EAS Journal of Orthopaedic and Physiotherapy
Abbreviated Key Title: EAS J Orthop Physiother
ISSN: 2663-0974 (Print) & ISSN: 2663-8320 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-1 | Issue-4 | July-Aug-2019 |

Research Article

Effect of BMI with Low Back Pain on Farmers Working Productivity in Panrannuangku Village Takalar Regency 2019

Abdul Komsar Tona[1*], Syamsiar Russeng[1] and Hasnawati Amqam[2]

[1]Departement of Occupational Health and Safety, Faculty of Public Health, Hasanuddin University, Indonesia
[2]Departement of Environmental Health and Safety, Faculty of Public Health, Hasanuddin University, Indonesia

*Corresponding Author
Abdul Komsar Tona

Abstract: Agriculture is the most important sector in the growth of an agrarian country's economy such as Indonesia and the phenomenon that exists, farmers spend every day in the garden, although only for hoeing and harvesting, and work like this is done continuously by farmers as a routine. Jobs with non-ergonomic work attitudes have the potential to accelerate muscle fatigue and cause low back pain, while in some studies BMI was presented as one of the LBP risk factors, health problems experienced by workers can affect productivity. This research is quantitative with a cross sectional study design. The population in this study were all farmers in Panrannuangku Village and a sample of 215 respondents with sampling using the simple random sampling method. To analyze the direct and indirect effects of IMT on work productivity through LBP, path analysis was used. The results of this study indicate that there is a direct effect of BMI on LBP (p value = 0.000), but there is no direct effect of BMI on work productivity (0.481), while indirect effects on BMI have indirect effects on productivity through LBP. To the local government to increase farmers' knowledge about work nutrition balance and increase productivity through education in each farmer group.

Keywords: Farmers, BMI, LBP, Work Productivity.

INTRODUCTION

Agriculture is the most important sector in the growth of an agrarian country economy such as Indonesia, where the majority of people in Indonesia are working as farmers where the number reaches 39.7 million (BPS, 2017). The phenomenon in Indonesia, farmers spend every day in the garden, although only for hoeing and harvesting, and work like this is done continuously by farmers as a routine (Deli, 2015). Jobs with non-ergonomic work attitudes and excessive workload have the potential to accelerate muscle fatigue.

Panada (2011) also stated the prevalence of LBP complaints in rice farmers in Thailand as much as 77.4%. Birabi (2012) who also conducted research on farmers in the southern region of Nigeria, found that 67.10% of farmers had LBP complaints. According to study conducted by Susanto *et al.*, (2017) states that farmers who experience joint and bone pain as much as 50.3% are associated with ages between 41-59 years (44.4%), work breaks that are less than 30 minutes per work (70%) and non-ergonomic work positions (54.4%) and this is closely related to the nutritional status of farmers which is lower than the national figure, namely over nutrition of 13.5% and obesity 15.4%. Study conducted by Utami *et al.*,. (2017) adding workload is a risk factor for MSDS in rice farmers, as well as BMI in the Isnain study showing BMI is a LBP risk factor.

Data from the North Polobangkeng District Health Center in the last two years showed that there was a significant increase in the incidence of muscle pain complaints categorized as soft tissue disorders and included in the top 10 (ten) diseases, which in 2017 ranked third with 735 cases, and 2018 increased to second place with 2176 cases. According to local health center employees, most patients who experience soft tissue disorders claim to work as farmers. The local subdistrict shows data, that most farmers are domiciled in Panrannuangku Village.

Given the magnitude of the potential of agriculture in Indonesia, the economic condition of farmers, especially in Takalar Regency is classified as

Quick Response Code

Journal homepage:
http://www.easpublisher.com/easjop/

Article History
Received: 10.06.2019
Accepted: 15.07.2019
Published: 28.07.2019

DOI: 10.36349/easjop.2019.v01i04.001

poor and the magnitude of the incidence of muscle pain and many risk factors for occupational illness in the form of Low Back Pain in Panrannuangku Village, Polobangkeng Utara Subdistrict. with Low Back Pain Against Productivity of Farmers in Panrannuangku Village, Takalar Regency in 2019.

METHODOLOGY

Research Design

This research was conducted in Parranuangku Village, Takalar Regency in March to May of 2019. The type of research used was quantitative research design in the form of observational analytic with Cross Sectional approach..

Population and Sampling

The population used in this study were farmers in the village of Parrannuangku Kec. Polombangkeng Utara, North Sumatra District with 465 farmers. 215 samples were selected using the simple random sampling technique.

