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THE RELATIONSHIP BETWEEN DRIVING TIME AND THE INCIDENCE OF MYOFACIAL PAIN SYNDROME, UPPER TRAPEZIUS MUSCLE IN MICROBUS DRIVERS AT UBUNG TERMINAL

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ABSTRACT

Myofascial pain syndrome is commonly felt by drivers who perform activities in a static and repetitive manner for long durations. Myofascial pain syndrome is caused by a change in cervical posture, which leads to excessive burden and tightness in the upper trapezius muscle. Complaints are described as pain due to the suppression of nociceptor nerve fibers in the neck and shoulder area. The objective of this study was to determine the relationship between driving time and the incidence of myofascial pain syndrome in the upper trapezius muscle in microbus drivers at Ubung Terminal, specifically drivers majoring the Singaraja-Denpasar/Denpasar-Singaraja route. The sampling technique used in this study was consecutive sampling. This study used an observational method with a cross-sectional design. Data were collected from 64 microbus drivers majoring the Singaraja-Denpasar/Denpasar-Singaraja route at Ubung terminal. The results showed that there was a significant relationship between driving time and myofascial pain syndrome with a correlation of 0.426 and a p value of 0.000 ($p < 0.05$). It can be concluded that there is a relationship between driving time and the incidence of myofascial pain syndrome in upper trapezius muscle in microbus drivers at the Ubung Terminal. In the future, follow-up research can be conducted to see the long-term effects of changes in posture and driving time, and the sample size can be increased by taking the entire population of terminals in Bali area.

Keywords*: Myofacial pain syndrome; driving duration; visual analogue scale*

INTRODUCTION

Globalization with its various demands has a negative stress impact on the human body. Socio-economic status, culture and science will have a different effect on each person. This high demand causes the body to overwork, which is exacerbated by a work posture that is not ergonomic, static and carried out repetitively. The majority of static activities often affect the activity patterns of the human body. Activities such as sitting in front of a computer and driving a four-wheeled vehicle (driver) for long durations often cause complaints and problems in the body. The actuality of complaints often arises slowly so that many people underestimate and think there will be a reduction in complaints later. Consequently, complaints tend to be chronic and accumulate over a long period of time, affecting the composition of the human body posture. The static and monotonous posture in the long term will cause mechanical stress to the main movement system of the human body, namely the musculoskeletal system. According to data described by Global Burden of Disease 2010, it is explained that complaints related to the relationship between posture and work position cause 21.0% of the causes of limitations and decreased functional activity[1].

Drivers often experience complaints that occur in the hands, neck, and shoulders in particular as a stabilizing region, mobilizing posture in the human body and often doing repetitive activities[2]. Many cross-sectional studies have described that in a static condition, the postural muscles will work (contract) continuously for a long-time causing fatigue, which results in a decrease in good postural control. In addition, postural muscle contraction is an eccentric contraction so that ATP deficiency accelerates as the main energy for contraction. This condition results in anaerobic energy synthesis, which will produce lactic acid as a

result of metabolic waste. The buildup of lactic acid in one part will cause symptoms of spasm which, if left in the long term, will affect the muscles structurally; this is known as tightness[3].

Myofascial pain syndrome is a symptom of a disorder in which the muscles experience tightness due to a static and repetitive posture, which presses on the nociceptor nerve so that the patient will feel pain radiating in certain areas[4]. People who perform static repetitive movements are usually the most at risk of experiencing this disorder. In medical practice, the prevalence of myofascial pain syndrome is around 10% to 18% and occurs 30%-50% during an individual's lifetime[5].

Myofascial pain syndrome often occurs in postural muscles and stabilizers that experience fatigue, causing pain and disruption of activity. The upper trapezius muscle is a postural muscle that is responsible for mobility and stability of the cervical region in the human body and often experiences myofascial pain syndrome. The upper trapezius muscle will maintain an ergonomic head posture while driving, thereby creating a comfortable condition and reducing the risk of fatigue in drivers [6]. In the activity of driving, the upper trapezius muscle act as a stabilizer of the driver's two hands. The existence of fatigue in the upper trapezius muscles due to excessive work duration will not only cause musculoskeletal complaints but also psychological problems that are often felt by drivers of long trips such as Singaraja-Denpasar. When a muscle experiences fatigue, it will cause loading on the surrounding muscles as a result of compensation[7].

