

The Relationship Between Stress Level and Sleep Quality of Nurses in Jakarta During the COVID-19 Pandemic

Yosephin Sri Sutanti¹, Yusuf Handoko¹, Alya Silva Nabilah², and Evan³

¹Department of Occupational Medicine, Faculty of Medicine, Universitas Kristen Krida Wacana, Indonesia

²Student of Faculty of Medicine, Universitas Kristen Krida Wacana, Indonesia

³Department of Orthopedics, Faculty of Medicine, Universitas Kristen Krida Wacana, Indonesia

Abstract

Coronavirus disease (Covid-19) is an infectious disease known as severe acute respiratory syndrome. The first case of Covid-19 was identified in Wuhan, China on December 31, 2019. Health workers around the world are at the forefront of handling the COVID-19 pandemic. One of the health workers who is very important in handling COVID-19 cases is a nurse. The considerable increase of Covid-19 cases makes nurses have a heavier workload, struggle, and reduced rest periods. Heavy workloads and reduced rest periods can generally increase fatigue and affect sleep quality and stress levels which negatively impact work balance. This study's objective was to determine whether there was a relationship between the stress level and the quality of sleep of nurses in Jakarta during the Covid-19 pandemic. This study used 75 samples of nurses who were actively working during the Covid-19 pandemic in Jakarta, female, and aged 20-40 years. The sampling technique was snowball sampling. Data collection was through a questionnaire distributed via a Google form. The questionnaire included questions about the characteristics of the respondents, the Perceived Stress Scale (PSS-10), and the Pittsburgh Sleep Quality Index (PSQI). The study showed that there was a relationship between stress levels and the sleep quality of nurses in Jakarta during the Covid-19 pandemic.

Keywords: pandemic, covid-19, stress, sleep, nurse

Author Note

Yosephin Sri Sutanti

Yusuf Handoko

Alya Silva Nabilah

Evan

We have no known conflicts of interest to disclose.

Correspondence concerning this article should be addressed to: Yosephin Sri Sutanti, Department of Occupational Medicine, Faculty of Medicine, Universitas Kristen Krida Wacana, Indonesia. Email: yosephin.sri@ukrida.ac.id

The Relationship Between Stress Level and Sleep Quality of Nurses in Jakarta During the COVID-19 Pandemic

Coronavirus disease (Covid-19) is an infectious disease known as acute respiratory syndrome. The first case of Covid-19 was identified in Wuhan, China on December 31, 2019. Covid-19 has been claimed by the World Health Organization (WHO) as a Public Health Emergency of International Concern (PHEIC). The number of Covid-19 cases is increasing and progressing fast enough that this pandemic continues to expand to other countries outside the Wuhan area (International Labour Organization, 2020). Health workers in the world are at the forefront of handling the COVID-19 pandemic. One of the health workers who is very important in handling the COVID-19 case is a nurse. Nurses are some of the health workers who have the longest contact with patients as they take care of patients 24 hours a day. Therefore they have a high risk of getting infected by Covid-19 (Jusnimar, 2012; Zulmia & Mu'in, 2017).

The considerable increase in Covid-19 cases causes nurses to have a heavier workload, greater struggle, and reduced rest time. Heavy workloads and reduced rest periods can generally increase fatigue and stress levels which has a negative impact on work balance. High stress that exceeds a person's endurance can cause negative effects such as headaches, irritability, and difficulty sleeping (Persatuan Perawat Nasional Indonesia, 2020).

This psychological disorder has a broader and longer-lasting impact than physical injury, while there is much less attention to mental health (Handayani et al., 2020). Possible stress-related reactions in response to the Covid-19 pandemic could include changes in concentration, irritability, anxiety, insomnia, reduced productivity, and interpersonal conflict. This is especially true of those directly affected, such as health professionals. Stress is pressure or something that feels pressuring in someone who feels that the tension has exceeded the limit and is even difficult to deal with. This pressure can arise from within or

from outside caused by an imbalance or failure of individuals to meet their needs or wishes. When stress is controlled well, it can be a good thing. On the contrary, stress can cause health problems if it is not controlled properly. Every human being has a defense system that varies when dealing with different kinds of pressure (Sartika, 2015; Sukadiyanto, 2010; Vanchapo, 2020).

