

RESEARCH ARTICLE | MAY 15 2023

Work stress factors FOR educational institution employees during Covid-19 pandemic

Friska Ayu ✉; Moch. Sahri; Muslikha Nourma Rhomadhoni; ... et. al



AIP Conference Proceedings 2595, 090004 (2023)

<https://doi.org/10.1063/5.0123809>



CrossMark

Articles You May Be Interested In

Physicochemical characterizations and insecticidal properties of Lantana camara leaf ethanolic extract with powder application

AIP Conference Proceedings (May 2020)

Time to get excited.
Lock-in Amplifiers – from DC to 8.5 GHz

Find out more

Work Stress Factors FOR Educational Institution Employees during Covid-19 Pandemic

Friska Ayu^{1, a)}, Moch. Sahri¹, Muslikha Nourma Rhomadhoni¹, Octavianus Hutapea¹, Hafid Algristian²

¹Occupational Safety and Health Department, Faculty of Health, Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia

²Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia

^{a)}Corresponding author: friskayuligoy@unusa.ac.id

Abstract. COVID-19 infection was first reported in China in December 2019 and then declared a pandemic by the World Health Organization (WHO) in March 2020. Indonesia had written its first case on March 3, 2020, and the number of cases has steadily increased over time. The public is asked to follow health protocol from the government to keep distance and break the chain of transmission. All activities that are usually carried out outdoor must be done at home. Working from home can trigger boredom, which can impact human mental health, namely stress. This study analyzed the factors that influence work stress on employees during the COVID-19 Pandemic. This study is the first nationwide survey of psychological distress in educational institution employees with a cross-sectional study. This study involved 189 employees as respondents recruited through convenience sampling using a simple random sampling method. Due to social distancing regulations, face-to-face data collection was not possible. Therefore, the researchers employed Google Form with the informed consent, sociodemographic, and stress measurement using DASS Questioner. Multiple linear regression tests showed that the influencing work stress on Indonesian employees was gender ($p = 0.014$), city of residence during the Pandemic ($p=0.027$), length of work ($p = 0.043$), and profession of work ($p = 0.044$). The results can be concluded that 38.2% of work stress was influenced by gender, city of residence during the Pandemic, length of work, profession, and other factors influenced the rest. This research is an important benchmark for identifying a person with a greater stress risk during the Pandemic. The results can be used to conduct psychological interventions to reduce work stress while working from home during the COVID-19 Pandemic.

INTRODUCTION

The whole world is currently facing the COVID-19 Pandemic. WHO established COVID-19 as a global pandemic on March 12, 2020. It requires each country to implement emergency response mechanisms to prevent the transmission of this disease. East Java, especially in Surabaya, is the second center of the outbreak of COVID-19 cases in Indonesia. The cases continue to increase over time [1] and forced large-scale social restrictions as a government's efforts to break the COVID-19 transmission in Surabaya. A new problem that may occur is boredom, which can stress some employees who have to work from home, one of whom is an employee in an educational institution. They have the habit of communicating face-to-face rather than through audio-visual. However, their habit must be changed because of the COVID-19 Pandemic [2].

Studies on the psychological effects of quarantine during pandemics and epidemics in previous cases (SARS, Ebola, and MERS) focused on comparing images of the psychological results of quarantined people with people who were not quarantined. The results showed that quarantined people are more likely to show psychological pressure [3]. Similarly, Qiu et al., in a survey of psychological distress among Chinese people during the COVID-19 epidemic, reported that almost 35% of the 52,730 participants showed psychological distress. Recent studies that discuss the effects of COVID-19 in China and Italy using the Depression Anxiety Stress Scale (DASS-21) have suggested that gender, age, and educational background are consistent predictors of psychological conditions. Another study on

health professionals and administrative staff at Fujian China Hospital was conducted using the Hamilton Anxiety Scale (HAMA) and the Hamilton Depression Scale (HAMD) to measure the incidence of fear, anxiety, and depression using a numerical rating scale (NRS). The study found that medical staffs are more susceptible to psychological disorders while handling COVID-19 cases [4].

