**PERSONAL PROTECTIVE EQUIPMENT (PPE) AND NURSE ANXIETY**

**DURING THE COVID 19 PANDEMIC**

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**ABSTRAK**

**Background:** Anxiety felt by nurses is a vague fear accompanied by feelings of uncertainty, helplessness, isolation, and insecurity when performing nursing care during the Covid-19 pandemic. Nurses need personal protective equipment as a barrier against substance penetration, solid, liquid, or airborne particles to protect against injury or the spread of disease. **Methods:** This research is a quantitative study using a causal - comparative study research design that is non-experimental (ex post facto). The sampling method used is Non-probability sampling with a consecutive sampling approach with a sample of 90 respondents using the PPE completeness checklist sheet, observation and Hamilton Anxiety Rating Scale (HAM-A) questionnaire and the data is processed using a post hoc test. **Results:** The majority of nurses experienced mild anxiety as many as 27 people (30%). This study shows that there is no significant difference in mean (p value> 0.05), which means that there is no effect on PPE standards on nurses' anxiety. **Suggestion:** The government through policies in hospitals is expected to intervene and evaluate nurse anxiety and factors related to nurse anxiety such as providing consultation services need to be done effectively.

**Key words:** Anxiety, nurse, COVID-19

**Latar belakan**g: Kecemasan dirasakan perawat adalah rasa takut yang samar-samar yang disertai oleh perasaan ketidak pastian, ketidak berdayaan, isolasi, dan ketidak amanan saat melakukan asuhan keperawatan pada masa pandemi Covid-19. Perawat dalam melaksanakan asuhan keperawatan memerlukan Alat pelindung diri sebagai penghalang terhadap penetrasi zat, partikel padat, cair, atau udara untuk melindungi diri dari cedera atau penyebaran penyakit.**Tujuan**: Mengetahui pengaruh penggunaan standar Alat Pelindung Diri terhadap kecemasan perawat. **Metode:** Penelitian ini merupakan penelitian kuantitatif dengan menggunakan design penelitian studi kausal – komparatif yaitu non-eksperimental (ex post facto). Metode sampling yang digunakan yaitu *Non-probability sampling* dengan pendekatan *consecutive sampling* dengan jumlah sampel 90 responden yang menggunakan lembar cheklist kelengkapan APD, observasi dan kuesioner *Hamilton AnxietyRating Scale* (HAM-A) dan data diolah dengan menggunakan uji *post hoc test***. Hasil:** Perawat mayoritas mengalami kecemasan ringan sebanyak 27 orang (30%). Penelitian ini menunjukkan tidak ada perbedaan mean yang signifikan (p value> 0,05) yang berarti tidak terdapat pengaruh pada standar APD terhadap kecemasan perawat. **Saran:** Pemerintah melalui kebijakan di Rumah Sakit diharapkan melakukan intervensi dan evaluasi terhadap kecemasan perawat dan faktor yang berhubungan dengan kecemasan perawat seperti penyediaan layanan konsultasi perlu dilakukan secara efektif.

**Kata kunci**: Kecemasan, Alat Pelindung Diri, Perawat

**INTRODUCTION**

The World Health Organization (WHO) officially declared Covid-19 a pandemic on March 9, 2020 and reported the total positive cases of Covid-19 as of June 8, 2020 reached 6,931,000 cases with 400,857 people died in 151 countries globally. Of the total cases in Indonesia, 32,033 with a total of 1,883 deaths (WHO, 2020). Meanwhile, according to North Sumatra Covid-19 Response for the North Sumatra region there were 993 positive cases with a total death of 67 people, among these cases the Medan area had the highest number of cases in North Sumatra with 657 cases with a total death of 40 people as of June 18, 2020 (Satgascovid19Sumut, 2020).

The Covid-19 virus is transmitted through contact and droplets. People who are most at risk with Covid-19 patients are people who care for Covid patients and one of them is nurses. Therefore, additional precautions are needed by nurses to protect themselves and prevent the spread of Covid-19. One of the precautions is to use PPE (WHO, 2020).

