

ISSN: 2597-8012 JURNAL MEDIKA UDAYANA, VOL. 14 NO.10, OKTOBER, 2025

DOAJ DIRECTORY OF OPEN ACCESS JOURNALS

Received: 2025-08-12 Revision: 2025-09-08 Accepted: 12-09-2025

# POSITION AND WORK DURATION ON THE INCIDENCE OF LOW BACK PAIN IN SPA THERAPISTS AT NUSA DUA BALI

# Amanda Devasya Kusuma<sup>1</sup>, Ida Ayu Sri Wijayanti<sup>2</sup>, Ni Made Susilawathi<sup>2</sup>, Ni Putu Ayu Putri Mahadewi<sup>2</sup>

<sup>1.</sup> Bachelor of Medicine Study Program, Faculty of Medicine, Udayana University, Bali
<sup>2.</sup> Department of Neurology, Faculty of Medicine, Udayana University, Bali
Email: amandadevasya@gmail.com

## **ABSTRACT**

Low back pain is a sensation of pain or discomfort in the lower back area. Spa therapists are identical to inappropriate working positions and quite dense activities, so they are at risk of experiencing lower back pain. This research aims to determine the effect of work position and duration on the incidence of lower back pain in Spa therapists in Nusa Dua Bali. This study is an observational analytical study with a cross-sectional approach with a sample of 63 people meeting the inclusion criteria. Sampling using the consecutive sampling method. Data collection was carried out by filling out questionnaires offline. Data analysis was carried out using SPSS version 25.

Based on the data, the proportion of lower back pain sufferers in Spa therapists is 68.3%. There is a relationship between lower back pain and work position (p = 0.000) with a correlation value of 0.663, indicating a strong relationship between the two. There is also a relationship between lower back pain and work duration (p = 0.002), with a correlation value of 0.377, indicating a moderate relationship between the two.

Keywords: Low back pain., Spa therapist., Working duration., Working position

## INTRODUCTION

Bali is one of the provinces in Indonesia that is used as a holiday destination for domestic and foreign tourists. This is because Bali has various tourist attractions, ranging from cultural tourism, nature tourism, and marine tourism spread across every district/city. Tourists who come to Bali not only enjoy nature and culture, but also to calm their minds and mentality which is known as healthy and wellness tourism. One example that supports this tourism is the Spa (Solus Per Aqua). Spa is one example of a tourism product in Bali that has experienced rapid growth in recent years. Initially, Bali began to be known throughout the world in 2006 as the Asian Spa City of the Year. This is because Bali has a unique Spa quality. Not only that, in the following years Bali also won the Asian Spa Capital of the Year award. These awards have continued until now, one of which is since 2019, where for 3 consecutive years Bali won Asia's Best Spa Destination at the World Spa Awards. The rapid development of Spas in Bali has caused the demand for Spa services to soar. Spa therapists who provide services to tourists play a vital role in this service. Hence, the performance of Spa therapists has a great impact on customer satisfaction and causes Spa therapists to be required to show maximum and optimal performance. Poor body position can increase the risk of pain. This is supported

by a study in 2020 on the relationship between work position and complaints of lower back pain which showed that high pain problems were caused by incorrect work positions that were not ergonomic. <sup>2</sup>

In doing their work, Spa therapists are at risk of experiencing pain caused by the work due to body position when doing work such as bending, often tilting the body, sitting or standing for a long time, or other inappropriate body postures, therefore the most common complaint is a pain in the lower back. This complaint occurs among Spa therapists related to improper positioning, which can cause acute complaints due to trauma.3 This lower back pain results in reduced work productivity. 4 If it continues, it can cause decreased work performance and reduced concentration, resulting in limited activity. The duration of work for spa therapists that exceeds capacity and is too long also increases the risk of lower back pain. This is supported by a study showing that long work duration can cause fatigue and lower back pain. <sup>5</sup>Lower back pain in spa therapists can cause reduced productivity at work. If this continues, it can cause decreased performance and reduced concentration, resulting in reduced working days and limited activity. Therefore, researchers are interested in knowing the effect of position and duration of work on the incidence of lower back pain in spa therapists in the Nusa Dua area of Bali.

