

Research Article

Musculoskeletal Disorders (MSDs) Among Lecturers and Employees During Pandemic Era in Universitas Pekalongan

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Abstract.

Musculoskeletal Disorders (MSDs) comprise a spectrum of symptoms involving muscle tissue, tendons, ligaments, cartilage, nervous system, bone structures, and blood vessels. MSDs cause pain, numbness, tingling, swelling, stiffness, shaking, sleep disturbances, and burning sensations. Due to the impact of Covid-19, the change of the work from the office to be work from home is a concern as it may exacerbate. This study aimed to describe symptoms of MSDs among lecturers and employees during pandemic era in Universitas Pekalongan. This is a descriptive study with cross-sectional design. It involved 36 respondents including lecturers and employees of Universitas Pekalongan. Each respondent was asked to fulfill the observation checklist that examined symptom of pain from head to toe which divided into 28 parts of the body. Results of this study revealed that majority respondents of this study aged range from 31-40 years old (41.7%), gender of male (52.8%), type of work was employees (52.8%), and have the length or work about 0-5 years (25.0%). The results show that the five highest region of the body that experienced MSDs in level "Pain" were upper neck, lower neck, back, waist, and buttock ranging from 11.1% to 16.7%. Whereas, there was only 2.8% respondents reported of feeling "Extremely Pain" in region left knee. Employees who worked in administration were more in a monotonous position with computer work equipment. Meanwhile, lecturers were worked online during the pandemic and required to have a sedentary life where they carry out almost all of their activities monotonously in a sitting position in front of the computer. It recommended that the institutions should pay more attention towards strategies of occupational health among lecturers and employees in Universitas Pekalongan.

Keywords: MSDs, musculoskeletal disorders, occupational health, universitas pekalongan

1. INTRODUCTION

Musculoskeletal is a bundle of symptoms related to muscle tissue, tendons, ligaments, cartilage, nervous system, bone structure, and blood vessels where musculoskeletal complaints are complaints. In parts of the skeletal muscles felt by a person ranging from mild complaints to fatal [1]. Initially, the complaints of musculoskeletal disorders (MSDs) were in the form of aches, pains, numbness, tingling, swelling, stiffness, shaking, sleep disturbances, and burning sensations. As a result, it leads to the inability of a person to

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carry out movement and coordination [2], [3]. Movement of limbs or extremities, thereby reducing efficiency at work and losing work time so that work productivity decreases. Skeletal muscle complaints generally occur due to excessive muscle contraction due to giving a workload that is too heavy with a long duration of loading. On the other hand, muscle complaints may not occur due to muscle contractions ranging from only 15-20% of maximum muscle strength. However, if the muscle contraction exceeds 20%, the blood circulation to the muscle decreases according to the level of contraction which is influenced by the amount of energy required. The oxygen supply to the muscles decreases, the carbohydrate metabolism process is inhibited and as a result there is an accumulation of lactic acid which causes pain [4], [5], [6], [7].

Currently, almost all aspects of work, both in the business and office sectors as well as in industry and manufacturing, have utilized the support of technology and computer equipment in completing and supporting their work activities and in a static sitting position [8]. In Indonesia, based on research conducted by Rahadini in 2006, who conducted research on office employees, out of 200 respondents found the highest prevalence rate of skeletal muscle system complaints in the neck (68.7%), back (62.1%), and the spine (60%). Health problems in workers can be caused by factors related to work or not related to work. The health status of workers is influenced not only by health hazards in the workplace and work environment, but also by factors of occupational health services, work behavior, and other factors [12]. Working position can affect the health of workers, both standing and sitting. As much as possible the work is done by sitting. The advantage of working in a sitting position is that it can reduce leg fatigue, avoid unnatural attitudes, reduce energy consumption and the level of blood circulation needs. In addition, working in a sitting position also has several disadvantages, namely the softening of the abdominal muscles, a curved back and not good for internal organs, especially digestion if the position is carried out in a bent manner [9]. Work done in a sitting position can be at risk for MSDs, one of which is a computer user worker. One of the factors causing this is because the work is in a standby sitting position in front of the computer for more than four hours a day and the posture used in doing work (typing) is a static sitting posture [1], [7], [8], [10], [11]

