**Work factors affect work stress among lecturers: study in Indonesia**

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Work stress is a discrepancy between the workload and the individual's ability to do their job. Work stress factors that cause work stress are individual, work, and outside the work/environment. There is no data and research about work stress factors, mainly focusing on lecturers or universities.

**Objective.** This study aimed to analyze the relationship between work factors in the form of type of faculty, workload, type of professor, and interpersonal relationships with the work stress of lecturers.

**Material and methods.** This research was conducted using a cross-sectional study. The research sample consisted of 100 lecturers with active status selected by quota sampling. Data were collected using a questionnaire filled out online and analyzed using the Chi-square test and the Contingency Coefficient Test.

**Results.** The result showed that most participants had moderate stress (score: 59–92) and moderate workload (score: 50–80). Most of the participants were Associate professors (52%) and had good interpersonal relationships in the workplace (59%). There is a relationship between interpersonal relationships and work stress of lecturers. However, there was no relationship between type of faculty, workload, and type of professor with lecturers’ work stress.

**Conclusion.** In conclusion, interpersonal relationships are significantly related to job stress on lecturers. A good interpersonal relationship will reduce the possibility of work stress on the participant.

Keywords: occupational stress; lecturers; job factors; university.

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Work stress is a mismatch between the workload and the individual’s ability to cope with the work stress he faces in the form of an emotional state caused [1]. Work stress factors that cause work stress are from the individual/self, work, and outside the work/environment. Based on the previous research results, work stress can also occur in university lecturers, where 52% of lecturers experience high work stress and 24% experience very high work stress [2]. This is because the activities or task demands received by the lecturer are too many and teach. If the work stress occurs continuously, it will cause several health problems, both physically and psychologically [3–5]. Work stress is caused by several work factors: type of faculty, mental workload, professor, and interpersonal relationships [6–9].

Indonesia is one of the countries with the largest population in the world, and until 2021 through the population census, the number aged 15–24 years shows a population of 44 million [10]. This figure shows the large number of people who are likely to take higher education at universities and other educational institutions of the same level in Indonesia. In Indonesia, 3,115 universities and other educational institutions at the same level have been prepared by the government to accommodate many prospective students. From these universities until 2020, 312,890 lecturers will guide and teach students in Indonesia [11].

All lecturers in Indonesia have the same task, including teaching, research, and service to the community every semester. The maximum workload that each lecturer has in one semester is 12 credits. This is following regulations from the Ministry of Education of the Republic of Indonesia number 12/E/KPT/2021 [11]. According to previous research, many lecturers have a total load of 18 credits per semester, so lecturers do not have time to write and work [12].

Each lecturer has a different level of work stress according to the type of faculty or the origin of the faculty unit [13]. One of the things that can affect work stress is interpersonal relationships among co-workers, where the better interpersonal relationships, the lower the person's work stress level [14, 15]. Work stress is common for lecturers who have high positions because the workload will also increase, affecting the level of work stress [16, 17]. Until now, there is no data and research about work stress from work factors mainly focusing on lecturers or universities in Indonesia. In this study, we investigate the work stress from work-related factors among lecturers in a university.

**Material and methods.** Study design. This research is quantitative with the type of analytical research with a cross-sectional approach.

**Place.** This research was conducted at the University of Jember, Indonesia, during March-December 2021. University of Jember is one of the biggest University in Indonesia with 15 faculties and more than 100 department.

**Subjects / description of the sample.** According to the university data, total number of lecturers were 1362. The eligible must be permanent lecturers with the status and, age between 25 to 70.
The sample of this study was 100 lecturers, taken using the quota sampling technique. The total sample is come from 7% of population that match with inclusion criteria [18]. According to the university data criteria Samples were taken from 2 types of faculties, namely social science 50 and science 50. Social science faculty in this study consist of Faculty of Law, Faculty of Social and Political Science, Faculty of Economics and Business, and Faculty of Humanities. In addition, science faculties consist of Faculty of Agriculture, Faculty of Mathematics and Natural Science, Faculty of Engineering, Faculty of Pharmacy, Faculty of Pharmacy, Faculty of Medicine, Faculty of Public Health and Faculty of Nursing. This research has passed the ethical review in Indonesia with the number 77/KEPK/FKM-UNED/VII/2021.