Some international literature involving the general and specific population (on health employees) shows the impact of sociodemographic factors on an individual's response to quarantine, stress levels during emergencies, and other variables that influence psychological problems. Although using different measurement tools to measure the psychological condition of individuals with different target groups, individual reactions to psychological effects are almost the same, namely experiencing psychological disorders such as stress, anxiety, and depression with different scales [5]. Because of psychological distress, it is important to create a quantitative measurement or scale to assess and gauge the impact so that better education or preventive management can be implemented [6].

Working from home was initially considered one of the most effective and productive efforts during the COVID-19 Pandemic [7]. However, it can trigger boredom, affecting human mental health, namely stress. Employees who work from home have demanding tasks and roles [8]. Overall, the literature described earlier supports the view that large-scale social restriction or quarantine impacts human health. It can cause considerable psychological tension and trigger various other psychological problems [9]. There has been no study that measures the psychological impact of large-scale social restrictions/quarantine on employees in an educational institution. During a pandemic, the employees perform their work activities from home [10-12]. Therefore, this study is the first to survey the psychological distress of the working population in educational institutions during the COVID-19 Pandemic by using the Depression, Anxiety, and Stress Scales (DASS-21) measurement tool [13].

METHOD

The design of this study surveyed analytic with a cross-sectional study. This design studies the dynamics of the correlation between risk factors through observation or data collection approach. Ethical approval was obtained from the Medical Research Ethics Committee of the Nahdlatul Ulama University before the project began. All participants provided informed consent. The populations of this study were 360 employees of the Nahdlatul Ulama University of Surabaya who implemented large-scale social restrictions during the COVID-19 Pandemic. The research samples were 189 people determined using the Slovin formula $n = \frac{N}{N(e)^2 + 1}$

Description:

N	=	The population
e	=	Error tolerance
n	=	The number of samples

$$n = \frac{N}{N(e)^2 + 1}$$

$$n = \frac{360}{360(0.05)^2 + 1}$$

$$n = \frac{360}{1,9}$$

$$n = 189.47$$

Each participant was given a questionnaire containing two sections to fill in. The first section was the sociodemographic questions requesting age, gender, educational background, the city the participant was currently living during covid-19, marital status, length of work, and profession. The second section was the DASS-21 scale. It was a self-report scale designed to measure the severity of emotional distress (depression, anxiety, and stress). It contained 21 items measuring three different domains: depression (e.g., "I could not seem to experience any positive feeling at all"), anxiety (e.g., "I was aware of the dryness of my mouth"), and stress (e.g., "I found it hard to wind down"). Each item was rated on a four-point Likert scale ranging from 0 (did not apply to me at all over the last week) to 3 (strongly applied to me most of the time over the past week) [14]. Higher scores in each domain indicate greater severity of emotional distress in that domain. The data obtained were then analyzed using the SPSS program, namely the multiple linear regression test [15].

RESULTS

Characteristics of Respondents

TABLE 1. Participant characteristics

Characteristics of Respondents	Categories	n	%
Age	>50 years old	12	6.3
	40-50 years old	25	13.3
	30-39 years old	97	51.3
	20-29 years old	55	29.1
Gender	Man	56	29.6
	Woman	133	70.4
Educational Background	Doctoral Degree	14	7.5
	Master Degree	111	58.7
	Bachelor's Degree	52	27.5
	Diploma Degree	11	5.8
	High School	1	0.5
Marital Status	Married	130	68.8
	Single	58	30.7
	Divorced	1	0.5
Length of work	More than four years	87	46.0
	3-4 years	41	21.7
	1-2 years	35	18.5
	Less than one years	26	13.8
Profession of Work	Lecturer	128	67.7
	Staff/ Administrative Staff	53	28.0
	Laboratory Assistants	8	4.3
City of residence during the Pandemic	Surabaya	113	59.8
	Outside Surabaya	76	40.2
Total		189	100.0

(Source: Primary Data, 2020)

Table 1 shows the individual characteristics of 189 employees who participated in this study. Most of the respondents were female (70.4%) with an age range of 30-39 years (51.3%). Their educational background was a master's degree (111 employees). A total of 128 (67.7%) respondents worked as lecturers, and eight respondents worked as laboratory assistants. Eighty-seven employees have been working for more than four years. During the covid-19 Pandemic, 113 respondents (59.8%) lived in Surabaya, and 76 respondents lived outside of Surabaya.

