Analysis Factors that Affect Low Back Pain in Medical Students during the Study from Home

by Rohadi Rohadi

Submission date: 25-Apr-2023 11:11PM (UTC-0500)
Submission ID: 2075810494
File name: B11.pdf (277.59K)
Word count: 5648
Character count: 28871

Biomedical & Pharmacology Journal, March 2023. Vol. **16**(1), p. 355-364

Analysis Factors that Affect Low Back Pain in Medical Students during the Study from Home

I Gede Bramantya Surya Mahendra[1]*, Dyah Purnaning[2] and Rohadi Muhammad Rosyidi[3]

[1]Faculty of Medicine, University of Mataram, Mataram, Indonesia.
[2]Department of Orthopedic and Traumatology, Faculty of Medicine, University of Mataram, Mataram, Indonesia.
[3]Department of Neurosurgery, Faculty of Medicine, University of Mataram, Mataram, Indonesia.
*Corresponding Author E-mail: gedebramantya82@gmail.com

https://dx.doi.org/10.13005/bpj/2617

(Received: 24 October 2022; accepted: 27 December 2022)

Low Back Pain (LBP) is a health problem that affects performance in working. Indonesia is a country affected by the COVID-19 pandemic, so a study from the home policy has been issued. This study aimed to determine the association between the factors that affect LBP in Medical Students at the Faculty of Medicine, University of Mataram during the study from home. This study is an observational analytic study design with the cross-sectional approach. The population of this study is Medical Students, Faculty of Medicine, University of Mataram with total sample of 185 people. Collecting data using questionnaires and analyzed using univariate, bivariate, and multivariate analysis. According to univariate analysis, amount of LBP complaints (53 people). Based on bivariate analysis, the p-value of gender factor (0.000); body mass index factor (0.840); social-economy status factor (0.499); sitting position factors (sitting position while studying factor (0.008), sitting location while studying factor (0.046), chair shape while studying factor (0.286), body position while studying factor (0.037), legs position while studying factor (0.339), back support use while studying factor (0.455), table use while studying factor (0.010), elbows position while studying factor (0.627), stretching between study time factor (0.372), duration in each stretch factor (0.389), time range between stretch factor (0.311)), and sitting duration factor (0.011). Based on multivariate analysis, the strength of the association (OR) to LBP are sitting position factor (sitting position while studying factor) (8.232), sitting duration factor (1.956), and gender factor (0.187). The dominant factors to LBP are gender factor, sitting position factor (sitting position while studying factor), and sitting duration factor. The factor that has the strongest association with LBP is sitting position factor (sitting position while studying factor).

Keywords: COVID-19; Low Back Pain; Student; Study from Home.

Coronavirus Disease-2019 (COVID-19) is a respiratory disease caused by the new coronavirus, SARS-CoV-2[1]. On 11 March 2020, WHO stated that COVID-19 is a pandemic[2]. Indonesia is one of the countries affected by the COVID-19 pandemic, education is also affected by this. Ministry of the Education Republic of Indonesia said in Official Statement Number 4 in 2022 that studies should be done by distance learning/study from home[3]. The study by Fitriani, et al. (2021) on UIN Syarif Hidayatullah Jakarta students throughout the study from home, shows an

association between study time and body position during lectures with low back pain complaints[4].

Low Back Pain (LBP) is a health problems that usually happens in people and could affect work performance[5]. The prevalence of LBP globally in 2017 was 577.0 million cases, which increased compared to 1990 with 377.5 million cases. In 2017, LBP prevalence was highest in South Asia with 96.3 million cases, followed by East Asia with 67.7 million cases, meanwhile the lowest prevalence was found in Oceania with 0.7 million cases[6]. Based on PERDOSSI's Pain Study Group, it was found that 18,37% of overall patient pain was LBP[7]. The study done by Fitriani, et al. (2021) on UIN Syarif Hidayatullah Jakarta students, it was found that 278 students felt LBP pain and 116 students did not felt LBP throughout the study from home[4]. 90% of LBP cases was caused by inappropriate body position while working[8]. Factors that affect LBP are work/study factors (sitting position factor and sitting duration factor), demographic factors (gender factor, age factor, education factor, and social-economy status factor), health factor (Body Mass Index [BMI] factor), psychological factor (depression factor), and lower back trauma history factor[9]. History of spinal disorders factor (scoliosis, kyphosis, and lordosis) could affect LBP[10]. Moreover, a history of spine surgery factor could cause back pain[11].