Data collection procedure and measurement tool. The dependent variable in this study was the work stress of the lecturers, which was measured using the NASA-TLX (Cronbach alpha >0.8). NASA TLX is a tool for measuring and conducting a subjective mental workload assessment. It rates performance across six dimensions to determine an overall workload rating. The six dimensions are as follows: Mental demand, Physical demand, Temporal demand, Effort, Performance, Frustration level. Participant will give value 0–100 for each dimension, then every score will multiply by rating. Total score will divided with 15. NASA TLX divided mental work load into 3 groups: light (score: <50), moderate (score: 50–80) and heavy (score >80) [19]. In contrast, the independent variables in this study were work factors, including type of faculty, professor, and interpersonal relationships possessed by lecturers are greater in the good category is 59 lecturers (59%).

OSI-R (Occupational Stress Inventory-Revised) a concise measure of three domains of occupational adjustment: occupational stress, psychological strain, and coping resources. This questionnaire was used to measure work stress by using 25 questions with Likert scale 1–5 (Cronbach alpha >6). This questionnaire divided work stress into 3 groups light (score: 25–58), moderate (score: 59–92) and heavy (score >92) work stress [20]. The questionnaire is distributed online using the Google Form application to collect data on the independent and dependent variables.

Statistical analysis. Bivariate analysis using Chi-square test and Contingency coefficient test with $\alpha=0.05$.

Ethical considerations. This research has passed the ethical review in Indonesia with the number 77/KEPK/FKM-UNED/VII/2021.

Results. Work Factors. According to Table 1, the same number of respondents came from the type of faculty of science and social science. Most respondents have a moderate workload, with 62 lecturers (62%). Thirty-three lecturers experienced the workload in the heavy category from all faculties except the Faculty of Medicine. All respondents from the Faculty of Medicine have a moderate workload.

In this study, there were more Associate Professors than lecturers with other types of professors, 52 lecturers (52%). At the same time, there were only 3 Full Professors (3%), who come from the Faculty of Dentistry, Faculty of Teacher Training and Education, and Faculty of Agricultural Engineering. The interpersonal relationships possessed by lecturers are greater in the good category is 59 lecturers (59%).

Work Stress. Based on Table 2, most respondents have moderate work stress, 66 lecturers (66%) with 0 as minimum score and 100 as maximum score in every dimension. Total mean from 6 dimension is 66.98 with ±SD 19.54. There are three faculties whose entire lecturers have moderate work stress, namely the Faculty of Pharmacy, the Faculty of Medicine, and the Faculty of Mathematics and Natural Sciences. The work stress measured by the lecturers was assessed using the OSI-R (Occupational Stress Inventory-Revised) questionnaire. This work stress focuses on individual factors (age and years of service) and workload when teaching, which can cause a feeling of pressure on the lecturers.

Relationship of Work Factors with Job Stress. Based on Table 3, the type of faculty, workload and type of professor has a p-value >0.05, so those variables are not significantly related to lecturer work stress. Meanwhile, in the interpersonal relationship variable, there is a p-value <0.05, so interpersonal relationships have a significant relationship to lecturer work stress. The relationship is negative and classified as weak.

Discussion. Work Factors. Several work factors will affect work stress in every profession. Work factor also make an impact to work stress on university lecturers. Work factors in this study include type of faculty, workload, type of professor, and interpersonal relationships. The type of faculty is divided into science and social science faculties. Both have the same number of 50 lecturers from the science faculty and 50 lecturers from the social science faculty. Furthermore, based on the results of descriptive analysis, it is known that the average workload variable is moderate workload. This indicates that the average workload experienced by respondents is on the 50–80 range. Hence, lecturers feel their duties and responsibilities while working are quite burdensome. However, it should be noted that there are respondents who are already in the heavy workload category, namely 33 lecturers.

The workload is assessed by adding the scores on each perceived demand during work. The demands on the work of lecturers who have the highest average score are effort demands [21].

### Table 1. Distribution of Work Factors

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of faculty:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>science</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>social science</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Work load:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>light</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>moderate</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>heavy</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Type of professor:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>assistant professor</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>associate professor</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>full professor</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Interpersonal relations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bad interpersonal</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>relations</td>
<td>59</td>
<td>59</td>
</tr>
</tbody>
</table>

Note. $n=100$.