The working duration of the drivers that tends to be long, static and repetitive will cause work-related complaints, muscle fatigue and posture changes such as upper quadrant syndrome or forward head posture. Researchers have agreed that the minimum contraction duration limit that can result in muscle fatigue and tightness is 5-6 hours per day. This situation will result in a permanent change in posture and pain cycle between complaints, posture and overworking habits of the upper trapezius muscle due to excessive working hours in the driver profession[8].

The awareness of drivers to pay more attention to work duration, work posture and work environment can affect comfort and effectiveness and even safety when working itself. The assumption that consciously allows complaints and the notion that complaints can disappear on their own without further handling / intervention makes the level of awareness of the drivers themselves become worse and complaints tend to recur. Therefore, we need a study that describes the relationship between duration and complaints in an effort to increase the level of awareness of drivers in working every day so that they can take minimal steps to prevent a complaint of myofascial pain syndrome in the upper trapezius muscle.

METHODS

A. Research Design

The research design that has been carried out in this study is a cross sectional study design where the aim of this study is to prove the relationship between driving duration and the incidence of myofacial pain syndrome in the upper trapezius muscle in minibus drivers at the Ubung terminal.

B. Place And Time

This research was conducted in the Ubung terminal area on 64 bemo drivers majoring in Singaraja-Denpasar / Denpasar-Singaraja between January and August 2019.

C. Population And Sample

All bemo drivers at the Ubung terminal as the target population and affordable population are all drivers who are indicated to be at risk of having complaints of myofacial pain syndrome in the upper trapezius muscle and have met the inclusion criteria, namely sample drivers are bemo drivers majoring Denpasar-Singaraja and Singaraja-Denpasar for more than 6 years , the exclusion was that the sample had a history of chronic musculoskeletal disease and a physiotherapy assessment in the form of palpation to be included as the sample of this study.

D. Sampling Technique

The sampling technique was accidental and consecutive sampling used in the sampling procedure in this study.

E. Research Procedure

The procedure of this research is: the preparation stage and the implementation stage.

Preparation Phase: (a) Requesting permission from the relevant authorities for the sampling of bemo drivers at the Ubung Terminal; (b) The researcher determines the target population and selects respondents according to the criteria of inclusion, exclusion and physiotherapy assessment. (c) The researcher provides an explanation to the sample regarding the objectives, benefits and other important information in order to protect the sample and fulfill the research code of ethics; (d) Population filled in the informed consent form.

Implementation stage: (a) Once again in more detail explaining the procedural data collection to the respondent; (b) driving time by filling out a questionnaire and the presence of myofacial pain syndrome is checked by palpation method on the trapezius muscle trigger point; (c) The data obtained will be processed in SPSS and discussed in the discussion of this study.

F. Data analysis

Data analysis using SPSS version 23 software. (1) Descriptive Statistics to analyze age, duration of work each day, and length of work, (2) Hypothesis testing using Spreaman Rank.

RESULT

Table 1.
Description of the Characteristics of Research Subjects

Driving Time	MPS		Total	p
	Yes	No		
6-10 (year)	13	14	27	0,000
>10 Year	33	4	37	
Total	46	18	64	

Table 1 shows the characteristics of the study sample based on age, duration of work and length of work for bemo drivers. The characteristics of the sample, all of whom were male, based on age obtained an average of 57.69 years with a standard deviation of 4.33. The sample characteristics based on the duration of work show that the average working duration of bemo drivers is 8.03 per hour with a standard deviation of 1.08. The sample characteristics based on the length of work of the bemo drivers obtained 12.05 with a standard deviation of 2.96.

Table 2.
The Long-Running Relationship with The Incidence of Myofascial Pain Syndrome

Characteristics	N	Average±SD
Age	64	57,69±4,33
Duration of work (hour)	64	8,03±1,08
working period (year)	64	12,05±2,96

The data shown in table 2 is the relationship between driving time and complaints of myofacial pain in the bemo driver sample from palpation of the upper trapezius muscle trigger point. Myofacial pain syndrome is directly proportional to the length of driving the driver, it can be seen from the higher the time the driver works, the increase in complaints.

Table 3.