Based on the description above, researchers are interested in conducting this study to analyze the factors that influence LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram, especially during the learning period from home, because the COVID-19 pandemic has not ended which allows learning from home to continue. Latest studies only analyze the association between one or two factors with LBP such as sitting position factors generally, and there is no study that analyze factors affecting LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram, especially during the period of study from home.

MATERIAL AND METHODS

This study used an observational analytic study design with the cross-sectional study approach. The population of this study is all students of the Medical Education Study Program, Faculty of Medicine, University of Mataram in 2019, 2020, and 2021 academic years. The sample selection in this study used Total Sampling. Independent variables (predictor) are sitting position factors, sitting duration factor, gender factor, social-economy status factor, and BMI factor. Dependent variable (criterion) is LBP. Controlled confounding variables are history of lower back trauma factor, history of spine disorder factor, history of spine surgery factor, and depression factor. Inclusion criteria in this study are all students of the Medical Education Study Program, Faculty of Medicine, University of Mataram in 2019, 2020, and 2021 academic years and all students of the Medical Education Study Program, Faculty of Medicine, University of Mataram in 2019, 2020, and 2021 academic years that willingly included as study sample, no LBP before the study from home, no lower back trauma history before the study from home, no spine surgery history before the study from home, no spine disorder history before the study from home, and not depressed. Exclusion criteria in this study are all students of the Medical Education Study Program, Faculty of Medicine, University of Mataram in 2019, 2020, and 2021 academic years that does not want to be included as study sample, has LBP before the study from home, has lower back trauma history before the study from home, has spine surgery history before the study from home, has spine disorder history before the study from home, and depressed. This study used a questionnaire that was done validity and reliability test, primary data collection was done by the researchers. In this study, data analysis was done with SPSS for Windows version 25. The type of hypothesis testing used in this study is the Chi-Square hypothesis test, and the data analysis used is univariate, bivariate, and multivariate analysis.

RESULTS AND DISCUSSION

In this study, 372 participants filled out a questionnaire and 185 participants were included as inclusion criteria. For the sitting position factors, some factor components have the number of participants following the number of respondents in the previous factor component. Based on Table 1 and Table 2, respondents with LBP complaints is 53

Table 1. Univariate Analysis (Detail of Factor)

Factor	n	%
Gender		
Female	109	58.9
Male	76	41.1
Body Mass Index		
Underweight	40	21.6
Normal	113	61.1
Overweight	32	17.3
Social-economy Status		
Low (<Rp1,500,000/month)	6	3.2
Moderate (Rp1,500,000 - Rp2,500,000/month)	16	8.6
High (Rp2,500,000 - Rp3,500,000/month)	32	17.4
Very high (>Rp3,500,000/month)	131	70.8
Sitting Position (Sitting Position While Studying)		
Yes	167	90.3
No	18	9.7
Sitting Position (Sitting Location While Studying)		
On chair	124	74.3
On floor	27	16.2
On bed	16	9.5
Sitting Position (Chair Shape While Studying)		
Fits back shape	84	67.8
Does not fit back shape	36	29.0
Has no back shape	4	3.2
Sitting Position (Body Position While Studying)		
Upright body position	85	50.9
Bending body position/slouching	82	49.1
Sitting Position (Legs Position While Studying)		
With foothold	75	44.9
Without foothold	92	55.1
Sitting Position (Back Support Use While Studying)		
Yes	47	28.1
No	120	71.9
Sitting Position (Table Use While Studying)		
Yes	176	95.1
No	9	4.9
Sitting Position (Elbows Position While Studying)		
Elbows placed on the table	134	76.1
Elbows are not placed on the table	42	23.9
Sitting Position (Stretching Between Study Time)		
Yes	142	76.8
No	43	23.2
Sitting Position (Duration in Each Stretch)		
<5 minutes	104	73.2
5-10 minutes	33	23.2
>10 minutes	5	3.6
Sitting Position (Time Range Between Stretch)		
<2 hours	69	48.6
Every 2 hours	27	19.0
>2 hours	46	32.4
Sitting Duration		
Short (1 – 4 hours)	24	13.0
Moderate (5 – 8 hours)	96	51.9
Long (>8 hours)	65	35.1
Low Back Pain		
Acute Low Back Pain	25	13.5
Chronic Low Back Pain	28	15.1
No complaints	132	71.4

people (28.6%) (acute low back pain is 25 people (13.5%) and chronic low back pain is 28 people (15.1%)). Respondents with no LBP complaints is 132 people (71.4%).

