

THE EFFECT OF USING *MEDULA SPINALIS BELT* (MSB) AGAINST COMPLAINTS OF *LOW BACK PAIN* (LBP)

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ABSTRACT

Objective: The aim research to know the impact of MSB on reducing complaints of low back as a cashier worker.

Methods: This study used a pre and posttest to assess the level of LBP in workers. This type of research is a quasi-experimental with study approach to 30 workers as a sample selected using experimental purposive sampling.

Results: According of the research to mitigate in the scale of LBP in the action group after using MSB statistical test using the Mann Whitney test showed $p = 0.00$.

Conclusion: There was an effect of using MSB ($p = 0.000$). There was no effect of using MSB in the control group ($p = 0.317$). There are differences in changes in the scale of low back pain ($p = 0.000$).

KEYWORDS: Medula spinalis belt; Low Back pain

I. INTRODUCTION

According to WHO, there are more than 150 types of LBP in the world, causing pain and inflammation for a very long time as well as disabilities or injured because low back pain.^{1,2} This report relates to the designation of the decade 2000-2010 by WHO as the decade of bones and joints.^{3,4}

This is confirmed by the National Health Interview survey data which estimates that two thirds of all cases of low back pain are caused by work activities. Nearly 80% of the population in industrialized countries have experienced low back pain.^{5,6} In the case of the UK, low back pain is the main cause of absenteeism it is estimated that around 3.5 million working days were lost in 2007/2009 due to musculoskeletal disorders, especially low back pain (Low back pain or Low Back Pain (LBP) is pain that is felt in the lower back whose source is the spine in the spinal area or lower back, muscles, nerves, or other regional structures in the area.⁷ Low back pain symptoms include: muscle pain, discomfort or pain in the waist area, pain that radiates to the lower legs to the feet, and difficulty standing upright.⁸

From the results of a national research conducted in 14 Indonesian teaching hospitals, conducted by the pain study group (pokdi Pain) PERDOSSI in May 2002 indicated that painful sufferers were 4456 people (25% of total visits), where 1598 people (35.86%) were headache sufferers and 819 people (18.37%) were LBP sufferers LBP is a complaint This often occurs at the workers with a prevalence reaching 31.6%.⁹ Research conducted on a frying pan maker shows that 75% of respondents experience complaints on their backs. Complaints in the back sector can be caused because the respondent's work attitude is the sitting position with the back bent forward for a long duration.^{10,11}

Judging from the data collected and research by the Center for Research and Development of the Ecology Center for Health, the Ministry of Health which involved 800 people from 8 informal sectors in Indonesia, showed that 31.6% of oil palm farmers in Riau had complaints of low back pain, 21% of shadow puppet craftsmen in Riau. Yogyakarta, 18%, onix craftsmen in West Java, 16% gold miners in West Kalimantan, 14.9% shoe craftsmen in

Bogor and 8% brass craftsmen in Central Java.¹² In addition, the brick craftsmen in OKI Jakarta who suffered from complaints of low back pain were 76.7% and 41%.¹³

The muscles of the abdomen and the front of the invertebrate disk in the lumbar region are compressed. In the ligamentous side of the invertebrates the disc is stretched or flexed. This condition will cause pain in the lower back. Low back pain is pain that is felt in the lower back area, can be local pain or radicular pain or both. and feet. Pain originating from the lower back area can be referred to other areas or vice versa pain originating from other areas is felt in the lower back area.^{2,9,10}

The application of modalities to reduce low back pain needs to be applied, one of which is by using the medulla spinal belt (MSB) in addition to reducing pain, MSB is also to correct wrong postures when working at the ticket post cashier, so in addition to the MSB therapy tool it is also used as a preventive tool, however, it is not recommended to use this corset continuously because it will have a negative impact on the lower back, it requires an understanding and proper education from the therapist so that the expected results are achieved.¹⁴

Medulla spinalis belt is a tool used on the body, especially in the waist area which functions as a support for the body to make it more stable and comfortable during work activities, the medulla spinalis belt is recommended for people with LBP complaints as stabilization in the lumbar region, to facilitate movement -bending movements, and to reduce pain.