## LITERATURE REVIEW

#### Low Back Pain

Lower back pain is a pain found in the lower back, generally in the L4-L5 and L5-S1 areas. Lower back pain can be radicular pain, local pain, or a combination of both. This pain was located between the lower rib angle and the lower buttocks, especially in the lumbar or lumbosacral area. Complaints of lower back pain are related to pain, spasms, and functional limitations related to movement of the waist. The pain felt often makes people reluctant to move the spine, causing physiological changes in the muscles, namely reduced muscle mass and resulting in decreased functional activity. Excessive muscle use can be caused when the body is in the wrong posture for a long time. The muscles in the back area will continue to contract to maintain a normal posture. This excessive muscle use causes ischemia and inflammation. This pain is obtained from muscle spasms that press on blood vessels and cause ischemia. Ischemia causes a large distribution of lactic acid in the tissue. Lactic acid in the tissue can stimulate pain nerve endings or pain receptors and cause a sensation of pain in the lower back so that lumbar mobility is limited in performing bending and twisting movements. 8

Risk factors for lower back pain consist of individual and occupational factors. Individual factors include age, gender, smoking habits, and BMI. As we age, the human body will begin to degenerate. The results of the study showed that a decrease in the ability to withstand various types of pain stimuli is more likely for the elderly. Women are at higher risk of developing lower back pain than men, regardless of age. This statement is related to biopsychosocial mechanisms. Smoking habits can cause a decrease in minerals in bones. Nicotine in cigarettes reduces blood flow to the tissues, causing complaints of lower back pain. 10 Someone is overweight, the fat distributed to the abdominal area will increase the workload on the lumbar region, which will cause fatigue in the lumbar muscles. 11 Occupational factors consist of workload, work duration, and work position. Workload is some of the work done by a person physically or socially. Work that requires a lot of energy will put more strain on the ligaments, muscles, and joints. <sup>12</sup> A person who works less than or equal to eight hours has a lower risk of experiencing lower back pain than someone who works more than eight hours. 13 Poor working position can increase the occurrence of musculoskeletal complaints.<sup>14</sup>

# **Work Position**

A working position is a posture formed by the worker's body while working. Working position is very important in analyzing the effectiveness and comfort of a job; if the position is good, the results will be better, and there will be no fatigue. Meanwhile, if the position taken by the worker is not good, the results of the work will not be as expected. <sup>15</sup> A working position that is in accordance with the anatomical position of the body results in no changes in body parts such as bones, nerves and organs. <sup>16</sup> According to research conducted by Irwanti in 2019 on

Spa therapists regarding the effect of working position on the location of pain felt. It was found that the main complaints felt by spa therapists were complaints about the waist, neck, and shoulders. This is because of the working position of Spa therapists who take a more hunched posture.

#### **Work Duration**

Duration of work can be interpreted as the amount of time spent by workers in carrying out work activities in a day, which does not include rest time. Generally, the right duration of work in a day is around 6 to 10 hours. The rest of the time should be used for personal life, such as rest, as well as life in the family and community. Duration of work that exceeds the capacity of the length of work will usually result in unproductive work and will not be accompanied by efficiency and effectiveness. Important aspects in the duration of work consist of: how long a person can work well, what is the relationship between rest time and work duration?, how does work time relate to time, such as morning, afternoon, evening, and night?, if you miss the normal time, the muscles will work harder, increasing the risk of lower back pain.<sup>5</sup>

#### Spa

The spa comes from the Latin word Solus Per Aqua (Solus = Treatment, Per = With and Aqua = Water). Along with its development, Spas have emerged with various programs for those who need refreshment and new enthusiasm. With the advancement of technology, modern Spas are no longer just soaking in hot water or traditional massages. Currently, Spas function more to improve physical and mental health. This condition has caused the demand for Spas to continue to increase; therefore, currently, the need for Spas is not only for tourists but also for ordinary people who want to regain their fitness after doing busy activities. <sup>1</sup>

# MATERIALS AND METHODS

The research design used was observational analytic with a cross-sectional approach. This study was conducted without providing treatment or intervention to the research sample. This study included Spa therapists who were willing to be respondents and worked in the Nusa Dua Bali area. In contrast, the exclusion criteria were Spa therapists who had a history of trauma, surgery, and spinal abnormalities. This study used the consecutive sampling method, namely, all subjects who came during the study until the required number of subjects was met. The number of samples obtained was 63 respondents.

