

# The Relationship Between Sitting Attitude and Duration of Work with Low Back Pain Complaints Among Kalimantan Tengah Health Office Employees in 2019

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Research Article

# The Relationship Between Sitting Attitude and Duration of Work with Low Back Pain Complaints Among Kalimantan Tengah Health Office Employees in 2019

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### Abstract

Low back pain is an occupational disease that arises due to work relationships or is caused by work and work attitudes. Incorrect sitting posture and sitting for long periods are one of the most frequent risk factors. The study was conducted to determine the relationship between sitting posture and work duration with complaints of low back pain in-office employees. The research design used is descriptive-analytic with a cross-sectional approach. The number of samples was 70 employees of the Central Kalimantan Provincial Health Office; the total sampling technique. The research data was taken using a questionnaire. The results of respondents who complained of low back pain were 12 people (17.1%), and 9 of them related to the wrong sitting position (81.8%) with a p-value of 0.000, and the wrong sitting posture was 84 times greater for suffering from lower back pain compared to the correct sitting posture. The duration of work (long sitting) did not have a relationship with complaints of back pain ( $p = 0.974$ ). There is a significant relationship between the respondent's sitting attitude to the incidence of low back pain, and there is no significant relationship between work duration (length of sitting) and the incidence of low back pain in employees at the Central Kalimantan Provincial Health Office.

**Keywords:** Work Duration, Sitting Length, Lower Back Pain, Sitting Position

## INTRODUCTION

Occupational diseases arise due to work relationships or those caused by work and work attitudes<sup>1</sup>. One of the occupational diseases is spinal disorders or low back pain (low back pain). Low back pain (LBP) is pain that is local or radicular or both, which is felt between the angle of the lower ribs and the folds of the lower buttocks, namely in the lumbar or lumbosacral area and is often accompanied by radiating pain to the leg and feet<sup>2</sup>. Meanwhile, according to Munir in his research, low back pain is defined as a non-specific condition that refers to complaints of acute or chronic pain and discomfort in the lumbosacral area, which can be caused by inflammation, degenerative processes, malignancies, gynecological disorders, trauma, and metabolic disorders<sup>3</sup>.

Several things that can affect the onset of low back pain are the habit of sitting, working bent over for a relatively long time, lifting and carrying loads with an ergonomic attitude, an abnormal spine, or due to certain diseases such as degenerative diseases. In addition, according to some experts, individual factors such as age, gender, physical activity, physical strength, and body size can cause complaints of low back pain<sup>4</sup>. Low back pain is a major cause of activity limitation and a reason for absenteeism from work worldwide and causes an economic burden on individuals, families, communities, industry, and governments<sup>5</sup>. 15-45% of adults

suffer from low back pain per year, generally occurring at the age of 43-5. One in 20 patients must be hospitalized for acute attacks of low back pain<sup>6</sup>.

One of the problems of low back pain that often occurs is the recurrence of attacks of acute pain that can radiate to the buttocks or one of the thighs. During the attack, the back can also feel stiff and painful. The pain may subside within a day or two or maybe a few weeks each time. Sometimes it disappears completely, persists, or recurs<sup>7</sup>. The number of low back pain sufferers in Indonesia is unknown but is estimated to be between 7.6% and 37%<sup>8</sup>. Low back pain arising from a static position at work and being sustainable can result in lost working hours that interfere with work productivity.

Several studies have shown a relationship between prolonged sitting and low back pain. People who work in a sitting position for 12 hours of work time or more have a 1.6 greater relative risk for low back pain. Low back pain does not increase during sitting one hour per day. However, low back pain is associated with sitting for more than 4 hours. Research on school students also found that in Scandinavia, 41.6% suffered from low back pain while sitting in a class consisting of 30% of students who sat for 1 hour and 70% of students who sat for more than 1 hour<sup>9</sup>. The results of research conducted by Sumekar (2010) showed that in a good sitting

position, 27 of 65 respondents (41.5%) experienced low back pain, while in a wrong position, 11 out of 12 respondents (91.7%) experienced low back pain, with p-value = 0.011 and a risk of 15,481 times<sup>10</sup>.

