

Mental Workloads of Lectures

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Abstract

Lecturers are responsible for implementing the three main responsibilities in university (Tridharma Perguruan Tinggi) with 12 credits to 16 credits each semester. However, many lecturers feel that the workload is very excessive. The purpose of this study was to describe the mental workload of lecturers at the Faculty of X Padjadjaran University. The method of this research was quantitative descriptive by using a total sampling technique involving 43 lecturers. Data collection used NASA-TLX instruments. Data were analysed using descriptive statistics. The results of the study showed that overall the mental workload of the Faculty of X Padjadjaran University lecturers was included in the high category both in education and teaching assignments (74.4%), research assignments (76.7%), and community service assignments (74.4%).) Effort dimensions have the highest mean value that is equal to 51.8, while the dimensions that have the lowest mean are Performance dimension, namely 9.4, where the greater the mean dimension shows the large contribution in the mental workload felt by the lecturer. The conclusions, this study show that most lecturers have a high mental workload. It is suggested that the lecturers need to have balance numbers of tasks according to their abilities, balance the time working with recreation, and meet the needs of rest. The results of this study need to be followed up by examining methods or efforts that can reduce the lecturers' mental workload.

Keywords : Lecturer, mental workload, university.

Introduction

The lecturer is responsible for a university system. The National Education System can be realized if lecturers are required to carry out three main tasks. Law of the Republic of Indonesia Number 12 of 2012 concerning Higher Education, confirms that the main task of lecturers as professional educators and scientists is to transform, develop and disseminate science and technology through education, research, and community service. This task is called the Tridharma of Higher Education.

High lecturer workloads were reported by several countries. One of the studies was Doyle and Hind (1998) in England who found that most levels of stress and fatigue in lecturers were included in the high category. This is influenced by the high workload of lecturers. As many as 70% of men and 67% of women reported that their workload was felt excessive because of the increasing administrative work. This is supported by the research of Houston, Meyer, and Paewai (2006) in New Zealand which showed that as many as 86% of lecturers in 2002 and 94% of lecturers in 2003 experienced excessive workloads due to spending a lot of time completing their work demands. Where 34% of lecturers in 2002 and 39% of lecturers in 2003 reported having worked more than 10 hours outside working hours to complete their duties. This shows that the work of a lecturer often takes up his free time.

Time outside working hours is proven to be often spent by lecturers to complete their work. Sliskovic and Sersic (2011) in Croatia reported that more than three quarters of the lecturers worked more than 40 hours a week, and nearly 40% worked more than 50 hours in one week. A similar finding was reported by Kinman and Jones (2008) which states that 54% of UK higher education lecturers work more than 45 hours, and 21% more than 55 hours in one week. Most said they could not complete tasks within 40 hours of work. Time outside working hours is proven to be often spent by lecturers to complete their work. Sliskovic and Sersic (2011) in Croatia reported that more than three quarters of the lecturers worked more than 40 hours a week, and nearly 40% worked more than 50 hours

in one week. A similar finding was reported by Kinman and Jones (2008) which states that 54% of UK higher education lecturers work more than 45 hours, and 21% more than 55 hours in one week. Most said they could not complete tasks within 40 hours of work.

Research related to lecturer workload and other professions in Indonesia has been conducted by (Purwaningsih and Sugiyanto, 2007; Ginting, 2009; Somantri, I., Hernawaty, T., & Multisari, R., 2019; Wulandari, A. E., Susilaningsih, F. S., & Somantri, I. 2018)) in Semarang, which shows that the workload is felt by lecturers due to the high burden of mental effort in carrying out education and teaching tasks. The calculation of lecturer workload has actually been determined. Based on the Law of the Republic of Indonesia Number 12 of 2012 concerning Higher Education, explained that the main task of lecturers is to implement the Tridharma of Higher Education with a workload that is at least commensurate with 12 Semester Credit Units (SKS) and a maximum of 16 credits each semester. The implementation of lecturer workloads at Unpad refers to the stipulated mandatory regulations of the Republic of Indonesia. Regulation of the Chancellor of the University of Padjadjaran Number 46 of 2014 concerning Permanent Lecturers, Home Base, Study Program Supervisors, and Calculation of Workloads explains that Unpad is a Legal Entity State University (PTN BH) referring to the stipulated regulations.

