East African Scholars Journal of Medical Sciences
Abbreviated Key Title: East African Scholars J Med Sci
ISSN: 2617-4421 (Print) & ISSN: 2617-7188 (Online)
Published By East African Scholars Publisher, Kenya

Volume-5 | Issue-9 | Sept-2022 | DOI: 10.36349/easms.2022.v05i09.003

OPEN ACCESS

Original Research Article

Risk Factor of Low Back Pain in the Informal Sector Tailor in Solor Kupang City 2019

Handrianus Mayestus Buntanus[1,2,3*], Christina Olly Lada[1], Sidarta Sagita[2], Dyah Gita Rambu Kareri[3]

[1]Department of Nutritional, Faculty of Medicine and Veterinary Medicine, Universitas Nusa Cendana, Indonesia
[2]Department of Community Medicine, Faculty of Medicine and Veterinary Medicine, Universitas Nusa Cendana, Indonesia
[3]Department of Medical Rehabilitation, Faculty of Medicine and Veterinary Medicine, Universitas Nusa Cendana, Indonesia

Article History
Received: 15.08.2022
Accepted: 09.09.2022
Published: 14.09.2022

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: Tailor is a risky job that impact to low back pain. Low back pain (LBP) can cause a tailor to experience a decrease in the ability to perform daily activities and occupational health problems. One of the low back pain risk factors is individual factors include body mass index (BMI), exercise habits, and working period. This research was observational analytical research with a cross-sectional design conducted at Informal Sector tailor in Solor, Kupang City by filling questioner, body mass index measurement, and direct interview. The sampling technique used was total sampling with 48 samples that fulfilled inclusion and exclusion criteria. The data were analyzed by using the univariate, bivariate with chi-square, and multivariate with logistic regression as well. The bivariate analysis results showed that the results were significant on the variable of body mass index (p=0.012, OR=5.667) and work period (p=0.026). While there was no significant correlation between the variables of exercise habits with the incidence of low back pain (p=0.407).The multivariate analysis results found that the variable of the work period was the variable that had the biggest effect on the incidence of low back pain (OR=0.361). There are correlations between body mass index and work period with low back pain incidence at Informal Sector tailor in Solor, Kupang City in 2019.

Keywords: LBP, BMI, exercise habits, working period, tailor, occupational health problems.

INTRODUCTION

According to (Hoy DG, *et al.*, 2015), low back pain (LBP) is a symptom in the form of local pain or radicular pain or both. LBP occurs mainly in low and middle-income countries where informal work is common and the possibility for work modification was almost non-existent at all, especially about occupational musculoskeletal health policies. Hoy DG *et al.*, reported based on the 2010 Global Burden of Disease Study (GBD 2010), of the 291 diseases studied, LBP is the largest contributor to global disability, measured through years lived with disability (YLD), and ranks sixth out of the total burden as a whole, measured with the disability-adjusted life year (DALY). Furthermore, the 2015 GBD study calculated the burden of disease from 1990 to 2015 for 315 causes in 195 countries and regions and provided an assessment of the patterns and rates of disease and the burden of disability, LBP is responsible for around 60.1 million years of life with disabilities (YLD) in 2015, an increase of 54% since 1990. Research conducted by the Pain Association of Indonesian Neurologists (PERDOSSI) in 14 teaching hospitals in Indonesia in 2002 showed that the prevalence of pain sufferers was 4456 people with LBP sufferers as much as 18.37%. While in Nusa Tenggara Timur (NTT), Indonesia, based on data on the morbidity of outpatients in Prof. Dr. W.Z. Johannes, Hospital in Kupang city, Indonesia, from January to December 2018, reported 1354 new LBP cases.

Tailor was one job that was at risk of causing occupational diseases. The worker performs the activities of lifting heavy loads inappropriately, working in a sitting position for long periods related to factors that can cause difficulties in the limbs, back, arms, joints, and other structures that support the spine such as restoring LBP. Zatadin ZM, in 2018, found that the frequency of samples that experienced LBP while working as a tailor in the informal business sector was higher at 57.5% compared to those who did not experience LBP as much as 42.5%.