Association Between Gender Factor and Low Back Pain

According to Table 1, respondents with female gender is 109 people (58.9%) and male is 76 people (41.1%). Based on Table 3, there is a significant association between gender factor and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 185 participants, it was found based on bivariate analysis, the p-value was 0.000 (<0.05). This result is in parallel with the study done by Rahayu & Dayanti (2021), which showed a significant association between gender and LBP[12]. This result is also in parallel with the study done by Abdu, et al. (2022), which showed a significant association between gender and LBP[13].

Association Between Body Mass Index Factor and Low Back Pain

According to Table 1, respondents with underweight BMI is 40 people (21.6%), normal BMI is 113 people (61.1%), and overweight BMI

Table 2. Univariate Analysis (Category of Factor)

Factor	n	%
Sitting Position (Sitting Position While Studying)		
Ergonomic	167	90.3
Not ergonomic	18	9.7
Sitting Position (Sitting Location While Studying)		
Ergonomic	124	74.3
Not ergonomic	43	25.7
Sitting Position (Chair Shape While Studying)		
Ergonomic	84	67.7
Not ergonomic	40	32.3
Sitting Position (Body Position While Studying)		
Ergonomic	85	50.9
Not ergonomic	82	49.1
Sitting Position (Legs Position While Studying)		
Ergonomic	75	44.9
Not ergonomic	92	55.1
Sitting Position (Back Support Use While Studying)		
Ergonomic	47	28.1
Not ergonomic	120	71.9
Sitting Position (Table Use While Studying)		
Ergonomic	176	95.1
Not ergonomic	9	4.9
Sitting Position (Elbows Position While Studying)		
Ergonomic	42	23.9
Not ergonomic	134	76.1
Sitting Position (Stretching Between Study Time)		
Ergonomic	142	76.8
Not ergonomic	43	23.2
Sitting Position (Duration in Each Stretch)		
Ergonomic	33	23.2
Not ergonomic	109	76.8
Sitting Position (Time Range Between Stretch)		
Ergonomic	27	19.0
Not ergonomic	115	81.0
Low Back Pain		
Complaints	53	28.6
No complaints	132	71.4

Table 3. Bivariate Analysis

Factor	Low Back Pain				
	Complaints		No Complaints		
	n	%	n	%	p-value
Gender					0.000
Female	44	40.4	65	59.6	
Male	9	11.8	67	88.2	
Body Mass Index					0.840
Underweight	11	27.5	29	72.5	
Normal	34	30.1	79	69.9	
Overweight	8	25.0	24	75.0	
Social-economy Status					0.499
Low	3	50.0	3	50.0	
Moderate	5	31.3	11	68.8	
High	11	34.4	21	65.6	
Very high	34	26.0	97	74.0	
Sitting Position (Sitting Position While Studying)					0.008
Ergonomic	43	25.7	124	74.3	
Not ergonomic	10	55.6	8	44.4	
Sitting Position (Sitting Location While Studying)					0.046
Ergonomic	27	21.8	97	78.2	
Not ergonomic	16	37.2	27	62.8	
Sitting Position (Chair Shape While Studying)					0.286
Ergonomic	16	19.0	68	81.0	
Not ergonomic	11	27.5	29	72.5	
Sitting Position (Body Position While Studying)					0.037
Ergonomic	16	18.8	69	81.2	
Not ergonomic	27	32.9	55	67.1	
Sitting Position (Legs Position While Studying)					0.339
Ergonomic	22	29.3	53	70.7	
Not ergonomic	21	22.8	71	77.2	
Sitting Position (Back Support Use While Studying)				0.455	
Ergonomic	14	29.8	33	70.2	
Not ergonomic	29	24.2	91	75.8	
Sitting Position (Table Use While Studying)					0.010
Ergonomic	47	26.7	129	73.3	
Not ergonomic	6	66.7	3	33.3	
Sitting Position (Elbows Position While Studying)					0.627
Ergonomic	10	23.8	32	76.2	
Not ergonomic	37	27.6	97	72.4	
Sitting Position (Stretching Between Study Time)					0.372
Ergonomic	43	30.3	99	69.7	
Not ergonomic	10	23.3	33	76.7	
Sitting Position (Duration in Each Stretch)					0.389
Ergonomic	8	24.2	25	75.8	
Not ergonomic	35	32.1	74	67.9	
Sitting Position (Time Range Between Stretch)					0.311
Ergonomic	6	22.2	21	77.8	
Not ergonomic	37	32.2	78	67.8	
Sitting Duration					0.011
Short	7	29.2	17	70.8	
Moderate	19	19.8	77	80.2	
Long	27	41.5	38	58.5	

