

The Correlation of Working Posture and Tenure with Myofascial Pain Syndrome on Tailors

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Abstract—Myofascial pain syndrome is a complaint due to a soft tissue disorder characterized by a taut band or trigger point. This syndrome can occur due to wrong work posture applied when sewing and the period of work. This study aimed to determine the relationship between work posture and tenure on myofascial pain syndrome on tailors. This study used a cross-sectional observational analytic method by using a sample form from a simple random sampling technique of 70 research subjects. Work posture was measured using Rapid Upper Limb Assessment (RULA), work tenure was measured using interviews, and myofascial pain syndrome was measured using the spearman correlation test. This study shows that working posture and tenure can affect the occurrence of myofascial pain syndrome on tailors. In addition, this study aimed to know the causative factors of the complaint so it can be appropriately handled and will not occur severe complaints in the future.

Index Terms—tailors, work posture, tenure, myofascial pain syndrome

I. INTRODUCTION

Tailors are one of the most crucial determinants of success for an apparel business. Tailors who attempt to provide a product of the desired quality. Therefore, their body's health needs to be considered while operating a machine to achieve good product results.

The health of these employees may be disrupted because of terrible work postures generally implemented while working. Work posture when performing tasks is frequently in a position that has tendency to bend long way from neck to the leg. This is due to the fact, tailoring is a monotonous task for looking at the product being sewn carefully in order to minimize the mistakes when sewing [1].

Working postures that are included in the category of poor postures if applied continuously will cause various discomfort to the body [2]. For example, jobs related to sewing activities will experience such as pain in the neck, lower back, and calf. Occasionally, workers may fail to recognize complaints that arise when they consider that

minors complaints as a serious problem, so they will continue to work as they should without considering the source of the problem [3].

The neck muscles play a role in maintaining an abnormal neck position, which is frequently bent when sewing. These muscles are forced to work or contract indirectly. As a result, it causes complaints of neck aches and pains [4]. According to the findings of the investigation, there were 42,9% of complaints in the neck area and 41,2% of moderate complaints [5].

The working posture plays a role in the appearance complaints on body functions. However, a factor that can also trigger complaints is the tailor's work tenure. The period of work is the length of time that they have been working as a tailor [6]. The working period that has been carried out will affect the presence of discomfort in the body and alterations in the function of body movement. In addition, due to the long working period, the longer the tailor will be exposed to internal and external factors in the work environment, which ultimately has an impact on the existence of an ailment or disorder in the body [7].

A long working period refers to the period of work posture that has been applied. Muscle contractions that work continuously over a long period of time have an impact on micro or macro trauma and muscle degeneration [8]. These contractions also cause tension in the muscle and pain that occurs during palpation [9].

Trauma that appears in the muscles without repair or proper treatment will trigger myofascial pain syndrome. Myofascial pain syndrome is a complaint related to soft tissue conditions with a taut band or trigger point [10]. According to the study's findings, myofascial pain syndrome in the upper trapezius muscle affected 93.75% of participants [11]. The trauma that occurs leads to an accumulation of nutrients in the myofascial tissue, which results in an ischemic process. The accumulation will trigger inflammatory process in the muscles [12].

The problems that occur to workers can have a negative impact on the quality of the finished product. As a result, the complaint must be prevented appropriately and treated so that it does not interfere with work activities. Thus, tailors must be aware of the factors influencing the onset of myofascial pain syndrome symptoms. To address this, the authors conducted a study

on the relationship between work posture and tenure on the occurrence of myofascial pain syndrome in tailors.

II. MATERIAL AND METHODS

This research study used a cross-sectional analytical observational study design to analyze the relationship between work posture and tenure on myofascial pain syndrome on tailors. The selection of research subjects used simple random sampling technique. The inclusion criteria of the research subjects were female, aged 30-50 years old, who had worked for at least two years, and were willing to give informed consent. Exclusion criteria were a history of injury to the neck area, nervous disorders in the neck area, and a weak muscle tone in the neck area. The number of research subjects in this study was 70 research subjects.

A. Working Posture

Working posture was measured using a Rapid Upper Limb Assessment (RULA) method. The classification of working posture is equipped with a scoring assessment in the RULA table, which is divided into 4 sections: 1-2 (acceptable posture), 3-4 (further investigation, change maybe needed), 5-6 (further investigation, change soon), and 7 (investigate and implement change).

