Jurnal Kesehatan Masyarakat

Complaints of Low Back Pain in Tailors

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Article Info

Abstract

Low back pain (LBP) is one of the musculoskeletal disorders as a result of incorrect ergonomics. The impact caused by low back pain is bad posture, stiffness, pinched nerve, and muscle weakness. This study aims to determine the relationship between ages, years of service, length of sitting, work posture, and the chair's ergonomics with complaints of low back pain in tailors at Pasar Petisah, Kota Medan, with 35 workers based on inclusion and exclusion criteria. The research tools are interviews, observations, and filling out questionnaires. This sampling technique is used purposive sampling methods. Data were analyzed using the STATCAL application with a 5% chi-square test. Based on the result, we concluded that there is a long relationship between ages (p=0,02), years of service (p=0,04), length of sitting (p=0,01), and work posture (p=0,03) with the occurrence of low back pain tailors. Tailors in the Petisah Market in Medan City are at risk for complaints of low back pain based on age, long years of service, a risky length of sitting, and a risky work posture. If the workers ignore low back pain, the impact is the emergence of serious problems such as stiffness in the spine, fractures, pinched nerves, and can even cause death.

Introduction

Low back pain (LBP) has been declared a burden of disease by WHO and reported as a significant cause of disability worldwide and continues to experience an increased incidence of cases. LBP ranked highest in all non-communicable disease cases (Mohideen, 2021). The prevalence in one year can reach up to 56%, and the lifetime prevalence is 84% (Arias-vázquez et al., 2020). LBP's etiology is multifactorial and classified according to the mechanism of injury, etiologic diversity, evolutionary time, and degree of radicular involvement (Schitter et al., 2022). These problems can be associated with various types of factors such as age, gender, decreased flexibility and muscle mobility, obesity, competitive sports, postural habits, non-ergonomic work, sedentary lifestyle, level of physical activity, smoking, and others (Akkarakittichoke & Janwantanakul, 2017; Quintino et al., 2017). Sitting longer than 7 hours per day can cause damage to the lumbar tissue system (Maradei García et al., 2016; Shenbagasundaram & Balasuburamaniam, 2017). The classification of LBP is divided into three types, namely: acute low back pain, which is characterized by pain that arises suddenly from daily activities in less than a week, sub-acute low back pain, which is characterized by pain that occurs continuously for 5-11 weeks, and chronic low back pain, which is characterized by serious injury from physical activity or an accident that causes spinal damage (Stevans et al., 2021; Traeger et al., 2019;

Xu et al., 2022). Based on the Riskesdas (Basic Health Research) (2018) results, the prevalence of musculoskeletal disorders in Indonesia that health workers have diagnosed is 11.9%, while based on diagnosis or symptoms is 24.7%. The number of people with LBP in Indonesia is unknown, but it is estimated that between 7.6% to 37% (Kementerian Kesehatan, 2018). In Medan City, a previous study reported the prevalence of LBP in tailors at 62,9% (Syaputra et al., 2022).

One type of work that can result in LBP complaints is tailoring. Tailors have a relatively high risk of developing LBP. In carrying out their duties, tailors will carry out sewing activities using rigid behavior. Constantly rigid behavior will be a dilemma for the tailor's health because it will suffer serious injury (Kamariah et al., 2020). Siswanti et al (2019) reported that musculoskeletal complaints in batik artisans were caused by bending and squatting activities during work (Siswiyanti et al., 2019). Stevans et al. (2021) used a descriptive study so that the characteristics of work with work attitudes at risk of LBP in France are unclear. Moreover, Munawarah & Segita (2021) study mentioned that years of service carried out by weavers have a higher risk caused by activities continuously over a period of years causing disturbances to the body. Putri et al. (2018) did not clearly state the length of time the tailor sat had no relationship with complaints of pain.

Although many studies have discussed the risk factors for LBP, few still discuss the ergonomics of the seat on the tailor, so further research needs to be done. Chair ergonomics is one of the factors that have an essential role in work. Chair ergonomics can not be separated from the choice of seat design. The criteria for selecting a chair design that is safe and comfortable when working is having a height and backrest that is in accordance with the BMI and the work table, the diameter of the seat mat, sturdy support legs, and no cracks. If workers choose ergonomic chairs, workers can avoid LBP complaints. Thus, researchers are interested in researching the complaints of LBP regarding the ergonomics of the tailor's chair. This study analyzes the effect of age, work posture, years of service, length of sitting, and chair ergonomics on complaints of low back pain in tailors.