The Relationship Between Driving Time And The Incidence Of Myofacial Pain Syndrome

Variable	MPS	
	R	p
Driving Time	0,426	0,000

Based on table 4 above, the value of p = 0.000 (p <0.05) is obtained, which indicates that there is a significant relationship between the length of driving a minibus driver and myofacial pain syndrome. The value of r = 0.426 between the length of driving with myofacial pain syndrome. A positive value of r indicates that driving time has a similar relationship with myofacial pain syndrome. If the driving time is getting longer.

DISCUSSION

The Relationship Between Driving Time and the Incidence of Myofascial Pain Syndrome, Upper Trapezius Muscle in Bemo Drivers at Ubung Terminal

Myofacial pain syndrome is a common complaint for people who often do long, static and repetitive sitting activities and for long periods of time, as seen from the work activity patterns of bemo drivers majoring in Singaraja-Denpasar. According to Sihombing (2015) sitting posture for more than or equal to 6 hours will cause an increase in lactic acid which is concentrated in one place in the body. Lactic acid here is often associated with the synthesis of ATP anaerobically and can increase spasm and tightness in a tissue if done for years[9].

Research conducted by Sang on attitudes and work safety in 2004 outlined the importance of avoiding static postures by adjusting working hours or cheating rest time. Cheating rest time is a technique where someone steals time to rest which in this case is to move more dynamically to contract more muscles and restore the lactic acid contraction back into the blood circulation[10].

The relatively high level of fatigue and accidents experienced by drivers indicates that the error does not only occur at high levels of traffic density but is further exacerbated by poor driving posture due to fatigue in drivers which in this study focused more on cervical posture[11].

This theory is supported by Zain (2017) which states that there is a relationship between cervical stability and comfort in upper limb movements such as wrists, elbows and shoulders. The bobath concept also describes the fundamental aspects of the good and bad of the resulting movements starting from the core muscles, the presence of weakness or inactive core muscles which are often replaced by global muscles which can only be done for a short duration and are very risky in the long term. Core muscle is a postural muscle where this muscle has a very high endurance resistance, usually included in slow twitch muscle fibers, core muscle is a type of muscle that has autonome contraction. This type of contraction is a type of contraction that functions more for stability and support of an active movement in the cervical region[12.]

Sherrington's muscle inactivation theory proves that a person who has bad posture due to weak and inactive core muscles so that it is replaced by a contraction of global muscle tends to have an imbalance muscle contraction. In carrying out one hand movement like driving, it requires complex coordination between the muscles that synergize with each other, both the agonist and antagonist muscles of the extremities as mobilizers and the cervical as stabilizers. The existence of posture abnormalities such as forward head posture due to the inability of the muscles to maintain a functional posture will cause a compensated muscle to become tightness. In addition, the reciprocal inhibition in the Sherrington principle describes that tighness is a condition in which the muscles become stiff and tense so that it will cause inactivation or inhibition of contraction from the contralateral side or the antagonistic muscle and it continues again and has implications for posture deterioration so it is often called a cycle problem[13].

According to the theory presented by Chaitow (2006), the repetitive static position carried out by bemo drivers not only causes irreversible posture changes but also spread pain such as headaches, shoulder pain, LBP and in the long term can cause prematurity of spine degeneration. The human body will always want to be in the most comfortable position which sometimes tends to be in a bad posture position. The habit of activity patterns such as forward head and static posture due to excessive stress and contraction of muscles will affect activities to a certain tolerance limit[14].

The complex problems of bemo drivers who work extra hard and long are often encountered posture problems such as upper quadran syndrome, forward head posture, protraction and shoulder elevation which overwork the upper trapezius muscles themselves. The design and pattern of working time arrangements so that the work position becomes ergonomic has a major role in overcoming complaints. The existence of neck support, the position of the seat back that can be adjusted, at least, can be used in the context of reducing fatigue of the upper trapezius muscles which play a role in stability during work activities so that myofacial pain of the Upper Trapezius muscles can be avoided[15].

Several theoretical studies and the results of the above research are an indication of the important role of drivers in maintaining good working patterns and attitudes. Increased work efficiency will have an effect on the income generated related to reducing expenses for medical expenses. Complaints on the musculoskeletal system are undeniably not life-threatening complaints, but these complaints will be very disturbing and also the mismanagement of problems can cause prolonged effects and decrease the quality of functional activities.

CONCLUSION

There is a positive relationship between driving time and the incidence of myofacial pain syndrome. The longer you drive, the risk of myofacial pain syndrome increases.

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