



Position relationship and long sitting with complaints of low back pain during studies online at level II students ners study program at STIKes Santa Elisabeth Medan in 2022

Mardiati Barus¹, Ernita Rante Rupang², Evan Juniman Putra Lahagu³

^{1,2,3}STIKes Santa Elisabeth Medan/Si Keperawatan/Indonesia

Article Info

Article history:

Received Aug 1, 2023

Revised Sep 1, 2023

Accepted Sep19, 2023

Keywords:

Long sitting;

Low back pain;

Sitting position;

ABSTRACT

Low back pain (LBP) is pain that occurs in the lower back due to excessive body activity. Long sitting is a sitting posture for a long time. Sitting position is a good position in doing activities such as reading, watching, and writing. This study aims to analyze the relationship between position and length of sitting with complaints of low back pain during online lectures for second-level students on the Nursing Study Program at STIKes Santa Elisabeth Medan 2022. The research method used was a correlation research design with a Cross Sectional approach. The population in this study are 84 people. The sampling technique is the Total Sampling technique. Data is collected using a questionnaire and the statistical test used was Spearman Rank (Rho). There is no significant relationship between sitting position and the occurrence of complaints of low back pain (p-value = 0.606; r = 0.057). There is a significant relationship between length of sitting and the occurrence of complaints of low back pain (p-value = 0.000; r = 0.588). It is concluded that there was no relationship between sitting position and complaints of low back pain in level II students and there was a relationship between length of sitting and complaints of low back pain during online lectures for level II students of the Nursing study program at STIKes Santa Elisabeth Medan 2022.

This is an open access article under the CC BY-NC license.



Corresponding Author:

Evan Juniman Putra Lahagu,

S1 keperawatan,

STIKes Santa Elisabeth Medan,

Jalan Bunga Terompet No 118, Sumatera Utara, 20131, Indonesia.

Email: lahaguking@gmail.com

1. INTRODUCTION

With the rise of Covid, the government now calls on all Indonesian people to reduce activities outside the home to prevent and minimize transmission of Covid-19 (Restuputri et al., 2020). Especially in the learning process at school, office activities and lectures are carried out from home with an online system (in the network) using cellphones and laptops as learning media. Online learning activities can last around 4-5 hours per day (Fitriani et al., 2021).

Long sitting is a sitting posture for a long duration with uncomfortable body postures that can cause musculoskeletal complaints (Hutasuhut et al., 2021). Research found by Sinaga that sitting for more than 4 hours at work has a 1.91-fold risk of experiencing lower back pain (Sinaga & Makkiyyah, 2021). This is supported by WHO, that sitting for long hours for hours when using

electronic media such as smartphones and laptops can cause musculoskeletal disorders in the lower spine (Pramana, 2020).

The prevalence of LBP in the world from the results of The Global Burden of Disease data increased until 2017, namely 8.86% and is a major problem as a cause of disability. Riskesdas data for 2018, musculoskeletal problems with complaints of joint disease from the results of doctors' diagnoses in people aged ≥ 15 years in Indonesia, namely 7.30% (Fitriani et al., 2021). Another research that was conducted (Chiwariidzo, 2018) was that the percentage of respondents who experienced LBP during online lectures was 89.3% for students and 10.7% who did not experience it (Wahyuni & Pratiwi, 2021).

Low back pain (LBP) is a musculoskeletal disorder or pain that occurs in the lower back due to excessive body activity (Sahara & Pristya, 2020). The trigger factor for low back pain (LBP), according to Rice in Shocker, is due to stiffness and spasm of the back muscles due to body activities when the position is not good, resulting in muscle tension in the back of the body (Fitriani et al., 2021). In students, LBP complaints occur due to posture when attending online lectures with the body leaning left or right, static positions for long periods, wrong sitting posture, hunched posture and head position that always looks down (Wahyuningtyas et al., 2019).

Sitting position is the attitude or posture of the body when sitting. According to Nurmianto in Pramana, (2020), a good or ergonomic sitting position is sitting upright with your back straight and shoulders back, your thighs against the chair and must touch the back of the chair. A sitting position that is not ergonomic is a position of bending forward with a crooked back posture when sitting which can put pressure on the back causing pain (Setyowati & Fatimahhayati, 2021).