Table 4. Multivariate Analysis

Factor	p-value	OR
Gender	0.000	0.187
Sitting position (sitting position while studying)	0.001	8.232
Sitting duration	0.028	1.956

is 32 people (17.3%). Based on Table 3, there is no significant association between BMI factor and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 185 participants, it was found based on bivariate analysis, the p-value was 0.840 (>0.05). This result is in parallel with the study done by Wulandari, et al. (2017), which said there was no association between BMI and LBP[14]. This result is also in parallel with the study done by Wijaya, et al. (2019), which said there was no association between BMI and LBP[15].

Association Between Social-economy Status Factor and Low Back Pain

According to Table 1, respondents with low social-economy status is 6 people (3.2%), moderate is 16 people (8.6%), high is 32 people (17.4%), and very high is 131 people (70.8%). Based on Table 3, there is no significant association between social-economy status factor and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 185 participants, it was found based on bivariate analysis, the p-value was 0.499 (>0.05). This is because most of the student's parents have a very high income. This result is in accordance with the study done by Ikeda, et al. (2019), in which their study showed higher social-economy status tend to have lower LBP complaints, compared to lower social-economy status[16].

Association Between Sitting Position Factors and Low Back Pain

Association Between Sitting Position Factor (Sitting Position While Studying Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with sitting position while studying (ergonomic) is 167 people (90.3%) and position other than sitting while studying (not ergonomic) is 18 people (9.7%). Based on Table 3, there is a significant association between sitting position factor (sitting position while studying factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 185 participants, it was found based on bivariate analysis, the p-value was 0.008 (<0.05). This result is in line with the study done by Widjayanti & Pratiwi (2016), which had a significant association between sitting position and LBP[17]. This result is also in line with the study done by Fitriani, et al. (2021), which had a significant association between body position and LBP[4].

Association Between Sitting Position Factor (Sitting Location While Studying Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with sitting location on chair while studying (ergonomic) is 124 people (74.3%). Respondents with sitting location on floor while studying is 27 people (16.2), on bed is 16 people (9.5%), and the total not ergonomic is 43 people (25.7%). Based on Table 3, there is a significant association between sitting position factor (sitting location while studying factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 167 participants, it was found based on bivariate analysis, the p-value was 0.046 (<0.05). This result is in line with the study done by Widjayanti & Pratiwi (2016), which had a significant association between sitting position and LBP[17]. This result is also in line with the study done by Fitriani, et al. (2021), which had a significant association between body position and LBP[4].

Association Between Sitting Position Factor (Chair Shape While Studying Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with fits back shape while studying

(ergonomic) is 84 people (67.8%). Respondents with not fit back shape while studying is 36 people (29.0%), has no back shape is 4 people (3.2%), and the total not ergonomic is 40 people (32.3%). Based on Table 3, there is no significant association between sitting position factor (sitting location while studying factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 124 participants, it was found based on bivariate analysis, the p-value was 0.286 (>0.05). This result is in parallel with the study done by Pratami, et al. (2019), which had no significant association between sitting posture and LBP[18]. This result is also in parallel with the study done by Akbar & Nilapsari (2021), which had no significant association between sitting position and LBP[19].

Association Between Sitting Position Factor (Body Position While Studying Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with upright body position while studying (ergonomic) is 85 people (50.9%) and bending body position/slouching (not ergonomic) is 82 people (49.1%). Based on Table 3, there is a significant association between sitting position factor (body position while studying factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 167 participants, it was found based on bivariate analysis, the p-value was 0.037 (<0.05). This result is in parallel with the study done by Widjayanti & Pratiwi (2016), which had significant association between sitting position and LBP[17]. This result is also in parallel with the study done by Fitriani, et al. (2021), which had a significant association between body position and LBP[4].