In addition to the consequences of sitting for long periods, low back pain is closely related to one's sitting posture. Nurannisa (2015), in her research on 50 employees at the Tebing Tinggi Branch of the BRI Office in North Sumatra, argues that there is a relationship between sitting position and low back pain<sup>33</sup> with the results of her research that 28 workers experienced complaints of low back pain, and 19 of them were caused by the wrong sitting position. The correct sitting position is with your back straight, shoulders back, and buttocks touching the back of the seat. The wrong sitting position and too long can cause excessive load on the lumbar spine, causing pain in the lower back<sup>11</sup>.

Pain that continues for three months or more will enter a chronic stage, and if left untreated, it can have serious physical, psychological, and social consequences, so it is essential to prevent this from happening. One of the fields of work that can cause complaints of low back pain is office employees. People who work in this section must be more active in a sitting position in front of a computer screen. While sitting for too long is one of the risk factors for low back pain complaints, plus if the sitting position is not ergonomic. Therefore, researchers want to examine further how the effect of sitting posture and duration of work (length of sitting) on the incidence of low back pain complaints in employees at the Central Kalimantan Provincial Health Office, where workers are required to work in a sitting position, and most of them sit for long periods ( $\geq 4$  hours a day).

The wrong sitting position for too long will cause muscle tension and stretching of the posterior longitudinal ligament in the spine. Incorrect body position while sitting creates abnormal pressure on the tissues, causing pain in the lower back. In a sitting place, the muscles that work are the back and abdominal muscles as a counterweight to the work of the erector spinae. Working in a sitting position will cause abdominal and back muscle weakness and increase pressure on the spine. The impaired function causes an imbalance in the abdominal and back muscles that support the spine<sup>12</sup>.

The problem in this study is "Does sitting posture and work duration affect the incidence of low back pain complaints (low back pain) in Central Kalimantan Health Office employees in 2019? This study aimed to identify the effect of the relationship between sitting posture and work duration on the occurrence of low back pain complaints in employees at the Central Kalimantan Provincial Health Office in 2019.

## LITERATURE REVIEW

The spine, medically known as the vertebral column, is a complex structure divided into anterior and posterior sections<sup>13</sup>. The spine consists of a cylindrical body of vertebrae connected by intervertebral discs and attached by the anterior and posterior longitudinal ligaments. The length of the spinal cord in adults reaches 57-67cm. There are 33 bones, 24 separate, and the remaining nine vertebrae are later fused into five sacra and four coccyges. The function of the spine is to support the human body in an upright position, which is mechanically resisting the influence of gravity so that the body remains balanced and reasonable. The anterior part of the spine comprises the vertebrae body and intervertebral discs (as articulations) and is supported by the anterior and posterior longitudinal ligaments.

In comparison, the posterior part comprises the pedicle, the lamina of the vertebral canal, and the transverse

and spinous processes, which serve as the supporting and protective muscles for the spine. The posterior parts of the spine are connected by apophyseal (faceted) joints<sup>14</sup>. The facet and sacroiliac joints are lined by synovial, compressible intervertebral discs and elastic ligaments, which play a role in the spine's flexion, extension, rotation, and lateral spine motion<sup>15</sup>.

The spine's stability depends on the integrity of the vertebral bodies, intervertebral discs, and supporting structures such as muscles and ligaments. Although the ligaments that support the spine are powerful, spinal stability is still influenced by the reflex and voluntary activity of the sacrospinalis, abdominal, gluteus maximus, and hamstring muscles<sup>15</sup>. The spine structures sensitive to pain are the vertebral periosteum, dura, facet joints, the annulus fibrosus of the intervertebral discs, epidural veins, and the posterior longitudinal ligament. Disturbances in these various structures may explain the cause of back pain without compression of the nerve roots. The nucleus pulposus of the intervertebral disc is insensitive to pain under normal circumstances. The lumbar and cervical spine regions are the structures most sensitive to movement and susceptible to trauma<sup>16</sup>. Vertebrae are grouped and named according to their area<sup>17</sup>: cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacral vertebrae, and coccygeal vertebrae.