The results of an initial survey conducted by the researcher on 2nd grade students at the STIKes Santa Elisabeth Medan 10 respondents using the WhatsApp interview method, the researcher obtained data that 9 students had experienced lower back pain during online lectures and 1 student who did not feel back pain during the online lecture process. Based on the background above, the author is interested in conducting research entitled the relationship between position and sitting duration and complaints of low back pain during online lectures for second-level students of the Nursing study program at STIKes Santa Elisabeth Medan in 2022.

2. RESEARCH METHOD

The research design used was a correlation research design with a cross sectional approach. The population in this study were all level II students of the Nursing STIKes Santa Elisabeth Medan study program in 2022. The sampling method used a total sampling technique, which means that the entire population was used as a sample of 84 respondents. The instrument used is a questionnaire. The data collection technique used in this study was to use a google form containing a questionnaire. The questionnaire contained the aims and objectives of the study, informed consent sheets, demographic data questionnaires, as well as sitting position, length of sitting and LBP (low back pain) questionnaires. Multivariate data analysis in this study used the Spearman Rank (Rho) test with the IBM SPSS Statistics 24 for Windows computer program. Then the data is presented in the form of a frequency distribution and percentage (%).

3. RESULTS AND DISCUSSIONS

Results

Based on the results of research on the frequency distribution of demographic characteristics, sitting position, length of sitting and low back pain in level II students of the nursing study program at STIKes Santa Elisabeth Medan in 2022, this will be explained in the following table.

Table 1. Distribution of respondents based on demographic characteristics, age and gender

Characteristics	F	%
Age (years)		
18	3	3.6
19	30	35.7

20	46	54.8
21	4	4.8
27	1	1.2
Total	84	100.0
Gender		
Man	6	7.1
Woman	78	92.9
Total	84	100.0

Based on Table 1, it was found that out of the 84 respondents, most of the respondents were at the age of 20, 46 respondents (54.8%) and the least were at the age of 27, 1 respondent (1.2%). The most respondents in this study were female, 78 respondents (92.9%) and the least male, 6 respondents (7.1%).

Table 2. Distribution of respondents based on sitting position

Sitting Position	F	%
Less ergonomic	67	79.8
Ergonomic	17	20.2
Total	84	100.0

In table 2 the distribution of respondents based on sitting position for level II students of the Nursing study program at STIKes Santa Elisabeth Medan in 2022, the category of sitting position that is less ergonomic is 67 people (79.8%), the category of ergonomic sitting position is 17 people (20.2%)

Table 3. Distribution of respondents based on sitting time

Long Sitting	F	%
Short	15	17.9
Currently	47	56.0
Long	22	26.2
Total	84	100.0

In table 3 the distribution of respondents based on length of sitting for level II students of the Nursing study Program at STIKes Santa Elisabeth Medan in 2022, the category of long sitting with short durations was 15 people (17.9%), the category with moderate duration was 47 people (56.0%)) and categories with long duration as many as 22 people (26.2%).

Table 4. Distribution of respondents based on low back pain

Low back pain	F	%
Light	5	6.0
Currently	35	41.7
Heavy	28	33.3
Very heavy	16	19.0
Total	84	100.0

In table 4 the distribution of respondents based on complaints of low back pain in level II students of the Nursing study program at STIKes Santa Elisabeth Medan in 2022. In the low back pain complaints in the mild category there were 5 people (6.0%), in the moderate category there were 35 people (41.7%), the severe category was 28 people (33.3%), and the very heavy category was 16 people (19.0%).