As one of the faculties at Padjadjaran University, Faculty of X is required to carry out the regulations set by the University of Padjadjaran. Faculty X Padjadjaran University is a faculty that is academic in nature and also a professional education. Therefore, the Faculty of X Padjadjaran University has three study programs, namely undergraduate study programs (S1), professional study programs, and master's study programs (S2). This causes the Faculty of X lecturers to have quite complex assignments such as teaching in the big class, teaching in small classes (tutorials), guiding students to practice in the laboratory, guiding students to practice directly in the field both in the Community or Hospital, and guiding students to conduct research as assignments end of each study program

(Skipisi, Nursing and Thesis Care Report) (Padjadjaran University, 2016). Job demands for lecturers of the Faculty of X Padjadjaran University increased after the existence of the Main Non-Campus Study Program (PSDKU). In 2016, the first PSDKU was located in Pangandaran which had five fields of study, of which one of them was Faculty of X (Hendriyana, 2016). Then in 2017, one of the campuses in Garut Regency was officially handed over to Padjadjaran University (West Java Provincial Government, 2017). This resulted in the lecturers of the Faculty of X Padjadjaran University having to teach students in several places such as teaching in Jatiningor Building, Jalan Eyckman, Garut and Pangandaran, as well as guiding students to practice the field in several hospitals in order to carry out the assigned task demands.

Based on information from the faculty X Sub Academic Section (SBA), there were 66 lecturers (80.5% female and 19.5% male). From all 66 lecturers, there were 14 lecturers who were on leave to continue their studies and maternity leave so that the number of lecturers who were actively teaching in the faculty were 52 lecturers. The 52 lecturers are responsible for teaching 1,124 students from undergraduate study programs (S1), guiding as many as 166 students from professional programs, and also responsible for 64 master students (S2).

From these data, the ratio between the number of lecturers of the Faculty of X Padjadjaran X and the number of students from the undergraduate study program (S1) is 1:22. This is not in accordance with the regulations set by the Ministry of Research, Technology and Higher Education (2014), and the Rector's Regulation of the University of Padjadjaran (2014), where the ratio between the number of lecturers and the number of students in the health science cluster is 1:20. In fact, the 52 lecturers are also responsible for the continuation of professional study programs and master's study programs, so that if the number of S1 students, NERS students, and S2 students is united, then the ratio of lecturers of Faculty of X Padjadjaran University is not in accordance with established regulations.

The amount of responsibility and demands on lecturers of Faculty of X can increase

the mental workload possessed by Faculty X lecturers. Based on preliminary studies conducted on 5 lecturers, almost all lecturers stated that they felt exhausted while working, spent a lot of time outside work to complete their work, complaining of stiffness on the shoulders sometimes feeling dizzy when working too long in front of a laptop. In addition, based on a preliminary study of 10 faculty X students, 3 of them stated that the tutorial schedule was delayed because the lecturers were sick or the lecturers' schedules were crowded.

Based on this phenomenon, researchers felt interested in conducting research on the mental workload of the X lecturers at the University of Padjadjaran. The purpose of this research is to know the description of mental workload based on the tasks of education and teaching, research, and community service, and to know the contribution of the mental demand dimension, physical demand, temporal demand, performance, frustration, and effort to the mental workload.