Pekalongan University is one of the higher education institutions located in Pekalongan City which organizes higher education, research and service activities and provides academic degrees in several scientific fields. In carrying out its activities, Pekalongan University involves educators and education staff in carrying out the duties and responsibilities of organizing educational activities. The Covid-19 pandemic has an

impact on changes in learning activities, changes in learning methods from outside the network (offline) to within the network (online). This restriction and changes in learning methods have positive and negative impacts, the positive impacts of which are as a form of support for efforts to control the transmission of Covid-19, while one of the negative impacts is physical complaints due to monotonous work activities. Most of the activities are carried out at work desks using computers with an average length of time of 7-8 hours per day adjusted to the allocation of activities for each lecturer and employee. Work activities that are carried out using a computer in a static sitting position and for a long time and continuously can be at risk of developing MSDs.

2. METHOD

This is a descriptive study with cross sectional design. This study was conducted on Universitas Pekalongan which consist of 8 (eight) faculties divided into 15 (fifteen) study programs. Population of this study was lecturers and employees in Universitas Pekalongan. This study involved 36 respondents including lecturers and employees in Universitas Pekalongan during October 2021 to January 2022. The instrument of this study was used observation checklist that examined symptoms of pain from head to toe which divided into 28 parts of the body. Respondents were asked their pain range from 1 to 4 for each parts of the body. Range of value on the instruments means higher value was higher score. Score 1 means no pain, score 2 means quite pain, score 3 means pain, and score 4 means extremely pain.

3. RESULTS AND DISCUSSION

Results and discussion in this study were consisted of analysis univariat of each variable including age, gender, occupation, length of work, and musculoskeletal disorders. Majority of respondents majority respondents of this study aged range from 31-40 years old (41.7%), gender of male (52.8%), type of work was employees (52.8%), have the length or work about 0-5 years (25.0%), and have low level of MSDs (91.7%) (See table 1).

Based on table 2. it can be seen that the respondents who work as lecturers amounted to 17 (37.2%) and employees amounted to 19 (52.8%). Generally, the description of lecture activities is teaching, doing research and community services. But, the method of working was change during the pandemic, in the beginning teaching

TABLE 1: Distribution Frequencies of Respondents Regarding to Age, Gender, Occupation, and Length of Work.

No.	Variables	Frequencies	Percentage (%)
1	Age		
	20 – 30 years old	6	16.7
	31 – 40 years old	15	41.7
	41 – 50 years old	9	25.0
	51 – 60 years old	6	16.7
2	Gender Male	17	47.2
	Female	19	52.8
3	Occupation Lecture	17	47.2
	Employee	19	52.8
4	Length of Work		
	0 – 5 years old	9	25.0
	6 – 10 years old	8	22.0
	11 – 15 years old	4	11.0
	16 – 20 years old	6	16.0
	21 – 25 years old	6	16.0
	26 – 30 years old	2	5.0
	>30 years old	1	5.0
5	Musculoskeletal Disorder (MSDs)		
	Low	33	91.7
	Average	3	8.3
	High	0	0.0
	Very high	0	0.0

Source : Primary Data, 2022

and learning activities were carried out in the classroom, laboratory, and in the field. Meanwhile, during a pandemic with limitations and activity restrictions, this has an impact on monotonous working conditions or postures on lecturer activities. In addition, the Work from Home (WFH) policy has an impact on uncontrolled work postures, one of which is the availability and support of work desks with ergonomic designs during WFH. Inadequate support for facilities and infrastructure from the ergonomic aspect can cause discomfort and result in a decrease in work productivity [4]. Whereas, the description of the work activities of employees is influenced by the work unit, or part of the work of each employee. The administrative work area with a monotonous work posture when

using a computer monitor screen, while the infrastructure supervision work area has activities that tend to be monotonous because they carry out supervision and monitoring of the campus area [5].