#### RESULT

This study was conducted offline from February to April 2024 at several Spas in the Nusa Dua area of Bali. Data collection was carried out by filling out a paper questionnaire containing personal identity, characteristics of Spa therapists, duration of work, work position, and complaints of lower back pain experienced by Spa therapists.

# POSITION AND WORK DURATION ON THE INCIDENCE OF LOW BACK PAIN IN SPA THERAPISTS AT NUSA DUA BALI

Table 1. Characteristics of Spa Therapist

Characteristics	Frequency (n=63)	Precentage (%)
Age		
≤35 years	51	80,9
>35 years	12	19,1
Gender		
Female	63	100
Male	0	0
BMI		
Underweight	3	4,8
Normal	49	77,8
Overweight	6	9,5
Obese	5	7,9
Time needed get to work		
0-15 minutes	56	88,9
15-30 minutes	7	11,1
>30 minutes	0	
Work period		
$\leq$ 6 months	0	0
>6 months	63	100

Based on this understanding, it can be said that Spa is a system of treatment or therapy with water or, in English,it is called hydrotherapy. Coincidentally, Spa is also a city in Belgium, which is a hot spring discovered by the ancient Romans. In the past, this water source was used by soldiers to heal wounds caused by pain after the war. Since then, the use of hot springs as a means of healing in Europe, America, and Asia has grown rapidly. 17 "Hippocrates", the father of medicine, has used Spas extensively for treatment since 400 BC. He explained in detail the indications and contraindications for water treatment. The basic principles explained by Hippocrates became the starting point for the emergence of Spa Medic (Water Therapy); then, in modern times, Spa Medic therapy began in the 17th century (1697) and was introduced by Sir John Floyer. The Floyer method has a strong clinical scientific basis for the use of water as a healing effort. In Europe, a number of medical and non-medical professionals have begun to emerge in the spa world.18

The results of the description of age characteristics show that

the age category  $\leq 35$  years is 51 people (80.1%), and the age category > 35 years is 12 people (19.1%), with an average age of Spa therapists of 28.86. Based on gender characteristics, all respondents are female, which is 63 people (100%). The characteristics of BMI in spa therapists are BMI 18.5-22.9, which is categorized as normal in as many as 49 people (77.8%). This is followed by respondents with a BMI of 23-24.9 or categorized as overweight as many as 6 people (9.5%), BMI  $\geq$ 25 or classified as obese as many as 5 people (7.9%), and BMI<18.5 or categorized as underweight as many as 3 people (4.8%). Based on the characteristics of the amount of time taken to get to work, the majority of respondents have a travel time of 0-15 minutes, which is 56 people (88.9%). Followed by respondents with a travel time of 15-30 minutes, namely 7 people (11.1%), and none of the respondents travelled >30 minutes to work. Length of work at Spa therapists is categorized into < 6 months and>6 months. All respondents. namely 63 people (100%), have a work period of >6 months.

Table 2. Characteristics of work position, work duration, and low back pain in spa therapists

Characteristics	requency (n=63)	centage (%)
Work position		
Risk	50	79,4
No risk	13	20,6
Work duration		
$\leq 8 \text{ hours}$	33	52,4
>8 hours	30	47,6
Low back pain		
Exist	43	68,3
None	20	31,7

Based on the distribution of answers in Table 2, it shows that out of 63 respondents, 50 respondents have risky work positions (79.4%), and 13 others have non-risky work positions (20.6%). The work duration table shows that Spa therapists who work for  $\leq 8$  hours are 33 people (52.4%), and

Spa therapists who work > 8 hours are 30 people (47.6%). Most respondents feel lower back pain, namely 43 respondents (68.3%), while the other 20 respondents (31.7%) do not experience lower back pain.

Table 3. Spearman's Rho test results the relationship between work duration and low back pain

	Low back pain	
	r	0.377
Work duration	p	0.002
	N	63

Based on Table 3, the results of the Spearman's rho analysis test on n=63, which are in accordance with the research objective to answer the hypothesis, namely "Knowing the Effect of Work Duration on the Incidence of Lower Back Pain in Spa Therapists in the Nusa Dua Bali Area". The results of the statistical test obtained a p- value of 0.002 (p <0.05), which means that H0 is rejected, so it is concluded that there is an influence

between work duration and the incidence of lower back pain. This study also obtained a correlation coefficient (0.377) which means that it is in the same direction or has a moderate correlation nature, with a positive correlation direction, namely that the higher the duration of work, the higher the complaints of lower back pain and the lower the duration of work, the lower the complaints of lower back pain.

