Risk Factor Analysis of Myofascial Pain Syndrome Upper Trapezius Muscle in Tea Leaf Pickers

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ABSTRACT
Upper trapezius pain is a common musculoskeletal disease with 30% -50% of people experiencing it for year. Myofascial pain syndrome is the cause of pain in the upper trapezius muscle. Tea leaf picking workers work with the head tilted down for a long time plus carrying the picks on one side of the shoulder can cause complaints of pain and muscle tension. The purpose of this study was to determine what are the risk factors that can cause myofacial pain syndrome in tea leaf pickers. This study was an analytic observational with a cross sectional approach. The research was conducted at PT. Pagilaran Tea Plantation, Batang regency, sample size of 54 people taking samples using consecutive sampling. The instrument used for the work position used the REBA, assessment of the incidence of myofacial pain syndrome using a diagnostic criteria examination methods of data collection using interviews, observation, and examination. Data analysis with chi squre test. The majority of workers work with long working period, (88.9%), and most workers lift loads that exceed their capacity (71.1%) and work positions that have a high risk (62.2%). There is a relationship between working period, carrying weight, work position with incidence of myofacial pain syndrome upper trapezius muscle. Long working period, heavy carrying loads exceeding capacity and high-risk work positions are risk factors for the incidence of myofacial pain syndrome in the upper trapezius muscle in tea leaf pickers.

Keyword : Myofacial pain syndrome upper trapezius muscle, working period, load weight, work position

INTRODUCTION

Upper trapezius pain is a common musculoskeletal disease with 30% -50% of people experiencing it for year.[1] It is also mentioned in other studies that upper body muscle pain is more often affected than other parts of the body. Pain points 84% occur in the upper trapezius muscle, levator scapula, infras pinatus, scalenus.[2] Preliminary research that has been carried out by researchers on August 24, 2021 at the Pagilaran tea plantation conducted on 10 respondents by conducting interviews with tea leaf pickers, it was found that 60% of the total 10 respondents complained of pain in the muscles around the neck and shoulders, 20 % complained of low back pain, 10% complained of pain in the leg muscles, and 10% did not complain of pain in the muscles.

The condition that can cause pain in the upper trapezius muscle is myofacial pain syndrome. Myofacial pain syndrome is a musculoskeletal pain disorder that occurs due to the presence of myofacial trigger points (pain points) in tight muscles or link bands. Trigger point is a sensitive area located in the muscle that is experiencing the taut band (hardening). Myofacial pain syndrome arises due to excessive load when doing muscle work, continuous daily activities and frequent use of upper trapezius muscle work.[3]

The upper trapezius muscle is the type of muscle that works hard when the head is tilted downwards for a long time. For tea leaf pickers, it works like this, with excessive stress on the upper trapezius muscle causing complaints of pain and tension in the surrounding area. Pain in the upper trapezius muscle is also caused by continuous movement during work such as typing for a long time, using the computer constantly, working at a desk that is too low, carrying heavy loads, and work that involves repetitive shoulder movements without resting..[4]

A long working period can affect the upper trapezius muscle pain because the accumulation of emphasis on the Upper Trapezius muscle due to daily lifting activities. From the results of research

conducted by previous researchers, it was found that there was a unidirectional relationship between working period with myofacial pain syndrome. The longer the working period of a worker, the higher the risk of myofacial pain syndrome.[5]

The weight of the load and the length of carrying can also affect shoulder pain as a result of the sling that is placed on one side of the shoulder, the heavier the load a person carries each time he carries, the greater the pressure on the upper trapezius muscle, so the possibility of pain is also getting bigger same with previous research that got results in workers who carried a load > 80 kg experienced moderate pain in the upper trapezius muscle.[6]

The working position of the tea picker has several potential risks of ergonomic hazards that will increase. Working positions that are done monotonously and repeatedly, static positions, non-neutral or awkward positions and the burden borne by workers can also cause upper trapezius muscle complaints. Similar to previous research related to MSDs complaints, it was found that 64 workers (71%) who had non-ergonomic work attitudes felt MSDs complaints while only 26 workers (29%).[7] Based on the description of the background, the authors are encouraged to determine the risk factors for the occurrence of upper trapezius muscle myofacial pain syndrome in tea leaf pickers to prevent occupational diseases.

