work shifts and work shifts that are perceived to have challenges) in health workers found no difference in the concentration of each group on stress levels. Research conducted by [36] also stated the same results, where long working hours played a more significant role than work shift rotation in stress levels in health workers. This also applies to health workers who work in the field of handling Covid-19. Some studies state that long working hours have a role in the stress levels of health workers

[37,38]. The division of shift rotation is intended so that health workers can rest when their work shift has ended. Therefore, long working hours are more tiring for health workers than what shifts they get. Health workers in the field of handling Covid-19 have a heavy workload, and long working hours prefer adequate rest and recovery time [39].

Health workers who are Covid-19 *survivors* and *non-survivors of* Covid-19 show no difference in their role in stress levels. This is contrary to research conducted by [40], which states that 31% of 126 individuals who are Covid-19 survivors experience symptoms of stress. Epidemiological studies have also shown a high prevalence of mental health problems in *survivors* and health workers [41]. This suggests that health workers who are Covid-19 survivors should show differences in stress levels from *non-survivor* health workers. Therefore, the absence of differences in concentration may be due to other influential factors. Research by [40] shows that the level of stress experienced by Covid-19 *survivors is* influenced by *social support. Social support for* Covid-19 survivor health workers plays a role in quarantine and post-quarantine periods. Health workers infected with Covid-19 do not receive social support from the surrounding environment. This is supported by the research of [42], where quarantined health workers experience mental health problems, loss of social support, and financial losses.

This study has a weakness where the number of samples is too small to be extrapolated to all health workers in Malang because there are only 102 samples from 6 hospitals in Malang. In addition, the technical data collection on health workers in the hospital needed more preparation, so the researcher handed over the research scale to the field of hospital training to be distributed to all health workers. In addition, researchers did not explore the theory in forming the background, so the background of this study can only see from the point of view of the contribution of socio-demographic factors to the level of stress health workers possess. However, the novelty of this study can be used as additional literature and references in further research.

5. CONCLUSION

The research conducted by researchers on 102 health workers in Malang found that the hypothesis was rejected. Therefore, there is no variation in the concentration of socio-demographic factors of health workers on the level of stress that health workers have. In this study, it is known that the stress level of health workers in Malang is mainly at a normal level when viewed from each socio-demographic characteristic of the subject. Therefore, group variations in each socio-demographic variable do not

provide significant differences in concentration on the stress level of health workers in Malang.

This study implies that variations in socio-demographic variables do not make a difference in the stress level of health workers, and the stress experienced is at an average level during the Covid-19 pandemic. Most of the stress levels are at normal levels. It can conclude that health workers can overcome existing stressors in extreme conditions such as a pandemic. Suggestions for further research in examining socio-demographic variables and stress need to consider the existence of other influential variables to explain the relationship between socio-demographic variables and stress. In addition, it is also necessary to consider using a more significant number of samples, considering better data collection techniques, and further deepening the theory used in forming the research background. Based on the results of studies to prevent stress on health workers in situations similar to the Covid-19 pandemic, adequate information and comprehensive protective tools are required in the face of an epidemic. Government or hospital authorities are expected to be able to train health workers on the treatment of patients in pandemical conditions, and always ensure that complete protective equipment is available for health personnel in each hospital.

Author Contributions

All author conduct concept of the research design, writing introduction, data collection, data processing, and writing discussion.

Conflict of interest:

The authors declare there is no conflict of interest.

References

[1] Mona N. Konsep isolasi dalam jaringan sosial untuk meminimalisasi efek contagious (kasus penyebaran virus corona di indonesia. Jurnal Sosial Humaniora Terapan. 2020;2.

[2] World Health Organization. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. Available from: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—11-march-2020

[3] Suni NS. Tingginya kasus aktif dan angka kematian akibat covid-19 di Indonesia. J Pus Penelit Badan Keahlian DPR RI. 2021;13(3).

[4] Satuan Tugas Penanganan COVID-19. https://covid19.go.id/peta-sebaran-covid19. Peta Sebaran COVID-19.

[5] Nasrullah D, Natsir M, Twistiandayani R, Rohayani L, Siswanto S, Sumartyawati NM, et al. Psychological impact among health workers in effort to facing the COVID-19 in Indonesia. International Journal of Public Health Science. 2021;10(1):181.