Research Method

The design of this study uses descriptive quantitative research methods. The variable in this study is the mental workload on the lecturer. The population in this study were all lecturers who were actively working in the Faculty of X Padjadjaran University, totaling 52 lecturers. The sampling technique uses a total sampling technique. However, researchers found various obstacles such as lecturers who did not respond when asked for approval to be respondents, respondents did not return the questionnaire, and lecturers did not fill all questions in the questionnaire, so there were only 43 lecturers involved as research respondents. Data collection was carried out on May 28 to June 30 2018. The instrument used in this study was a NASA-Task Load Index (NASA-TLX) questionnaire developed by Sandra G. Hart from NASA-research center and Lowell E. Staveland from San Jose State University in 1981, which was later translated into Indonesian by Euis Nina SY, ST, MT, Mega Bagus Herlambang, ST, MT, and Fitri Agustina, ST, MT in 2011. NASA-TLX instruments have

a validity value of 0.857 and the reliability value is 0.921. Data analysis used descriptive statistics to determine frequency distribution and also presented in the form of mean to find out the contribution of each dimension to the mental workload of lecturers at the Faculty of X Padjadjaran University. This research has

received ethical approval from the Research Ethics Commission of Padjadjaran University with Number: 420 / UN6.KEP / EC / 2018.

Research Results

Table 1 Characteristics of respondents (n=43)

Characteristic	Frequency (f)	Persentation (%)
Gender		
Male	8	18.6
Female	35	81.4
Age		
Early Adult	19	44.5
Middle Adult	23	53.5
Late Adult	1	2.3
Status Marital		
Married	40	93
Unmarried	3	7
Distance of Residence to Workplace		
Close	12	27.9
Far Enough	22	51.2
Very far	9	20.9
Functional Position		
Professor	1	2.3
Head of Lecturer	7	16.3
Lecturer	25	58.1
Assistant Lecturer	7	16.3
Teacher	3	7.0
Additional Manager Tasks		
Yes	23	53.5
No	20	46.5
Individual Performance Contract		
PKPI 1 (25%–54%)	3	7.0
PKPI 2 (55%–84%)	29	67.4
PKPI 3 (85%–114%)	10	23.3
PKPI 4 (115%–144%)	1	2.3
PKPI 5 (145%–200%)	0	0

Table 2 Mental Workloads at Faculty of X Lecturers at Padjadjaran University Based on Educational and Teaching Tasks

Category	Frequency (f)	Persentation (%)
Moderate	1	2.3
Rather high	5	11.6

High	32	74.4
Very high	5	11.6

Table 3 Mental Workloads at Faculty of X Lecturers at Padjadjaran University Based on Educational and Teaching Tasks

Category	Frequency (f)	Persentation (%)
Rather high	5	11.6
High	33	76.7
Very high	5	11.6

Table 4 Frequency Distribution of Mental Workloads at Faculty of X Lecturers at Padjadjaran University Based on Community Service Tasks

Category	Frequency (f)	Persentation (%)
Moderate	2	4.7
Rather high	7	16.3
High	32	74.4
Very high	2	4.7

The results of this study indicate that the majority of respondents in this study were female. Of the three age categories, the largest percentage of respondents was in middle adulthood. Based on the marriage status category, the majority of respondents have married status. This research also shows that more than 50% of respondents have a considerable distance from home to work place, which means that the respondents have to travel 10 KM to 30 KM to arrive at work (Faculty X Padjadjaran University). The majority of functional positions held by respondents are lecturers. Nearly 54% of research respondents have additional managerial duties. The majority of respondents have individual performance contracts, also called PKPI level 2, which is in the range of 55%–84%.

In this study, the majority of respondents obtained a high mental workload in carrying out educational and teaching assignments. The results of this study also showed that none of the respondents had a mental workload in the low category.

The results of this study indicate that the majority of respondents have a high mental workload in carrying out research assignments. The results of this study also showed that none of the respondents had a

mental workload in the low category or in the medium category.

In this study it was found that the majority of respondents had a high mental workload in carrying out community bathing assignments and none of the respondents had a low mental workload.

Discussion

Mental Workload at Lecturer X Faculty of Padjadjaran University Based on Teaching and Education Tasks, Research Tasks, and Community Service Tasks.