Description of Respondents' Characteristics Regarding Stress Level

TABLE 2. Distribution of Respondents Based on Stress Measurement Result

Categories	N	%
Severe	1	0.5
Moderate	15	8.0
Mild	87	46.0
Normal	86	45.5
Total	189	100.0

(Source: Primary Data, 2020)

Table 2 shows the distribution of respondents based on the stress measurement result. From 189 respondents, 86 people (45.5%) were still in normal condition, 87 people (46.0%) under mild stress conditions, 15 people (8%) under moderate stress conditions, and only 1 person (0.5%) under severe stress conditions.

Description of Respondents' Characteristics regarding Individual Stress Level Factor

TABLE 3. Crosstabulation of Individual Stress Level Characteristics

Individual Characteristics	Categories of Stress Level								N	%	
	Severe		Moderate		Mild		Normal				
	n	%	n	%	n	%	n	%			
Age	>50 years old	0	0	0	0	6	50.0	6	50.0	12	6.3
	40-50 years old	0	0	0	0	10	40.0	15	60.0	25	13.3
	30-39 years old	0	0	7	7.2	42	43.3	48	49.5	97	51.3
	20-29 years old	1	1.8	8	14.5	29	52.7	17	31.1	55	29.1
Total	1	0.5	15	8.0	87	46.0	86	45.5	189	100	
Gender	Man	0	0	3	5.4	22	39.2	31	55.4	36	29.6
	Woman	1	0.8	12	9.0	65	48.8	55	41.4	15	70.4
Total	1	0.5	15	8.0	87	46.0	86	45.5	189	100	
Educational Background	Doctoral Degree	0	0	0	0	6	42.9	8	57.1	14	7.5
	Master Degree	0	0	9	8.1	45	40.5	57	51.4	111	58.7
	Bachelor's Degree	1	1.9	5	9.6	29	55.8	17	32.7	52	27.5
	Diploma Degree	0	0	1	9.1	7	63.6	3	27.3	11	5.8
	High School	0	0	0	0	0	0	1	100.0	1	0.5
Total	1	0.5	15	8.0	87	46.0	86	45.5	189	100	
Marital Status	Married	0	0	10	7.7	59	45.4	61	46.9	130	68.8
	Single	1	1.7	5	8.6	28	48.3	24	41.4	58	30.7
	Divorced	0	0	0	0	0	0	1	0.5	1	0.5
Total	1	0.5	15	8.0	87	46.0	86	45.5	189	100	
City of residence during the Pandemic	Surabaya	1	0.9	11	9.7	56	40.6	45	39.8	113	59.8
	Outside of Surabaya	0	0	4	26.7	31	40.8	41	53.9	76	40.2
Total	1	0.5	15	8.0	87	46.0	86	45.5	189	100	

(Source: Primary Data, 2020)

Table 3 shows a cross-tabulation of individual stress level characteristics. The data shows that mild stress condition was experienced by female employees (48.8%) with an age range of 30-39 years (52.7%) and educational background of master degrees. A mild level of stress was also felt by married employees (45.4%) living in Surabaya (40.6%). Furthermore, the moderate stress level was experienced by female employees (9.0%) in an age range of 20-29 years (14.5%) with a master's degree education background (8.1%). The moderate stress level is also felt by married employees living in Surabaya (9.7%).