***Corresponding Author:** Handrianus Mayestus Buntanus
Department of Nutritional, Faculty of Medicine and Veterinary Medicine, Universitas Nusa Cendana, Indonesia

Based on Purnamasari, 2010, the factors that influence the occurrence of low back pain as a disease due to work that is a factor of the workplace, especially ergonomic factors and other factors such as physical, chemical, biological, and psychological factors. There are also individual factors that are known to be related to LBP events in workers such as body mass index (BMI), exercise habits, and working period. Tailors are jobs that are considered often free from health problems; tailors often do not care about weight and forget about healthy lifestyles such as sports. When body weight increases, the spine will be increasingly pressured to accept the burden making it easier for damage to the bone structure. Similarly, the lack of exercise habits can reduce oxygen supply to the muscles so that it can cause muscle complaints (Purnamasari, 2010). LBP is also influenced by the longer a person is exposed to risk factors that exist in the workplace. Purnamasari's research showed that people who are overweight are more likely to suffer from LBP than people who have ideal body weight. Halisa K, in 2019, concluded that there was a significant relationship between the working period and low back pain in the respondents tested.

Low back pain for workers is quite worrying, especially for informal business tailors who have been unnoticed and concerned about occupational health that is still often ignored. Because of the above reasons and based on previous studies that still raise questions, researchers are interested in finding out "The relationship of body mass index, exercise habits, and working period with the occurrence of low back pain in the informal sector tailors in Solor City in Kupang in 2019 ".

MATERIALS AND METHODS

This study has received ethical approval with the registration number UN01190533, in 2020, from the Health Research Ethics Commission of the Faculty of Medicine, University of Nusa Cendana, Indonesia and used a type of observational analytical research method with a cross-sectional design, where the independent variables (BMI, exercise habits, working period) and the dependent variable (LBP). The location of this research is in the informal sector workplace in Solor, Kupang City on August 1-8, 2019.

The population includes all informal sector tailors in Solor, Kupang city in 2019, as many as 59 samples. Respondents are tailors who have been screened for inclusion and exclusion criteria as many as 48 sample. The sampling technique uses a Non-probability sampling technique that is Total sampling.

This study uses univariate analysis, bivariate analysis, and multivariate analysis. Univariate analysis was performed to analyze the characteristics of each variable. Bivariate analysis was performed to determine the effect between two variables with the chi-square test. Multivariate analysis with logistic regression to determine the independent variables that had the greatest influence on the dependent variable.

RESULT AND DISCUSSION

The tailors who participated in this study based on the age of the respondents then looked at the statistically analyzed sample. In Table 1 shows that of the 48 samples involved, the highest age range is age 36-45 years which is late adulthood as many as 15 people (31.3%).

Table 1: Characteristics of respondents by age

Age (years)	Frequency (n)	Percentage (%)
17 – 25	13	27.1
26 – 35	11	22.9
36 – 45	15	31.3
46 – 55	3	6.3
56 – 65	6	12.5
Total	**48**	**100**

Table 2: Characteristics of the respondents based on Gender, Education, and Work Period

	Frequency (n)	Percentage (%)
Gender		
Male	30	62.5
Female	18	37.5
Education		
Elementary	7	14.6
Middle school	16	33.3
High school	25	52.1
Work period		
4 hours	2	4.2
5 hours	1	2.1
6 hours	4	8.3
7 hours	12	25.0
8 hours	29	60.4
Total	**48**	**100**

Table 3: Distribution of respondents based on BMI, Exercise Habits, and Work Period

	Frequency (n)	Percentage (%)
BMI		
Overweight	20	41.7
No Overweight	28	58.3
Exercise habits		
Not Exercise	17	35.4
Sometimes	18	37.5
Often	13	27.1
Work period		
<5 Years	17	35.4
5-10 Years	12	25.0
>10 Years	19	39.6
Total	**48**	**100**

Table 4: Distribution of respondents based on LBP

	Frequency (n)	**Percentage (%)**
LBP last week		
Positif	31	64.6
Negative	17	35.4
Total	**48**	**100**
LBP last year		
Positif	31	64.6
Negative	17	35.4
Total	**48**	**100**

Table 5: Results of Bivariate Analysis of BMI, Exercise Habits, and Work Period with LBP