METHOD

This study used quantitative research with a cross-sectional study design because, in this study, the dependent and independent variables were measured at the same time. This research was conducted at the tailor's location in the Petisah Market, Medan City, in February 2022. The population in this study was 35 tailors and, and all became respondents (total sampling).

Data collection in this study was by distributing questionnaires, The Pain and Distress Scale, and REBA to respondents, recording the measurement results on the research sheet form, and observing respondents at work. The Pain and Distress Scale is a measuring tool developed by William W. K. Zung M.D in October 1983. This questionnaire contains 20 statements in English and has been translated into Indonesian by the researcher. The score for the assessment of the answers in this questionnaire is divided into 3, namely: a score of 1 if the respondent answers "Never", a score of 2 if the respondent answers "Rarely", and a score of 3 if the respondent answers "often". The acute category is when the assessment score is below 20; sub-acute if the score is between 21-39; and chronic if the assessment score is above 40. In addition, the researcher also used the REBA (Rapid Entire Body Assessment) questionnaire developed by Beauty Kartika Widyasari in 2014. This questionnaire contains 16 statements with the category not at risk if the assessment score is less than 25 and risk if the score is between 26-48. The score of the answer assessment in this questionnaire is divided into 3, namely: a score of 1 if the respondent answers "Never", a score of 2 if the respondent answers "Rarely", and a score of 3 if the respondent answers "Always".

The data processing was carried out after all data has been collected from the workers. The first data processing carried out was the data editing stage to check the completeness of the data for each variable to be studied, data coding for manually coding each variable, data entry to enter data into data processing applications, and tabulating data to facilitate data processing. The results of the research analysis were

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processed using the STATCAL data processing program and analyzed by univariate analysis to determine the distribution and frequency of the independent and dependent variables using the Chi-Square statistical test with a significance limit of p<a (a=0.05). The test results were presented as distribution tables and narratives to discuss the research results. This research has undergone an ethical review procedure and was declared ethical by the Universitas Prima Indonesia's Research Ethics Commission with Number: 010/KEPK/UNPRI/V/2022.

RESULT AND DISCUSSION

The characteristics of the respondents in this studyare in Table 1. Most age groups are at risk, 24 people (68.6%). The most working period is in the long working period, 25 people (71.4%). The highest length of sitting is found in the length of sitting that is not at risk, 18 people (51.43%). Most work postures are risky, 25 people (71.4%). Chair ergonomics are primarily found in ergonomic chairs, 35 people (100%). Most low back pains were in the sub-acute category, 23 people (65.7%).

TABLE 1. Characteristics of Respondents

Variables	Frequency	Percentage
Age		
≥ 35 years (at risk)	24	68,6
< 35 years (no risk)	11	31,4
Years of service		
≥ 5 years (long)	25	71,4
< 5 years (not long)	10	28,6
The Length of sitting		
≥ 8 hours (at risk)	17	48,6
< 8 hours (no risk)	18	51,4
Work Posture		
At risk	25	71,4
No risk	10	28,6
Chair ergonomics		
No	0	0
Yes	35	100
Low back pain		
Sub Acute	23	65,7
Chronic	12	34,3

Source: Primary Data, 2022

Figure 1 shows the line average and standard deviation between age and year of service with low back pain complaints. The average for people with years of service with

acute low back pain is 1 and 0. The average for people with years of service who have sub-acute low back pain is 1,222 and 0,428. The average for people with years of service who have chronic low back pain is 1,375 and 0,5. The average for people of age with acute low back pain is 1 and 0. The average for people with sub-acute low back pain is 1,389 and 0,502. The average for people with age with chronic low back pain is 1,25 and 0,447.

Figure 2 shows the average length of sitting, work posture, and chair ergonomics with low back pain complaints. The average for people with a length of sitting who have acute low back pain is 2 with 0, for people who have a sub-acute of low back pain 1,389 with 0,502 std deviations, and for people who have chronic low back pain 1,625 with 0,5. The average for people with work posture who have acute low back pain is 1 with 0, for people with sub-acute low back pain is 1,167 with 0,383, and for people with chronic low back pain is 1,438 with 0,512. The average for people with chair ergonomics who have acute low back pain is 2 with 0. So do people with sub-acute and chronic low back pain are 2 with 0.

