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Spinal Cord Belt (MSB) as a Method of Reducing the Level of Low Back Pain in Cashier Pos Ticket Worker at Panakkukang Mall in Makassar

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Abstract

Background. PT.Centerpark in collaboration with Panakkukang Makassar Mall is a formal company engaged in providing parking services. Worker in this company wrork every day with an average of 8 hours a day, in a day worker is able to sit for 7 hours. So the risk of complaints pos ticket workers is very high. The purpose of this study was to determine the effect of using MSB on decrasing complaints of low back pain in the cash register cashiers at Panakkukang Mall Makassar in 2019. This study used pre and post tests to assess the level of low back pain in workers. **Material and Method**. The type of research used was an experimental quasi. The sampling method uses simple purposive sampling. The study was conducted in November - February 2020. The number of sampling was 30 people. The data analysis technique used in this study is Chi-square and Mann Whitney test. **Results**. The results showed that as The average level of low back pain before and after the use of MSB in the intervention group before using MSB the mean value is 4.93 mg/dl (SD = 1.03) after using MSB the mean value is 2.53 mg/dl (SD = 0.91). The use of MSB on the level of low back pain after treatment in the intervention group p (0,000) < p (0.05). The use of MSB on the level of low back pain after treatment in the control group was p (0,317) > p (0.05). There was a difference in changes in the scale of low back pain before and after using MSB in the intervention and control groups p (0,000) <p (0.05). **Conclusion.** There is a difference in the average level of the lower back before and after the use of MSB on the basis of the time before the use of MSB the average value of the worker level is 4.93 mg/dl (SD = 1.03) after using MSB 53 mg/dl (SD = 0.91). It is recommended for workers to use MSB tools every time they work.

Keywords: *Spinal cord belt (MSB), Low Back Pain, Method of Reducing, age, length of work, years of service*

Introduction

Back pain is a complaint that is found in everyday life. Almost everyone has experienced back pain. Lower back pain remains a major public health burden throughout the industrial world. Epidemiological data show that lower back pain (LBP) ranks 19th (27%) and lifetime prevalence is 60%. [1] The World Health Organization (WHO) explains that 2-5% of employees in industrialized countries suffer from low back pain every year, and 15% of absenteeism in the steel industry and trade industry is caused by low back pain (LBP). [2]

The application of modality can reduce low back pain needs to be applied, one of them by using the spinal cord belt (MSB). MBS is useful for reducing pain, correcting incorrect posture at work, and is also used as a prevention tool. Spinal cord belt is a tool that is used on the body, especially in the waist that serves as a body buffer to make it more stable and comfortable when work activities take place, spinal cord belt is recommended for people with LBP complaints as stabilizing the lumbar region, facilitating bending movements, and reduce pain.

This research was conducted at formal sector postal cash register workers at Panakkukang Mall in Makassar. The results of preliminary observations have found that

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research has not been carried out specifically in the area of occupational health and safety. Cashier at the mall often does not pay attention to the compatibility between work facilities and work attitude, causing complaints of low back pain. This is seen by the presence of lower back pain complaints felt by the worker.

Material and Method

The type of research used was quasi experimental. The sampling method uses simple purposive sampling. The study was conducted in November-February 2020. The number of sampling was 30 people (intervention group 15 people, control 15 people). This research will involve intervention and control groups. The intervention group (workers use SBM 3 hours per day for 2 weeks) and control (no treatment is given) will each be pre-tested, namely the measurement of pain scale. The data analysis technique used in this study is Chi-square and Mann Whitney test.

Results

The number of ticket workers who experience LBP in this study is 30 people (intervention group 15 people, control 15 people). The results of these measurements can be seen in the following table.

Table 1. Distribution of Pretest and Posttest Back Pain Levels Based on Age, Work Period, and Length of Work at the Cashier Post Shop Ticket

Variable	Pretest		Posttest	
	Mild pain	Moderat pain	Mild pain	Moderat pain
Age				
≤ 25 years	14	9	19	4
>25 years	2	5	6	1
Work Period				
≤ 1 years	11	1	12	0
>1 years	5	13	13	5
Length of Work				
Intervention	3	12	12	3
Control	13	2	13	2
Total	16	14	25	5

Table 1 shows that for workers aged ≤25 years with LBP of 14 respondents (mild pain) and increased to 19 respondents (Mild pain), work period> 1 year with LBP of 13 respondents (moderate pain) decreased to 5 respondents (moderate pain).