The International Classification of Disease defines low back pain as acute or chronic pain in the lumbar and/or sacral regions of the spine caused by sprains, strains, intervertebral disc shifts, or from all anatomical parts around the spine<sup>18</sup>. Low back pain was also defined as acute pain in the fifth to the first sacral, lumbar region (L5-S1). Pain in the lower back felt by the patient can occur clearly or vaguely as well as diffuse or localized<sup>13</sup>. According to Tjokorda, Mahadewa, and Sri Maliawan (2009), low back pain is a pain in the lower back area (it can be local pain, radicular pain, or both). This pain is felt between the lower ribs' corners and the lower buttocks' folds, namely in the lumbar or lumbosacral area, and is often accompanied by a journey of pain to the legs and feet. Pain originating from the lower back area can be referred to other sites, or conversely, pain arising from other places is felt in the lower back area<sup>19</sup>.

Pain can be described as an unpleasant sensation when an injury or bodily damage occurs. Pain can be hot, shaking, tingling like burning, stabbing, or being stabbed. Pain will be a problem if pain affects a person in living life. It can occur because the pain lasts long or becomes chronic. Pain is also described in terms of how long it lasts. Acute or brief pain lasts more than two months. Most back pain is simple back pain, i.e., pain related to how the bones, ligaments, and muscles of the back work<sup>22</sup>.

In the United States, more than 80% of the population has complained of low back pain, while in Indonesia, it is estimated that there are more, and 90% of cases of low back pain are not caused by organic disorders but by errors in body position at work (mechanical causes)<sup>24</sup>. According to studies that have been conducted, the highest incidence of low back pain is in the third decade, and the prevalence increases at the age of 60-65 years and then gradually decreases. Other common risk factors reported were low educational status, stress, anxiety, depression, job dissatisfaction, low levels of social support at work, and overall body vibration. Low back pain profoundly impacts individuals, families, communities, government, and businesses worldwide<sup>21</sup>.

The risk factors for low back pain can be divided into three factors, including individual factors (age, body mass index (BMI), gender, smoking, years of service<sup>22</sup>, job factors

(workload, duration of work, work position, repetition)<sup>23</sup>, and physical environmental<sup>42</sup> factors. There are several classifications of low back pain based on the duration of symptoms. LBP is classified into three categories, namely<sup>24</sup> (acute, subacute, chronic), based on pain (local back pain, root irritation, somatic referral pain, viscerosomatic referral pain, pain due to ischemia, and<sup>19</sup> psychogenic pain), based on causative factors (spondylotic low back pain, viscerotonic low back pain, vasculogenic low back pain, and psychogenic low back pain).

Pain-sensitive structures contain nociceptive (pain) receptors stimulated by various local stimuli (mechanical, thermal, chemical). This stimulus will be responded to by releasing multiple inflammatory mediators that will cause pain perception. The pain mechanism is a protection that aims to prevent movement so that the healing process is possible. One form of protection is muscle spasm, which can cause ischemia<sup>25</sup>. Pain that arises can be in the form of inflammatory pain in the tissue with the involvement of various inflammatory mediators or neuropathic pain resulting from a primary nervous system lesion<sup>25</sup>. In the case of LBP, mainly due to mechanics, nociceptor activation is caused by mechanical stimulation, namely muscle overuse. Overuse of muscles can occur when the body is held in a static position or incorrect posture for an extended period, where the muscles in the back will contract to maintain a normal posture, or during activities that cause excessive mechanical loads on the lower back muscles. For example, lifting heavy loads in the wrong position (the body is bent with straight knees, and the load is far away from the body). This overuse of muscles leads to ischemia and inflammation. Any muscle movement will cause pain at the same time and will increase muscle spasms. Because there is muscle spasm, the range of motion of the lower back is limited. Lumbar mobility is limited, especially for bending (flexion) and twisting (rotation)<sup>25</sup>.