B. Working Tenure

Working Tenure in this study was measured from the length of time the research subject worked until the research was conducted using interview techniques.

C. Pain Intensity

Pain intensity on this study's subject was measured using by numeric pain rating scale. The numeric rating scale consist of three levels of pain intensity: 1-3 (mild), 4-6 (moderate), 7-10 (severe). This pain measurement was calculated when palpate the area of suspected of myofascial pain syndrome.

D. Myofascial Pain Syndrome

Myofascial pain syndrome was measured using palpation technique with taut band and pain was measured using the NPRS scale.

The measurement data that has been obtained are then collected for data analysis. First, the significance of the results of the relationship between the various variable was analyzed using IBM SPSS Statistics ver. 22.0 (IBM Co., Armonk, NY, USA). The data results are said to be significant if the p-value < 0.05.

III. RESULTS

Table I shows that the number of respondents were 70 tailors, all of the subjects are women. The mean age subjects was 41.3 ± 2.7 years. The mean tenure subjects was 18.2 ± 4.1 years. Majority of the tailors have a working posture score at 5-6 (37.1 %). Regarding at pain intensity, most of the subjects was at moderate pain (50.0%). Myofascial pain syndrome of the subjects in this study was mostly have myofascial pain syndrome (55.7%).

TABLE I. CHARACTERISTIC OF THE SUBJECTS

Characteristics	Number of respondents	Percentage
Working Posture		
1-2	8	11.4
3-4	15	21.4
5-6	26	37.1
7	21	30.0
Tenure		
< 16 years	20	28.6
16-20 years	25	35.7
> 20 years	25	35.7
Pain Intensity		
Mild	33	47.1
Moderate	35	50.0
Severe	2	2.9
Myofascial Pain Syndrome		
No	31	44.3
Yes	39	55.7

The calculation of the relation between the working posture and pain intensity of myofascial pain syndrome in tailors is displayed in Table II. Data analysis that covered 70 subjects showed that the calculation of the Spearman Coefficient was 0.725. The obtained result of the Spearman Coefficient showed that there is a positive correlation. The test of relation significance shows that probability Sig. (2-tailed) is 0.000. This implied that there is a significant positive correlation between the working posture and level pain intensity of myofascial pain syndrome.

TABLE II. THE CORRELATION BETWEEN WORKING POSTURE AND PAIN INTENSITY MYOFASCIAL PAIN SYNDROME

Spearman's rho			Working Posture	Pain Intensity
	Working Posture	Correlation Coefficient	1.000	0.725**
		Sig. (2-tailed)	.	0.000
		N	70	70
	Pain Intensity	Correlation Coefficient	0.725**	1.000
		Sig. (2-tailed)	0.000	.
		N	70	70

The calculation of the relation between the tenure and pain intensity myofascial pain syndrome in tailors is displayed in Table III. Data analysis that covered 70 subjects showed that the calculation of the Spearman Coefficient was 0.505. The obtained result of the Spearman Coefficient showed that there is a positive correlation. The test of relation significance shows that probability Sig. (2-tailed) is 0.000. This implied that there is a significant positive correlation between tenure and level pain intensity of myofascial pain syndrome.

The calculation of the relation between the working posture and tenure in tailors is displayed in Table IV. Data analysis that covered 70 subjects showed that the calculation of the Spearman Coefficient was 0.782. The obtained result of the Spearman Coefficient showed that there is a positive correlation. The test of relation significance shows that probability Sig. (2-tailed) is 0.000. This implied that there is a significant positive correlation between the working posture and tenure.