Table 2. Back Pain Scale of Post Ticket Cashier Worker Intervention Group

LBP	Intervention Group				*p value*
	Min Mm (mg/dl)	Max (mg/dl)	Mean±SD	Shapiro -wilk	
Pretest	4,0	6,0	4,93±1,03	0,000	0,000
Posttest	1,0	4,0	2,53±0.91	0,009	

Table 2 shows that the pretest back pain scale of the intervention group obtained a minimum pain scale of 4.00 mg / dl, a maximum pain scale of 6.0mg / dl and an average pain scale of 4.93 mg / dl (SD = 1.03). The posttest back pain scale of the intervention group obtained a minimum pain scale of 1.0 mg / dl, a maximum pain scale of 4.0 mg / dl and an average pain scale of 2.53 mg / dl (SD = 0.91).

Table 3. Back Pain Scale of Post Ticket Cashier Worker Control Group

LBP	Group Control				p value
	Min Mm (mg/dl)	Max (mg/dl)	Mean±SD	Shapiro -wilk	
Pretest	1.0	4.0	2.13±0.99	0.025	0.317
Posttest	1.0	4.0	2.20±1.08	0.030	

Table 3. shows the backpain scale (control group) pretest obtained minimum pain scale 1.0 mg / dl, maximum pain scale 4.0 mg / dl and average pain scale 2.13 mg / dl (SD = 0.99). The posttest back pain scale received a minimum pain scale of 1.0 mg / dl, a maximum pain scale of 4.0 mg / dl and an average pain scale of 2.20 mg / dl (SD = 1.08).

Table 4. Effects of Use of the Medulla Spinalis Belt (MSB) Tool on Post Cashier Workers

Mann-Whitney Test	Mean Rank	p value
Intervensi	8.00	0.000
Kontrol	23.00	

Table 4 shows that the mean rank value for the intervention group is smaller than the control group, the change in the backpain scale of the intervention group (8.00) is smaller than the control group (23.00). The statistical test results using the Mann-Whitney Test p = 0.000 <p (0.05).

Discussion

Table 1 shows that there are differences in complaints of pretest back pain and means that there is a change in complaints of low back pain in this case back pain decreases from moderate pain to mild pain. The control group of mild pain pretest results 14 people changed to 13 people in the posttest, meaning that there was a change in pain complaints, namely increased pain complaints because the control group did not use MSB tools. Tarwaka (2015) explains that the complaint factors of low back pain are caused by work factors (type of work tenure, body posture at work, length of work and equipment), individual factors (age, sex, nutritional status, disease, and physical activity and sports), As well as physiological factors (scoliosis, HNP, spondylitis and osteoporosis). [3]

Other factors that cause LBP are poor health problems, psychological and psychosocial problems, degenerative arthritis, smoking, mayor scoliosis (more than one hundred and a hundred degrees), obesity; excessive body weight, work-related things such as prolonged sitting, or standing for hours, vibration, lifting, carrying weights, pulling weights, bending, twisting, and growing. [4], [5] The results of this study indicate that the lack of awareness of workers who do not pay attention to ergonomic posture while working and the lack of occupational health and safety knowledge in cashier workers who experience complaints of low back pain.

In this study, the largest number considered was 60% intervention group, 93.3% control group. Age is a predisposing factor that can restore the lower back and is usually suffered by people who open, change the shape

of the body made of bone so it is not elastic anymore like when young. Age of lower back recovery associated with aging increases, including increased degeneration of the spine at an increased risk of lower back pain. [6], [7], [8] Uninstalling, even though he was still a teenager but could experience lower back recovery, this happened to the cash ticket manager at the Makassar. Amod, et al (2015) conducted a study with no significant correlation between age and lower back pain in truck drivers in Nagpur India p 0.060> 0.05. [9]

A person who works in daily work without rest can spend days and reduce the body's work power decreases. Based on the distribution of the rate of recovery of pretest backs in the intervention and control groups based on the length of work (8 hours) in postal cashier workers showed in the intervention group with mild comfort (0%) and those who improved moderate pain (100%), while the control group with mild care comfort (93.3%) and those experiencing moderate pain (6.7%).