METHOD

This research method is analytic observational with cross sectional approach. The population in this study were tea leaf pickers at PT Perkebunan Teh Pagilaran, Blado District, Batang Regency, which was held in May 2022. The number of samples in this study was 45 people, the sampling technique used consecutive sampling. The samples used were tea leaf pickers according to the inclusion and exclusion criteria. Inclusion criteria consisted of respondents who had agreed to the informed consent previously given and explained by the researcher, respondents who carried a minimum load of 5 kg, respondents who worked for at least 5 years. Exclusion criteria consisted of respondents who had experienced neck, shoulder and back injuries, respondents who had congenital abnormalities of one-sided long limbs and respondents who had congenital abnormalities of torticollis. The data collection used in this study were REBA observation assessment sheets, interview sheets, diagnostic criteria examination sheets and documentation. Data analysis in this study used the Chi-Square test. This research has been approved by the Ethics Committee of the Faculty of Medicine, University of Muhammadiyah Semarang No.022/EC/KEPK-FK/UNIMUS/2022.

RESULT

Table 1. Respondent characteristics

Variable	Frekuensi (%)
Working period	
Medium working period	5(11.1)
Long working period	40(88.9)
Weight loads	
Did not exceed capacity	13(28.9)
Over capacity	32(71.1)
Working position	
Medium Risk	17(37.8)
High Risk	28(62.2)
Incidence of upper trapezius muscle myofacial pain syndrome	
No	21(46.7)
Yes	24(53.3)

Based on the results of the univariate analysis in table 1, the characteristics of the respondents based on working period, the majority of respondents worked with long period(88.9%), based on the weight of the load that was carried, most of the respondents lifted weights that exceeded their capacity (71%), based on the REBA work position Most of the respondents had a high-risk work position according to the REBA score (62.2%), and based on respondents who experienced the upper trapezius muscle myofacial pain syndrome, most of the respondents experienced myofacial pain syndrome in the upper trapezius muscle (53.3%).

Table 2. The relationship between working period, carrying weight and work position with the incidence of upper trapezius muscle myofacial pain syndrome

Variabel		the incidence of upper trapezius muscle myofacial pain syndrome				N	%	P	PR CI l (95%)
		Yes		No					
		N	%	N	%				
working period	Medium	24	60	14	40	40	100	0,017	2.500 (1.710– 3,654)
	Long	0	0	5	100	5	100		
Weight loads	Over capacity	22	68.7	10	31.3	32	100	0,002	2.708 (1.541– 4.758)
	Did not exceed capacity	2	15.4	11	84.6	13	100		
work position	High risk	22	78.6	6	21.4	28	100	0,000	4.117 (1.983-8.546)
	Medium risk	2	11.8	15	88.2	17	100		

Based on the results of bivariate analysis with Chi-square test in Table 4.3. The results showed that there was a significant relationship between working period, carrying weight and REBA working position with the incidence of myofacial pain syndrome in the upper trapezius muscle. Bivariate analysis on the variables of working period and incidence of upper trapezius muscle myofacial pain syndrome, the results showed that some respondents who experienced the occurrence of upper trapezius muscle myofacial pain syndrome with a long working period amounted to 24 respondents (60%), respondents with a long working period had risk factors 2 times higher incidence of upper trapezius muscle myofacial pain syndrome compared to respondents with a medium working period.

In the variable weight carrying load that exceeds the capacity with the incidence of myofacial pain syndrome of the upper trapezius muscle, the number of respondents who experienced totaled 22 respondents (68.7%), indicating a significant relationship between the weight of the carrying load and the incidence of myofacial pain syndrome of the upper trapezius muscle, respondents with the weight of the carrying load that exceeds the capacity has a risk factor of 2 times higher the incidence of myofacial pain syndrome of the upper trapezius muscle compared to respondents with the weight of the load that does not exceed the capacity.

Meanwhile, for the REBA work position variable with high risk criteria with the incidence of upper trapezius muscle pain syndrome, 22 respondents (62.2%), showed a significant relationship between the REBA work position and the incidence of upper trapezius muscle pain syndrome and respondents with the upper trapezius muscle pain syndrome. REBA with high risk risk has a 2 times higher risk of the occurrence of upper trapezius muscle pain syndrome compared to respondents with moderate risk REBA work positions.