The Indonesian National Nurses Association (PPNI) in 2006 stated that survey results showed that as many as 50.9% of nurses in Indonesia experienced work stress. Nurses often feel tired, dizzy, unfriendly, and unrested due to work as well as inadequate income (Jusnimar, 2012). Stress and sleep have a fairly close relationship, where poor sleep quality can be associated with mental health, one aspect of which is stress (Persatuan Perawat Nasional Indonesia, 2020). Based on research conducted by Susanti, Kusuma, and Rosdiana (2017) at Puskesmas DAU Malang, less than half of the nurses (14) experienced moderate stress levels, whereas more than half of the nurses (19) had poor sleep quality. The study also found there was a relationship between work stress levels and the quality of sleep in nurses. Hospital nurses need to carry out effective stress management such as time management, creative problem solving, and good relaxation techniques. In addition, research from the National Institute for Occupational Safety and Health (NIOSH) conducted by Schultz and Schultz determined that nursing is a profession with a very high risk of stress (Persatuan Perawat Nasional Indonesia, 2020; Schultz & Schultz, 1994; Susanti et al., 2017). Based on the explanation above, the purpose of this study was to learn the relationship between the stress level and the quality of sleep of nurses in Jakarta during the Covid-19 pandemic.

Methodology

The study design was descriptive correlational using a cross-sectional approach. The study took place from January to February 2021. The first tool used in this study was the PSS-10 questionnaire to determine stress levels. The second questionnaire was the PSQI

questionnaire to measure sleep quality. The questionnaires were administered online to nurses in Jakarta using Google Forms.

The population in this study was all nurses in Jakarta who met the inclusion requirements. They were females aged 20-40 who were still actively working during the Covid-19 pandemic in Jakarta and willing to fill out a complete questionnaire. The sample in the study was a part or representation of the population studied by the non-probability sampling method. The Spearman Rank test was carried out on the sample to determine whether there was a correlation or relationship between stress levels and the sleep quality of nurses in Jakarta during the Covid-19 pandemic.

Results and Discussion

Distribution of Stress Levels with Respondent Characteristics

Table 1

Stress Level Frequency Distribution Based on the Characteristics of the Respondents

Respondent Characteristics	Stress Level (n=75)					
	Mild Stress		Moderate Stress		Severe Stress	
	n	%	n	%	n	%
Age						
20-30 Years Old	21	28	42	56	2	2.7
30-40 Years Old	0	0	10	13.3	0	0
Sickness History						
Doesn't Have	21	28	46	61.3	2	2.7
Does Have	0	0	6	8	0	0
Job Part						
Polyclinic	4	5.3	18	24	0	0
Inpatient	1	1.3	4	5.3	1	1.3
IGD	3	4	5	6.7	0	0
NICU	2	2.7	2	2.7	0	0
HCU	1	1.3	1	1.3	0	0
Contact Tracer Covid-19	3	4	6	8	0	0
Covid-19 Inpatient	5	6.7	5	6.7	1	1.3
Isolation Room Covid-19	1	1.3	3	4	0	0
ICU	1	1.3	5	6.7	0	0
ICU Covid-19	0	0	1	1.3	0	0
Central Surgical Installation	0	0	1	1.3	0	0
Birthing Room	0	0	1	1.3	0	0
Working Period						
<5 Years	19	25.3	36	48	2	2.7

Respondent Characteristics	Stress Level (n=75)					
	Mild Stress		Moderate Stress		Severe Stress	
	n	%	n	%	n	%
5-10 Years	2	2.7	9	12	0	0
>10 Years	0	0	7	9.3	0	0
Work Shift						
Shift 1	10	13.3	22	29.3	0	0
Shift 2	2	2.7	7	9.3	0	0
Shift 3	9	12	23	30.7	2	2.7

From the research results, most of the respondents, or 52 people (69.3%), were classified as having moderate stress, 21 people (28%) with mild stress, and two people (2.7%) with severe stress. However, in the 20-30 year age group, 42 respondents (56%) experienced moderate stress. This shows that nurses who were actively working during the Covid-19 pandemic were more likely to experience moderate stress. Nurses are at great risk in dealing with Covid-19 patients. This risk includes being infected with Covid-19, working under pressure and high stress, as well as having a long working period, and excessive workload. Sometimes, they don't even have proper training or adequate personal protective equipment. They had never faced a situation like this before, so it was necessary to have much greater mental strength and energy (Rosyanti & Hadi, 2020). A total of 46 respondents (61.3%) experienced moderate stress without any medical history. Meanwhile, six respondents (8%) experienced moderate stress accompanied by a history of illness, including five people who had a history of menstrual pain disorders and one person with a history of scoliosis. Additionally, 18 nurses (24%) who worked in the polyclinic experienced the highest level of stress during the Covid-19 pandemic. This was in line with Soep's (2012) research which showed that the work environment had a significant effect on nurses' stress.