II. METHODS

This type of research is experimental research, using the experimental quasi method. Where in this study will involve the intervention and control groups, then the intervention group and the control group will each be carried out a pre-test in the form of a pain scale measurement. For the intervention group; After doing the pretest, the workers used MSB for 3 hours a day for 2 weeks. After that, the pain complaints were re-measured (posttest). The sampling technique was purposive sampling with criteria including workers who were declared not to have complications from other diseases that can cause low back pain (kidney and neurological disorders). Minimum length of work is 1 year. Working hours ≥ 8 hours per day, and routine as a ticket post cashier. Never experienced trauma to the waist. From research criteria were 30 workers divided into 2 groups, namely 15 samples for the action group and 15 samples (control)

Research stage

- a) Intervention group
- b) Workers are fitted with MSB tools and allowed to do their work during work and take them off during rest. this is done for workers with the morning shift and afternoon shift. It is given from Sundays to workers using the tools. Monitoring complaints of low back pain in ticket post cashier workers for 2 weeks.
- c) Control Group
- d) Monitoring complaints of low back pain in 15 ticket post cashiers for 2 weeks.
- e) Post-test stage
- f) Seeing the changes in complaints of low back pain, the ticket post cashier workers after using MSB for 2 weeks

Analysis data

The analysis data using program SPSS, According Low Back Pain For Group Intervention And Control using Shapiro walk. The Effect of Using the Medulla Spinalis Belt (MSB) Tool Towards using Mann-Whitney Test.

III. RESULT

Table 1 Distribusi for action and control based on age, lenght work and work period.

Variable	Action				Control			
	Before		After		Before		After	
	Slight	Medium	Slight	Medium	Slight	Medium	Slight	Medium

	p ai nf ul	painf ul	pa in fu l	painf ul	pai nfu l	painful	p ai nf ul	Painful
Age								
≤ 25 years	0	9	6	3	14	0	13	1
>25 years	0	6	6	0	0	1	0	1
Length of work								
Intervention	0	15	12	3	5	10	12	3
Control	14	1	13	2	10	5	4	11
Work period								
≤ 1 years	0	14	12	2	3	1	2	2
>1yaers	0	1	0	1	11	0	11	0

Source: Primary Data, 2019

According of table 1 indicated based on age intervention an control (before/ after test of 15 respondents, for length of work intervention an control before/after test of 30 respondents, and thelast variable is work period intervention an control (before/ after test of 15 respondents).

Table 2 Distribution of response according low back pain for group action and control.

Group	Low back pain	Min (Mm (mg/dl)	Max (mg /dl)	Mean ± SD	Shapiro-wilk	p-value
Action	Before	4	6	4.93 ±1.03	0.000	0.00
	After	1	4	2.53 ±0.91	0.009	
Group control	Before	1	4	2.13±0.99	0.025	0.317
	After	1	4	2.20±1.08	0.030	

Source: Primary Data, 2019

Table 2 indicated of LBP pain scale in the intervention group obtained a minimum pain scale of 4.00 mg / dl, a maximum pain scale of 6.0 mg / dl and an average pain scale of 4.93 mg / dl (SD = 1.03). Posttest back pain scale in the intervention group, a minimum pain scale of 1.0 mg / dl was obtained, a maximum pain scale of 4.0 mg / dl and an average pain scale of 2.53 mg / dl (SD = 0.91).

Table 3 using the Mann Whitney test shows that the mean rank value for the intervention group is smaller than the control group rank average value for changes in the back pain scale of each sample group, namely the intervention group (9.00) is smaller than the control group. control (22.00).

Table 3 The Effect of Using the Medulla Spinalis Belt (MSB) Tool Towards Cashier Workers at PosKarcis Mall.