DISCUSSION

The results of the Chi Square test in this study showed a significant relationship between working period and the incidence of myofascial pain syndrome in the upper trapezius muscle. Static muscle loading for a long time will cause

muscle, bone and tendon pain due to repetitive work done for a long time. A long working period can affect the upper trapezius muscle pain because it is an accumulation of pressure on the upper trapezius muscle due to activities carrying heavy daily loads.[7]

This research is similiar with research by Lena H P Hutasoit which states that the longer the working period of coffee pickers who do not work well, the coffee pickers who have experienced latent myofascial trigger points will be at risk for experiencing active myofascial trigger points**.**[8] And similar with the results of the study. by Gemilang who stated that there was a relationship between years of service and the incidence of myofascial trigger points syndrome upper trapezius in doffer workers with the Spearman test correlation test results obtained p (sig. 2 tailed) 0,006 (<0,05).[9] However, this study is not in line with the results of Muhammad Untung's research which stated that the results of the Chi Square test, obtained a p value of 0.460 (p>0.05) so that it can be concluded that there is no relationship between the length of work of tea pickers on the incidence of upper trapezius muscle pain in the Kemuning Tea Plantation, Tawangmangu.[6]

The results of the Chi Square test in this study showed a significant relationship between the weight of the carrying load and the incidence of myofacial pain syndrome in the upper trapezius muscle. The load carrying the tea picks on the pickers varies between each picker. The muscles involved when carrying the plucked are the muscles of the neck, shoulders, elbows, and arms. However, the heaviest portion of the muscle work is the shoulder muscles. Fixation on the scapula is shown to stabilize the shoulder while carrying the tea extract. In this condition the upper trapezius muscle will become the prime mover muscle or become the main muscle that works.[10] In tea pickers, loading is carried out on the upper trapezius muscle which is excessive and continuous for a long time, this activity will cause continuous static work on one of the upper trapezius muscles.

This study is in line with the research of Muhammad Untung who stated that based on the results of the Chi square test, it was known that the duration of carrying heavy loads was related to the incidence of mild pain with p = 0.029 (p <0.05). Respondents with a workload of more than 80 kg have a higher risk of exposure to upper trapezius muscle pain compared to respondents with a workload of less than 80 kg.[6]

When working with bad ergonomics potition and happening repeatedly for a long time will cause prolonged mechanical stress on the myofascial tissue of the upper trapezius muscle. when carrying a load of tea extracts must be continuous starting from the neck, shoulders, arms, elbows and hands. Forward head position and elevation of the scapula. All movements that occur from the neck, shoulders, arms, elbows, and hands work in unequal portions between one another. With poor work ergonomics continuously for a long time will increase stress and repetitive strain on the uppertrapezius muscle.[11]

This study is similar with the research of Ika Rahman who said that there was a relationship between work posture (p value = < 0.013) and work attitude (p value = < 0.018) on myofascial trigger point (MTPS). Most of the work postures in this study are high-risk work postures caused by non-ergonomic positions and workers are not comfortable with these positions.[12] And similar with research conducted on 1,501 farmers in Iran in 2020 showed that inappropriate ergonomic conditions provide risk factors for the incidence of musculoskeletal disorders including problems in the lower back (59.3%), knees (36.9%), back upper

(36.6%), neck (36.5%), and shoulders (36.2%).[13] Also according to research conducted by Komang Embun et al (2022) the chi-square test results obtained 0.019 which shows asymptotic significance <0.05. If asymptotic sig. < If asymptotic sig. < 0.05 there is a significant relationship between the two variables, namely MPS (myofacial pain syndrome) and RULA work position.[14]

CONCLUSION

The conclusion from the results of this study is that there is a significant relationship between working period, heavy load carrying, work position on the incidence of myofacial pain syndrome in the upper trapezius muscle. Long working period, heavy carrying load that exceeds capacity and high-risk work position are risk factors for the incidence of myofacial pain syndrome in the upper trapezius muscle in tea leaf pickers.

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