 PPE is a tool used to protect against transmission of the Covid-19 virus. PPE that complies with standards in the form of surgical masks, N95 respirators, eye protection, face protection, examination and surgical gloves, disposable gowns, medical coveralls, heavy duty aprons, waterproof boots, shoe covers (Directorate General of Pharmaceuticals and Medical Devices Ministry of Health of the Republic of Indonesia. 2020).

Research conducted in China on February 7-14, 2020 stated that anxiety occurred in health workers caring for Covid-19 patients as much as 23.04% (53 people out of 230 respondents) including severe anxiety 2.17 (5 people), moderate anxiety 4.78% (11 people) and mild anxiety 16.09%. (37 people). One of the causes of anxiety is inadequate personal protective equipment (PPE) (Huang et al., 2020). In line with other research which states that there are eight sources of anxiety, one of which is the availability of adequate and standardized access to PPE (Shanafelt, Ripp, Trockel, 2020).

During the pandemic, medical personnel were suspected of being exposed to Covid-19 because when handling patients with Covid-19 cases without adequate PPE. So that adequate PPE is very important to prevent transmission and protect nurses from the risk of infection (Mahrani et al., 2020). In fact, the Indonesian National Nurses Association and the Association of health professionals made a statement stating that they refused to treat patients without PPE.

Until September 13, 2020, 21 nurses died, as many as 80 nurses were positive for Covid-19 in the task of serving Covid-19 patients (PPNI, 2020). From the results of researcher interviews with nurses who cared for patients during the pandemic, nurses said that PPE was not available according to standards, even some PPE was purchased at personal expense. So that nurses feel afraid, anxious to the point of crying to care for patients.

On the basis of this background, the formulation of the main problem to be discussed is whether the standard of Personal Protective Equipment affects the anxiety of nurses who provide nursing care to patients during the Covid-19 pandemic? The special purpose of this study is to determine the anxiety faced by nurses so as to contribute anxiety data that will be useful for Medan Hospital in particular. Therefore, the urgency of the research is deemed necessary due to the management of nurses' anxiety in the hospital which will have an impact on nursing care provided later.

**RESEARCH METHOD**

This research is a quantitative study using a causal - comparative study research design that is non-experimental (ex post facto). Comparative causal research is sometimes treated as a type of descriptive research because it describes existing conditions. This research completes evidence of causal relationships more than correlational research and comparative causal research is classified into non-experimental research (Sandjaja & Heriyanto, 2011). Ex Post Facto research is research conducted after an event has occurred. A systematic empirical investigation in which the researcher does not control the independent variable directly because the existence of the variable has occurred, or because basically the variable cannot be manipulated according to Kerlinger (Radhakrishnan, 2013).

The author chose the Purposive Sampling technique which sets certain considerations that must be met by the samples used in the study. The sample size in this study was taken using the sample size formula used is using the rule of thumbs, namely the sample size is 10 times the number of independent variables selected (Burmeister & Aitken 2012). In this research there are 9 variables, so the sample size needed in this research is as large as: N = 10 x variables = 10 x 9 = 90 respondents.

Sampling in this study used consecutive sampling technique, which is a sample selection method carried out by selecting all individuals encountered and meeting the selection criteria until the desired number is met (Dharma, 2011). In this study, researchers selected nurses who met the inclusion criteria. Respondents who met the inclusion criteria were used as research samples. The inclusion criteria for this study are nurses who work in the Covid 19 treatment room and are willing to become respondents.

This research was conducted at the Medan City Regional General Hospital. Researchers submitted licenses and ethics to the Research and Development department, then received permission from the Head of Nursing. This research was conducted in six Covid 19 treatment rooms.

Measuring tools through questionnaires that are distributed using google form and supported by respondent interview data. The independent variables in this study are age, gender, education, marital status, length of work, PPE training, and psychological services. To find out the PPE standards, researchers used a questionnaire in the form of a google form about the completeness of PPE standards used by nurses. The dependent variable in this study was nurse anxiety.