Mann-Whitney Test	Mean Rank	p value
Intervention	9.00	0.000
Control	22.00	

Source: Primary Data, 2019

IV. DISCUSSION

The work environment is also very influential on ticket post cashier workers which can trigger fatigue which results in lower back pain, a worker sits for more than 3 hours while doing his job, in a small room with a size of 1.5m x 1.5m, with a work chair that is not ergonomic, has no backrest.¹⁵ These are the things that cause cashier workers is easy to experience low back pain. the factors of low back pain complaints are caused by work factors, namely the type of work, work period, posture at work, length of work and equipment. Individual factors are age, gender, nutritional status, disease, and physical activity and sports. As well as physiological factors, namely scoliosis, HNP, spondylitis and osteoporosis.^{3,9,16}

Other factors that cause LBP are poor health, psychological and psychosocial problems, degenerative arthritis, smoking, scoliosis major (curvature more than eighty degrees), obesity; excessive body weight, work-related matters such as sitting for long periods of time, or standing for hours (static work posture), vibration, lifting, carrying weights, pulling weights, bending, turning, and pregnancy.^{2,6,8,17}

In this study, the largest percentage who experienced complaints of LBP was in the age group categorized as workers aged 25 years and under who experienced complaints, namely 9 workers (60%) in the intervention group, 14 workers (93.3%) in the control group, cashier workers with the category of workers over 25 years of age who experienced complaints were 6 workers (40%) in the intervention group and 1 worker (6.7%) in the control group.

This is supported by research that NBP does not increase during sitting 1-3 hours per day but NBP is associated with sitting for more than 3 hours. Based on the distribution of the level of back pain in the control group based on the length of work (8 hours) before the treatment was carried out, it was found that 1 worker (6.7%) experienced moderate pain, after treatment there were 2 workers (13.3%) who experience moderate pain.^{2,5,15,18} According to the researchers, why it has increased is because at the time of the assessment of the level of pain there was an error because the pain assessment was only assessed based on worker complaints (subjective), not supported by laboratory examinations and X-rays of the spine.^{7,19}

However, long-sitting work activities and non-ergonomic sitting positions will result in cashier workers requiring large exertions, but not having enough time to rest so that the risk of experiencing muscle pain complaints will increase. The workers in this study are contract workers who are determined by the company with a contract system every 6 months of contract renewal, thus there are very few workers who work more than five years. This study is in accordance with the theory put forward which states that a working period with a continuous static load if workers do not pay attention to ergonomic factors will more easily cause complaints of low back pain.^{5,11}

According to research that workers with a work period with a sitting attitude of more than 1 year have a higher risk of being exposed to NPB compared to workers whose working period is less than 1 year, this is because loading the spine for a long time causes the disc cavity to constrict permanently and also results in degeneration of the spine which will lead to LBP. The longer you work, the higher the risk level for suffering from back pain.^{20,21} Based on the research results, it was found that the highest percentage of brick workers with complaints of low back pain was found in brick workers with the category of long working period (> 5 years) who experienced complaints, namely 15 people (65.2%) and those who did not experience complaints, namely 8 people (34.8%) while brick workers with a new working period (55 years) who experienced complaints were 9 people (29.0%) and 22 people who did not experience complaints (71.0%).^{15,16}

The conclusion indicated the intervention group after using the Medulla Spinalis Belt (MSB). This is because this tool when used causes a feeling of massage on the back and in this part of the tool there is a support on the back. This can be seen from a decrease in the scale of pain felt by workers. Most people with low back pain tend to experience improvement in a period of two weeks to three months. During this time period, when complaints of low back pain are the process resolution, or if back pain is chronic, it is necessary to consider appropriate conservative management.

V. CONCLUSION

There is a difference in the average level of LBP before and after use of MSB. There was an effect of using MSB on the level of LBP after treatment in the Activity group with a p-value of 0,000. There was no effect of using MSB on the level LBP after treatment in the control group (p = 0.317). There are differences in changes in the scale of LBP before and after using MSB in the intervention and control groups with a value of p = 0.000.

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