TABLE III. THE CORRELATION BETWEEN TENURE AND PAIN INTENSITY MYOFASCIAL PAIN SYNDROME

Spearman's rho			Tenure	Pain Intensity
	Tenure	Correlation Coefficient	1.000	0.505**
		Sig. (2-tailed)	.	0.000
		N	70	70
	Pain Intensity	Correlation Coefficient	0.505**	1.000
		Sig. (2-tailed)	0.000	.
		N	70	70

TABLE IV. THE CORRELATION BETWEEN WORKING POSTURE AND TENURE

Spearman's rho			Working Posture	Tenure
	Working Posture	Correlation Coefficient	1.000	0.782**
		Sig. (2-tailed)	.	0.000
		N	70	70
	Tenure	Correlation Coefficient	0.782**	1.000
		Sig. (2-tailed)	0.000	.
		N	70	70

IV. DISCUSSION

Working as a tailor is a job that has a monotonous work, requiring high concentration in a sitting position. Therefore, work posture and tenure play an essential role in the occurrence of myofascial pain syndrome. This is in accordance with the results of the study which showed that there was a significant correlation between work posture and tenure with the occurrence of myofascial pain syndrome.

The mean age in this study was 41 years (Table I), supported by research that when a person is mature to elderly there is a change in their body. The body's physiological functions reach their peak at the age of 30. Beyond this age, the body's physiological functions, such as muscle strength and muscle stability, decline with age. [13]. Changes that occur in the muscular system can interfere with muscle performance. When the muscles in the body are in a static position, the muscles do not stretch for that period of time. If this condition continues for a long time, it will lead to myofascial pain syndrome [14].

Research subjects worked sewing for 8 hours a day. A person with general time running more significant than 4 hours worked could purpose a lower within the productiveness of the tailor's work. There is also a lower blood sugar concentration within the body, followed by means of a tendency for fatigue or the hazard of disorder while working. Therefore, rest while doing work could be very crucial to apply [15].

The prevalence of body parts problems in sewing operations is very high. This is also in line with the results of the study, the value of $p = 0.000$, which means that there is a significant relationship between working posture and myofascial pain syndrome. This also supported by a correlation value of 0.725, indicating that

better working posture will be able to reduce the incidence of myofascial pain syndrome.

Based on the work posture assessments investigated and analyzed, the posture commonly used by tailors include some poor postures consisting of at the back of the body that bends not followed by back support, so the muscular tissue works extra continuously [16]. In addition, the posture is seen on the neck when sewing tends to bent over, which is greater than 20° caused by the sewing table being too low that need to see the object more clearly and precisely [17].

Tailors also frequently apply postures which include upper arms that generally tend to flex 20° to 45° accompanied by abrasion or raised shoulders and leg postures that bend and rest on the sewing table so that it will cause fatigue in the legs [18]. The working postures applied when doing a job should be considered should be in the proper state so that when working does not cause discomfort to the body [19]. If the working postures that we applied was not proper when doing the work and carried out repeatedly for a long time will cause tension within the muscular tissue resulting in decreased tissue circulation. Eventually, it will trigger the onset of taut band that leads to myofascial pain syndrome [20].

Work tenure is one of the factors that play an important role in triggering the onset of myofascial pain syndrome. This is evident from the results of the study, with a value of p is 0.000, which means that there is a significant relationship between tenure and myofascial pain syndrome. It is also proven to be strong because the correlation coefficient (r) value is 0.505, indicating that there is a strong positive correlation. The results showed that the lower tenure of the tailors, the lower the myofascial pain syndrome.

Work tenure is how long a person has worked as a tailor. This factor becomes one of the strongest a risk factors that has a significant impact on workers to increase their risk of myofascial pain syndrome, especially for the type of work that uses high work force for a considerable time [21]. The longer a person works, the longer it takes for the person to be exposed to or exposed to risk factors such as the physical in the working environment.[22]. To overcome this problem, an ergonomic intervention approach can be implemented to enable the tailor to function without discomfort in the musculoskeletal system. The applied ergonomic handling should be thorough in the working environment [23]

V. CONCLUSION

Based on the results of the study, it can be concluded that there is a positive correlation between work posture and myofascial pain syndrome in the tailors. The higher value of the work posture and tenure, the higher occurrence myofascial pain syndrome in the tailors. This study shows that work posture and tenure are factors that can trigger myofascial pain syndrome. Therefore, it is hoped that further research will discuss about intervention that can be given to prevent and reduce the occurrence of myofascial pain syndrome.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Ayesa Febrinia conducted the research and wrote this manuscript; Alit Kamayoga analyzed research data and wrote the manuscript; Srianti Dewi analyzed research data and proofread; all authors had approved the final version.

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