Description of Respondents' Characteristics Regarding Work Factor and Stress Level

TABLE 4. Crosstabulation of Work Factor and Stress Level to UNUSA Employees

Individual Characteristics	Categories of Stress Level								N	%	
	Severe		Moderate		Mild		Normal				
	n	%	n	%	n	%	n	%			
Length of Work	More than four years	0	0	2	2.3	39	44.8	46	52.9	87	46.0
	3-4 years	0	0	0	0	10	40.0	15	60.0	41	21.7
	1-2 years	0	0	7	7.2	42	43.3	48	49.5	35	18.5
	Less than one years	1	1.8	8	14.5	29	52.7	17	31.1	26	13.8
Total	1	0.5	15	8.0	87	46.0	86	45.5	189	100	

Individual Characteristics	Categories of Stress Level								N	%	
	Severe		Moderate		Mild		Normal				
	n	%	n	%	n	%	n	%			
Profession of Work	Lecturer	0	0	9	7.0	51	39.8	68	53.1	128	67.7
	Staff/ Administrative Staff	1	1.9	6	11.3	28	52.8	18	34.0	53	28.0
	Labor	0	0	0	0	8	100	55	41.4	8	4.3
Total	1	0.5	15	8.0	87	46.0	86	45.5	189	100	

(Source: Primary Data, 2020)

Table 4 shows a cross-tabulation of work factors with stress levels to employees. The data shows that lecturers mostly experienced mild stress conditions (39.8%) with a length of work of 1-2 years (52.7%). The moderate stress category was mostly felt by lecturers (7.0%) with a work period of less than one year (14.5%). Furthermore, the severe stress level was felt by employees administrators with a work period of less than one year.

Multiple Regression Test

Table 5. Multiple regression of Individual Factor to Stress Level

Variable	B	t	Sig.	F	R	R-Square
(Constant)	4.055	13.466	0.000			
Age	-0.176	-2.593	0.010			
Gender	-0.208	-2.063	0.041			
Educational Background	-0.085	-1.186	0.237	4.220	0.322	0.103
Marital Status	0.090	.828	0.409			
City of residence during the Pandemic	0.199	2.123	0.035			
t _{table} : 1.65322						
dF Residual: 181						

(Source: Primary Data, 2020)

Table 5 shows a statistical test of individual factors to employees' stress levels. Statistical test results using multiple linear regression showed that the work stress was influenced by age ($p = 0.010$), gender ($p = 0.041$), and city of residence during the Pandemic ($p = 0.035$) with an R-value of 0.322. This result implied an influence of individual factors on the level of stress. Besides, this study obtained information that 32.2% of work stress was influenced by age, gender, and city of residence during the Pandemic. Other factors influenced the rest.

Table 6. Multiple Regression of Work Factor to Employees Stress Level

Variable	B	t	Sig.	F	R	R-Square
(Constant)	3.792	29.829	0.000			
Length of Work	-0.094	-2.017	0.045	6.861	0.262	0.069
Profession of Work	-0.175	-1.938	0.054			
t _{table} : 1.65322						
dF Residual: 181						

(Source: Primary Data, 2020)

Table 6 shows a statistical test of work factors to employees' stress levels. The results showed that the work stress was influenced by the length of work ($p = 0.045$). Thus, the length of work influenced the stress level of employees at this institution. Besides, this study found that work factors influenced 26.2% of work stress, and other factors influenced the rest.

TABEL 7. Multiple Regression of Individual Factors and Work Factors to Stress Level of UNUSA Employees

Variable	B	t	Sig.	F	R	R-Square
(Constant)	3.953	13.249	0.000			
Age	-0.105	-1.437	0.152			
Gender	-0.251	-2.481	0.014			
Educational Background	0.113	1.037	0.301			
Marital Status	0.160	1.470	0.143	4.406	0.382	0.146
City of residence during the Pandemic	0.204	2.222	0.027			
Length of Work	-0.109	-2.041	0.043			
Profession of Work	-0.281	-2.024	0.044			
t _{tabel} : 1.65322						
dF Residual: 181						

(Source: Primary Data, 2020)

Table 6 shows that the statistical test of individual and work factors on employees' stress levels was tested simultaneously. The test results showed that the influencing individual factor was gender ($p = 0.014$), city of residence during the pandemic ($p = 0.027$), length of work ($p = 0.043$), and profession of work ($p = 0.044$). the obtained R-value was 0.382. Thus, there was an influence of individual factors and work factors on employees' stress at this institution. Also, this study obtained information that 38.2% of work stress was influenced by gender, city of residence during the Pandemic, length of work, profession, and the rest was influenced by other factors.