Table 5. Distribution of Respondents Based on the Relationship between Position and Length of Sitting with Low Back Pain Complaints during online lectures for Level II Students of the Nursing study Program at STIKes Santa Elisabeth Medan in 2022. (n=84)

Correlations

		Sitting Position	Long Sitting	Low Back Pain	
Spearman's rho	Sitting Position	Correlation Coefficient	1.000	-.020	-.067
		Sig. (2-tailed)	.	.858	.545
		N	84	84	84
	Long Sitting	Correlation Coefficient	-.020	1.000	.588**
		Sig. (2-tailed)	.858	.	.000
		N	84	84	84
	Low Back Pain	Correlation Coefficient	-.067	.588**	1.000
		Sig. (2-tailed)	.545	.000	.
		N	84	84	84

** . Correlation is significant at the 0.01 level (2-tailed).

The results of table 5 show the results of the Spearman Rank correlation test (Rho) between the relationship between sitting position and low back pain giving a coefficient value of -0.067 with a p-value of 0.545 ($p > 0.05$). This shows that there is no relationship between sitting position and low back pain complaints in students. And the results of the Spearman Rank statistical test (Rho) between sitting time and complaints of low back pain obtained a p-value = 0.000 which is said to be related if ($p < 0.05$) with a correlation (r) of 0.588 . These data show that there is a significant relationship between sitting duration and low back pain in level II students of the Nursing study program, thus H_a is accepted.

Discussions

In the relationship between sitting position and complaints of low back pain during online lectures for level II students in the Nursing study program, the results of the Spearman rank correlation test gave a coefficient value of $r = -0.067$ with a p-value of 0.545 ($p > 0.05$), so it can be concluded that H_a was rejected so that H_o was accepted, meaning that there was no relationship between sitting position and complaints of low back pain during online lectures in level II students of the Nursing study program at STIKes Santa Elisabeth Medan.

The author assumes that students' sitting positions when attending online lectures are not in a fixed sitting position and always change positions with the aim of stretching their bodies due to the appearance of discomfort when in a fixed sitting position. This is in line with the results of research from Pratami, et al (2019) that p value = 0.645 ($P > 0.05$) there is no relationship between sitting posture and complaints of low back pain in first and second year YARSI University medical faculty students due to frequent sitting postures lean back and stretch frequently when sitting.

Several previous journals stated that there was a relationship between sitting position and complaints of low back pain in college students. This is because there are several other factors such as obesity, psychological factors, age, and some activities that are carried out too hard, for example lifting heavy objects that can cause complaints of low back pain. This research is in line with research conducted by Pratiwi, et al (2017) where the p value is 0.001 ($p < 0.05$) so that the sitting position is significantly related to complaints of lower back pain in students due to wrong sitting position habits.

In the long-standing relationship with complaints of low back pain during online lectures for level II students in the Nursing study program, the results of the Spearman rank correlation test gave a coefficient value of $r = 0.588$ with a p-value of 0.000 ($p < 0.05$). This shows that there is a significant

relationship between sitting duration and low back pain complaints in college students. Where the level of correlation is included in the moderate category and the direction of the relationship is positive.

Sitting for a long duration results in complaints in certain parts of the body. This is caused by the lack of mobility that students do when sitting in online learning takes place. This research is in line with research conducted by Ruth (2021) which states that sitting for ± 2 hours can cause discomfort in the lower back. A long sitting position without a backrest has a greater risk of experiencing low back pain because the pressure on the intervertebral disc will be greater when sitting flexed.

In this study, the authors assume that the length of time students sit when taking online lectures is in the long sitting posture and the lack of stretching that students do while sitting when online lectures take place. This is in line with the research by Hutasuhut, et al (2021) which said that a p value of 0.001 ($p < 0.005$) had a relationship between sitting duration and the occurrence of low back pain complaints in medical students due to being seated for 5-8 hours.

4. CONCLUSION

Based on the results of research conducted on level II nursing students at STIKes Santa Elisabeth Medan, totaling 84 respondents, it was found that the relationship between sitting position and low back pain was not related to the results of the Spearman rank test with a p-value of 0.545. Long sitting and low back pain are related to the results of the Spearman rank test with a p-value of 0.000. It is recommended for future researchers that this research be continued by examining other factors that cause complaints of lower back pain such as age, weight and environmental factors.