Data were collected using the Hamilton Anxiety Rating Scale (HAM-A) questionnaire developed by Hamilton The assessment of anxiety states by rating Br J Med Psychol. This questionnaire is used to measure anxiety in adults in health or research centers. This instrument has been tested for item construct validity based on Pearson correlation ranging from 0.529 to 0.727, Cronbach's alpha reliability was obtained at 0.756 (Ramdan, 2019). In addition, this measurement tool has been used in work practice to assess a person's occupational health in terms of anxiety because anxiety can be shown through a person's response to certain situations (Thompson. 2015).

The questionnaire in the form of a google form was given to the head of the room then the head of the room distributed to all members. The questionnaire contains a list of questions about nurse identity and anxiety which contains 14 question items.

Univariate analysis aims to describe the characteristics of each variable, namely age, gender, education, marital status, length of work, PPE training, psychological services, PPE access and third vaccination. Bivariate analysis will be carried out using a post hoc test to answer the hypothesis. Post hoc tests are used to determine the results of comparisons between each anxiety.

RESULTS AND DISCUSSION

Table 1. Distribution of Respondents Based on Age, Gender, Education, Marital Status, Length of Employment, PPE Training, Psychological Services

|  |  |
| --- | --- |
| Respondent Characteristics | Total |
| N | %  |
| Age (years) |
| 26-35  | 26 | 28,9 |
| 36-45  | 62 | 68,9 |
| 46-55 | 2 | 2,2 |
| Gender |
| Man | 7 | 7,8 |
| Woman | 83 | 92,2 |
| Education |
| D III | 61 | 67,8 |
| S1/ D4 | 8 | 8,9 |
| Ners | 21 | 23,3 |
| Status  |  |  |
| Married | 79 | 87,8 |
| Singel | 7 | 7,8 |
| Widow/Widower | 4 | 4,4 |
| Length of Work (years) |  |  |
| < 2  | 8 | 8,9 |
| > 2  | 82 | 91,1 |
| PPE Training |
| Yes | 65 | 72,2 |
| No | 25 | 27,8 |
| Psychology Services |
| Yes | 43 | 47,8 |
| No | 47 | 52,2 |
| PPE Access |
| Easy | 83 | 92,2 |
| Difficult | 7 | 78 |
| Boster Vaccination  |
| Yes | 43 | 47,8 |
| No | 47 | 52,2 |
| Anxiety |
| None | 19 | 21,1 |
| Mild | 27 | 30 |
| Medium | 16 | 17,8 |
| Severe | 16 | 17,8 |
| Very Severe | 12 | 13,3 |

Table 2. *Post Hoc Test*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| (I) Kecemasan | (J) Kecemasan | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |
| Lower Bound | Upper Bound |
| None (<14) | Mild | .068 | .076 | 1.000 | -.15 | .29 |
| Medium | .043 | .086 | 1.000 | -.20 | .29 |
| Severe | -.020 | .086 | 1.000 | -.27 | .23 |
| Very Severe | .105 | .093 | 1.000 | -.16 | .37 |
| Mild (14-20)  | None  | -.068 | .076 | 1.000 | -.29 | .15 |
| Medium | -.025 | .080 | 1.000 | -.26 | .20 |
| Severe | -.088 | .080 | 1.000 | -.32 | .14 |
| Very Severe | .037 | .088 | 1.000 | -.22 | .29 |
|  Medium (21-27) | None  | -.043 | .086 | 1.000 | -.29 | .20 |
|  MIld | .025 | .080 | 1.000 | -.20 | .26 |
| Severe | -.062 | .089 | 1.000 | -.32 | .20 |
| Very Severe | .062 | .097 | 1.000 | -.22 | .34 |
| severe (28-41) | None | .020 | .086 | 1.000 | -.23 | .27 |
|  Mild | .088 | .080 | 1.000 | -.14 | .32 |
|  Medium | .062 | .089 | 1.000 | -.20 | .32 |
| Very Severe | .125 | .097 | 1.000 | -.15 | .40 |
| Very Severe (>42) | Tidak ada  | -.105 | .093 | 1.000 | -.37 | .16 |
| Mild | -.037 | .088 | 1.000 | -.29 | .22 |
| Medium | -.062 | .097 | 1.000 | -.34 | .22 |
| Severe | -.125 | .097 | 1.000 | -.40 | .15 |