Pain and muscle spasms often make individuals afraid to use the back muscles to perform movements in the lumbar. Furthermore, it will cause physiological changes in these muscles, namely reduced muscle mass and decreased muscle strength. Eventually, individuals will experience a decrease in their level of functional activity<sup>25</sup>.

The clinical diagnosis of low back pain includes anamnesis, general physical examination, provocation tests<sup>64</sup> and supporting examinations. In principle, the management of low back pain is divided into two, namely conservative<sup>26</sup> therapy and surgical therapy. The prognosis is good in non-specific and myogenic low back pain. The difference lies in the use of drugs or medicine. Non-specific LBP is self-limiting without treatment, whereas myogenic LBP requires early treatment for a one-week cure.<sup>10,46</sup> The prognosis for chronic LBP is uncertain<sup>26</sup>.

The term ergonomics comes from the Latin words Ergon (work) and Nomos (natural law/rules), so it can be defined as the study of human aspects in the work environment which are reviewed anatomically, physiologically, psychologically, management, and design. Meanwhile, according to Notoatmodjo (2010), ergonomics in a language is the law of work<sup>27</sup>. Ergonomics is a science examining the relationship between humans and their work environment. What is meant by the work environment here is the surrounding environment where humans work, work methods, work arrangements both individually and in groups, tools or machines used, materials, humans, and the atmosphere called the work system.

Ergonomics aims to achieve high (effective) work productivity in a peaceful, safe, and comfortable atmosphere.

In other words, ergonomics seeks to increase the efficiency of human activities. Besides that, ergonomics also plays an essential role in improving occupational safety and health factors, for example, designing a working system to reduce pain and aches in the human skeletal and muscular system and designing workstations for visual aids<sup>28</sup>.

In general, the objectives of the application of ergonomics are: a) Improving physical and mental well-being through prevention of work-related injuries and diseases, reducing physical and mental workload, promoting promotion and work decisions; b) Improving social welfare through improving the quality of social contacts, managing and coordinating work effectively and increasing social security both during the productive age and after being unproductive; and c) Creating a rational balance between various aspects, namely technical, economic, anthropological, and cultural aspects of each work system carried out to create a high quality of work and quality of life<sup>4</sup>.

Thus, it can be concluded that the scope of ergonomics is in the design of tasks, equipment, work areas, and work systems that are adapted to the capacity and capabilities of workers (considering the abilities and physical limitations of workers), which aims to create efficiency and comfort in work and prevent workers from accidents and diseases that their work can cause.

Ergonomic attitude and work system allow for reduced levels of labor fatigue. Body posture in work is always attempted to be carried out by sitting or in a sitting and standing posture alternately. According to Parjoto (2007), there are several sitting positions, namely<sup>29</sup> sitting up straight, leaning forward; and sitting back. Khumaerah's research (2011) explains that the standard ergonomic sitting position is as follows<sup>30</sup>: a) the chin is pulled in; b) the head does not bend forward (5-10° flexion); c) keep the back straight with the seat cushion supporting the lower back; d) the back position is relaxed and not bent (Lumbar remains lordosis); e) tibia (calf) perpendicular to the floor; f) horizontal thigh position, parallel to the floor (85-100°); and g) the position of the soles of the feet on the ground. If not, it means that your sitting position is too high. In addition, according to Eko Nurmianto (2008), the correct sitting posture is to sit with a straight back and shoulder<sup>13</sup> behind and buttocks touching the back of the chair. The trick, sit at the end of the chair and bend your body as if it were in the letter C shape. After<sup>13</sup>, straighten your body, and make the body arch as much as possible. Hold for a few seconds, then release the position slowly (about 10°). This sitting position is the best. Sit with your knees at or slightly higher than your hips (use leg support), and it's best not to cross your legs. Keep both legs hanging off and avoid the same position for more than 20-30 minutes. While sitting, rest your elbows and arms on the chair, keeping your shoulders relaxed<sup>13</sup>.