Based on the length of work, the majority of respondents, 36 people (48%), who experienced moderate stress, were those who worked less than five years. This study is in line with Manabung et al. (2018) who found that only four respondents (6.4%) had a longer working period (longer than 15 years). This was because nurses with a longer working period

understood their work duties better and had more experience so they tended to be more resilient in dealing with the pressures in their work (Manabung et al., 2018).

According to the number of shifts, most of the respondents experienced moderate stress. These respondents were as many as 23 people (30.7%) who worked in Shift 3. Respondents working in Shift 3 had a rotational shift. For instance, nurses who work one day and get a morning shift will get an evening shift on the following day, and the day after a night shift. The frequent changes in working hours also changed their sleep patterns. This research was in line with the research conducted by Rhamdani and Wartono (2019) before the Covid-19 pandemic showing that 82% of nurses who worked in shifts experience more work stress due to irregular lifestyles compared to those who do not work in shifts.

Distribution of Sleep Quality with Respondent Characteristics

This study found that 74.7% of nurses in Jakarta who actively worked during the Covid-19 pandemic experienced poorer sleep quality compared to the 25.3% of nurses who had good sleep quality. This finding is in line with research conducted by Dimkatni et al. (2020) before the Covid-19 pandemic at the emergency department, ICU, and inpatient departments of Bitung Hospital and Budi Mulia Bitung Hospital. Their study showed that 69.7% of nurses had poor sleep quality.

However, the results of this study were different from those of research conducted by Huang et al. (2022) during the Covid-19 pandemic at Fangcang Hospital in Wuhan, China. Their study results showed that in general, the sleep quality of the nurses was good during the Covid-19 pandemic. These different results might be due to many factors affecting sleep quality. Among the most important factors affecting sleep quality were the number of patients, family support, patient trust, and perception of stress.

Table 2

Frequency Distribution of Sleep Quality Based on Respondent Characteristics

Respondent Characteristics	Sleep Quality (n=75)			
	Good		Bad	
	n	%	n	%
Age				
20-30 Years Old	17	22.7	48	64
30-40 Years Old	2	2.7	8	10.7
Sickness History				
Doesn't Have	19	25.3	50	66.7
Does Have	0	0	6	8
Job Part				
Polyclinic	6	8	16	21.3
Inpatient	1	1.3	5	6.7
IGD	2	2.7	6	8
NICU	2	2.7	2	2.7
HCU	1	1.3	1	1.3
Contact Tracer Covid-19	4	5.3	5	6.7
Covid-19 Inpatient	2	2.7	9	12
Isolation Room Covid-19	0	0	4	5.3
ICU	1	1.3	5	6.7
ICU Covid-19	0	0	1	1.3
Central Surgical Installation	0	0	1	1.3
Birthing Room	0	0	1	1.3
Working Period				
<5 Years	15	20	42	56
5-10 Years	2	2.7	9	12
>10 Years	2	2.7	5	6.7
Work Shift				
Shift 1	9	12	23	30.7
Shift 2	1	1.3	8	10.7
Shift 3	9	12	25	33.3

The high prevalence of poor sleep quality in nurses will not only impact the health of the nurses themselves but can also work performance and patient safety (Agririsky & Adiputra, 2018). According to research conducted by Triwijayanti et al. (2020), sleep problems greatly affected the performance of a nurse; therefore nurses must realize that good time management is needed so that they can adjust to the existing work schedule. This study found the quality of sleep of most respondents in the 20-30 years old group (48 nurses or 64% of the respondents) was poor. Based on the age characteristics in this study, they were of productive age or young adults with an average sleep need of between six and eight and a half hours per day. Lifestyle can interfere with sleep quality and sleep patterns of young adults, due to stress, family relationships, and social activities (Thayeb et al., 2015).