Table-2 shows that there is no significant mean difference with p value > 0.05. This means that there is no influence on PPE standards on nurse anxiety.

Nurses as respondents were mostly aged 36-45 years, which is late adulthood and as many as 19 people (21%) experienced mild anxiety. In line with research conducted in three hospitals and nine health services in April 2020, it also stated that the majority of respondents were adults who were the group with the most anxiety (Fadli et al., 2020).

Women are the majority who experience anxiety as many as 24 people (27%) experience mild anxiety. The prevalence of anxiety was 26.6% with women higher than men, namely 29.7% in women and 23.1% in men in Uganda, Africa (Abbo, et al., 2013). Women tend to use their emotions to solve a problem. This coping mechanism is thought to be the reason why the prevalence of women is higher than men (Waty, 2018). Generally, women experience anxiety more quickly than men. Women also have different biological responses when faced with stressors (Nasus et al., 2021).

The majority of nurses who were respondents had a DIII Nursing education and each nurse as many as 13 people experienced mild and moderate anxiety. Education has a relationship with the level of anxiety of nurses in handling emergency patients (Awaluddin, 2020).

The majority of nurses were married as many as 79 people (87.8%) and experienced mild anxiety as many as 26 people. Meanwhile, Haryanto and Septimar (2020) stated that the majority of nurses who are married / married do not experience anxiety. This may be due to differences in family and neighborhood support, or worry about transmitting the disease to the family. However, further research needs to be done on this issue.

The majority of nurses worked for more than 2 years as many as 82 people (91.1%), and as many as 26 people (28.9%) experienced mild anxiety. This is because the routine that is carried out makes nurses easily experience work stress as expressed by nurses during a brief interview.

Nurses have attended training on PPE as many as 65 people (72.2%), but still experience mild anxiety as many as 19 people (21.1%). Nurses stated that the training was obtained through zoominar online. This anxiety may occur because nurses do not feel enough without face-to-face training or other things that need to be studied further.

Nurses stated that there were no psychological services. When asked about hospital support if there is anxiety, nurses stated that support is obtained from colleagues. Meanwhile, research states that the better hospital support, the level of anxiety in nurses will decrease (Haryanto & Septimar, 2020).

The majority of nurses stated easy access to PPE (92.2%) but 47 people (52.2%) had not received their third vaccination. Meanwhile, at the beginning of the pandemic, nurses and the public had difficulty getting masks. Then the third vaccination cannot be carried out because most nurses tested positive for Covid19 so that the third dose could not be given. This dose is expected to specifically provide additional protection to health workers who are faced with a high risk of COVID-19 transmission on a daily basis.

Effect of Personal Protective Equipment on Nurse Anxiety

Statistically, there is no significant mean difference with p value > 0.05. This means that there is no influence on PPE standards on nurse anxiety. Meanwhile, other studies state that there are eight sources of anxiety, one of which is the availability of adequate and standardized access to PPE (Shanafelt, Ripp, Trockel, 2020). This happened because the majority of nurses as many as 83 people (92.2%) stated that it was easy to access PPE and had received PPE according to standards. Nurses verbally stated that at the beginning of the pandemic they did experience difficulties, but now there are no problems in fulfilling PPE standards. Nurses have also been exposed to information about Covid, causes, signs and symptoms and how to prevent it so that knowledge and alertness when providing nursing care to Covid patients19. Along with the increase in time, nurses have attended training on Covid19 and PPE so that positive changes occur such as wearing masks, washing hands, maintaining distance, protecting families and people around by teaching the right things according to their own health. Anxiety about the risk of disease transmission to the family is reduced. Mild anxiety that occurs in nurses can be due to the tensions of daily life.