Data Analysis

Data collection was carried out by officers in the field and using questionnaires. BMI data were measured using microtoise and weight scales LBP measurement using Visual Analog Scale, and work productivity using a questionnaire. The data collected were then analyzed by univariate and bivariate using the SPSS 20 application and for multivariate analysis in the form of analysis using AMOS 18. The results of the analysis are then presented in the form of tables and descriptions.

RESULTS

Univariate Analysis

Table 1. Characteristics of Farmers based on Work Productivity

Research Variable	Work Productivity						Total	
	Low		Medium		High			
	n	%	n	%	n	%	n	%
Age								
Young (≤ 35 th)	46	83.6	8	14.5	1	1.8	55	100
Old (> 35 th)	143	89.4	12	7.5	5	3.1	160	100
BMI								
Normal	41	89.1	3	6.5	2	4.3	46	100
Not Normal	148	87.6	17	10.1	4	2.4	169	100
Low Back Pain								
Light	11	84.6	1	7.7	1	7.7	13	100
Medium	49	87.5	5	8.9	2	3.6	56	100
Heavy	129	87.0	15	10.3	4	2.7	146	100

Table 1 shows that the age category of respondents is more in the old age there are tables as many as 160 (74.4%) and 55 (25.6%) which are in the young age category, the respondent's body mass index is in the obesity category or BMI ≥ 25.0 which is 114 (53.0%) of respondents and only 3 (1.4%) respondents were underweight. For LBP complaints, many respondents were in the heavy category of 146 (67.9%) and only 13 (6.0%) were totally painless, and based on the work productivity of many respondents who were in the low category as many as 189 (87.9%) respondents and only there are 2 (0.9%) respondents who have high productivity.

Bivariate Analysis

Table 1 shows that there are 46 (83.6%) respondents with young age categories and 143 (89.4%) respondents with old age categories have low work productivity, based on BMI status, it shows that there are 41 (89.1%) respondents with normal nutritional status and 148 (87.6%) respondents with abnormal nutritional status have low work productivity, with LBP complaints on productivity also listed in the table that there were 11 (84.6%) respondents with mild LBP complaints, 49 (87.5%) respondents with LBP complaints were moderate, 127 (87.0%) respondents with severe LBP complaints have low productivity.

Multivariate Analysis

Table 2. Results of Analysis of the Direct Effect Path

Research Variabele	Direct Effect		
	Estimation	Value p	Conclusion
BMI →LBP	.385	.000	Significant
BMI → Working Productivity	.039	.481	Not Significant
LBP→ Working Productivity	.254	.000	Significant

Table 3. Results of Indirect Path Effect Analysis

Hypothesis (Path)	Indirect Effect	Total Effect
BMI →LBP→Productivity	.052	.090

Table 2 shows that there is a direct effect of BMI on LBP (p value = 0.000), but there is no direct effect of BMI on work productivity (0.481), indirectly in table 3, while indirect effects on BMI have indirect effects on productivity through LBP.

DISCUSSION

Increased work demands can be overcome, one of which is having a good nutritional status. With good nutritional status, farmers can do their jobs effectively and efficiently, but if there is a lack of nutritional value in food consumed by farmers, it will result in not achieving optimal efficiency and work productivity because the body's defense against disease decreases, physical ability decreases, body weight decline, lack of enthusiasm, lack of motivation, slow reaction, and apathy.

In this study, it was shown that many of the farmers who had the obesity BMI category were 114 (53.0%) or 169 with abnormal BMI, 22 (13.0%) had severe fatigue, 123 (72.8%) experienced LBP complaints are severe, and there are 148 (87.8%) having low productivity.

Path analysis shows that there is no effect of BMI on fatigue. This study is in line with research conducted by Verawati (2017) which states that the statistical test of the relationship between nutrition and work fatigue using coefficient of contingency obtained an association value of 0.081 in the range of values. 0.00-0.25 which means having a weak level of relationship. This shows that there is no relationship between nutritional status and labor fatigue at the packaging of CV Sumber Barokah factory. In contrast to research conducted by Lendeon (2017) on transport workers, it shows that there is a relationship between nutritional status and p value = 0.049 with work fatigue.

Research conducted by Perwitasari and Tualeka (2012) proved the relationship between nutritional status and fatigue (p value = 0,000). The conclusion of the study showed that the nutritional status of nurses in Dr. Mohamad Soewandhie Hospital Surabaya Surabaya is at risk of causing work fatigue. A worker with good nutrition will have a better work capacity and endurance compared to more or less nutritional status workers.

Workers need nutritious food for the maintenance of the body, to repair cells and tissues, for growth to certain times and to carry out activities including work. Food is needed by the body to be used as a source of energy. These substances can be burned in the body as energy to work (Budiono, 2003).

