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Factors Related of Musculoskeletal Disorders (MSDS) Complain in Online Study at Public Health University X

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Abstract

Permasalahan ergonomi berkaitan dengan adanya ketidak nyamanan pada saat melakukan pekerjaan, sehingga berdampak pada keluhan suatu penyakit tidak terkecuali dirasakan oleh mahasiswa pada saat perkuliahan dengan metode daring. Pada penelitian ini memiliki permasalahan antara lain 7 responden menyatakan punggung dan leher merasakan sakit, 8 orang merasakan mata berair, mata pedas. Waktu tidur yang berbeda dari 7 responden. Waktu kuliah yang berbeda antar kelas dari 7 responden. Tujuan dari penelitian ini adalah menganalisis faktor yang berhubungan dengan keluhan musculoskeletal disorder pada perkuliahan metode daring pada mahasiswa Angkatan 2020 di Fakultas Kesehatan Masyarakat. Penelitian ini merupakan penelitian deskriptif kuantitatif, dengan populasi adalah mahasiswa angkatan 2020 yang berjumlah 238 orang, dan sampel penelitian berjumlah 71 mahasiswa. Teknik pengambilan sampel menggunakan incidental sampling. Instrumen yang digunakan adalah nordic body map, dan lembar REBA. Analisis data yang digunakan adalah analisis Univariate dan analisis bivariat dengan Uji Chi-square. Ada hubungan antara jenis kelamin dan durasi kuliah daring dan tidak ada hubungan antara waktu tidur dengan keluhan muskuloskeletal pada mahasiswa angkatan 2020 di Fakultas Kesehatan Masyarakat X dengan $p = 0,41$, $0,39$ dan $0,886$. Terdapat hubungan antara jenis kelamin dan durasi kuliah dan Tidak terdapat hubungan waktu tidur dengan keluhan muskuloskeletal pada perkuliahan metode daring pada mahasiswa angkatan 2020 Fakultas Kesehatan Masyarakat Universitas X.

Kata kunci : jenis kelamin, durasi kuliah, waktu tidur, mahasiswa, muskuloskeletal.

Factors Related of Musculoskeletal Disorders (MSDS) Complain in Online Study at Public Health University X

Abstract

Ergonomics problems are related to the presence of discomfort when doing work, so that the impact on complaints of a disease is no exception felt by students during lectures using the online method. In this study, there were problems, including 7 respondents who stated that their back and neck felt pain, 8 people felt watery, and pungent in the eyes. Different sleep times of 7 respondents. Different lecture times between classes of 7 respondents. The study goal was to analyze the element related to complaints of musculoskeletal disorders in online study for students' class 2020 at the Faculty of Public Health. Methods of this study was a quantitative descriptive, with a population of 238 students from the class of 2020, and a research sample of 71 students. The sampling technique used incidental. The instruments tool used nordic body map, and REBA sheet. The data analysis used Chi-square test. There was relationship between gender and the duration study and there was no correlation between sleep time and musculoskeletal complaints in students' class 2020 at the Faculty of Public Health

University X with $p = 0.41, 0.39$ and 0.886 . There is a relationship between gender and duration study and there is no correlation between sleep time and musculoskeletal complaints in online study in students' class 2020 of the Faculty of Public Health, University X.

Keywords: gender, study duration, sleep time, student, musculoskeletal disorders

INTRODUCTION

Coronavirus Disease 19 (Covid 19) which has been present in the world community is a fairly complicated health problem. The disease is a component of the viral genus that causes diseases such as the flu virus to the most severe is Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) (WHO, 2020). Indonesia, Covid 19 occurred in March 2020. Covid 19 has an impact on the pattern of human life, including a clean and healthy lifestyle which is increasing and has a negative impact on health, social, economic, and education in Indonesia is no exception.