REFERENCES

- Afnacia, V. (2022). *Gambaran Postur Tubuh Dengan Keluhan Muskuloskeletal Disorders (Msds) Pada Pengrajin Deandra Batik Tulis Di Bandar Lampung Tahun 2021*. 1–10. Afnacia, Vony. *Gambaran Postur Tubuh Dengan Keluhan Muskuloskeletal Disorders (Msds) Pada Pengrajin Deandra Batik Tulis Di Bandar Lampung Tahun 2021*. Diss. Universitas Jambi, 2022.
- Anggraika, P. (2019). Hubungan Posisi Duduk Dengan Kejadian *Low back pain (LBP)* Pada Pegawai Stikes. *Jurnal 'Aisyiyah Medika*, 4(1), 1–10. <https://doi.org/10.36729/jam.v4i1.227>
- Cinthia, R. R., & Kustanti, E. R. (2017). Pada Mahasiswa. *Jurnal Empati*, 6(April), 31–37.
- Daneshmandi, H., Choobineh, A., Ghaem, H., & Karimi, M. (2017). Adverse Effects of Prolonged Sitting Behavior on the General Health of Office Workers. *Journal of Lifestyle Medicine*, 7(2), 69–75. <https://doi.org/10.15280/jlm.2017.7.2.69>
- Fitriani, T. A., Salamah, Q. N., & Nisa, H. (2021). Keluhan *Low back pain* Selama Pembelajaran Jarak Jauh pada Mahasiswa UIN Syarif Hidayatullah Jakarta Tahun 2020. *Media Penelitian Dan Pengembangan Kesehatan*, 31(2), 133–142. <https://ejournal2.litbang.kemkes.go.id/index.php/mpk/article/view/4180>
- Gamaliel ADP, Asti Nuraeni, M. S. (2018). Pengaruh Sit Stretching Terhadap Perubahan Skala Nyeri. *Jurnal Ilmu Keperawatan Komunitas, Volume 1 N*, 1–13.
- Gómez-galán, M., & Pérez-alonso, J. (2017). Owas Review 315. *Industrial Health*, 55, 314–337. https://www.jstage.jst.go.jp/article/indhealth/55/4/55_2016-0191/_pdf
- Grove, Susan K., Gray, J. R., & Sutherland, S. (2014). Burns and Grove's the practice of nursing research: appraisal, synthesis, and generation of evidence. *Elsevier*, 8, 1–1192.
- Hutasuhut, R. O., Lintong, F., & Rumampuk, J. F. (2021). Hubungan Lama Duduk Terhadap Keluhan Nyeri Punggung Bawah. *Jurnal E-Biomedik*, 9(2), 160–165. <https://doi.org/10.35790/ebm.v9i2.31808>
- Khasanah, F. N., & Setiyadi, D. (2019). Uji Sensitivitas Metode Simple Additive Weighting Dan Weighted Product Dalam Menentukan Laptop. *Bina Insani ICT Journal*, 6(2), 165–174.
- Malyana, A. (2020). *Pelaksanaan Pembelajaran Daring Dan Luring Dengan Metode Bimbingan Berkelanjutan Pada Guru Sekolah Dasar Di Teluk Betung Utara Bandar Lampung*. Vol. 2, No(1), 67–76.
- Mukaka, M. M. (2012). Statistics corner: A guide to Appropriate use of Correlation Coefficient in Medical Research. *Malawi Medical Journal*, 24(3), 69–71.
- Nursalam. (2015). *Metodologi Penelitian Ilmu Keperawatan: Pendekatan Praktis*.
- Ostelo, R. W. (2020). Physiotherapy management of sciatica. *Journal of Physiotherapy*, 66(2), 83–88. <https://doi.org/10.1016/j.jphys.2020.03.005>