DISCUSSION

The COVID-19 Pandemic has had a large impact on various countries and sectors. The health sector, the economic sector, and the education sector are directly affected by this pandemic [16]. The government tried to break the chain of transmission of the COVID-19 virus by issuing policies to work from home. Several public facilities were temporarily closed, and large-scale social restrictions (PSBB) were enforced in regions with the highest number of COVID-19 transmission cases. It was hoped that the community could remain safe at home and reduce the incidence of COVID-19 [17].

Educational institutions are one of the business activities in services, whose activities can still be done at home, such as teaching, administration, and various other service activities. Nahdlatul Ulama University Surabaya, one of the universities in East Java, issued a policy for employees and students to work from home. Working from home was initially considered one of the most effective and productive efforts during the COVID-19 Pandemic. However, work-from-home activities can cause boredom for students and lecturers. One of the stressors for employees is the task and the role. Lecturers in the teaching and learning process must be more creative, active, and innovative so that students can understand the learning topics. Some students consider the online learning process too monotonous because there is no interaction activity between students and between students and lecturers directly [18].

Stress is a condition of tension that affects one's emotions, thoughts, and physical condition. Stress that is not handled properly usually results in the inability of a person to interact with his environment, both the work environment and outside of work. The stress measurement showed that there were 86 employees (45.5%) were in normal condition, 87 employees (46.0%) were under mild stress conditions, 15 employees (8%) were under moderate stress conditions, and only one employee (0.5) was under severe stress conditions. Work stress can change metabolism, cause headaches, cause dissatisfaction at work, and change life habits. It also causes smoking, sleep disorders, working conditions, role ambiguity, and lack of management attention to employees. Besides, stress could influence career development, non-involvement in decision making, and stress due to having two jobs. In this study, the most stressed employees were lecturers [4]. The task of a lecturer is not only to teach but also to do other work such as governance of study programs, research, and community development activities, following webinars that can improve skills, or becoming speakers at webinars and some other additional work [11].

Some indicators of work stress are (1) Job Conditions (work schedules), (2) Stress due to the role, (3) interpersonal factors (the lack of management attention to employees), (4) career development (job security), (5) Organizational structure, namely non-involvement in making and decision making, and (6) two jobs. The statistical test using multiple linear regression showed an influence between individual factors (age, gender, and city of residence during the

Pandemic) and work factors (the length of work and profession of work) on UNUSA employees' stress levels. The analysis results showed that age influenced work stress. Thus, as a person gets older, the stress level will be lower [19].

Another variable from individual factors was gender. Suma'mur (2009) states that men and women have differences in physical abilities (muscle). Women have a greater percentage of stress compared to men. Women tend to get tired. Besides, work stress is also influenced by the menstrual cycle, affecting the emotional state. Unstable emotions can aggravate work stress [20].

City of residence during the pandemic COVID-19 is one of the influencing stress factors for UNUSA employees [7]. In this study, employees who experienced mild and moderate work stress mostly lived in Surabaya. East Java, especially Surabaya, is the second epicenter city the COVID-19 case. The number of cases has steadily increased over time. The number of positive cases that continue to increase will certainly increase stress for individuals [2]. There is also a lot of confusing information about the coronavirus on social media. Stress can also arise due to the regional quarantine rules imposed by the government. The effects of stress on individuals can differ depending on the location of residence. Individuals in the red zone potentially experience more stress than those outside the red zone. Length of work is a work factor variable that influences stress. People with longer working periods will experience mild stress due to accumulated experiences facing various professional problems [21].