In the world of education in Indonesia, the impact of covid 19 is the pattern of changes in the study process from the synchronous method that facilitates interaction with students and then turns into online/online or asynchronous. This is in accordance with the Circular from the Minister of Education and Culture Indonesia Number: 26962/MPK.A/HK/2020 dated March 17, 2020 regarding working from home to prevent the spread of Corona Virus Disease (COVID-19) (Kemendikbud, 2020). The existence of this online learning provides several problems for students including tight eye, headaches, arm and finger felt numb, and tension in the neck while other problems are ear pain, insomnia and back pain (Canaria et al., 2019). The cause of this problem is the use of mobile phones 4 to 7 hours per day to conduct lectures using the online method (Canaria et al., 2019). Another study by Al-Hadidi (2019) stated women have a higher risk of pain in the neck, and in the arms because women are more likely to use cellphones. The results of the study of Didin et al. (2020) stated that the workload in online learning methods were diverse significantly. Mental workload, distress at work, mental effort, work anxiety and fatigue when online learning is quite high with a synchronous learning system (Didin, et al., 2020). Another impact of using online methods is that learning still embarrasses students, students become passive, reduce creativity, the accumulation of information/concepts on students is less useful, students experience stress and increase language literacy skills (Anggraheni, 2020). The impact of ergonomics on online lectures states that the majority of Musculoskeletal Disorders (MSDS) complaints occur in the left and right shoulders (95%), upper neck (82.14%), and back (72.62%). Visual Fatigue, with the majority of symptoms being headaches, sore eyes, and dry eyes (Fathimahhayati, et al., 2020). In ergonomics research there are several instruments used to examine MSDS postural complaints including Rapid Entire Body Assessment (REBA), Rapid Upper Limb Assessment (RULA), Owako Working Posture Assessment System (OWAS), Questionnaire Nordic Body Map (NBM) (Nurmianto, 2005).

The Faculty of Public Health, University X, as one of the faculties that prioritizes the Healthy Tourism program, should provide excellent service both online and synchronous. This is done as an effort to provide comfort and health to consumers, in this case students, so that when the online method was applied during the COVID-19 pandemic, there were no health problems for students. This research is based on a preliminary study conducted on 10-15 students during lectures from being asked questions about posture or attitude complaint at home experienced by students during online lectures, assistive devices used during online lectures, and work positions when conducting lectures, and the part of the body that is felt. Based on these questions, information was obtained, the highest complaint was 7 respondents stated that their back and neck felt pain and pain. The tools used are 10 people using cellphones and 5 people using laptops or PCs. Then the working position during online lectures is with a sitting

position of 9 peoples with a combination of sitting on the floor without a table or sitting using a study table and sitting on a chair and using a study table, and 6 peoples lying down. From 7 respondents, 4 people in the same class and 3 different classes stated that the lecture time was between 4-6 hours per day. Respondents stated that 4 people sleep at 21.00 – 05.00 while the other 3 people over 00.00 and feel back pain. The reason the researchers conducted research on Semester 2 students was because the workload and duration of lectures were more than the semester above. The approach in this study uses the NBM instrument because of the ease of conducting an MSDS complaint survey. Based on these physical complaints (musculoskeletal disorders), researchers are interested in researching Ergonomic Complaints in Online Lectures during the COVID 19 Pandemic in Semester 2 Students of the Faculty of Public Health, Ahmad Dahlan University. This study aims to analyze complaints of musculoskeletal disorders (MSDs) in online method lectures for 2020 students of the Faculty of Public Health, University X.

METHOD

This study method uses a descriptive approach with cross sectional data, namely data taken at one time, the data used is data from a Nordic body map questionnaire from Public Health Faculty students who take online lectures which are analyzed by percentage of complaints. Data collection was done by filling out a google form related to MSDS complaints in the Nordic body map questionnaire. The population in this study were all students of the class of 2020 with a sample of 69 people and the sampling technique used Incidental Sampling. The reason for using this technique is that when taking sample data that has been calculated using the cluster system, it turns out it does not fill in. Data presentation was done by tabulating the level of complaints with univariate and bivariate analysis with chi-square test.