Independent Variable	**OR**	**95% CI**	**p-value**	**Inf.**
BMI	5.667	1.351 – 23765	0.012	Significant
Work period	-	-	0.026	Significant
Exercise habits	-	-	0.407	Not significant

[#]*Chi Square Test*

Table 6: Multivariate Analysis Results with Logistic Regression

	Variable	***p-value***	**Exp (B)/OR**
Step 1[a]	BMI	0.080	0.259
	Work period	0.049	0.443
Step 2[a]	Work period	0.010	0.361
Nagelkerke R Square =0,278			

In the table 2, it can be seen that there are more male respondents, namely 30 people (62.5%), most of the respondents having a high school education are 25 people (52.1%), and the most respondents have 8-hour work hours every day namely as many as 29 people (60.4%). Table 3 showed that the respondents which is not considered overweight is 58.3% and can be seen in the informal sector in Solor, where 35.4% of tailors do not exercise, 37.5% are used while traveling (1 -2 times a week), and as many as 27.1% of tailors are categorized as often exercising (≥3 times the conversation). While the distribution of respondents based on the work period shows that the informal sector tailors in Solor have worked >10 years, amounting to 39.6%. In the table 4, the distribution of respondents based on LBP events shows that during the last week and the last year most of the tailors experienced LBP, which was 64.6%.

The purpose of the bivariate analysis is to evaluate the effect between body mass index (BMI), exercise habits, and working period to the incidence of low back pain in tailors. Chi-square test shows the p-value for the BMI variable (p = 0.012) and the work period variable (p = 0.026). These results indicate a value of p < 0.05 which means H1 is accepted, which means that there is a significant relationship between BMI and working period with LBP events. While the results of the bivariate analysis for exercise habits variables, the value of p =0.407 (p> 0.05) shows that H1 was rejected so it is said that there is no meaningful relationship between exercise habits on LBP events in the informal sector tailors in Solor, Kupang City. Multivariate analysis to determine the independent variables that most influence the incidence of LBP.

The results indicate that there was a significant relationship between BMI with LBP and tailors who suffer from overweight have a 5.667 times chance to experience LBP compared to tailors who are not overweight. The results of the analysis are following the analysis conducted by Purnamasari, 2010 in his research regarding overweight as a risk factor for LBP in patients with Neurology Poly Prof. Dr. Margono Soekarjo Purwokerto and Kade Ngurah Dewi in his research reagarding that there is a significant relathionship between BMI with LBP. Research conducted by (Kade Ngurah Dwi Putra Negara (2015) also showed that there was a significant relationship between body mass index in the category of overweight and obesity with complaints of low back pain at the Faculty of Medicine, University of Udayana with a p-value of 0.01 (p <0.05). Increased body weight will increase the burden on the spine, making it easier for damage to the bone structure. The spine has a function to maintain an upright position in the human body. Not only the spine plays a role, but the muscles also play a role in helping the spine maintain its position and also as a driving force. Those who have normal body proportions, then the burden on the spine are also within normal limits. Excessive load on the spine will also increase the pressure in the invertebrate disc then cause LBP.

Statistical tests also show that there is a significant relationship between the work periods with LBP events. This study is in line with (Umami, 2013)

research on written batik workers in the batik industry Sumberpakem Village Sumberjambe Subdistrict with a sample of 36 people, concluded that years of service were significantly related to LBP complaints. The results of this study are supported by research conducted by (Syaidah, 2020) who also found that there is a relation of working period to the risk of current back pain in bank bca employees, Probolinggo city. The same thing was shown in the latest research, (Saputra, 2020) found that there was a significant relationship between work tenure and complaints of low back pain among batik craftsmen in Batik Semarang. Andy found that from 27.8% of respondents who had a risky working period (≥ 5 years), there were 13.89% of respondents who had a very high risk of experiencing LBP, and this was higher than respondents with high risk and low risk, with a percentage of 11, 11% and 2.78%. This shows that LBP is also related to working for a long time and it is suspected that the longer a person is exposed to risk factors in the workplace. Related to this, LBP is a chronic complaint that takes a long time to develop and manifest. So the longer the time worked or the longer a person is exposed to these risk factors, the greater the risk of experiencing LBP. This shows that the length of time a person is exposed to exposure at work can lead to health problems, especially experiencing LBP.