Based on the results of the study, it was found that most of the respondents had mental workloads on Faculty X lecturers included in the high category in carrying out educational and teaching assignments, research assignments, and in carrying out community service assignments. The results of this study are not in line with the research conducted by Ginting, Santoso, and Hartini (2009) in Semarang, which shows that the lecturer at the Faculty of Electrical Engineering at Diponegoro University has a high mental workload only on education and teaching assignments, but on assignments the research mental lecturer workload is categorized as

being moderate, and on community service assignments the lecturers' mental workload is low. The lecturers' high mental workload is a high mental effort burden or the amount of attention needed to complete by lecturers to complete their tasks which are influenced by individual factors and work factors (Kinman & Jones, 2008). To fulfill the demands of the task in the field of education and teaching, lecturers must carry out many activities such as attending lecturers' functional education and training, preparing and studying lecture materials, conducting lectures, making exam questions, supervising examinations, correcting examination results or student assignments, and developing programs lecture (Directorate General of Higher Education Ministry of National Education, 2010). According to Ginting, Santoso, and Hartini (2009), these activities made lecturers need a high level of accuracy, took the attention and concentration of lecturers, and needed a lot of time in carrying out these activities. This can lead to increased mental workload of lecturers when carrying out educational and teaching assignments. While the task of community service, consists of carrying out the development of education and research results that can be utilized by the community, providing training or counseling to the community, providing services to the community or other activities that support the implementation of development, and making community service works (Directorate General of Higher Education Ministry of National Education, 2010). Based on the explanation that has been described, the high workload of lecturers on the task of education and teaching can be caused by the large demands of the task, so that the lecturer must have a great effort in fulfilling the demands of the task.

High workloads can have some impact on workers. The impact is a result that can occur to someone because it has a high mental workload. The impact of high mental workload on a person is the occurrence of physical changes such as disturbances in the lower back, upper back, neck, shoulders, elbows, arms, lower legs, thighs and knees due to high pressure on the cervix, lumbar and shoulder muscles due to work that is owned, and because of rest periods that do not meet

the body's needs; psychological changes such as work stress and depression because; and changes in behavior, when the mental workload they have is too high, many people choose to avoid the pressure that comes from their mental workload. This avoidance strategy can have negative consequences on its performance (Cain, 2007).

This can be caused by differences in the fields of work held by respondents. The Ginting Santoso, and Hartini (2009) study was conducted on lecturers who worked in the Faculty of Electrical Engineering at Diponegoro University while the study was conducted at the Faculty of X Padjadjaran University which clearly shows the different types of fields involved so that they can have different demands on each of their jobs. Faculty of Padjadjaran University X has a vision to become a research-based superior learning faculty, both in the field of science and the profession of nursing. So that this can be the reason for the differences in the results of mental workloads on research assignments and community service assignments between this research and previous research at Padjadjaran University.

In addition, respondents in previous studies were dominated by men because the faculty was the Faculty of Electrical Engineering. While the results of this study indicate that respondents were dominated by female lecturers (81.4%). Women tend to be emotional in solving problems than men so that women often feel excessive concerns (Baumgarder & Crothers, 2010). This is in line with the research of Krantz, Berntsson, and Lundberg (2005) which shows that women have a higher total workload than men, because women have a greater responsibility because they have tasks related to the household and tasks from work it has. In addition, there are more female working hours than men because women spend time at work until work hours are over and continue doing homework so that the total number of hours of work for women is more than for men.

Nevertheless, the study shows a similar thing in the task of education and teaching which shows that the mental workload in carrying out these tasks is included in the high category. To fulfill the demands of the

task in the field of education and teaching, lecturers must carry out many activities such as attending lecturers' functional education and training, preparing and studying lecture materials, conducting lectures, making exam questions, supervising examinations, correcting examination results or student assignments, and developing programs lecture (Directorate General of Higher Education Ministry of National Education, 2010). According to Ginting, Santoso, and Hartini (2009), these activities made lecturers need a high level of accuracy, took the attention and concentration of lecturers, and needed a lot of time in carrying out these activities. This can lead to increased mental workload of lecturers when carrying out educational and teaching assignments.