The research results showed that 50 respondents (66.7%) experienced poor sleep quality without any disease history, while six respondents (8%) experienced poor sleep quality accompanied by a disease history. Lack of sleep can have a negative effect on physical or mental health. Based on the theory, lack of sleep can interfere with several body organ systems, such as the metabolic, endocrine, and immunity systems (Deaneva et al., 2015). Based on the length of work, the respondents who had the poorest sleep quality were those who had worked less than five years (42 nurses or 56% of the respondents), whereas 15 nurses (20% of the respondents) experienced good sleep quality. Nurses with a longer working period seemed to be able to adapt well to the existing work situation so that the percentage of poor sleep quality was lower in the longer working period group (Agririsky & Adiputra, 2018). Based on the number of work shifts, most of the respondents (25 nurses or 33.3% of the respondents) who experienced poor sleep quality were those who worked in Shift 3. According to Grandjean (1988), whose research pre-dated the Covid-19 pandemic, 50-60% of shift workers experienced sleep disturbances, decreased physical health, and erratic psychological conditions as a result of various working hours or work shifts.

Relationship Between Stress and Sleep Quality

A bivariate analysis was carried out to answer the research problem of whether there was a relationship between stress and the sleep quality of nurses in Jakarta during the Covid-19 pandemic. In this study, the two dependent and independent variables studied were ordinal-ordinal data, so the bivariate analysis was carried out using the Spearman rank test with $\alpha = 0.05$.

Table 3

Cross-tabulation of Stress Level and Sleep Quality of Respondents in Jakarta During the Covid-19 Pandemic

Stress Level	Sleep Quality		Total	p-value .004	r-value .325
	Good	Bad			
Mild	10 (13.3%)	11 (14.7%)	21 (28%)		
Moderate	9 (12%)	43 (57.3%)	52 (69.3%)		
Severe	0 (0%)	2 (2.7%)	2 (2.7%)		
Total	19 (25.3%)	56 (74.7%)	75 (100%)		

Note: Primary Data 2021

Based on Table 3, which was obtained from cross-tabulation between stress level and sleep quality in this study, among 52 respondents who experienced moderate stress, 43 people (57.3%) tended to have poor sleep quality. Meanwhile, among the 21 respondents who experienced mild stress, there was only a slight difference in the number of people having poor and good sleep quality. It was found that 11 people or 14.7% of the respondents experienced poor sleep quality while 10 people or 13.3% of them had good sleep quality. This finding indicates a link between stress and the sleep quality of nurses during the Covid-19 pandemic. To test the hypothesis in this study, the correlation test was conducted with the Spearman rank test.

The results of the bivariate analysis using the Spearman rank test showed the p -value was 0.004. Since the p -value was <0.05 , H_0 is rejected and H_1 is accepted. This analysis results suggested that there was a significant relationship between stress levels and the sleep quality of nurses in Jakarta during the Covid-19 pandemic. The r -value of 0.325 indicated a strong unidirectional relationship suggesting that the higher the stress level, the worse the sleep quality. The results of this study were in line with research at the Dau Malang Public Health Center conducted by Susanti et al. (2017) before the Covid-19 pandemic. The research found a p -value of 0.000 (<0.050) indicating a relationship between the level of work stress and the quality of sleep in nurses.

Likewise, da Rocha and De Martino (2010), who conducted a study before the Covid-19 pandemic, found that there was a relationship between stress levels and the sleep quality of nurses where the p -value was 0.0026 (<0.050). It showed that stress could be a direct proportional factor positive for sleep quality, in that the higher the stress level of the nurse, the worse the quality of sleep was. Research conducted by Deng et al. (2020) before the Covid-19 pandemic evaluating the correlation between work stress and sleep quality in community nurses also showed that the higher the level of work stress, the worse the quality of sleep would be. High stress that exceeds a person's endurance can cause symptoms such as headaches, irritability, and difficulty sleeping. One of the respondents in the study stated that their sleep patterns were very disturbed during the Covid-19 pandemic, but they still performed their work to the best of their ability. Although something was difficult to live with, if they got used to it, it would become a normal thing to do. But the results of the study showed that stress levels tended to be very high accompanied by poor sleep quality, even though some were able to deal with this condition well. Everyone has a different level of stress due to the stress coping ability factor and the different emotional regulations for each person (Xiang et al., 2020).