## RESEARCH METHOD

This study used an analytical<sup>39</sup> survey research method with a cross-sectional design (cross-sectional study). This research was conducted at the Central Kalimantan Provincial Health Office at Jalan Yos Sudarso No. 9, Menteng, Jean Raya, Palangkaraya<sup>58</sup>, Central Kalimantan, from December 2018 - January<sup>32</sup> 2019. The population in this study were all employees at the Central Kalimantan Provincial Health Office. The research sample<sup>32</sup> was a subject taken from an affordable population at the Central<sup>46</sup> Kalimantan Provincial Health Office during the study and met the inclusion<sup>24</sup> criteria and those who did not meet the exclusion criteria. The sampling technique in this research is Total Sampling, which involves all Central Kalimantan Provincial Health Office, employees. The

instrument in this study was a questionnaire consisting of 6 questions to determine the identity of the respondent <sup>4</sup>, the duration of work, 20 questions to assess complaints of low back pain, and eight questions to determine the status of the sitting position. The method of data collection is to use primary data, namely data obtained directly from data sources by distributing questionnaires. In this study, all data were taken by meeting and asking office employees to fill out the questionnaire that had been provided. After that, it is recorded directly into the table provided. The data obtained from the data collection process were converted into tables. Then the

data is processed using a Statistical Product and Service Solution (SPSS) computer program and presented in tabular form to research the relationship between sitting position and length of sitting with the incidence of low back pain in employees at the Central Kalimantan Provincial Health Office. Then, the program's data processing process consists of several steps: coding, data entry, verification, and computer output. Statistical analysis to process the data obtained will use a computer program where there will be two kinds of data analysis: univariate analysis and bivariate analysis.

## RESEARCH RESULT

**Table 1: Characteristics of Research Respondents**

No	Characteristics of Respondents	Total (n)	%
	Age		
1	20 – 29 years	18	25.7
	30 – 39 years	16	22.9
	40 – 49 years	18	25.7
	50 – 59 years	18	25.7
	Gender		
2	Male	30	42.9
	Female	40	57.1
	Duration/length of work per day		
3	< 8 hours	6	8.6
	≥ 8 hours	64	91.4
	Low back pain status		
4	LBP	12	17.1
	Normal (no LBP)	58	82.9
	Sitting Position		
5	Incorrect	11	15.7
	Correct	59	84.3
	Smoking Status		
6	Smoker	3	4.3
	Do not smoke	67	95.7
	Years of service		
7	≤ 10 years	35	50
	> 10 years	35	50

**Table 1** shows that the number of respondents in the age group of 20-29 years, 40-49 years, and 50-59 years each is 18 people with a percentage of 25.7%. Meanwhile, the minor respondent age group is 30-39 years, with as many as 16 people (22.9%). The number of female respondents is more than male respondents, namely female sex, as many as 40 (57.1%), while the male sex, as many as 30 (42.9%).

The number of respondents who work 8 hours per day is the largest, namely 64 people, with a percentage of 91.4%. At the same time, the number of respondents who work 59 hours per day is only six people, with a portion of 8.6%. The number of respondents who suffer from low back pain is less than normal respondents (not suffering from low back pain), namely 12 people (17.1%) compared to 58 people (82.9%). The number of respondents with the correct sitting position

was more than the wrong sitting position, namely 59 people (84.3%), while the number of respondents with the wrong sitting position was 11 people (15.7%). The number of respondents who smoked was three people, with a percentage of 4.3%, while the number of respondents who did not smoke was more significant, namely 67 (95.7%). The respondent number with a tenure of 10 years and > 10 years is the same, namely 35 people, each with a percentage of 50%.