Majority respondents were in low level of MSDs (91.7%). The change of the work from the office to be work from home is worried to trigger musculoskeletal disorders. For example, the people who usually work from office have the chair which has set based on the ergonomic standard. When they have to work from home, the people usually sit on the chair which they have in the home, so that it does not appropriate with the ergonomic standard so that musculoskeletal disorder is possible experienced by the workers [2]. Therefore, the study identified musculoskeletal disorder of the workers in Indonesia during work from home on the Covid-19 pandemic (Condrowati, 2020) . Overall the percentages of MSDs in each region was showed on Table 2 (See table 2).

The current study examined Musculoskeletal Disorder (MSDs) of lecturers and employees during pandemic era which required them to work from home. Overall, it revealed that 94.5% respondents were experienced of pain caused MSDs. The results show that the five highest region of the body that experienced MSDs in level "Pain" were upper neck, lower neck, back, waist, and buttock ranging from 11.1% to 16.7%. Whereas, there was only 2.8% respondents reported of feeling "Extremely Pain" in region left knee. The results were confirmed by Erik and Smith (2011) that showed the most prevalent body sites experienced with musculoskeletal disorder ranges between 39% and 95% were neck, back, and upper limbs. Besides, Phedy and Gatam (2016), Azma et al. (2016), and Chiu and Lam (2006) confirmed that neck, shoulder, upper back, and lower back were the most commonly region affected by musculoskeletal disorder.

Working from home has required a person to stay in front of the computer all day long, the upper trapezius muscle was the most exerted muscle that leads to the generation of internal forces within the body in which it will increase the muscle tension and pain in the shoulder and neck. The musculoskeletal disorder might be triggered because the workers have to work for five to seven hours a day sitting on a chair. Moreover, those who prefer to sit on the floor has really didn't meet any ergonomic standard. It is supported by some studies that explained that the seated position is one of the factors which triggered musculoskeletal disorder [9].

TABLE 2: Percentages (%) of Musculoskeletal Disorders (MSDs).

No.	Part of Body	No Pain	Quite Pain	Pain	Extremely Pain
1	Upper Neck	41.7	41.7	16.6	0.0
2	Lower Neck	38.9	47.2	13.9	0.0
3	Left shoulder	61.6	30.6	8.3	0.0
4	Right shoulder	63.9	27.8	8.3	0.0
5	Left upper arm	86.1	11.1	2.8	0.0
6	Back	52.8	30.6	16.7	0.0
7	Right upper arm	77.8	19.4	2.8	0.0
8	Waist	58.3	30.6	11.1	0.0
9	Buttock	55.6	30.6	13.9	0.0
10	Bottom	80.6	13.9	5.6	0.0
11	Left elbow	94.4	5.6	0.0	0.0
12	Right elbow	88.9	11.1	0.0	0.0
13	Left lower arm	88.9	11.1	0.0	0.0
14	Right lower arm	80.6	19.4	0.0	0.0
15	Left wrist	83.3	13.9	2.8	0.0
16	Right wrist	72.2	19.4	8.3	0.0
17	Left hand	91.7	2.8	5.6	0.0
18	Right hand	83.3	13.9	2.8	0.0
19	Left thigh	86.1	11.1	2.8	0.0
20	Right thigh	88.9	8.3	2.8	0.0
21	Left knee	86.1	11.1	0.0	2.8
22	Right knee	75.0	22.2	2.8	0.0
23	Left calf	80.6	16.7	2.8	0.0
24	Right calf	80.6	16.7	2.8	0.0
25	Left ankle	75.0	19.0	5.6	0.0
26	Right ankle	75.0	19.4	5.6	0.0
27	Left foot	72.2	22.2	5.6	0.0
28	Right foot	72.2	22.2	5.6	0.0