- Polit & Beck. (2012). *Nursing Research Principles and Methods*.
- Polit, D. F., & Beck, C. T. (2017). *Nursing Research : Generating and Assessing Evidence for Nursing Praticce* (K. Burland (ed.); 10th ed.). J. B. Lippincott Company.
- Pramana, A. P. G. (2020). Hubungan Posisi dan Lama Duduk dalam Menggunakan Laptop terhadap Keluhan *Low back pain* pada Mahasiswa Fakultas Kedokteran Universitas Udayana. *Jurnal Medika Udayana*, 9(8), 14–20.
- Pratami, A. R., Zulhamidah, Y., & Widayanti, E. (2020). Hubungan Antara Sikap Duduk dengan Kejadian *Low back pain* pada Mahasiswa Fakultas Kedokteran Universitas YARSI Tahun Pertama dan Tahun Kedua. *Majalah Kesehatan Pharmamedika*, 11(2), 105–115. <https://doi.org/10.33476/mkp.v11i2.1324>
- Rachmat, N., Utomo, P. C., Sambada, E. R., & Andyarini, E. N. (2019). Hubungan Lama Duduk dan Sikap Duduk terhadap Keluhan Nyeri Punggung Bawah pada Penjahit Rumahan Di Kecamatan Tasikmadu. *Journal of Health Science and Prevention*, 3(2), 79–85. <https://doi.org/10.29080/jhsp.v3i2.204>
- Restuputri, D. P., Garside, A. K., & Ningrum, I. S. (2020). *Analisis Postur Belajar Pada Pengguna Laptop (Study Kasus Pada Mahasiswa Kuliah Online)*. 502–511.
- Sahara, R., & Pristya, T. Y. R. (2020). Faktor Risiko yang Berhubungan dengan Kejadian *Low back pain* (LBP) pada Pekerja. *Jurnal Ilmiah Kesehatan*, 19(3), 92–99.
- Setyowati, D. L., & Fathimahhayati, L. D. (2021). *Modul Penelitian Sikap Kerja Ergonomis Untuk Mengurangi Keluhan Muskuloskeletal Pada Pengrajin Manik-Manik*. 46. <http://repository.unmul.ac.id/handle/123456789/7390>
- Sinaga, T. A., & Makkiyyah, F. A. (2021). Faktor Yang Mempengaruhi Nyeri Punggung Bawah Pada Usia Dewasa Madya di Jakarta dan Sekitarnya Tahun 2020. *UPN Vet Jkt, Sensorik Ii*, 44–52. <https://conference.upnvj.ac.id/index.php/sensorik/article/view/993>
- Stafford, M. A., Peng, P., & Hill, D. A. (2017). Sciatica: A review of history, epidemiology, pathogenesis, and the role of epidural steroid injection in management. *British Journal of Anaesthesia*, 99(4), 461–473. <https://doi.org/10.1093/bja/aem238>
- Tarigan, M. B. (2019). Pengaruh Stretching Terhadap Tingkat Nyeri Punggung Bawah Pada Lansia Di Upt. Pelayanan Sosial Lanjut Usia Binjai Tahun 2018. *Stikes Santa Elisabeth Medan*.
- Wahyuni, & Pratiwi, D. A. (2021). Hubungan Antara Duduk Lama dengan Kejadian *Low back pain* pada Mahasiswa Selama Kuliah Online. *The 13th University Research Colloquium 2021 Sekolah Tinggi Ilmu Kesehatan Muhammadiyah Klaten*, 613–621.
- Wahyuningtyas, S., Isro'in, L., & Maghfirah, S. (2019). Hubungan Antara Perilaku Penggunaan Laptop Dengan Keluhan *Musculoskeletal Disorder (MSDS)* Pada Mahasiswa Teknik Infomatika. 196–206.
- Wijaya, P. G. P. M., Wijayanthi, I. A. S., & Widyastuti, K. (2019). Hubungan posisi dan lama duduk dengan nyeri punggung bawah pada pemain game online. *Intisari Sains Medis*, 10(3), 834–839. <https://doi.org/10.15562/ism.v10i3.495>
- Wijayanti, F., Oktafany, Ramadhian, R. M., Saftarina, F., & Cania, E. (2019). Kejadian *Low back pain* (LBP) pada penjahit konveksi di kelurahan Way Halim kota Bandar Lampung. *Medula*, 8, 82–88. <http://repository.lppm.unila.ac.id/13036/1/ergonomi.pdf>