Table 2 shows 13 people with sub-acute LBP at risk age (54.2%) and 11 with chronic pain (45.8%). Complaints of LBP at the age of no sub-acute risk were 10 people (90.9%), and chronic 1 person (9.1) with p-value = 0.03 and OR = 0.11. It means a relationship exists between age and LBP complaints on tailors at the Medan Petisah Market. Age has a risk relationship of 0.11 times, causing complaints of LBP in tailors. The values of 95% Cl lower and upper are 0.013 and 1.074. It means that age is at least 0.013 times more at risk of experiencing LBP complaints, while the highest is 1.074 times more at risk of complaining of LBP. Age has a significant relationship with low back pain complaints, which is also supported by the research of Yang et al. (2016), which noted that 23.8% of people aged 18-40 years were at risk of experiencing low back pain. Research conducted by Kanniappan & Palani (2020) stated that the age above 30 years had a 3.3 times risk of developing LBP in tailors in India. Another study reported that LBP experienced by workers aged over 45 years old can have an impact on decreasing worker ability and

productivity (Bayattork et al., 2019; Marklund et al., 2020). Everyone who has experienced LBP complaints is caused by a decrease in calcium levels in the bones. In another sense, age is a determining factor for people who experience pain in the spine (Wu et al., 2020).

The highest global incidence occurs in people who experience complaints of low back pain, including stiffness, numbness, tingling, aches, and the most chronic can experience paralysis of the body (Fatoye et al., 2019).
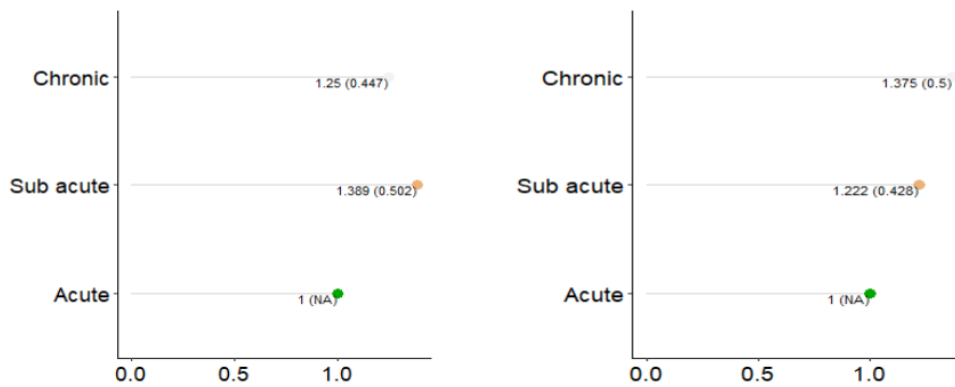

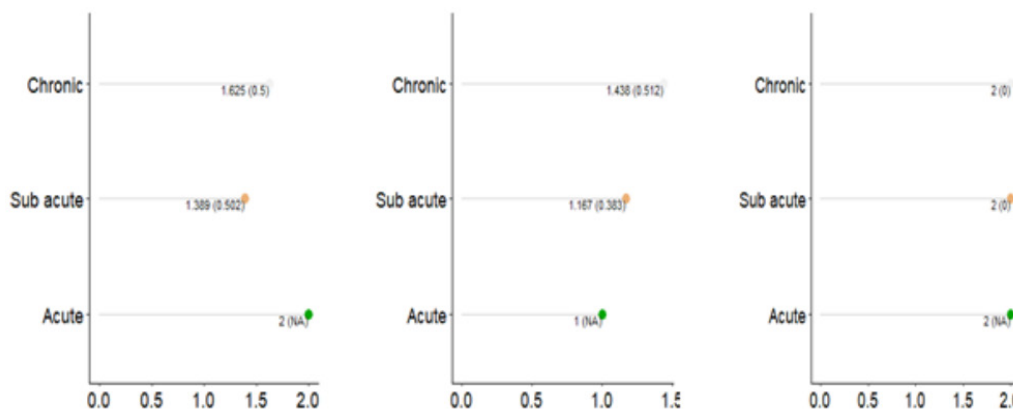FIGURE 1. The Average Between Age and Year of Service with Low Back Pain Complaints