### Table 2. Distribution of Work Stress

<table>
<thead>
<tr>
<th>Work Stress</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light work stress</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>Moderate work stress</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Note. $n=100$.
Business demands are indicators related to the amount of attention and concentration a lecturer needs to complete a task. Examples of business demands are calculations, making decisions, storing information, and solving problems that arise [22, 23].

Furthermore, according to type of professor, most respondents came from Associate Professors. Meanwhile, on the interpersonal relationship variable, most participant had good interpersonal relationship. This indicates that the interpersonal relationships owned by the respondents are in the close category because they are still in the range of more than 40. Hence, lecturers have a close relationship between co-workers and leaders. This can be shown from the respondents’ answers, most of the lecturers (48%) feel that they never have difficulty coordinating education or lectures with colleagues. Most lecturers (47%) feel that they never lack appreciation from the dean/supervisor, and 44% of lecturers do not find it challenging to coordinate with the dean and supervisor. The dean always provides solutions to the problems he faces.

Work Stress. Most of the lecturers experienced work stress in the moderate category. This means that even though the mean value of work stress is moderate, the lecturers still think that they are still experiencing stress at work. Work stress that is not in the high category is caused by a positive attitude towards workers to continue doing their duties as lecturers. According to the result, these tasks have become professional demands. Previous research explains that low to moderate stress levels is unpleasant for employees while working [16, 24, 25]. Moderate work stress, in general, can also affect performance.

It should be noted that mild stress is a level of stress that does not damage individual physiological aspects [26]. This stress is usually felt by someone, for example, forgetting, falling asleep, and traffic jams. Meanwhile, moderate stress can cause stomach and intestinal disorders, such as ulcers, irregular bowel movements, muscle tension, sleep disturbances, changes in the menstrual cycle, and decreased memory and concentration [27, 28].

Stress is an unpleasant psychological state caused by pressure at work. This situation will be marked by the appearance of physical, psychological, and behavioral symptoms [4, 29]. Things that are considered unpleasant can cause work stress. This can be illustrated by the respondents’ answers in the statement item stress indicators. The item that received the most answers was always statement number 14, which is 56% of lecturers felt that they were always required to have sufficient responsibility in their work. In addition, 52% of lecturers feel that the workload they face often increases. At the same time 42% of lecturers feel that they often have very short and little time to do many different tasks. 41% of lecturers feel that they often have limited time to work. Another 39% of lecturers feel they often have to take unfinished work home from work (before the COVID-19 pandemic). Therefore, stress on lecturers can be triggered by the inability to adjust to the many responsibilities and work environment. Pressure or tension arises at work that affects emotions, thinking processes, and conditions [2].

Stress experienced by lecturers will result in decreased performance. Lecturers will feel uncomfortable at work, quickly tired, less thorough, and less able to concentrate. This situation can cause lecturers to be unable to complete their duties according to the Tri Dharma of Higher Education appropriately (teaching, research, and service to the community), efficiently, and effectively, and services to students become less than optimal.

Relationship of Work Factors with Job Stress. Based on the result, it is known that type of faculty does not have a significant relationship with work stress on lecturers at the University of Jember, Indonesia. This study is not in line with previous research result, which states that work stress on lecturers in the Social Sciences faculty is higher than in the Science faculty [30]. The difference in stress levels is due to the perception that not all existing theories are valid and can be put into practice because the environment is constantly changing. The stress caused by this perception does not apply to lecturers at the University of Jember. Social Science lecturers consider that even though there is a change in the environment, their knowledge will always be helpful. Their work is considered to have a future and career as expected.

The absence of a relationship between type of faculty and work stress can be caused by the same role in carrying out their duties as lecturers in the faculty of science and social science [31]. In the 2019 Jember University Lecturer Workload guidebook, the duties and responsibilities in education, research, and community service are the same for every lecturer in carrying out the Tri Dharma of Higher Education (teaching, research, and service to the community). In addition, all lecturers are also responsible for supporting activities such as acting as members of a committee/commission/task force/agency at the institutional and faculty level at the University of Jember.

According to the result between workload and work stress, it is known that workload does not have a significant relationship with work stress on lecturers at the University of Jember. The results of this study are not in line with previous research [9, 16], which shows a relationship between stress levels and workload for teachers.