This researched also showed that there is no significant relationship between exercise habits with LBP incidence among tailors in Solor, Kupang City. This was in line with Prayojana, 2016 research on workers at the Indarung Packing Plant loading section of PT Semen Padang which showed that there was no significant relationship between exercise habits with LBP complaints. This result is also supported by Atthariq Wahab's research which shows that exercise habits have no effect on the incidence of low back pain in fisherman in batu karas village, cijulang pangandaran. Based on (Lionel, 2014) in journal community Medicine & Health Education mention that routine exercise habits have a very close relationship in the primary prevention of LBP events compared to not doing sports at all, but not all types of exercise can be done as a preventative measure. A good exercise to prevent LBP is doing aerobic exercises, such as cycling, swimming, and walking. Low back pain requires special care, therefore it is recommended to do swimming sports as a treatment for symptoms, which when swimming water supports body weight, thus relaxing the spine. Besides walking and running 20 minutes a day and more than 3 times a week has a significant protective effect on the incidence of LBP. This is likely due to the researchers only assessing the frequency of exercise and not assessing the type of exercise the sample is taking, related to the prevention of LBP. There are types of exercises that are good for preventing LBP, while there are also types of exercise that increase the risk of experiencing LBP, such as weight lifting, chess, and other risky sports.

This multivariate analysis was carried out various steps in making the model, the last model occurs when all the independent variables with the dependent have no value p>0.05, the last multivariate modeling in this analysis is the results shown in step [2a] Table 6. Statistically, the results of the multivariate analysis show that the variable that influences the LBP occurrence was the working period variable. BMI variables in the bivariate analysis showed significant results, while different results were shown in a multivariate analysis which showed the BMI variable does not consistently affect the incidence of LBP. This explains that multivariate logistic regression analysis aims to analyze other hands can cause trauma the relationship between exposure and disease by simultaneously controlling the influence of several variables at once after controlling for the influence of other predictors, thus showing differences in the results of the analysis in bivariate analysis and multivariate analysis.

Based on the results of the logistic regression test, to see which variable has the greatest effect on the dependent variable, it can be seen in the final modeling of multivariate analysis, that is from the value of OR or exp (B) for a significant variable, the greater the value of exp (B) means the greater effect on dependent variable analyzed. The regression logistic table shows that the variable of the work period has the greatest effect on LBP events. The results of this multivariate test are supported by research by (Syuhada AD, 2018), showing that work period has the greatest effect on LBP events in Tea Picking Workers in Ciater Tea Plantation, Subang Regency. This is also supported by research by (Rohmawan, 2017) regarding the relationship between work period and complaints of Low Back Pain in production workers of PT Surya Besindo Sakti, Serang Regency, which shows that respondents with long work period have a 2 times higher chance of experiencing LBP than the short period.

The work period is a risk factor for LBP incidents in the informal sector tailors in Solor and is the most influential factor as a risk factor for LBP incidents. Low back pain is a chronic complaint that takes a long time to develop and manifest. So the longer the working period or the longer a person is exposed to these risk factors, the greater the risk of causing LBP. The analysis also shows the value of Nagelkerke R Square in this multivariate analysis is 0.278, this can be interpreted that the BMI and working period simultaneously in the logistic regression model can explain the LBP incidence rate of 27.8%, the remaining 72.2% is influenced by variables others such as exercise habit variables or other factors not examined in this study.

CONCLUSION

The results of the study concluded that there was a relationship between BMI and work period with

low back pain variable, while exercise habits had no relationship with low back pain that occurred in the informal sector tailors in Solor, Kupang city, Indonesia.

ACKNOWLEDGEMENTS

We would like to express our gratitude to all those who supported us during this research and to reviewers for their in-depth review which made us further improve the quality of this journal. This research is expected to be useful not only for researchers but also for all parties. We also realize that this research is far from perfect, therefore we are very receptive to all suggestions and wise criticisms given to this journal.