Based on the results of the study, BMI did not affect fatigue because farmers with normal and abnormal BMI worked together in carrying out their duties as farmers. This caused fatigue felt by farmers with normal and abnormal BMI tending to be the same. Although IMT is not related to fatigue, it has an influence on low back pain. The results of this study are in line with the research Shiri *et al.*, (2019) that the incidence of low back pain increases in workers with nutritional status who are obese. Study by Dario (2015) showed significant results between BMI and LBP complaints. However, Research by Hadyan (2016) which mentions different things where it was found that there was no effect of IMT on low back pain.

In people who have excess weight the risk of developing lower back pain is greater, because the burden on the supporting joints will increase body weight, so that it can allow the occurrence of low back pain. Excessive weight can cause a pull on the soft tissue of the back (Yonansha, 2012)

A person's work ability is different from one person to another and is very dependent on nutrition and work environment. the higher the work ability of a workforce with a level of fatigue that does not mean showing a good level of physical condition of the workforce concerned, which in this case will have a positive impact on increasing productivity (Notoatmodjo, 2009). This is what underlies the indirect influence of BMI on productivity through LBP complaints.

CONCLUSION

We conclude that there is a direct effect of BMI on LBP and LBP on productivity, but not BMI on productivity, while indirect effects on BMI have an indirect effect on productivity through LBP.

REFERENCES

1. Birabi, B., & Dienye P, N. G. (2012). Improvement of chronic back pain or failed back surgery with vitamin D repletion: a case series. *The Journal of the American Board of Family Medicine.*, *22*(1), 69–74.
2. Budiono, S. *et al.*,. (2003). *Bunga Rampai Hiperkes dan KK. Badan Penerbit Universitas Diponegoro. Semarang*.
3. Dario, A. B., Ferreira, M. L., Refshauge, K. M., Lima, T. S., Ordoñana, J. R., & Ferreira, P. H. (2015). The relationship between obesity, low back pain, and lumbar disc degeneration when genetics and the environment are considered: A systematic review of twin studies. *Spine Journal*, *15*(5), 1106–1117. https://doi.org/10.1016/j.spinee.2015.02.001
4. Dwiyanti, E., Ardianto, D.Y., Tualeka, A.R., & Paskarini, I. (2012). Accident and Health Problems of Traditional Diver and the Factors That Affect the District Seram, Maluku. *Indonesian Journal of Occupational Safety and Health, 1(1).*
5. Hadyan, M. F. (2016). *Hubungan Usia, Lama Kerja, Masa Kerja Dan Indeks Massa Tubuh (Imt) Terhadap Kejadian Low Back Pain (LBP) Pada Petani Di Desa Munca Kabupaten Pesawaran Pesawaran*. Universitas Lampung.
6. Lendeon Claudia, Pinontoan Odi. R, P. A. T. K. (2017). Hubungan Antara Beban Kerja Dan Status Gizi Dengan Kelelahan Kerja Pada Buruh Angkut Di Pasar Serasi Kota Kotamobagu. *Jurnal. Universitas Sam Ratulangi:Fakultas Kesehatan*

Masyarakat.

7. Panada, T. (2011). *Prevalence of Low Back Pain among rice farmers in rural Thailand.* Naresuan University Phitsanulok, Thailand.
8. Shiri, R., Falah-Hassani, K., Heliövaara, M., Solovieva, S., Amiri, S., Lallukka, T., … Viikari-Juntura, E. (2019). Risk Factors for Low Back Pain: A Population-Based Longitudinal Study. *Arthritis Care and Research*, *71*(2), 290–299. https://doi.org/10.1002/acr.23710
9. Susanto, T., Purwandari, R., & Wuryaningsih, E. W. (2017). Prevalence and associated factors of health problems among Indonesian farmers. *Chinese Nursing Research*, *4*(1), 31–37.
10. Sitepu, D. S., Sinaga M. M., & Lubis, H. S. (2015). Faktor-faktor yang Berhubungan dengan Keluhan Low Back Pain Petani Jeruk di Desa Diakan Kecamatan Merek Kabupaten Karo tahun 2015.
11. Utami, U., Karimuna, S. R., & Jufri, N. (2017). Hubungan lama kerja, sikap kerja dan beban kerja dengan muskuloskeletal disorders (MSDs). *Jimkesmas*, *2*(6), 1–11.
12. Verawati, L. (2017). Hubungan Tingkat Kelelahan Subjektif dengan Produktivitas pada Tenaga Kerja Bagian Pengemasan di CV Sumber Barokah. *The Indonesian Journal of Occupational Safety and Health*, *5*(1), 51–60.
13. Yonansha, S. (2012). Gambaran Perubahan Keluhan Low Back Pain dan Tingkat Risiko Ergonomi dengan Vacuum Pada Pekerja Manual Handling Pt Aii. *Universitas Indonesia*.