Association Between Sitting Position Factor (Legs Position While Studying Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with foothold while studying (ergonomic) is 75 people (44.9%) and without foothold (not ergonomic) is 92 people (55.1%). Based on Table 3, there is no significant association between sitting position factor (legs position while studying factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 167 participants, it was found based on bivariate analysis, the p-value was 0.339 (>0.05). This result is in line with the study done by Pratami, et al. (2019), which had no significant association between sitting posture and LBP[18]. This result is also in line with the study done by Akbar & Nilapsari (2021), which had no significant association between sitting position and LBP[19].

Association Between Sitting Position Factor (Back Support Use While Studying Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with back support use while studying (ergonomic) is 47 people (28.1%) and without back support use while studying (not ergonomic) is 120 people (71.9%). Based on Table 3, there is no significant association between sitting position factor (back support use while studying factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 167 participants, it was found based on bivariate analysis, the p-value was 0.455 (>0.05). This result is in line with the study done by Pratami, et al. (2019), which had no significant association between sitting posture and LBP[18]. This result is also in line with the study done by Akbar & Nilapsari (2021), which had no significant association between sitting position and LBP[19].

Association Between Sitting Position Factor (Table Use While Studying Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with table use while studying (ergonomic) is 176 people (95.1%) and without table use while studying (not ergonomic) is 9 people (4.9%). Based on Table 3, there is a significant association between sitting position factor (back support use while studying factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 186 participants, it was found based on bivariate analysis, the p-value was 0,010 (<0,05). This result is in line with the study done by Widjayanti & Pratiwi (2016), which had significant association between sitting position and LBP[17]. This result is

also in line with the study done by Fitriani, et al. (2021), which had significant association between body position and LBP[4].

Association Between Sitting Position Factor (Elbows Position While Studying Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with elbows placed on table while studying (not ergonomic) is 134 people (76.1%) and elbows not placed on the table (ergonomic) is 42 people (23.9%). Based on Table 3, there is no significant association between sitting position factor (elbows position while studying factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 176 participants, it was found based on bivariate analysis, the p-value was 0.627 (>0.05). This result is in line with the study done by Pratami, et al. (2019), which had no significant association between sitting posture and LBP[18]. This result is also in line with the study done by Akbar & Nilapsari (2021), which had no significant association between sitting position and LBP[19].

Association Between Sitting Position Factor (Stretching Between Study Time Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with stretching between study time (ergonomic) is 142 people (76.8%) and not stretching between study time (not ergonomic) is 43 people (23.2%). Based on Table 3, there is no significant association between sitting position factor (stretching between study time factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 185 participants, it was found based on bivariate analysis, the p-value was 0.372 (>0.05). This result is in line with the study done by Pratami, et al. (2019), which had no significant association between sitting posture and LBP[18]. This result is also in line with the study done by Akbar & Nilapsari (2021), which had no significant association between sitting position and LBP[19].

Association Between Sitting Position Factor (Duration in Each Stretch Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with duration in each stretch 5-10 minutes (ergonomic) is 33 people (23.2%). Respondents with duration in each stretch <5 minutes is 104 people (73.2%), >10 minutes is 5 people (3.6%), and the total not ergonomic is 109 people (76.8%). Based on Table 3, there is no significant association between sitting position factor (duration in each stretch factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 142 participants, it was found based on bivariate analysis, the p-value was 0.389 (>0.05). This result is in line with the study done by Pratami, et al. (2019), which had no significant association between sitting posture and LBP[18]. This result is also in line with the study done by Akbar & Nilapsari (2021), which had no significant association between sitting position and LBP[19].

Association Between Sitting Position Factor (Time Range Between Stretch Factor) and Low Back Pain

According to Table 1 and Table 2, respondents with time range between stretch every 2 hours (ergonomic) is 27 people (19.0%). Respondents with time range between stretch <2 hours is 69 people (48.6%), >2 hours is 46 people (32.4%), and the total not ergonomic is 115 people (81.0%). Based on Table 3, there is no significant association between sitting position factor (time range between stretch factor) and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In 142 participants, it was found based on bivariate analysis, the p-value was 0.311 (>0.05). This result is in line with the study done by Pratami, et al. (2019), which had no significant association between sitting posture and LBP[18]. This result is also in line with the study done by Akbar & Nilapsari (2021), which had no significant association between sitting position and LBP[19].