**Table 4.** Spearman's Rho test results the relationship between work position and low back pain

	Low back pain	
	r	0.663
Work position	p	0.000
	N	63

The results of the Spearman's rho analysis test on n= 63, which are in accordance with the research objective to answer the hypothesis, namely "Knowing the Effect of Work Position on the Incidence of Lower Back Pain in Spa Therapists in the Nusa Dua Bali Area". The statistical test results obtained a p-value of 0.000 (p<0.05), which means that H0 is rejected, so it is concluded that there is an influence between the work position and the occurrence of lower back pain. This study also obtained a correlation coefficient (of 0.663) which means that it is in the same direction or has a strong correlation nature, with a positive correlation direction, namely, the higher the risk of the work position, the higher the complaint of lower back pain and the lower the risk of the work position, the lower the complaint of lower back pain.

#### **DISCUSSION**

The main objective of this study was to investigate the relationship between position and duration of work on complaints of lower back pain in Spa therapists in the Nusa Dua Bali area. A study of 63 spa therapists in the Nusa Dua Bali area showed a prevalence of lower back pain of 68.3% (43 out of 63 people). This prevalence is higher than that of a 2019 study, which showed a prevalence of lower back pain in spa therapists in Legian of 23.12% (Irwanti, 2019). The results of this study indicate that there is a significant relationship between the influence of work duration and complaints of lower back pain in Spa therapists in the Nusa Dua Bali area. In this study, a p-value of 0.002 (<0.05) was obtained, which means that the higher the duration of work experienced by Spa therapists, the higher the complaints of lower back pain that can be experienced. The results of the study of 63 respondents showed that the

percentage of work duration  $\leq$  8 hours was 52.4%, and duration 8 hours was 47.6%. As many as 41.3% of respondents who had excessive work duration experienced lower back pain, which is higher than the percentage of Spa therapists who work with normal work duration, which is 27%.

Work duration is the amount of time exposed to risk factors. The optimal length of time a person works in a day is generally around 6-8 hours. Work duration that exceeds this time usually causes decreased productivity, such as fatigue or workrelated illnesses.<sup>5</sup> This can happen because if workers do activities for a long time in the wrong position and are done continuously without a break to stretch, it can increase the load on the lower back spine. 19 The load received on the lumbar and sacral parts will increase if the duration of work exceeds its capacity, an increase in the load that exceeds the capacity in the lumbar and sacral parts will result in complaints of lower back pain. <sup>20</sup>This is in line with the results of a study conducted by Agustin, Puji, and Andriarti (2023), which stated that there is a relationship between work duration and complaints of lower back pain. The results of the analysis using the chi-square test obtained a p-value = 0.029 (p<0.05).<sup>21</sup> Furthermore, this is also in line with the research of Puspitaningrum et al. (2023), which found that the duration of work was significantly related to complaints of lower back pain (p = 0.000), which was reinforced by a correlation value of r of 0.557 which showed a fairly strong relationship.<sup>22</sup>The amount of efficient work in a week is around 40-48 hours, divided into 5 or 6 working days with a maximum additional working time of 30 minutes. If you miss this time, you will exert excessive muscle work to maintain the work position, which causes muscle spasms, so it is very risky to experience lower back pain. The results of the bivariate analysis in this study show that there is a significant relationship between the influence of work position and complaints of lower back pain in spa therapists in the Nusa Dua Bali area. In this study, a p-value of 0.000 (<0.05) was obtained, which means that the riskier the work position experienced by the Spa therapist, the higher the complaints of lower back pain that can be experienced. From the results of the study on 63 respondents, the percentage of risky work positions was 79.4%, and non-risky work positions were 20.6%. As many as 66.7% of respondents who had risky work positions tended to experience complaints of lower back pain, which was much higher than the percentage of Spa therapists who worked in normal work positions, which was 1.6%. Work position is one of the factors that must be considered in ergonomics. An inappropriate and forced work position will cause muscle fatigue, making the work less efficient. If the muscles receive repeated loads for a long time, it will damage the ligaments, joints, and tendons, causing pain. Over a long and continuous time, it will cause complaints in the back and waist or other parts of the body.<sup>23</sup>