The researcher assumes that all respondents in the intervention group experienced moderate pain before treatment due to static work positions, long sitting for more than 3 hours and un ergonomic positions and uncomfortable worker chairs. Therefore, researchers recommend that workers' chairs be replaced with chairs that have back cushion or backrest. This is supported by the research of Tomita et al. (2015) which shows that NBP does not increase during sitting 1-3 hours per day but NBP is related to sitting for more than 3 hours. [10]

Based on the distribution of the backpain level of the control group based on the length of work (8 hours) at the cashier post workers before treatment was obtained (6.7%) experienced moderate pain, after treatment was obtained (13.3%) who experienced moderate pain. The level of back pain in workers has increased because when assessing the level of pain there was an error because the assessment of pain was only assessed on a subjective basis. This is consistent with the results of research conducted by Tonapa Veny about factors associated with complaints of Lower Back Pain in Workers in Plantation PT. Toarco Jaya Kab. North Toraja in 2016, there is no relationship between length of work and complaints of low back pain. [11]

However, with long-sitting work activities and non-ergonomic sitting positions, cashier workers will need to mobilize large amounts of energy, but do not have enough time to rest so that the risk of experiencing muscle pain will increase. Respondents in this study are contract workers determined by the company with a contract system every 6 months contract renewal, so there are very few workers who work for more than five years. Based on the results of the study obtained that the highest percentage of cashier workers with complaints of low back pain is in the category of long years of working more than one year who experience complaints of moderate pain (93.3%) the intervention group (26.7%) control group and the length of service category less than one year experienced mild pain complaints (6.7%) in the intervention group, and (73.3%) in the control group.

The high level of pain is at the cashier workers whose work period is less than one year due to the high stress of the workers due to the low salary with high workload. This research is in accordance with the theory put forward by Tarwaka (2015) which states that the working period causes a continuous static burden if workers do not pay attention to ergonomic factors will more easily cause complaints of low back pain. [12]

Boshuizen reports that respondents who have more than 1 year of service have a higher risk of NPB exposure compared to respondents whose tenure is less than 1 year, this is due to the results of long-term spinal loading in the disk cavity that is permanently narrowed and also causes bone degeneration behind which will cause LBP. Most patients with acute low back pain have a previous history and therefore need a perfect clinical examination. The main purpose of the initial examination is to try to identify "danger signals" and to make certain diagnoses. [13], [14], [15]

Table 2 shows that there is a difference in the average level of low back pain before and after the use of MSB in the intervention group where before the use of MSB the mean value of worker pain level is 4.93 mg / dl (SD = 1.03) after using the MSB mean value of pain level is 2, 53 mg / dl (SD = 0.91) with p 0.000 < 0.005.

Table 3 and 4. shows the It can be concluded that there is no difference in the average rate of return before and after the use of the MSB control group. The statistical test results using the Mann-Whitney Test p = 0.000 <p (0.05) means that there is a significant difference in effect between the groups that use the Medulla Spinalis Belt (intervention) and the groups that do not use the Medulla Spinalis Belt (control). The results showed that there was a decrease in pain scale in the intervention group after using the Medulla Spinalis Belt (MSB).

Because this tool when used causes a feeling of massage on the back because of this tool there is a buffer on the back. This can be seen from the decrease in pain scale felt by respondents.

Researchers use MSB to overcome this which is useful to reduce or eliminate lower back pain, MSB is made from simple materials namely from rubber and fabric, as well as a reinforcement tool that serves to avoid loose tools when used made of plastic material, MSB is functioned or useful to provide comfort to the lower back at work, especially to reduce pain when doing long sitting activities such as the cashier workers. This study gives the result that there is a decrease in the average pain scale in the intervention group due to the use and compliance of respondents in using MSB, so that it can cause the comfort of workers when sitting as a cashier and provide comfort when after the respondent works.

In most sufferers of low back pain have a tendency to experience improvement within a period of two weeks to three months. During this time period, when complaints of low back pain are in the process of resolution, or if back pain is chronic, it is necessary to consider appropriate conservative management. [16]

Conclusion

There is a difference in the average level of the lower back before and after the use of MSB on the basis of the time before the use of MSB the average value of the worker level is 4.93 mg/dl (SD = 1.03) after using MSB 53 mg/dl (SD = 0.91). It is recommended for workers to use MSB tools every time they work.

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Ethical Considerations: Ethical clearance was obtained from Institute of Health Science "Maluku Husada", Ambon, Indonesia; with number" RK.21/ KEPK/STIK/XI/2019. Just before the interview, written (or thumb impression) consent was obtained from each participant in Institute of Health Science Ambon guidelines.

Conflicts of Interest: The authors alone are responsible for the views expressed in this article and they do not necessarily represent the views, decisions, or policies of the institutions with which they are affiliated.

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