Nurses are the frontline in contact with Covid19 patients. Nurses suspected of contact with COVID-19 patients were 93.4% in Iran, and experienced anxiety with a mean score of 8.64 ± 5.60 ranging from 38.8%. The nurses were 95% female. This nurse anxiety is associated with inadequate personal protective equipment (PPE) (Pouralizadeh et al., 2020). In another study conducted, it was stated that higher levels of anxiety occurred in health care workers compared to others during the COVID-19 outbreak. Even the anxiety level of nurses is so alarming, that there needs to be the availability of counseling services to improve the mental health of frontline nurses (Huang & Zhao, 2020). Therefore, minimizing the anxiety and worry of nurses is very important by providing PPE and convenience in fulfilling PPE, in addition to preventing self-contamination to provide continuity of medical services (Saricam, 2020).The hospital has supported the provision of PPE, it just needs to add support in intervening nurse anxiety such as the existence of a psychological service center for nurse psychological counseling.

CONCLUSIONS & SUGGESTIONS

Nurses are the health workers who meet patients the longest. PPE has no effect on the anxiety of nurses caring for patients during the pandemic. Nurse anxiety and causative factors need to be studied further. This study has weaknesses, namely the observation of anxiety and the use of PPE standards has not been carried out optimally, such as not being seen directly by researchers. Suggestion: This study can be used as hospital information to intervene in nurse anxiety and provide psychological services, so that nurses have a place for counseling. The provision of PPE and easy access is maintained not only during a pandemic, but at all times if needed.

For other studies that will conduct nurse anxiety research, it is recommended to conduct observations to see the nurse's anxiety response directly.

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**DAFTAR PUSTAKA**

Abbo, C., Kinyanda, E., Kizza, R. B., Levin, J., Ndyanabangi, S., & Stein, D. J. (2013). Prevalence, comorbidity and predictors of anxiety disorders in children and adolescents in rural north-eastern Uganda. *Child and adolescent psychiatry and mental health*, *7*(1), 1-11.

Awaluddin., A. (2020). Hubungan pendidikan dan lama kerja dengan tingkat kecemasan perawat dalam penanganan pasien gawat darurat di rsud sawerigading kota palopo tahun 2019. Jurnal Kesehatan Luwu Raya, 6(2), 5-12. Diambil dari <http://jurnalstikesluwuraya.ac.id/index.php/eq/article/view/5>

Burmeister, E., & Aitken, L. M. (2012). Sample size: How many is enough?. Australian Critical Care, 25(4), 271-274.

Dharma. (2011). *Metodologi Penelitian Keperawatan*. Jakarta. Trans Info Media

Direktorat Jenderal Kefarmasian dan Alat Kesehatan Kementrian Kesehatan Republik Indonesia. (2020). Standar Alat Pelindung (APD) dalam Manajemen Penangan Covid-19. [https://farmalkes.kemkes.go.id/en/2020/04/standar-alat-pelindung-diri-apd-dalam- manajemen-penanganan-covid-19/. 21 Juli 2020](https://farmalkes.kemkes.go.id/en/2020/04/standar-alat-pelindung-diri-apd-dalam-%20manajemen-penanganan-covid-19/.%2021%20Juli%202020)

Fadli, F., Safruddin, S,. Ahmad, A.S., Sumbara, S,. & Baharuddin, R (2020). Faktor yang Mempengaruhi Kece- masan pada Tenaga Kesehatan Dalam Upaya Pencegahan Covid-19. Jurnal Pendidikan Keperawatan Indonesia 6(1), p. 57–65

Haryanto, R., & Septimar, Z. M. (2020). Faktor-Faktor yang Mempengaruhi Tingkat Kecemasan Perawat Covid-19 Selama Pandemi di Indonesia. The Indonesian Journal of Infectious Diseases, 6(1), 9-21.