[6] Schulte PM. What is environmental stress? Insights from fish living in a variable environment. Journal of Experimental Biology. 2014;217(Pt 1):23–34.

[7] Rodríguez S, Valle A, Piñeiro I, Rodríguez-Llorente C, Guerrero E, Martins L. Sociodemographic characteristics and stress of people from spain confined by COVID-19. European Journal of Investigation in Health, Psychology and Education. 2020;10(4):1095–1105.

[8] Dudutienė D, Juodaitė-Račkauskienė A, Stukas R. Developing stress management programs in a public primary healthcare institution: Should we consider health workers' sociodemographic groups? [Internet]. Medicina (Kaunas). 2020;56(4):162.

[9] Folkman S. Stress: Appraisal and coping. Encyclopedia of Behavioral Medicine. New York (NY): Springer New York; 2013. 1913–1915 p.

[10] Lazarus RS, Cohen JB. Environmental stress. Human behavior and environment. Boston (MA): Springer US; 1977. 89–127 p.

[11] Baum A, Singer JE, Baum CS. Stress and the environment. Journal of Social Issues. 1981;37(1):4–35.

[12] Levin S, Van Laar C. Stigma and group inequality: Social psychological perspectives. Psychology Press; 2006.

[13] Osei-Mireku G, Wang X, Lartey J, Sarpong F. Individual differences in experiencing occupational stress—A case study on nurses of tamale teaching hospital (TTH). Open Journal of Business and Management. 2020;08(04):1657–1573.

[14] Zhu Z, Xu S, Wang H, Liu Z, Wu J, Li G, et al. COVID-19 in Wuhan: Sociodemographic characteristics and hospital support measures associated with the immediate psychological impact on healthcare workers. eClinicalMedicine. 2020;24:100443.

[15] La Torre G, Sestili C, Mannocci A, Sinopoli A, De Paolis M, De Francesco S, et al. Association betweenwork related stress and health related quality of life: The impact of socio-demographic variables. a cross sectional study in a region of central Italy. International Journal of Environmental Research and Public Health. 2018;15(1):159.

[16] Gonçalves L, Sala R, Navarro JB. Resilience and occupational health of health care workers: A moderator analysis of organizational resilience and sociodemographic attributes. International Archives of Occupational and Environmental Health. 2022;95(1):223–232.

[17] Bregar B, Skela-Savič B, Kores Plesničar B. Cross-sectional study on nurses' attitudes regarding coercive measures: the importance of socio-demographic characteristics, job satisfaction, and strategies for coping with stress. BMC Psychiatry. 2018:171.

[18] Haq Z, Iqbal Z, Rahman A. Job stress among community health workers: A multi-method study from Pakistan. International Journal of Mental Health Systems. 2008;2(1):15.

[19] Sharma P, Davey A, Davey S, Shukla A, Shrivastava K, Bansal R. Occupational stress among staff nurses: controlling the risk to health. Indian Journal of Occupational and Environmental Medicine. 2014;18(2):52–56.

[20] Al-Omar BA. Sources of work-stress among hospital-staff at the Saudi MOH. Journal of King Abdulaziz University: Economics and Administration. 2003;17(1):3–16.

[21] Aldarmasi MA, Alghamdi AH. Factors influencing stress perception among healthcare workers during the coronavirus pandemic: A multi-centric cross-sectional study. International Journal of Medical Research and Health Sciences. 2021;10(4):142–149.

[22] Kakemam E, Raeissi P, Raoofi S, Soltani A, Sokhanvar M, Visentin D, et al. Occupational stress and associated risk factors among nurses: A cross-sectional study. Contemporary Nurse. 2019;55(2–3):237–249.

[23] Karyati Z, Antara EYD, PUEBI: Suatu analisis komparatif. SAP (Susunan Artik Pendidikan). 2016;1(2).

[24] Sedgwick P. Cluster sampling. BMJ. 2014;348(jan31 2):g1215–g1215.

[25] Ben-Zur H, Zeidner M. Gender differences in coping reactions under community crisis and daily routine conditions. Personality and Individual Differences. 1996;20(3):331–340.