Conclusion

This study intended to find the relationship between stress levels and the quality of sleep of nurses in Jakarta during the Covid-19 pandemic. Based on the data analysis, it can be concluded that moderate stress was the highest level of stress experienced by nurses in Jakarta during the Covid-19 pandemic. During the Covid-19 pandemic, nurses in Jakarta most frequently had poor sleep quality. The results of the bivariate analysis showed that there was a significant relationship between stress levels and the sleep quality of nurses in Jakarta during the Covid-19 pandemic.

References

- Agririsky, I. A. C., & Adiputra, I.N. (2018) Gambaran kualitas tidur perawat dengan shift kerja di ruang rawat inap anak RSUP Sanglah Denpasar tahun 2016 [An overview of the sleep quality of nurses with work shifts in the children's inpatient room at Central General Hospital Sanglah Denpasar in 2016]. *E-Jurnal Medika Udayana*, 7(11), 2–6. <https://ojs.unud.ac.id/index.php/eum/article/view/43683>
- da Rocha M. C. P., & De Martino, M. M. F. (2010). Stress and sleep quality of nurses working different hospital shifts. *Rev Esc Enferm USP*, 44(2), 280–286. <https://doi.org/10.1590/s0080-62342010000200006>
- Deaneva, A.M., Hidayati, R.S., & Sumardiyono (2015) Hubungan kualitas tidur terhadap siklus menstruasi pada dokter muda di RSUD Dr. Moewardi Surakarta [The relationship between sleep quality and menstrual cycle in young doctors at Regional General Hospital Dr. Moewardi Surakarta]. *Nexus Kedokteran Komunitas*, 4(2), 59–69. <https://jurnal.fk.uns.ac.id/index.php/Nexus-Kedokteran-Komunitas/article/download/623/505>
- Deng, X., Liu, X., & Fang, R. (2020). Evaluation of the correlation between job stress and sleep quality in community nurses. *Medicine*, 99(4), e18822. <https://doi.org/10.1097/MD.00000000000018822>
- Dimkatni, N. W., Sumampouw, O. J., & Manampiring, A. E. (2020). Apakah beban kerja, stres kerja dan kualitas tidur mempengaruhi kelelahan kerja pada perawat di rumah sakit? [Do workload, work stress and sleep quality affect work fatigue in nurses in hospitals?] *Sam Ratulangi Journal of Public Health*, 1(1), 9–14. <https://ejournal.unsrat.ac.id/index.php/srjph/article/view/27273>
- Grandjean, E. (1988). *Fitting the task to the man: Ergonomic approach* (4th ed.). Taylor and Francis.

- Handayani, R. T., Kuntari S., Darmayanti, A. T., Widiyanto, A., & Atmojo, J. T. (2020). Faktor penyebab stres pada tenaga kesehatan dan masyarakat saat pandemi COVID-19 [Factors causing stress to health workers and the public during the COVID-19 pandemic]. *Jurnal Keperawatan Jiwa*, 8(3), 353–360. <https://jurnal.unimus.ac.id/index.php/JKJ/article/download/5990/pdf>
- Huang, L., Lei W., Liu, H., Hang, R., Tao, X., & Zhan, Y. (2022). Nurses' sleep quality of “Fangcang” Hospital in China during the COVID-19 pandemic. *International Journal of Mental Health and Addiction*, 20, 789–799. <https://doi.org/10.1007/s11469-020-00404-y>
- International Labour Organization (2020). *Dalam menghadapi pandemi: memastikan keselamatan dan kesehatan di tempat kerja* [In the face of a pandemic: Ensuring safety and health at work]. https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/--ilo-jakarta/documents/publication/wcms_742959.pdf
- Jusnimar (2012). *Gambaran tingkat stres kerja perawat Intensive Care Unit (ICU) di Rumah Sakit Kanker Dharmais* [Unpublished thesis, Fakultas Ilmu Keperawatan Universitas Indonesia]. <https://lib.ui.ac.id/file?file=digital/20311866-S43387-Gambaran%20tingkat.pdf>
- Manabung, A. R., Suoth, L. F., & Warouw, F. (2018). Hubungan antara masa kerja dan beban kerja dengan stres kerja pada tenaga kerja di PT. Pertamina TBBM Bitung [The relationship between tenure and workload with work stress on workers at PT. Pertamina TBBM Bitung]. *Kesmas*, 7(5). <https://ejournal.unsrat.ac.id/index.php/kesmas/article/view/22103>
- Persatuan Perawat Nasional Indonesia (2020). *DPPI PPNI sukses gelar doa perawat untuk negeri* [DPPI PPNI successfully held a nurse's prayer for the country]. <https://ppni-inna.org/index.php/public/information/news-detail/940>