REFERENCES

- Global Burden of Disease 2015 DALYs & HALE Colllaborators. (2016). Global, regional, and national disability-adjusted life-years (DALYs) for 315 diseases and injuries and healthy life expectancy (HALE), 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet*, (388), 1603-1658.
- Global Burden of Disease, Injury Incidence P, & Collaborators. (2016). Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet*, (388), 1545–1602.
- Halisa, K, (2019). Analysis of the Effect of Whole Body Vibration (WBV) on Low Back Pain (LBP) Complaints on Heavy Equipment Operators at PT. X', Faculty of Public Health Sriwijaya University. *Scientific Journal of Health Research*, 4(1), 29-34.
- Hoy, D. G., Smith, E., Cross, M., Sanchez-Riera, L., Blyth, F. M., Buchbinder, R., ... & March, L. M. (2015). Reflecting on the global burden of musculoskeletal conditions: lessons learnt from the global burden of disease 2010 study and the next steps forward. *Annals of the rheumatic diseases*, *74*(1), 4-7.
- Jackson, T., Thomas, S., Stabile, V., Shotwell, M., Han, X., & McQueen, K. (2016). A systematic review and meta-analysis of the global burden of chronic pain without clear etiology in low-and middle-income countries: trends in heterogeneous data and a proposal for new assessment methods. *Anesthesia & Analgesia*, *123*(3), 739-748.
- Lionel, K. A. (2014). Risk Factors Forchronic Low Back Pain. *Community Medicine & Health Education*, 2(4), 1-4.
- Martyrs, A. D. (2018). Risk Factors for Low Back Pain in Tea Picking Workers at Ciater Subang Tea Plantation. *Indonesian Journal of Health Promotion*, 1(13), 91.
- National Center for Health Statistic. (2010). Summary Health Statistics for U.S.Adults, Nationall Health Interview Survey 2009, 10(249), 30-35.
- Negara, KNDP. (2015). Relationship between Body Mass Index (BMI) Overweight and Obese Categories with Low Back Pain (LBP) Complaints among Medical Faculty Student of Udayana University, 2015, 1, 1-10.
- Occupational Safety and Health Administration. (2010). Sewing and Related Procedures Ergonomics.
- Purnamasari. (2010). Overweight as a risk factor for low back pain in patients with neurology at Prof. RSUD Prof. Dr. Margono Soekarjo Purwokerto. *Mandala Health*, 4, 26-30.
- Rohmawan, E. A. (2017). Term of Service, Work Attitudes and Low Back Pain (LBP) Complaints in Production Division Workers of Pt Surya Besindo Sakti Serang, Proceedings of the IKAKESMADA National Seminar. *The Role of Health Workers in the Implementation of SDGs*, 1(41), 171-180.
- Saputra, A. (2020). Work Attitude, Work Period, and Age to Complaints of Low Back Pain in Batik Craftsmen. *Higeia Journal of Public Health Research and Development*, 3(1), 84-94.
- Syaidah, I. (2020). Relationship of Working Period and Hight Heel Height to the Risk of Back Pain in Bank BCA Probolinggo City Employees. *Physiotherapy Undergraduate Study Program, Faculty of Health Sciences, University of Muhammadiyah Malang*, 2020, 50-58.
- Triani, W. P. (2016). Relationship of Work Posture and Individual Factors with Subjective Complaints of Low Back Pain in Workers in the Loading Section of the Packing Plant Indarung Pt Semen Padang in 2016. *Faculty of Public Health, Andalas University*, 50-55.
- Umami, A. R. (2013). The relationship between respondent characteristics and sitting work attitude with complaints of low back pain in batik workers. *E-journal of Health Library*, 2(1), 72 -78.
- Zatadine, Z. M. (2018). Relationship of Sitting Position and Length of Sitting on the Incidence of Low Back Pain (LBP) in Informal Sector Tailors in Laweyan District, Surakarta City. *Electronic Theses and Dissertations University of Muhammadiyah Surakarta*, 5-6.

Cite This Article: Handrianus Mayestus Buntanus, Christina Olly Lada, Sidarta Sagita, Dyah Gita Rambu Kareri (2022). Risk Factor of Low Back Pain in the Informal Sector Tailor in Solor Kupang City 2019. *East African Scholars J Med Sci*, *5*(9), 250-254.