This is in line with the results of a study conducted in 2021, which stated that there is a relationship between awkward body postures when doing work and complaints of lower back pain. The results of the analysis using the chi-square test obtained a p-value = 0.000 (p<0.05). Furthermore, this is also in line with research conducted by Eka, Pramesti, and Dewi (2023), which

stated that there is a relationship between work position and complaints of lower back pain. The results of the analysis using the chi-square test obtained a p-value =0.000 (p <0.05) with an OR value of 128, which means that respondents who have non-ergonomic work positions are 128 times more at risk of experiencing lower back pain complaints compared to respondents who work in ergonomic positions. The results of a study by a Udayana University student regarding work positions and complaints of lower back pain also stated that there is a significant relationship between work positions and complaints of lower back pain. The study used Spearman's rho analysis test and obtained a p-value= 0.000 (p <0.05) with a correlation coefficient result of 0.603, which means that there is a strong correlation between the two variables. <sup>2</sup>Body position when doing work that is not in accordance with the ergonomic position coupled with repetitive movements can increase the risk of lower back pain. This is because when the body posture is not appropriate, it can increase the amount of energy needed, and the transfer of power will be focused on the working muscles. Excessive use of muscles while working will cause tension in the tendon muscles. The muscles will continue to contract and use ATP (adenosine triphosphate), which causes the metabolic results to accumulate and then stimulate the nociceptors, which causes pain. This can cause pain while working, which is caused by an unergonomic work position.<sup>24</sup>Unergonomic work positions in Spa therapists are caused by work factors and responsibilities in carrying out their work. When carrying out their work, Spa therapists often do positions that are not in accordance with repetitive movements. This needs to be considered in the future to reduce the risk of lower back pain complaints. Therefore, Spa therapists need to pay more attention to the correct position and ergonomics when doing work to prevent and reduce the risk of lower back pain complaints.

#### CONCLUSIONS AND SUGGESTIONS

Based on the results of the study and discussion on the effect of position and duration of work on complaints of lower back pain in Spa therapists in the Nusa Dua Bali area in 2024, it can be concluded that complaints of lower back pain experienced by Spa therapists in Nusa Dua Bali have a percentage of 68.3%. There is a significant relationship between the duration of work and complaints of lower back pain, and there is a significant relationship between the position of work and complaints of lower back pain.

#### **BIBLIOGRAPHY**

- 1. Irwanti D. Evaluasi Beban Kerja Spa Terapis. 2019;05(02):74–82.
- 2. Kawi IKRSP, Saraswati PAS, Primayanti IDAID. Hubungan Posisi Kerja Terhadap Kejadian Nyeri Punggung Bawah Non Spesifik Pada Pengrajin Ukiran Kayu Di Ud. Murjayadi Style/Ukir Kayu Stil Bali Kabupaten Gianyar. Maj Ilm Fisioter Indones. 2020;8(3):24.
- Roma, I., Bayhakki, & Woferst R. Hubungan Pengetahuan tentang Body Mechanic terhadap Tingkat

Nyeri Low Back Pain (LBP) pada Petani Kelapa Sawit. J online Mhs fkp. 2019;6:1–9.

- Nugraheni W, Made I, Dinata K, Inten IDA, Primayanti D. Hubungan Disabilitas Pada Low Back Pain Dengan Postur Kerja Pada Pekerja Penyapu Jalan Di Kota Denpasar. J Med [Internet]. 2019;8(5):2597–8012.Availablefrom:https://ojs.unud.ac.id/index.php/eum
- Sutami NKD, Laksmi IAA. Hubungan Durasi Kerja Dan Posisi Kerja Dengan Kejadian Nyeri Punggung Bawah Pada Petani. J Borneo Holist Heal. 2021;4(2):85–96.
- Goni NTS, Khosama H, Tumboimbela MJ. Karateristik perawat di Irina F RSUP Prof. Dr. R. D. Kandou Manado yang mengalami keluhan nyeri punggung bawah. e-CliniC. 2016;4(1).
- Sudibyo, Devi Ariani et al. Panduan Praktik Klinis Neurologi. Perhimpuanan Dr Spes Saraf Indones.2023;1–267.
- 8. Sahara A, Satria AP. Pengaruh terapi bekam basah terhadap muskuloskeletal disorders di bagian punggung bawah pada pekerja bangunan di UMKT. Borneo Student Reaserch. 2020;2(1):118p.
- 9. Wong AY, Karppinen J, Samartzis D. Low back pain in older adults: risk factors, management options and future directions. Scoliosis Spinal Disord. 2017;12(1):1–23.
- Hasyim RL, Triastuti NJ. Hubungan Usia, Masa Kerja, Merokok Dan Imt Dengan Kejadian Low Back Pain (Lbp) Pada Penjahit Konveksi. Publ Ilm UMS. 2019;2:388–96.
- 11. Divia Irsadioni. Pengaruh Posisi Duduk dan Lama Kerja terhadap Nyeri Punggung. Front Neurosci. 2021;14(1):1–13
- 12. Haryanto YP, Wardhani K, Sari SK. Hubungan Duduk Lama Dan Ketidaksesuaian Kursi Terhadap Nyeri Punggung Bawah Pada Penjahit. J Kedokt STM (Sains dan Teknol Med. 2022;5(1):17–21.
- 13. Mulfianda R, Desreza N, Maulidya R. Faktor-faktor yang Berhubungan dengan Kejadian Nyeri Punggung Bawah (NPB) pada Karyawan di Kantor PLN Wilayah Aceh Factors Associated with Lower Back Pain (NPB) in Employees at the PLN Office Aceh region. J Healthc Technol Med. 2021;7(1):253–62.