**Table 2: Distribution of LBP Incidence Based on Characteristics of Respondents**

No	Characteristics of Respondents	LBP		No LBP		Total (100%)
		n	%	n	%	
1	Age					
	• 20-29 years	2	11,1%	16	88,9%	18
	• 30-39 years	3	18,8%	13	81,3%	16
	• 40-49 years	3	16,7%	15	83,3%	18
	• 50-59 years	4	22,2%	14	77,8%	18
2	Gender					
	• Male	6	20%	24	80%	30
	• Female	6	15%	34	85%	40
3	Duration / Length of Work Per Day (hours)					
	• < 8 hours	1	16,7%	5	83,3%	6
	• ≥ 8 hours	11	17,2%	53	82,8%	64
4	Sitting Position					
	• Incorrect	9	81,8%	2	18,2%	11
	• Correct	3	5,1%	56	94,9%	59
5	Smoking Status					
	• Smoker	0	0,0%	3	100%	3
	• Do not smoke	12	17,9%	55	82,1%	67
6	Years of service					
	• ≤ 10 years	6	17,1%	29	82,9%	35
	• > 10 years	6	17,1%	29	82,9%	35

Based on **Tab. 50**, the age group that complained the most about low back pain was the age group 50-59 years, namely four people, followed by the age group 30-39 years and 40-49 years with three people each, then the age group that The least complainant about low back pain is 20-29 years. The number of male and female employees who experience complaints of low back pain is the same, namely six people. Eleven employees work 8 hours per day, experiencing complaints of low back pain, while only one employee works <8 hours per day and complains of low back pain. For employees with the wrong sitting position, nine people experienced complaints of low back pain, while for employees with the correct sitting position, three people experienced complaints of low back pain. Twelve employees smoked and experienced complaints of low back pain, while none of the employees who smoked experienced complaints of low back pain. Six employees were the same in the working period of 10 years and > 10 years complained of low back pain.

**Table 3: Distribution of LBP Frequency Based on Sitting Attitude of Central Kalimantan Provincial Health Office Employees in 2019**

Sitting Attitude	LBP		No LBP		p-value
	N	%	N	%	
Incorrect	9	81,8%	2	18,2%	0,000
Correct	3	5,1%	56	94,9%	

**Table 3** shows the analysis results to see the relationship between the incidence of LBP and the sitting attitude of the Central Kalimantan Provincial Health Office employees in 2019. According to statistical analysis, a p-value of 0.000 (<0.05) was obtained, which means that there is a relationship between the incidence of LBP with a sitting posture for employees of the Central Kalimantan Provincial Health Office in 2019 or HA1 was accepted and HO1 was rejected which stated that the wrong sitting posture could lead to LBP.

**Table 4: Distribution of LBP Frequency Based on Duration of Work for Central Kalimantan Provincial Health Office Employees in 2019**

Duration / Length of Work	LBP		Normal		p-value
	N	%	N	%	
< 8 hours	1	16,7%	5	83,3%	0.974
≥ 8 hours	11	17,2%	53	82,8%	

**Table 4** shows the analysis results to see the relationship between the incidence of LBP and the duration of work for Central Kalimantan Provincial Health Office employees in 2019. According to the SPSS program results, a p-value of 0.974 ( $> 0.05$ ) was obtained. It means there is no relationship between the incidence of LBP and the duration of work for employees of the Central Kalimantan Provincial Health Office in 2019, or  $H_0$  is accepted, and  $H_A$  is rejected.

Of the 11 employees with the wrong sitting position, nine (81.8%) complained of low back pain, but the other two did not. And from 59 employees with the correct sitting position, three people (5.1%) complained of low back pain. This condition can be caused because low back pain is not only caused by sitting position but can be influenced by individual factors (age, BMI, gender, smoking, years of service), work factors (workload, duration of work, repetition), and physical environmental factors in the form of vibration.

In the study, it was found that there was a relationship between sitting posture and complaints of low back pain in employees of the Central Kalimantan Provincial Health Office. It is based on the chi-square test, which obtained a p-value of 0.000 ( $p < 0.05$ ) with a Contingency Coefficient (CC) value of 0.595 so that it can be interpreted that the sitting attitude of the employees of the Central Kalimantan Provincial Health Office has a fairly strong relationship with complaints of low back pain.