FIGURE 2. The Average between Length of Sitting, Work Posture and Chair Ergonomics with Low Back Pain Complaints

Among people who work for long years of service, 19 have sub-acute complaints (76.0%), and 6 (24.0%) have chronic complaints. Respondents with short years of service experienced complaints of subacute LBP as many as 4 (40.0%) and chronic LBP complaints as many as 6 (60.0%) with p-value = 0.04 and OR = 4.75. Therefore, there is a relationship between years of service and LBP complaints to tailors at the Petisah market in Medan City. Years of service have a relationship of 4.75 times causing LBP complaints to tailors. The values of 95% Cl lower and upper are 0.995 and 33,673. This means that the years of service are at least 0.372 times more at risk of experiencing LBP

complaints, and the largest is 6.047 times more at risk of complaining of LBP.

Years of service are a risk factor for back pain. The study's findings align with the research of Goncharenko et al. (2020) showed that years of service are associated with low back pain. A study by Kiadaliri et al (2021) explained that years of service at the age at risk had a relationship of 2.3 times with complaints of low back pain. Then, a study by Mohamed & Amer (2019) mentioned that the years of service that are at risk for all health workers in Saudi Arabia dodoes not have a significant relationship with LBP complaints because workers are always actively moving to provide services even though

their work shifts are classified as vulnerable. According to Ali et al., (2020), the longer a person does the job, the higher the risk for LBP. Symptoms that occur if a person is exposed to chronic LBP when the individual has been working for a long time are stiffness due to lack of movement, psychological problems, dissatisfaction with the work environment, and working with a monotonous posture (Wami et al., 2019). People with longer years of service have experienced subacute and chronic LBP due to

TABLE 2. Factors Affecting Complaints of Low Back Pain

Variable	Complaints of LBP		OR	p	95% Cl	
	Sub Acute	Chronic			Lower	Upper
	n(%)	n(%)				
Age						
≥ 35 years (at risk)	13(54,2)	11(45,8)	0,11	0,03	0,013	1,074
< 35 years (no risk)	10(90,9)	1(9,1)				
Years of service						
≥ 5 years (Long)	19(76,0)	6 (24,0)	4,75	0,04	0,995	22,673
< 5 years (Not long)	4(40,0)	6(60,0)				
The Length of sitting						
≥ 8 hours (at risk)	14(82,4)	3(17,6)	4,66	0,04	0,989	22,030
< 8 hours (no risk)	9(50,0)	9(50,0)				
Work Posture						
At risk	19(76,0)	6(24,0)	4,75	0,04	0,995	22,673
No risk	4(40,0)	6(60,0)				

Source: Primary Data, 2022

(17.6%). Length of sitting not at risk for subacute LBP is 9 people (50.0%), and chronic 9 people (50.0%) with p-value = 0.04 and OR = 4.66. It means there is a relationship between the length of sitting and LBP complaints on tailors at the Petisah market in Medan. The length of sitting has a relationship of 4.66 times, causing complaints of LBP in tailors. The values of 95% Cl lower and upper are 0.989 and 22.030. It means that the length of sitting is at least 0.989 times more at risk of experiencing LBP complaints, and the largest is more at risk of 22,030 times complaining of LBP.

The relationship between the length of sitting and LBP appears controversial, as seen in research studies by Amalia (2019) showed no significant relationship between the length of sitting and a higher risk of LBP. However, this study contradicts the research of Gupta et al. (2015) shows that workers who sit for more than 5 hours have 3 times the risk of LBP. Long sitting is at risk of experiencing subacute and chronic low back pain complaints due to static sitting for hours to pursue the target order every day. However, long sitting that is not at risk has experienced complaints of low back pain due to not stretching the muscles and the habit of sitting for a relatively long time. Long sitting also causes muscle stiffness in the buttocks area (Wuni et al., 2021). In addition, other aspects of sitting behavior may have a critical relationship with LBP in many workers (Nourollahi et al., 2018). Chronic symptoms caused if the individual's sitting behavior begins to feel pain for a long time is a change in the shape of the spine and tail. It suggests that individual sitting length may be associated with LBP (Bontrup et al., 2019).