- Rhamdani, I., & Wartono, M. (2019). Hubungan antara shift kerja, kelelahan kerja dengan stres kerja pada perawat [The relationship between work shifts, work fatigue and work stress on nurses]. *Jurnal Biomedika dan Kesehatan*, 2(3), 104–110.
<https://doi.org/10.18051/JBiomedKes.2019.v2.104-110>
- Rosyanti, L., & Hadi, I. (2020). Dampak psikologis dalam memberikan perawatan dan layanan kesehatan pasien COVID-19 pada tenaga profesional kesehatan. *Health Information: Jurnal Penelitian*, 12(1), 107-130. <https://myjurnal.poltekkes-kdi.ac.id/index.php/HIJP/article/view/191/version/109>
- Sartika, D. (2015). *Gambaran stres kerja pegawai bagian rekam medis Rumah Sakit Bhakti Wiratamtama Semarang* [Unpublished thesis, Jurusan Ilmu Kesehatan Masyarakat Fakultas Ilmu Keolahragaan Universitas Negeri Semarang].
<http://lib.unnes.ac.id/25526/>
- Schultz, D., & Schultz, P. (1994). *Theories of Personality* (5th ed.). Brooks/Cole.
- Soep, S. (2012). Stres kerja perawat berdasarkan karakteristik organisasi di rumah sakit [Job stress based on organizational characteristics in the hospital]. *Jurnal Keperawatan Indonesia*, 15(1), 67–74. <http://jki.ui.ac.id/index.php/jki/article/view/49>
- Sukadiyanto, S. (2010). Stress dan cara mengurangnya [Stress and how to reduce it]. *Cakrawala Pendidikan*, 24(1), 55–66. <https://doi.org/10.21831/cp.v1i1.218>
- Susanti, E., Kusuma, F. H. D., & Rosdiana, Y. (2017). Hubungan tingkat stres kerja dengan kualitas tidur pada perawat di puskesmas Dau Malang [The relationship between work stress levels and sleep quality for nurses at Dau Malang Public Health Center]. *Nursing News: Jurnal Ilmiah Keperawatan*. 2(3), 166–172.
<https://publikasi.unitri.ac.id/index.php/fikes/article/view/577>
- Thayeb, R. R. T. A., Kembuan, M. A. H. N., & Khosama, H. (2015). Gambaran kualitas tidur pada perawat dinas malam RSUP Prof. Dr. R. D. Kandou Manado [The description of

sleep quality of the night shift nurses at Prof. RSUP. Dr. R.D. Kandou Manado. *e-Clinic*, 3(3), 853–857.

<https://ejournal.unsrat.ac.id/index.php/eclinic/article/view/10457>

Triwijayanti, R., Romiko, & Dewi, S. S. (2020). Hubungan masalah tidur dengan kinerja perawat di rumah sakit [Relationship between sleep problems and nurse performance in hospital]. *Jurnal Ilmu Keperawatan dan Kebidanan*, 11(1), 95 –99.

<https://ejr.stikesmuhkudus.ac.id/index.php/jikk/article/view/572/478>

Vanchapo, A. R. (2020). *Beban kerja dan stres kerja* [Workload and work stress]. Qiara Media.

Xiang, Y.T., Yang, Y., Li, W., Zhang, L., Zhang, Q., Cheung, T., & Chee, H. N. (2020).

Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed.

The Lancet Psychiatry, 7(3), 228-229. [https://doi.org/10.1016/S2215-0366\(20\)30046-8](https://doi.org/10.1016/S2215-0366(20)30046-8)

Zulmia, S. & Mu'in, M. (2017). Gambaran tingkat stress kerja pada perawat di pusat kesehatan masyarakat (PUSKESMAS) kota Semarang [An overview of the level of work stress on nurses at the Public Health Center (PUSKESMAS) Semarang] [Undergraduate thesis, Universitas Diponegoro]. <http://eprints.undip.ac.id/55413/>