CONCLUSIONS

The stress measurement of 189 UNUSA employees found that that there were 86 employees (45.5%) were in normal condition, 87 employees (46.0%) were under mild stress conditions, 15 employees (8%) were under moderate stress conditions, and only one employee (0.5) was under severe stress conditions. The statistical result using multiple linear regression showed an influence between individual factors (age, gender, and city of residence during the Pandemic) and work factor (length of work and profession of work) on the UNUSA employees' stress level during the COVID-19 Pandemic.

ACKNOWLEDGEMENTS

The authors thank the research and community development institutions of UNUSA and the Occupational Safety and Health Department Faculty of Health and Faculty of the Medicine Nahdlatul Ulama University of Surabaya for supporting this research. This research was supported by research and community development institutions of UNUSA.

REFERENCES

- 1 World Health Organisation. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020 (2020).
- 2 P. Dagnino, V. Anguita, K. Escobar and S. Cifuentes, *Frontiers in Psychiatry* **11**, 591142 (2020).
- 3 Z. Y. Zu, M. D. Jiang, P. P. Xu, W. Chen, Q. Q. Ni, G. M. Lu and L. J. Zhang, *Radiology* **296**, 200490 (2020).
- 4 Keputusan Presiden No. 12 Tahun 2020 Bencana Non-Alam (2020).
- 5 Undang-undang No.13 Tahun 2003 tentang Ketenagakerjaan. Jakarta (2013).
- 6 Surat Edaran Rektor No. 599/UNUSA.B/Adm.I/III/2020 UNUSA. *Pelaksanaan proses belajar mengajar dalam masa darurat COVID-19*. Surabaya (2020).
- 7 Keputusan Kepala Badan Nasional Penanggulangan Bencana (BNPB) No.13.A Tahun 2020. *Perpanjangan Status Keadaan Darurat Bencana Wabah Penyakit Akibat Virus Corona*. Jakarta (2020)
- 8 F. Luthans, *Perilaku Organisasi* (ANDI, Yogyakarta, 2006).
- 9 W. Li, Y. Yang, Z. H. Liu, Y. J. Zhao, Q. Zhang, L. Zhang, T. Cheung, Y. T. Xiang. *International Journal of Biological Sciences* **16**,1732-1738 (2020).
- 10 C. Cooper and A. Straw, *Stress Management yang Sukses dalam Sepekan* (Kesaint Blanc, Jakarta, 2014).
- 11 NIOSH, *Stress at Work* (U.S. Department of Health and Human Services, United States, 1998).
- 12 Zambia, Labour Force Survey 2014 (2014).
- 13 N. E. Saputri, Hubungan Antara Stres Kerja Dengan Produktivitas Kerja Karyawan, Universitas Muhammadiyah Surakarta, 2012.

- 14 S. P. Siagian, *Manajemen Sumber Daya Manusia* (Bumi Aksara, Jakarta, 2008).
- 15 S. P. Robbins, *Organizational Behavior* (<https://books.google.co.id/books?id=9-jcsiS8RS0CPearson> Pearson Education, South Africa, 2009).
- 16 H. Fauji, *Pengaruh Stres Kerja Dan Konflik Kerja Terhadap Semangat Kerja Karyawan di PT. Karya Mandiri Enviroment*, Universitas Pasundan, 2013.
- 17 Sedarmayanti, *Sumber Daya Manusia dan Produktivitas Kerja* (Mandar Maju, Bandung, 2004).
- 18 L. Maurits. *Selintas tentang Kelelahan Kerja* (Amara Books, Yogyakarta, 2010).
- 19 ILO, *Stress Prevention at Work Checkpoints* (2012).
- 20 M. Manullang, *Dasar-Dasar Manajemen Bagi Pimpinan Perusahaan* (Gajah Mada Press, Jakarta, 2012).
- 21 N. T. P. Pang, A. Kamu, N. L. B. Hambali, H. C. Mun, M. A. Kassim, N. H. Mohamed, F. Ayu, S. S. S. A. Rahim, A. Omar and M. S. Jeffree, *International Journal of Mental Health and Addiction* (2020).