Association Between Sitting Duration Factor and Low Back Pain

According to Table 1, respondents with short sitting duration is 24 people (13.0%), moderate is 96 people (51.9%), and long is 65 people (35.1%). Based on Table 3, there is a significant association between sitting duration factor and LBP in students of the Medical Education Study Program, Faculty of Medicine, University of Mataram throughout the study from home. In

185 participants, it was found based on bivariate analysis, the p-value was 0.011 (<0.05). This result is in line with the study done by Hutasuhut, et al. (2021), which had significant association between sitting duration and LBP[20]. This result is also in line with the study done by Abdu, et al. (2022), which had significant association between sitting duration and LBP[13].

Dominant Factor to Low Back Pain

Based on Table 4, multivariate analysis done with logistic regression analysis with backward method LR (Likelihood Ratio), this study showed dominant factors to LBP which are gender factor, sitting position factor (sitting position while studying factor), and sitting duration factor. Based on multivariate analysis, there was a significant association between gender factor with p-value 0.000 (<0.05), sitting position factor (sitting position while studying factor) with p-value 0.001 (<0.05), and sitting duration factor with p-value 0.028 (<0.05) to LBP. Based on multivariate analysis, the factor that had the strongest association to LBP is sitting position factor (sitting position while studying factor) with OR 8.232, compared to OR in sitting duration factor with 1.956 and gender factor with 0.187. These results are in accordance with a study done by Fitriani, et al. (2021), found in multivariate analysis that had the strongest association to LBP is body position while in lecture[4].

Study Strength

There are 185 participants in this study. This study analyzed many factors to LBP throughout the study from home. Sitting position factors was analyzed in detail, there were sitting position while studying factor, sitting location while studying factor, chair shape while studying factor, body position while studying factor, legs position while studying factor, back support use while studying factor, table use while studying factor, elbows position while studying factor, stretching in between study factor, stretching duration factor, and time range of stretch factor.

Study Limitation

This study was done only in one study program, so it did not represent a wider population. This study used a cross-sectional approach, so if there was a LBP complaint after data collection, researchers would not know. In this study LBP complaints only based on participant's subjective complaint and there was no further examination.

CONCLUSION

Based on the result, it is concluded as follows, there are association between factors that affects LBP, such as gender factor, sitting position factors (sitting position while studying factor, sitting location while studying factor, body position while studying factor, table use while studying factor), and sitting duration factor; dominant factors to LBP are gender factor, sitting position factor (sitting position while studying factor), and sitting duration factor; and the factor that had the strongest association to LBP is sitting position factor (sitting position while studying factor).

ACKNOWLEDGEMENT

Researchers express their greatest gratitude to all parties, both from inside and outside the institution of Faculty of Medicine, University of Mataram.

Conflict of Interest

There is no conflict of interest in this study.

Funding Source

There is no funding source in this study.

REFERENCES

1. CDC. Coronavirus Disease 2019 (COVID-19). Centers for Disease Control and Prevention. https://www.cdc.gov/dotw/covid-19/index.html. Published 2021.
2. WHO. Coronavirus Disease (COVID-19) Pandemic. World Health Organization. https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov. Published 2021.
3. Kemdikbud RI. *SURAT EDARAN NOMOR 4 TAHUN 2O2O*.; 2020. https://www.kemdikbud.go.id/main/blog/2020/03/se-mendikbud-pelaksanaan-kebijakan-pendidikan-dalam-masa-darurat-penyebaran-covid19.
4. Fitriani TA, Salamah QN, Nisa H. Keluhan Low Back Pain Selama Pembelajaran Jarak Jauh pada Mahasiswa UIN Syarif Hidayatullah Jakarta Tahun 2020. *Media Penelit dan Pengemb Kesehat*. 2021;31(2):133-142. doi:https://doi.org/10.22435/mpk.v31i2.4180