Huang, J. Z., Han, M. F., Luo, T. D., Ren, A. K., & Zhou, X. P. (2020). Mental health survey of 230 medical staff in a tertiary infectious disease hospital for COVID-19. Zhonghua lao dong wei sheng zhi ye bing za zhi= Zhonghua laodong weisheng zhiyebing zazhi= Chinese journal of industrial hygiene and occupational diseases

Huang, Y., & Zhao, N. (2020). Generalized anxiety disorder , depressive symptoms and sleep quality during COVID-19 outbreak in China : a web-based cross-sectional survey. *Psychiatry Research*, *288*(April), 112954. <https://doi.org/10.1016/j.psychres.2020.112954>

Mahrani, Hana Khairina Putri Faisal, Paramita Khairan, Iﬀa Mutmainah, Fitriana Nur Rahmawati, Sarah Shafa Marwadhani, Gadistya Novitri Adinda, Sari, U., & Pukovisa Prawirohardjo. (2020). A A COVID-19 Mild Case on Healthworker: Evaluation on Clinical Findings and Transmission Risk. Journal Of The Indonesian Medical Association, 70(4), 78- 86. <https://doi.org/10.1234/jinma.v70i4.223>

Nasus, E., Tulak, G. T., & Bangu. (2021). *Tingkat Kecemasan Petugas Kesehatan Menjalani Rapid Test Mendeteksi Dini Covid 19*. *6*(1), 94–102.

Persatuan Perawat Nasional Indonesia. (2020). Pemantauan kasus Covid. https://www.covid19ppni.id/download/kasus-covid/.3 September 2020

Radhakrishnan, G. (2013). Non-experimental research designs: Amenable to nursing contexts. *Asian Journal of Nursing Education and Research*, *3*(1), 25-28.

Pouralizadeh, M., Bostani, Z., Maroufizadeh, S., & Ghanbari, A. (2020). International Journal of Africa Nursing Sciences Anxiety and depression and the related factors in nurses of Guilan University of Medical Sciences hospitals during COVID-19 : A web-based cross-sectional study. *International Journal of Africa Nursing Sciences*, *13*(May), 100233. <https://doi.org/10.1016/j.ijans.2020.100233>

Ramdan, I. M. (2019). Reliability and Validity Test of the Indonesian Version of the Hamilton Anxiety Rating Scale (HAM-A) to Measure Work-related Stress in Nursing. Jurnal Ners

Sandjaja & Heriyanto. A. (2011). *Panduan penelitian.* Jakarta: Prestasi Pustaka.

Saricam M. (2020). COVID‑19‑Related Anxiety in Nurses Working on Front Lines in Turkey. *Nmsjournal*, 178. <https://doi.org/10.4103/nms.nms>

SATGAS COVID 19 SUMUT. (2020). Sumut Tanggap Covid-19. https://www.covid19.sumutprov.go.id. 20 Juli 2020

Shanafelt T, Ripp J, Trockel M. (2020). Understanding and Addressing Sources of Anxiety Among Health Care Professionals During the COVID-19 Pandemic. JAMA. 2020;323(21):2133–2134. doi:10.1001/jama.2020.5893

Thompson, E. (2015). Questionnare Review Hamilton Anxiety Rating Scale. (\_): Oxford University Press on Behalf of the Society of Occupational Medicine

Waty, Sarni. (2018). “Analisis Faktor Yang Berhubungan Dengan Strategi Koping Pada Pasien Skizofrenia Di Kota Sungai Penuh Tahun 2017.” Indonesian Journal for Health Sciences2(1):26

WHO. (2020). Coronavirus Situation Reports.https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200608-covid-19-sitrep- 140.pdf?sfvrsn=2f310900\_2. 16 Juli 2020

World Health Organization. (2020). Rational use of personal protective equipment for coronavirus disease (COVID-19). Geneva: World Health Organization; 2020