RESULTS AND DISCUSSION

Based on the data that has been obtained from a survey using google forms regarding MSDS complaints, among others are characteristic of ages one of the risk factors in the occurrence of MSDS complaints as Table 1.

Table 1
Characteristics of Students Taking Online Study at University X in 2021

Characteristics	Total	Percentage
Age		
17	1	1.4
18	4	5.8
19	35	50.7
20	23	33.3
21	4	5.8
22	2	2.9
Sex		
Male	15	21.3
Female	45	78.7

From the results, it was found that the highest number of research respondents was 19 years old with a total of 35 people or a percentage of 50.7%. The lowest respondent with the age of 17 years amounted to 1 person or 1.4%. The Amount of respondents who filled out the

questionnaire for men was 15 people with a percentage of 21.3% and women amounted to 54 people or 78.3%. It can be concluded that the highest respondent is female.

Using the online study causes variation in time study of students, as following at the Table 2.

Table 2
Distribution of Time Study in Hours

No	Time Study	Total	Percentage
1.	<6 hours	57	82.6
2.	>6 hours	12	17.4
	Total	69	100

The conclusion from the data is that students' lecture time per day is less than 6 hours with a total of 53 students or 76.8% while more than 6 hours is 16 students with a percentage of 23.2%.

Sleep habits are one of the factors in the incidence of MSDs, in this study the students' sleep time was obtained as on Table 3.

Table 3
Distribution of pain in parts of body

No	Parts of Body	Amount	%
1	Neck	45	65.2174
2	Shoulder	23	33.3333
3	Upper Arm	10	14.4928
4	Elbow	4	5.7971
5	Lower Arm	5	7.24638
6	Wrist	11	15.942
7	Upperback	22	31.8841
8	Low Back	33	47.8261
9	Buttock	28	40.5797
10	Upper thigh	3	4.34783
11	Knee	4	5.7971
12	Lower Thigh	2	2.89855

From the table above, it was found that the highest body complaints experienced were in the neck with a percentage of 65% then lower back 40.57% and buttocks/hips 40.57%.

The following is the distribution of the frequency of MSDS complaints as reported on Table 4.

Table 4
Distribution of Musculoskeletal Disorders Complain

No	Musculoskeletal Disorders	Total	Percentage
1.	Yes	39	56.5
2.	No Complain	30	43.5

Gender is a gender difference which is divided into male and female to determine the different roles in life for Public Health Faculty students at University X Yogyakarta. Lecture time is the length of lectures using the online method in one day carried out by Public Health Faculty students at University X. Sleep time is the length of sleep at night to rest from studying

and other activities. From the table 5 showed of the relationship test on students of the Faculty of Public Health, University of X, the following results were found

Based on the analysis of the relationship between gender and musculoskeletal complaints in table 7 shows that of 54 female students who experience musculoskeletal symptom as many as 34 people (62.9%) while out of 15 men who are not at risk of experiencing musculoskeletal are 10 students (66.6%). From the table test obtained $p = 0.041$. This means that there is a relationship between gender and musculoskeletal complaints. The results of the analysis of lecture time with musculoskeletal complaints, lecture time at risk (> 6 hours) of 57 people who are at risk of experiencing musculoskeletal are 29 people (50.8%) while 2 people who are not at risk (< 6 hours) 2 people are not at risk of musculoskeletal (16, 6%). The results of statistical tests showed $p = 0.039$ with the interpretation that there was a relationship between lecture time and musculoskeletal complaints. Meanwhile, from the proportion of sleep time, it was found that the ideal sleep time (7-8 hours) showed that of the 13 people with the ideal sleep time, 8 of them experienced musculoskeletal complaints (61.5%) then 56 people with non-ideal sleep time and not at risk of musculoskeletal in the number of 25 people 44.6%, obtained $p = 0.886$.