The results of this study are in line with research conducted by Nurannisa (2015) which examined the effect of sitting position on the incidence of low back pain in BRI bank employees in Tebing Tinggi where the p-value obtained was 0.000 ( $p < 0.05$ ). It is in line with research conducted by Wahyu Nurma Sari (2013) regarding the relationship between sitting work attitude and subjective complaints of low back pain in shrimp paste makers at Tambak Rejo Tanjung Mas Semarang with a p-value of 0.02 ( $p < 0.05$ ) [53] which indicates that sitting posture affects the incidence of low back pain complaints.

Work attitude has a relationship with complaints of low back pain. It follows the theory that explains that non-ergonomic work attitudes can cause unnatural work attitudes and cause subjective complaints. One of the subjective complaints is back pain. This statement is also supported by the results of research conducted by Diana Samara (2026) about bending and twisting work attitudes during work as a risk factor for low back pain, showing that a slouched work attitude increases the risk of low back pain by 2.68 times compared to workers with an upright posture.

Work attitude is essential in carrying out work activities, especially for workers with static activities for a long time, such as office employees, because, according to Pheasant (1991), these work attitudes cause complaints to the musculoskeletal system more quickly. The wrong and forced work position can cause fatigue, making work less efficient. In the long term can cause physical and psychological disorders with complaints that are felt in the back. The pressure on the spine will increase when sitting. A tense sitting posture requires more muscle activity.

The wrong sitting posture or sitting in a chair that is not ergonomic will trigger back pain. The spine, tendons, and

muscles are forced to maintain the upper body in excess. It will cause fatigue in the back muscle tissue, especially the lumbar muscles. While the correct sitting posture is the one that can eliminate unnatural sitting postures, smooth the blood flow system, can reduce energy consumption, and can reduce pressure between the vertebrae (intradiscal pressure). Try when sitting, feet resting directly on the floor so as not to block blood flow to the legs. Sitting in the wrong position will cause the back muscles to tense and damage the surrounding soft tissue. And if this continues, it will cause pressure on the spinal cord, which results in a herniated nucleus pulposus. People who sit up straight get tired faster because their back muscles are tenser. While people who sit hunched over have lighter muscle work, the pressure on the nerve pads is more significant.

Based on the description above, if you feel back pain, the first thing you need to do is stand up. In addition, relaxing every 20-30 minutes is very important to prevent muscle tension. It is also recommended to every office employee that the sitting posture should be adjusted to the principles of ergonomics according to Nurmianto (2008) because, based on the results of the chi-square statistical test in this study, employees with the wrong sitting position have an 84 times greater risk of low back pain complaints. Then, it is necessary to pay attention to the body's posture in a balanced state to work comfortably and last a long time.

Statistical test results show no relationship between the length/duration of work per day and the incidence of low back pain complaints in Central Kalimantan Provincial Health Office employees in 2019. It is based on the chi-square statistical test with a p-value of 0.974 ( $> 0.05$ ), which states that employees' work duration does not cause complaints of low back pain. It is because, for about 8 hours, employees are only sometimes in a sitting position. After all, employees have time to rest and have free will to move from their bench or sitting position.

The results of this study are in line with research conducted by Arham Azis et al. (2017) regarding the relationship between age, length of service, and length of work on complaints of low back pain in loading and unloading workers at Manado port with a chi-square result of 0.073 ( $p > 0.05$ ). It means there is no relationship between the length of work and complaints of low back pain on loading and unloading workers at the port of Manado.

## CONCLUSION

Based on the results of the research and discussion, it can be concluded that there is a relationship between sitting posture and complaints of low back pain in employees at the Central Kalimantan Provincial Health Office in 2019. Besides, there is no relationship between work duration and complaints of low back pain in employees at the Central Kalimantan Provincial Health Office in 2019. For this reason, it

is hoped that employees will always pay attention to sitting posture and duration of sitting at work to prevent or reduce the incidence of low back pain. In addition, the Office of the Health Service/Related Agencies is expected to provide health services such as counseling or counseling regarding proper sitting posture and sufficient duration of work for office employees to reduce occupational diseases, especially low back pain.

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