Padjadjaran University has a vision to become a superior university in the implementation of world-class higher education. To realize this, Padjadjaran University has a strategy to become a superior learning university (Excellent Teaching University). This is what causes Faculty X as one of the faculties at Padjadjaran University, demanding that all lecturers carry out maximum education and teaching tasks. Based on the explanation that has been described, the high workload of lecturers on the task of education and teaching can be caused by the large demands of the task, so that the lecturer must have a great effort in fulfilling the demands of the task.

In carrying out research assignments, lecturers are required to produce a quality and useful study for all parties and must conduct publications both nationally and internally, while in carrying out community service tasks, lecturers are required to go directly to the community and implement easy research results for applied in people's lives, by providing training or counseling to the community. Where, both of these tasks are carried out outside of teaching hours and are often carried out until it takes free time outside working hours. So that this can cause lecturers to have Psychological Stress Load in carrying out research assignments that are characterized by feelings of anxiety and stress while working (Purwaningsih & Sugiyanto, 2007).

This was also shown in the Mensah (2016)

study involving 312 lecturers at the University of Ghana, West Africa. The results of his research show that the biggest factor that can predict the mental workload on lecturers while carrying out their tasks is the feeling of anxiety, despair, irritation and stress that the lecturer has when working on his assignment. The higher the feeling, the higher the mental workload of the lecturer.

These conditions can be possessed by the Faculty of X Padjadjaran University lecturers while carrying out research assignments given the University of Padjadjaran's strategy to become a University of Quality Research and Service (Research And Excellent Teaching University). The strategy requires all lecturers, including lecturers of Faculty of X Padjadjaran University to be involved in research activities and are required to increase research productivity within the University of Padjadjaran. This causes the Faculty of X to continue to do health related research. Lecturers are also required to publish Scopus indexes in national and international journals and conduct community service based on research results (Directorate of Research, Community Service and Innovation Unpad, 2016). Researchers assume that these demands will provide a separate burden for lecturers of the Faculty of X Padjadjaran University, because one of the factors that affect a person's mental workload is the demands of the work they have (Hart & Staveland, 1988). So that this can cause lecturers of the Faculty of X Padjadjaran University to have a high mental workload on education and teaching assignments, research assignments, and community service assignments.

Mental Workload at Lecturer X Faculty of Padjadjaran University

The results showed that of the six dimensions identified, the mean effort dimension was the highest mean ($M = 51.8$) compared to other dimensions. These results are in line with the research of Purwaningsih and Sugiyanto (2007) which shows that the effort dimension is the dimension most experienced by respondents (69.23%). This effort dimension shows the amount of attention and mental demands needed to complete a job. The high effort dimension of the lecturer illustrates the amount of mental and physical effort

and the high concentration needed by the lecturer in fulfilling his work (Purwaningsih & Sugiyanto, 2007). Based on this, the high mental workload experienced by the majority of lecturers can be caused by the amount of effort needed to complete his duties as a lecturer, because the highest mean shows the greater contribution to the mental workload (Hart & Staveland, 1988).

This study also shows that the dimensions included in the rather high category are the Temporal Demand dimension ($M = 49.5$). This shows that the mental workload possessed by the lecturer is due to the size of the Temporal Demand or the demands of time in completing the work. According to Houston, Meyer, and Paewai (2006), the high temporal demand for lecturers is caused by the clash of time needed to complete teaching and research assignments stated by respondents' reports stating that the time allocation provided is not in accordance with actual time spent. The results of this study are in line with the research conducted by Kusnadi (2014) who examined the mental workload at the University of Surabaya by involving 161 lecturers who showed that the dimensions that contribute to mental workload are the Temporal Demand dimension, which means that lecturers have a high time pressure on while working. As found in the research of Rothman and Barkhuizen (2001) in South Africa which showed that fatigue in lecturers was caused by excessive workload. The excess workload is felt by 80% of lecturers who come from time pressure caused by collisions between teaching assignments and research assignments. Similar findings were reported in a Houston, Meyer, and Paewai (2006) study in New Zealand which showed that as many as 86% of lecturers in 2002 and 94% of lecturers in 2003 experienced excessive workloads due to spending a lot of time completing their work demands. Where 34% of lecturers in 2002 and 39% of lecturers in 2003 reported having worked more than 10 hours outside working hours to complete their duties.