People with work postures at risk of subacute LBP are 19 people (76.0%) and six people with chronic (24.0%). There are 4 people at risk for subacute LBP (40.0%) and 6 (60.0%) chronic ones with p-value=0.04 and OR=4.75. It means a relationship exists between work posture and LBP complaints on tailors at the Petisah Market, Medan City. Work posture has a relationship of 4.75 times, causing complaints of LBP in tailors. The upper and lower 95%Cl values are 0.995 and 22.673, respectively. It means that the work posture is at least 0.995 times more at risk of complaining of LBP, and the highest risk is 22.673 times more complaining of LBP.

Work posture is one of the factors in

supporting one's work. It is supported by Imaekhai (2018) research which stated that the prevalence of fisherman work postures in Nigeria is 87% and has a risk of 7 times arising from complaints of low back pain. If a person's work posture is ergonomic, he will be more productive at work (Murata et al., 2021). The epidemiology of low back pain cases in China explains that work postures have a high risk of low back pain complaints. About 85% of workers in China who have poor work postures significantly affect the structure of the spine of workers. Work postures that are not ergonomic can cause complaints quickly (Hartvigsen et al., 2018). Uncomfortable work posture is related to age, gender, BMI, stress, anxiety, and depression (Mehrdad et al., 2016). Monotonous work postures carried out continuously for a long time have triggered complaints in the spine so that the flow of blood and oxygen to the muscles becomes blocked (Wan et al., 2017). Work must be more careful in this case and immediately check yourself so as not to experience serious complaints.

Ergonomics is an applied art used by workers to harmonize all facilities in the work environment. This research is inversely

proportional to the study of Firdaus (2020), which states that an ergonomic chair has a 4.4 times risk of developing low back pain complaints. An example of an application in ergonomics is the application of a worker's chair or bench. Sitting in a chair with back support has the effect of lowering the chances of LBP. Lumbar support has been widely recommended because of its well-known function of maintaining the integrity of the lower back curve, thereby reducing the risk of LBP (Diallo et al., 2019). Something is ergonomics if workers do not feel complaints while working. LBP and chair ergonomics must be harmonious with worker comfort (Vanni et al., 2022). The main principle of chair ergonomics is to adjust to the curvature of the spine, affect body biomechanics and have a backrest. In a safe seat design, the chair must be sturdy so that the user feels a comfortable sensation (Yuldashevich & Sadilloyevich, 2021). The strategy needed in emphasizing ergonomics is to provide education and intervention to individuals that can influence worker behavior in using chairs. It is done to prevent LBP and change worker behavior (Sowah et al., 2018).

TABLE 3. Multivariate Analysis Results

Low Back Pain Complaints Factors	p	95%Cl for EXP (B)	
		Lower	Upper
Age	0,034	1,097	1,421
Years of Service	0,044	1,179	1,495
Length of Sitting	0,045	1,395	1,746
Work Posture	0,044	1,179	1,495

Source: Primary Data, 2022

Table 3 shows the results of a multivariate analysis of factors for low back pain complaints. The most influential variable on the occurrence of LBP complaints is the age factor with a p-value = 0.034 with 95% Cl values are 1.097 and 1.421. It means that age is the most influential factor in LBP complaints. The risk of at least causing LBP is 1.097, and the maximum is 1.421. When the workers get aging, they begin to feel pain, such as form of tissue damage, changes in posture and reduction of fluid (Shariat et al., 2018). Age and a work posture can reduce productivity or increase productivity. The limitation of this research is that it uses a cross-sectional research design so that this study only describes the

overall types of variables to be studied. So, in future research, the researcher suggests using a case-control or cohort research design to get clear and accurate results.

CONCLUSION

Tailors in the Petisah Market in Medan City are at risk for complaints of low back pain based on age, long years of service, a risky length of sitting, and a risky work posture. If the workers ignore low back pain, the impact is the emergence of serious problems such as stiffness in the spine, fractures, pinched nerves, and can even cause death. Researchers recommend that health workers provide promotional and

preventive actions regarding low back pain problems, especially to tailors, so as not to cause severe low back pain injuries. The market party should pay more attention to the health and safety of tailors. So tailors become more productive to avoid low back pain and form collaborations with the health department to carry out health checks. Finally, tailors should be more concerned with their health condition so that they do not get low back pain by forcing activities that are too strenuous and applying practical and correct work postures.

ACKNOWLEDGEMENT

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