5. Duthey B. *Priority Medicines for Europe and the World "A Public Health Approach to Innovation."* World Health Organization; 2013. https://www.who.int/medicines/areas/priority_medicines/BP6_24LBP.pdf.
6. Wu A, March L, Zheng X, et al. Global low back pain prevalence and years lived with disability from 1990 to 2017: estimates from the Global Burden of Disease Study 2017. *Ann Transl Med*. 2020;8(6):1-3. doi:10.21037/atm.2020.02.175
7. Harris S, Wiratman W, Zairinal RA. Nyeri Punggung Bawah. In: Aninditha T, Harris S, Wiratman W, eds. *BUKU AJAR NEUROLOGI*. Kedua. Jakarta: Departemen Neurologi Fakultas Kedokteran Universitas Indonesia Rumah Sakit Cipto Mangunkusumo; 2022:682-698.
8. Andini F. Risk Factors Of Low Back Pain In Workers. *J Major*. 2015;4(1):12-19. http://juke.kedokteran.unila.ac.id/index.php/majority/article/view/495.
9. Emril DR. How to Diagnose Low Back Pain Properly. In: B T, ed. *Nyeri Punggung Bawah*. Badan Penerbit Universitas Diponeogoro Semarang; 2013:18.
10. NIH. *Low Back Pain*. National Institute of Neurological Disorders and Stroke; 2020. https://www.ninds.nih.gov/sites/default/files/low_back_pain_20-ns-5161_march_2020_508c.pdf.
11. Graff V. Back Pain That Won't Go Away—Even With Surgery. University of Pennsylvania. https://www.pennmedicine.org/updates/blogs/musculoskeletal-and-rheumatology/2017/november/back-pain-that-wont-go-away. Published 2017.
12. Rahayu SY, Dayanti R. Faktor-Faktor Yang Berhubungan Dengan Keluhan Low Back Painpada Mahasiswa Sarjana Keperawatan Non Reguler. *J Sehat Masada*. 2021;15(2):371-379. doi:10.38037/jsm.v15i2
13. Abdu S, Beda NS, Mentodo R, Nencyani ML. Analisis Faktor Determinan Risiko Low Back Pain (LBP) Pada Mahasiswa. *J Keperawatan Florence Nightingale*. 2022;5(1):5-13. doi:10.52774/jkfn.v5i1.95
14. Wulandari M, Setyawan D, Zubaidi A. Faktor Risiko Low Back Pain Pada Mahasiswa Jurusan Ortotik Prostetik Politeknik Kesehatan Surakarta. *J Keterapian Fis*. 2017;2(1):8-14. doi:10.37341/jkf.v2i1.65
15. Wijaya PGPM, Wijayanthi IAS, Widyastuti K. Hubungan posisi dan lama duduk dengan nyeri punggung bawah pada pemain game online. *Intisari Sains Medis*. 2019;10(3):834-839. doi:10.15562/ism.v10i3.495
16. Ikeda T, Sugiyama K, Aida J, et al. Socioeconomic inequalities in low back pain among older people: the JAGES cross-sectional study. *Int J Equity Health*. 2019;18(15):1-11. doi:10.1186/s12939-019-0918-1
17. Widjayanti Y, Pratiwi RRD. Hubungan Antara Posisi Duduk Dengan Keluhan Nyeri Punggung Bawah Pada Mahasiswa Stikes Katolik St Vincentius A Paulo Surabaya. *J Keperawatan*. 2016;5(2):83-87. doi:10.47560/kep.v5i2.169
18. Pratami AR, Zulhamidah Y, Widayanti E. Hubungan Antara Sikap Duduk dengan Kejadian Low Back Pain pada Mahasiswa Fakultas Kedokteran Universitas YARSI Tahun Pertama dan Tahun Kedua. *Maj Kesehat Pharmamedika*. 2019;11(2):105-115. doi:10.33476/mkp.v11i2.1324
19. Akbar D, Nilapsari R. Hubungan Posisi Duduk dengan Keluhan Nyeri Punggung Bawah pada Tenaga Kependidikan Fakultas Kedokteran Universitas Islam Bandung. *J Ris Kedokt*. 2021;1(1):9-13. doi:10.29313/jrk.v1i1.110
20. Hutasuhut RO, Lintong F, Rumampuk JF. Hubungan Lama Duduk Terhadap Keluhan Nyeri Punggung Bawah. *J e-Biomedik*. 2021;9(2):160-165. doi:10.35790/ebm.v9i2.31808

Analysis Factors that Affect Low Back Pain in Medical Students during the Study from Home

ORIGINALITY REPORT

11%	11%	4%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	journal.unram.ac.id Internet Source	5%
2	www.tandfonline.com Internet Source	3%
3	biomedpharmajournal.org Internet Source	3%

Exclude quotes	On	Exclude matches	< 3%
Exclude bibliography	On		

Analysis Factors that Affect Low Back Pain in Medical Students during the Study from Home

GRADEMARK REPORT

FINAL GRADE

/0

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10