This study also shows that the dimensions that have a low category are the Performance dimension (53.5%). Performance describes how much success someone has in their work and how satisfied they are with their work

(Hart & Staveland, 1988). This shows that the Performance dimension has very little contribution to the mental workload felt by lecturers, because the results show that even though the lecturers' mental workload is high, the lecturer gains success in his work and feels satisfied with the results of his work. The results of this study are in accordance with Kusnadi's (2014) study which shows that the Performance dimension is the dimension included in the lowest category in the respondent's mental workload because the lecturer has the qualifications and quality in accordance with university regulations making it possible to complete the work even though the completion process has high mental workload.

A high mental workload can cause stimulation of the central nervous system which can cause pain or in other words can cause a disease in workers. If the mental workload is greater than the ability of workers, there will be a sense of discomfort, fatigue, and the incidence of injury, or even result in a decrease in work productivity (Amalia, Wahyuni, & Ekawati, 2017). This is also explained by Satalaksana, Anggawisastra, and Tjakraatmadja (2006) which states that if a person continues to have a high workload, it will cause individuals to have psychological fatigue, which is a fatigue that arises in the feelings of workers. This happens because of a reaction from the center of consciousness (Cortex Cerebri) which works on the influence of two antagonistic systems, namely the system of inhibition and the activation system. The inhibitory system (inhibitor) is present in the thalamus which has a reduced ability to react. While the activation system is found in the Reticularis Formatio which stimulates the body to react. Both of these antagonistic systems can affect a person's condition at work, if the activation system is stronger than the inhibition system, then the person will be in a fresh state to work. However, if the inhibition system is stronger than the activation system, then the person will experience psychological fatigue which can cause workers to experience emotional tension so that they are irritable and offended.

Fatigue due to psychological stress can cause disruption to the health of lecturers, such as complaints of headaches, stiffness

in the shoulder, back pain, breathing feeling depressed, eyelid spasms, tremors in the limbs, and the body feels unwell. The way to overcome this is to fulfill the caloric needs of the body, pay attention to the ability of the body by paying attention to the expenditure of energy that may not exceed its limits. In addition, lecturers must pay attention to regular working time by making arrangements for working hours, having adequate rest periods, having time for vacation and recreation, providing music, and providing leisure time for sports (Sutalaksana, Anggawisastra, and Tjakraatmadja, 2006). This is expected to be carried out by the lecturer at the Faculty of X Padjadjaran University in order to reduce his mental workload.

Conclusion

The results of the study showed that the mental workload of the lecturers of the Faculty of X Padjadjaran University was that most respondents showed a high mental workload, both on education and teaching assignments, research assignments, or on community service assignments. The mean results in each dimension show that the Effort dimension has the highest mean value of 51.8, then the Temporal Demand dimension which has a mean of 49.5, the Mental Demand dimension with a mean of 33.3, the Frustration dimension with mean 24.9, Physical Demand and mean 18, 6, and Performance dimensions with mean 9.4. This shows that the Effort dimension has the biggest contribution in the mental workload of the X lecturers of the University of Padjadjaran. Based on the results of the study, the researchers suggested to the faculty leaders to evaluate the work system as an effort to reduce the high mental workload on the lecturers and researchers also hoped that this research could be used as preliminary data for Padjadjaran University in preparing a program as a preventive effort in preventing mental workload high on lecturers, so that they can prevent health problems to lecturers and decrease the performance productivity of lecturers in the Faculty of X Padjadjaran University.

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