Source : Primary Data, 2022

4. CONCLUSION

This study conclude that majority respondents of this study aged range from 31- 40 years old (41.7%), gender of male (52.8%), type of work was employees (52.8%), and

have the length of work about 0-5 years (25.0%). Most of the respondents complaints pain in the upper neck (16.6%), back (16.7%), lower neck (13.9%), waist (11.1%), and knee (2,8%). Employees who worked in administration were more in a monotonous position with computer work equipment. Meanwhile, lecturers were worked online during the pandemic and required to have a sedentary life where they carry out almost all of their activities monotonously in a sitting position in front of the computer. Majority respondents were in low level of MSDs (91.7%). It recommend that the institutions should pay more attention towards strategies of occupational health among lecturers and employees as preventive program in Universitas Pekalongan

References

- [1] Erick PN, Smith DR. A systematic review of musculoskeletal disorders among school teachers. *BMC Musculoskelet Disord*. 2011 Nov;12(1):260.
- [2] N. J. Sagala, S. M. Nasri, D. Keselamatan, K. Kerja, and F. Kesehatan, "ANALISIS FAKTOR PSIKOSOSIAL DAN STRES KERJA DI MASA PANDEMI COVID-19 PADA PEKERJA PERKANTORAN DI JAKARTA." <https://doi.org/10.31596/jkm.v9i2.750>.
- [3] Rozali YA, Sitasari NW, Lenggogeni A. MENINGKATKAN KESEHATAN MENTAL DI MASA PANDEMIC. *Jurnal Pengabdian Masyarakat AbdiMas*. 2021 Jan;7(2): <https://doi.org/10.47007/abd.v7i2.3958>.
- [4] Bintang SS. A., R. Mutiara, M. Zannah, and D. T. Febri Suryanto, "FAKTOR - FAKTOR YANG MEMPENGARUHI TIMBULNYA NYERI PUNGGUNG BAWAH PADA KARYAWAN WORK FROM HOME DIMASA PANDEMI COVID 19," [JKG]. *JURNAL KESMAS DAN GIZI*. 2021 Oct;4(1):38–44.
- [5] "1774-Article Text-4551-1-10-20220629".
- [6] J. Sosial, H. Terapan, and N. F. Dewi, "IDENTIFIKASI RISIKO ERGONOMI DENGAN METODE NORDIC BODY MAP TERHADAP PERAWAT POLI RS X."
- [7] Moom RK, Sing LP, Moom N. Prevalence of Musculoskeletal Disorder among Computer Bank Office Employees in Punjab (India): A Case Study. *Procedia Manuf*. 2015;3:6624–31.
- [8] F. Bachtiar, F. T. Maharani, and D. Utari, "Musculoskeletal Disorder of Workers During Work From Home on Covid-19 Pandemic: A Descriptive Study," 2020.
- [9] Dong H, Zhang Q, Liu G, Shao T, Xu Y. Prevalence and associated factors of musculoskeletal disorders among Chinese healthcare professionals working

in tertiary hospitals: a cross-sectional study. *BMC Musculoskelet Disord.* 2019 Apr;20(1):175.

- [10] N. B. Azma, R. Noah, N. Azma Amin, M. Jalan Lagoon Selatan, B. Sunway, and S. Darul Ehsan, "Work Related Musculoskeletal Disorders in Female Nursing Personnel: Prevalence and Impact," 2016.
- [11] Phedy P, Gatam L. Prevalence and associated factors of musculoskeletal disorders among young dentists in Indonesia. *Malays Orthop J.* 2016 Jul;10(2):1–5.
- [12] Anies (2014). *Kedokteran Okupasi Berbagai Penyakit Akibat Kerja dan Upaya Penanggulangannya dari Aspek Kedokteran.* Yogyakarta : Ar-Ruzz Media.