[26] Rosario M, Shinn M, Mørch H, Huckabee CB. Gender differences in coping and social supports: Testing socialization and role constraint theories. Journal of Community Psychology. 1988;16(1):55–69.

[27] Alyahya S, AboGazalah F. Work-related stressors among the healthcare professionals in the fever clinic centers for individuals with symptoms of COVID-19. Healthcare. 2021;9(5):548.

[28] Holt-Lunstad J, Birmingham W, Jones BQ. Is there something unique about marriage? The relative impact of marital status, relationship quality, and network social support on ambulatory blood pressure and mental health. Annals of Behavioral Medicine. 2008;35(2):239–244.

[29] Scheid TL, Wright ER, editors. A handbook for the study of mental health. Cambridge University Press; 2017. https://doi.org/10.1017/9781316471289.

[30] Shaukat N, Ali DM, Razzak J. Physical and mental health impacts of COVID-19 on healthcare workers: A scoping review. International Journal of Emergency Medicine. 2020;13(1):40.

[31] Preti E, Di Mattei V, Perego G, Ferrari F, Mazzetti M, Taranto P, et al. The psychological impact of epidemic and pandemic outbreaks on healthcare workers: Rapid review of the evidence. Current Psychiatry Reports. 2020;22(8):43.

[32] Costantino C, Cannizzaro E, Verso MG, Tramuto F, Maida CM, Lacca G, et al. SARS-CoV-2 infection in healthcare professionals and general population during "First Wave" of COVID-19 pandemic: A cross-sectional study conducted in Sicily, Italy. Frontiers in Public Health. 2021;9.

[33] Etesam F, Akhlaghi M, Vahabi Z, Akbarpour S, Sadeghian MH. Comparative study of occupational burnout and job stress of frontline and non-frontline healthcare workers in hospital wards during COVID-19 pandemic. Iranian Journal of Public Health. 2021;50(7):1428–1435.

[34] Tan BY, Chew NW, Lee GK, Jing M, Goh Y, Yeo LL, et al. Psychological impact of the COVID-19 pandemic on health care workers in Singapore. Annals of Internal Medicine. 2020;173(4):317–320.

[35] Chew NW, Ngiam JN, Tan BY, Tham SM, Tan CY, Jing M, et al. Asian-Pacific perspective on the psychological well-being of healthcare workers during the evolution of the COVID-19 pandemic. BJPsych Open. 2020;6(6):e116.

[36] Dembe AE, Delbos R, Erickson JB. Estimates of injury risks for healthcare personnel working night shifts and long hours. Quality & Safety In Health Care. 2009;18(5):336–340.

[37] Nguyen NP, Le DD, Colebunders R, Siewe Fodjo JN, Tran TD, Vo TV. Stress and associated factors among frontline healthcare workers in the COVID-19 epicenter of Da Nang City, Vietnam. International Journal of Environmental Research and Public Health. 2021;18(14):7378.

[38] Cabarkapa S, Nadjidai SE, Murgier J, Ng CH. The psychological impact of COVID-19 and other viral epidemics on frontline healthcare workers and ways to address it: A rapid systematic review. Brain, Behavior, & Immunity - Health. 2020;8:100144.

[39] Billings J, Chi Fung Ching B, Gkofa V, Greene T, Bloomfield M. Experiences of frontline healthcare workers and their views about support during COVID-19 and previous pandemics: A systematic review and.pdf. Experiences of frontline healthcare workers and their views about support during COVID-19 and previous pandemics. BMC Health Services Research. 2021;21:923.

[40] Cai X, Hu X, Ekumi IO, Wang J, An Y, Li Z, et al. Psychological distress and its correlates among COVID-19 survivors during early convalescence across age groups. American Journal of Geriatric Psychiatry. 2020;28(10):1030–1039.

[41] Xiao S, Luo D, Xiao Y. Survivors of COVID-19 are at high risk of posttraumatic stress disorder. Global Health Research and Policy. 2020;5(1):29.

[42] Gómez-Durán EL, Martin-Fumadó C, Forero CG. Psychological impact of quarantine on healthcare workers [Internet]. Occupational and Environmental Medicine. 2020;77(10):666–674.