- Adha ZM, Bahri S, Mardhotila YS. Analisis Posisi Kerja menggunakan Metode Ovako Working Analysis System (OWAS) dan Kebiasaan Olahraga Terhadap Keluhan Low Back Pain (LBP). J Mhs dan Penelit Kesehat [Internet]. 2020;7(2):26–31. Available from:http://dx.doi.org/10.29406/jjum.v7i3
- 15. Sulaiman F, Sari YP. Analisis Postur Kerja Pekerja Proses Pengesahan. J Teknovasi. 2016;03:16–25.
- Silalahi, R.L.R., Firmansyah, dan Deoranto. Desain Perbaikan Fasilitas Aktivitas Pemotongan Tempe berdasarkan Analisis Postur Kerja dan Antropometri. Univesitas Islam Negeri Syarif Hidayatullah. 2017;
- 17. Wiriawan, O., Wibowo, S., Arief, N. A., & Kaharina A. IMPLEMENTASI KONSEP SPA TERAPI KESEHATAN DAN KECANTIKAN UNTUK MENJAGAKEBUGARAN JASMANI MASYARAKAT DESA. swarna. 2022;67–73.
- 18. amarullah. Spa Medic Pilar Anti Aging Medicine Cermin Dunia Kedokteran. 2009;
- 19. Devira S, Muslim B, Seno BA, Nur E. Back Pain (Lbp) Penjahit Nagari Simpang Kapuak. J Sehat Mandiri. 2021;16(2):138–46.
- Jurusan M, Lingkungan K, Denpasar P, Jurusan D, Kasus S, Di Desa D, et al. Hubungan Sikap Pekerja Dan Lama Kerja Terhadap Keluhan Low Back Pain Pada Pekerja Di Industri Batu Bata Press. J Kesehat Lingkung. 2019;9(2):126–35.
- 21. Agustin A, Puji LKR, Andriati R. Hubungan Durasi Kerja, Masa Kerja Dan Postur Kerja Terhadap Keluhan Low Back Pain Pada Bagian Staff Di Kantor X, Jakarta Selatan. J Heal Res Sci. 2023;3(1):13–22.
- 22. Puspitaningrum AD, Setiawan MR. Hubungan Postur Kerja, Masa Kerja, dan Durasi Kerja di Pabrik Bulu Mata Artifisial. Medica Arter. 2023;5(1):24–9.
- 23. Ayuni RF, Inayah Z, Program M, Masyarakat SK, Kesehatan F, Gresik UM, et al. Hubungan Posisi Kerja dengan Keluhan Low Back Pain pada Pekerja Sarang Burung Walet Kembangbahu Relationship Work Position and Complaints of Low Back Pain in Kembangbahu Swiftlet Nest Workers. J Kesehat Masy. 2024;8(1):395–403.
- 24. Tanjung A, Hafez C, Pratiwi Y. Hubungan Postur Janggal Dengan Kejadian Low Back Pain Pada Pekerja Bagian Perkebunan di Pabrik Kelapa Sawit PT Mitra Bumi Kabupaten Kampar. Collab Med J. 2021;4(2):55–62.