Table 5
Relationship Test, Gender, Time study and Sleep Time

Variable	MSDS Complain		Amount	%	p
	Yes	No			
Gender					
Male	5	10	15	21.3	0.041
Female	34	20	54	78.7	
Time Study					
Risk >6Hour	29	28	57	82.6	0.039
No Risk <6Jam	10	2	12	17.4	
Sleep Time					
Ideal 7-8hour	8	5	13	18.8	0.886
No Ideal <7-8 Ideal	31	25	56	81.2	

From the table bivariate test, there is a correlation between gender and musculoskeletal complaints in lectures using the online method in class 2020 students at the Faculty of Public Health, University X with $p = 0.041$. This study is in line with the research of Ebu et al. (2020) which states same in dependent variable and independent variable but different subject research, Ebu research was in gas station operators in Kupang City (Ebu et al., 2020), this study is not in line with Shobur et al. (2019) there is a relationship between Musculoskeletal Disorders (MSDs) in weaving workers in Tuan Kentang Village, Palembang with a $p = 0.702$. The cause of the existence of a sex relationship related to MSDs complaints based on conditions in the field is that most of the respondents are female (78.7%) in accordance with the Wijayanti study (2019) that is, women are more likely to experience musculoskeletal problems because the strength and ability of women's muscles are smaller or less. two thirds (60%) of male muscles such as arm, back and leg muscles (Nuryaningtyas and Tri, 2014).

The results of the study related to the relationship between lecture time and musculoskeletal complaints, it was found that there was a significant relationship with $p = 0.039$. Several other studies show similar results, from Basuki (2015) there is a relationship between work duration and Carpal Tunnel Syndrome (CTS) ($p = 0.000$) in on-Machine Weaving Equipment craftsmen (Basuki et al., 2015). Shobur (2019) states that there is a relationship between length of work (p -value = 0.027) with complaints of MSDs in ikat workers in Tuan Kentang Village, Palembang (Shobur et al., 2019). In accordance with Law No. 13 of

2003 article 77 paragraph 1, generally people work 6-8 hours per day (Indonesia, 2003). From the analysis of the usual work, not too light or heavy, productivity begins to decline after 4 hours of work (Basuki et al., 2015). The analysis based on the results of bivariate analysis is that during online lectures, students tend to have a variety of positions in paying attention to devices but are static. Based on the research of Pawalia et al (2022) stated that there is an awkward posture when working or studying online with a percentage of 60.8%. With these conditions, if carried out for a long time, it will cause musculoskeletal complaints in accordance with Tarwaka (2004) which states that musculoskeletal complaints are complaints in parts of the skeletal muscles that are felt by a person ranging from very mild complaints to very sick. If the muscle receives a static load repeatedly for a long time (Tarwaka et al., 2004).

Bivariate analysis of sleep time with complaints of MSDs found no relationship between sleep time and complaints of MSDs with $p = 0.886$. This study is not in line with the research of Brenda Tam et al. (2021), which is that there is a relationship between sleep quality and MSDs complaints in Academic Staff in 2020 with $p = 0.016$. In line with this study, research by Chun et al. (2018) states that long and short sleep duration is associated with musculoskeletal disorders in health workers in South Korea (Chun et al., 2018). Although from the bivariate test it was found that 31 people with non-ideal sleep time (less than and more than 7-8 hours) and experienced MSDs complaints but there was no relationship, there was a possibility that the rest time between lectures was used as bedtime, lectures at Public Health Faculty UAD for the class of 2020 is different between classes, so this will have an effect, in other studies it is stated that sleep duration is influenced by gender, and age (Li et al., 2019). Several other supporting factors that allow MSDs to occur are static postures, based on the ILO (1998) the problem of static or fixed posture for a long time will cause stress/pressure in certain body parts so that the risk of MSDs complaints will increase without adequate rest support. (ILO, 1998)

CONCLUSION

Based on the results of the study it was found that there is relationship between gender with musculoskeletal complaint in Public Health Faculty students batch 2020 during online lectures at University X, there is a relationship between lecture duration with Musculoskeletal complaints in Public Health Faculty students batch 2020 during online lectures at University X, there is no relationship between time sleep with musculoskeletal complaints in Public Health Faculty students batch 2020 during online lectures at University X

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