



Relationship between Body Mass Index and Complaints of Low Back Pain (LBP) on Online Motorcycle Taxi Drivers in Medan, Indonesia

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ABSTRACT

Low back pain is one of the musculoskeletal conditions caused by a lack of exercise. Worldwide, 37 percent of cases of LBP are related to occupational variables, including prolonged standing or exposure to vibration. Healthcare workers, drivers, and construction workers are also more susceptible to LBP. The purpose of this study was to determine the relationship between body mass index (BMI) and complaints of low back pain on online motorcycle taxi drivers in Medan. This study is an observational study, and as many as 97 respondents participated in this study. Data analysis was carried out with SPSS version 25, where univariate and bivariate analyses were performed. Correlation between body mass index and complaints of LBP, where there is a low correlation and statistically different. An increase in body mass index will tend to be followed by an increase in LBP complaints, although the correlation between the two is low. There is a relationship between body mass index and complaints of low back pain on online motorcycle taxi drivers in Medan, Indonesia.

1. Introduction

LBP is one of the common musculoskeletal health problems that are widespread and almost experienced by everyone. Low back pain (LBP) is defined as pain in the lower back which is usually caused by muscle, bone, or ligament injury. This musculoskeletal disease can be caused by decreased physical activity. Up to 85 percent of people who complain of low back pain receive a complete medical evaluation, but the etiology is unknown. In the world, at least 80 percent of the entire population has experienced an episode of low back pain, of which 95 percent can recover without getting therapy. Although the exact epidemiology of

LBP in Indonesia is unknown, it is estimated that men are more likely to experience LBP than women. The incidence of LBP varies from 3-17 percent in some hospitals in Indonesia. According to epidemiological data from the Ministry of Health, the prevalence of LBP in Indonesia in 2018 was 18 percent.¹⁻⁵

Although there are many factors that cause LBP, in general, it can be divided into three categories, including occupational factors, individual factors, and environmental factors. Individual factors include age, position, working time, age, gender, smoking habits, exercise habits, obesity, and alcohol consumption

habits. On the other hand, environmental factors can be exposed to vibration and constant exposure to temperature extremes of the human body. Occupational factors that contribute to back pain include repetitive, energy-intensive work and static work. Globally, 37 percent of LBP is associated with occupational factors that are exposed to vibration, or long-standing positions, as healthcare workers, drivers, and construction jobs are more susceptible to LBP.⁶⁻⁹

Body mass index is a parameter of a person's physical condition that describes a person as overweight or vice versa. Several studies show that an increase in body mass index is positively correlated with complaints of low back pain (LBP). Body mass index is believed to play a role in the initiation of low back pain, in addition to environmental and occupational factors as well as body position related to low back pain complaints.^{10,11} This study is an initial study that aims to explore the relationship between body mass index and complaints of low back pain in individuals with risky occupational factors, namely online motorcycle taxi drivers in Medan, Indonesia.

2. Methods

This study is an observational study. The study was conducted by taking primary data from research subjects from May – July 2022 in Medan, Indonesia. A total of 97 respondents took part in this study, where the research subjects met the inclusion criteria in the form of online drivers who are still actively working, online drivers who have no complaints or other comorbidities, and online drivers who are willing to be research respondents. This study has been approved by the medical and health research ethics committee of the Faculty of Medicine, Universitas Prima Indonesia.

Low back pain was assessed using a questionnaire based on the pain and distress scale. The first questionnaire has been tested for the validity and reliability of the study respondents. The results of the assessment using the questionnaire will be grouped into 5 groups, which are declared very high if the score is 68-80, a high score is 56-67, rarely if the score is 44-55, a low score is 32-43 and very low if the score is 20-31. Data analysis was carried out with the help of SPSS version 25 software. First, a univariate test was carried out to show the distribution of data for each variable. Then, followed by a bivariate test using the Spearman correlation test to show the correlation between the variable body mass index and complaints of low back pain, $p < 0.05$.

3. Results and Discussion

Table 1 shows that the largest number of respondents were men, with 88 respondents or 90.7 percent, and women, with 9 respondents or 9.3 percent. Most respondents aged 20-30 years amounted to 50 respondents or 51.5 percent, and aged <20 years, there were 3 respondents or 3.1 percent, ages 41-50 years were 20 respondents or 20.6 percent. And aged >50 years, there were 4 respondents or 4.1 percent. The classification of the highest body mass index is normal, with 32 people or 33%, and the second highest number is obesity I, a total of 26 or 26.8%. The third is overweight, a total of 18 people or 18.6%, the fourth is obesity II, a total of 12 people or 12.4%; and at least 9 people are underweight or 9.3%. The low back pain is low with a number of 54 or 55.7%, total moderate 17 or 17.5%, very low, amounting to 21 or 21.6%, and the least high characteristics being 5 or 5.2%, while those with very high characteristics are not found in respondents.

Table 1. Characteristics of study respondents.

Gender	Total	Percentage
Male	88	90.7
Female	9	9.3
Total	97	100.0
Age (years)	Total	Percentage
<20	3	3.1
20-30	50	51.5
31-40	20	20.6
41-50	20	20.6
>50	4	4.1
Total	97	100.0
BMI classification	Total	Percentage
Obesity II	12	12.4
Obesity I	26	26.8
Overweight	18	18.6
Normal	32	33.0
Underweight	9	9.3
Total	97	100.0
Characteristics of LBP	Total	Percentage
High	5	5.2
Medium	17	17.5
Low	54	55.7
Very low	21	21.6
Total	97	100.0

Table 2 shows the correlation between body mass index and complaints of LBP, where there is a low correlation and statistically different. An increase in body mass index will tend to be followed by an increase in LBP complaints, although the correlation between the two is low. LBP is caused by obesity and functional spinal problems with stiffness and weakness of the lumbar muscles. This occurs due to low spinal flexibility and increased back stiffness.¹² When a

person is obese, the excess weight will be channeled to the abdominal area, which means that the work of the lumbar bones will increase.¹³ This causes the spine to be more depressed to accept the load, thus facilitating the occurrence of damage and harm to the spinal structure, where the area most at risk due to the effects of obesity is the lumbar vertebrae.¹⁴⁻¹⁶

Table 2. Correlation test between variables.

		BMI	LBP
BMI	Correlation coefficient	1.00	0.245*
	Significance (2-tailed)	0.00	0.016†

Spearman test, $p < 0,05$; *r; †p value.

4. Conclusion

There is a relationship between body mass index and complaints of low back pain on online motorcycle taxi drivers in Medan, Indonesia.

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