It should be noted that the workload indicators, namely mental demand, performance, effort, physical demand, and temporal demand, each indicator has a frustration level. The lecturers...
ers did not feel work stress despite the perceived heavy workload. This is following the previous research, which stated that workload was not significantly related to the work stress of lecturers in Iran [32]. There is no relationship between workload and work stress because workers feel they can carry out the work. This is following the results of this study, the majority of lecturers considered that they were able to do and complete their work even though there were many assignments given. In doing assignments, 50% of lecturers feel that they sometimes get help from their co-workers. The majority of lecturers find it easy to coordinate with co-workers to make their work easier.

According to the result, that type of professor does not significantly correlate with work stress on lecturers at the University of Jember. The results of this study are not in line with some research that states that position is significantly related to work stress on a lecturer. This is because there are too high expectations of lecturers, there is even a need to conduct research that is considered burdensome for them [33, 34].

The results of this study indicate that there is no significant relationship between type of professor and work stress. In addition, type of professor with standards as a condition for determining the level of office can also affect a person's ability to manage their skills and duties. Although the higher the level of type of professor will make the responsibilities of the lecturers more and more, the competencies possessed will make it easier for them to carry out work according to the target. The competence of each lecturer can be continuously maintained and improved through training. The higher the position, the need for training will increase. In this study, 50% of lecturers felt they had received training related to their duties and obligations. The training is carried out to improve the ability of lecturers to do and complete their assignments.

Interpersonal relationships have a significant relationship with work stress on lecturers at the University of Jember. These results are in line with previous research that shows a significant relationship between interpersonal relationships and work stress [35]. In this study, the value of the contingency coefficient is smaller than 0.5, so the relationship between interpersonal relationships and work stress is weak. In addition, the value of the contingency coefficient is negative, which means that the relationship between the two has an inverse direction. A good interpersonal relationship will reduce the possibility of work stress on the respondent. Social support is beneficial in the process of strengthening the psychology of lecturers. The relationship between interpersonal relationships and work stress on lecturers is negative, so if interpersonal relationships increase, work stress will decrease.

In this study, more lecturers have close interpersonal relationships. However, there are still respondents who answered negative statement items on interpersonal relations, namely 2% of lecturers stated that they always felt that they had a lot of demands and assignments from the dean. Furthermore, 6% of lecturers often find it challenging to get support from colleagues, 5% of lecturers feel that they often lack appreciation from the dean/supervisor, and 3% of lecturers feel that they always get criticism from colleagues. Previous results study state that a lack of interpersonal relationships can occur due to the lack of communication between lecturers and the leadership and the lack of information on the importance of these relationships in universities [36].

In this study, more respondents who experienced moderate stress had distant interpersonal relationships, and respondents with high work stress had more close interpersonal relationships with their lecturers and their leaders. An unclear communication relationship between workers can create unhealthy communication. This will impact the process of meeting the organization's needs so that the development of attitudes and thoughts between workers is hampered. If the fulfillment of needs is not optimal, it will cause work stress for workers. Distant interpersonal relationships at work need to be improved so as not to hurt the psychology of lecturers during work. Build good interpersonal relationships between workers. More openness is needed from the leadership to accept the aspirations and suggestions given by their subordinates and increase mutual respect between lecturers' colleagues.

This study provides an overview in addition to the factors that are often studied related to work stress, it turns out that there are work factors that can be a cause of stress, especially in university lecturers. On the other hand, this study has the limitation, because this is not using probability sampling and was carried out online because the research was conducted during the COVID-19 pandemic in Indonesia. This may affect the results of the study.

Research related to mental health in lecturers such as anxiety, boredom, and mental workload needs to be carried out in the future. The strategy of coping stress in lecturers through experimental research will also be very useful in the future to reduce work stress in lecturers.

Conclusion. It is known that interpersonal relationships have a significant relationship with the work stress of lecturers at the University of Jember. Based on the study results, the researchers suggested providing work demands that are appropriate or can be completed according to the agreed deadline between the two parties. Holding a program such as counseling guidance for lecturers can improve good interpersonal relationships by providing sharing events. Regarding work problems, and increase efforts to appreciate the performance of lecturers. In addition, lecturers must increase respect, empathy for colleagues, and good ethics when criticizing colleagues. They are expected to implement good time management by carrying out tasks based on a priority scale; they are expected to apply good stress management such as always thinking positively and actively socializing.

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