

## Musculoskeletal Disorder (MSDs) on Worker Batik Tulis

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### Abstract

Home industry batik Jetis, Sidoarjo district which is a batik home industry. Batik workers still experience pain in the skeletal muscles in the arms. These complaints are commonly called musculoskeletal disorders (MSDs). This research was conducted on 15 batik workers. That is as large as the population as well as the sample size of this research. Primary data was taken using a questionnaire. Secondary data was taken through interviews and observations. Primary data were analyzed by comparative qualitative descriptive. The conclusion, that the dominant pain complaint was pain in the right upper arm of batik workers (53.3 %), the complaint of pain was a musculoskeletal disorder in the right upper arm who had not used ergonomic batik tools. Suggestions, need to be made by redesigning the batik tool in the form of canting according to the anthropometry of the hand and right arm of the batik maker. This is so that the MSDs of the batik maker's right upper arm become comfortable or do not complain of pain.

Keywords: Batik workers, pain complaints, MSDs, Ergonomics.

### A. INTRODUCTION

The work of written batik is to draw or make batik on a piece of cloth. This batik craftsman is mostly done by housewives. The business of this batik craftsman can be called a household craftsman. This craftsman is in the village of Lemah Putro, Jetis village, Sidoarjo District, Sidoarjo Regency. Currently the performance of batik craftsmen is still low, due to uncomfortable equipment

resulting in complaints of the skeletal muscles (musculoskeletal).

As according to Hajar Abdurrahman (2014), mentions the batik workforce in Jetis Sidoarjo that "the character of the small industry of jetis batik does not have performance criteria that are considered good". Various things that affect the performance to be not good, one of which makes the performance is not good due to equipment. As also according to Hajar Abdurrahman (2014) that performance includes "the number of workers and the number of equipment". Of course what is meant by equipment is equipment for batik work.

The performance that makes the complaints of the skeletal muscles of batik craftsmen need to be resolved, in order to have a good performance. In fact, in the area of the village of batik jetis, many visitors who attend will buy cloth as well as batik cloth clothes. This jetis batik village is a tourist area owned by Sidoarjo. Jetis batik village is a tourist spot that is crowded with tourists. Its existence is in the middle of Sidoarjo city, namely in Lemah Putro Village, Jetis Village, Sidoarjo District, Sidoarjo Regency. According to Ditta Yuni Arfianti (2018) that "on weekdays or weekends as well as national holidays the average person who visits this batik jetis is tourists from outside the Sidoarjo area". It is very much expected that jetis batik has a good and continuous production.

So that the performance of batik craftsmen is related to the use of the body in work. It is necessary to work that can cause

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relaxation in the skeletal muscles of the body. It is necessary to identify complaints of pain (musculoskeletal disorder) that are dominant in the body organs in batik workers.

## B. RESEARCH METHOD

### 1. Work Type

This research was conducted on workers who were doing batik work. At the time of doing the work, what complaints happened. The complaint in question is that it occurs in the skeletal muscles (skeletal muscle) which experience pain in the organs of the body.

### 2. Subject

This research was conducted on batik workers in Lemah Putro Village, Jetis Village, Sidoarjo District, Sidoarjo Regency. When making batik, they pay less attention to work methods and work tools so that they

cause complaints in certain organs of the body. The population is all batik workers. A sample of the population, all 15 female batik workers were taken.

### 3. Research Type

The type or type of this research is a type of qualitative observation research, the data is taken using observation, interviews and questionnaires.

### 4. Data Analysis Method

In this first study, data analysis used comparative qualitative descriptive. The percentage of data is then compared. This is to determine the dominant complaint in the body's organs.

## C. ANALYSIS AND DISCUSSION

Based on the results of the data, it can be presented in the tabulation of data, it can be seen in table 1, complaints of pain in the following batik workers.

Table 1. Body Organs of Batik Makers Complained by Pain from 15 Respondents

No.	Batik Pain Complaints	Amount (Respondent Persons) and Percentage
1	Pain/stiffness in the upper neck	2 (13,3 %)
2	Pain/stiffness in the lower neck	2 (13,3 %)
3	Pain in right shoulder	7 (46,7 %)
4	Pain in the back	2 (13,3 %)
5	Pain in right upper arm	8 (53,3 %)
6	Pain in the waist	2 (13,3 %)
7	Pain in the buttocks	3 (20,0 %)
8	Pain in the ass	4 (26,7 %)
9	Pain in left thigh	2 (13,3 %)
10	Pain in right thigh	4 (26,7 %)
11	Pain in left knee	4 (26,7 %)
12	Pain in right knee	5 (33,3 %)
13	Pain in left calf	1 (6,7 %)
14	Pain in right calf	5 (33,3 %)
15	Pain in right leg	2 (13,3 %)

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Based on table 1 above, the highest complaints of pain were pain in the right upper arm, namely 8 people (53.3%) followed by pain in the right shoulder by 7 people (46.7%). One of the ergonomic risks that causes work-related injuries is musculoskeletal disorders (MSDs). Musculoskeletal complaints are complaints in the skeletal muscles or skeletal muscles that are felt by a person ranging from very mild complaints to very sick.

In batik making, it can be seen that in musculoskeletal disorders (MSDs), the dominant pain is located in the right upper arm, followed by pain in the right shoulder.

As Chris (2021) says that a number of muscle and tendon problems can cause arm pain or tenderness. Overuse of muscles that causes muscle strain (stretching) is the most common problem, although it is less serious. Often the muscles cramp or spasm. Tendons can also be involved. Tendonitis refers to inflammation of the tendons of a muscle. Severe conditions such as muscle tears and tendon ruptures can occur when injured. The rotator cuff muscles are more likely to cause shoulder pain but can radiate to the upper arm and are sometimes described as upper arm pain.

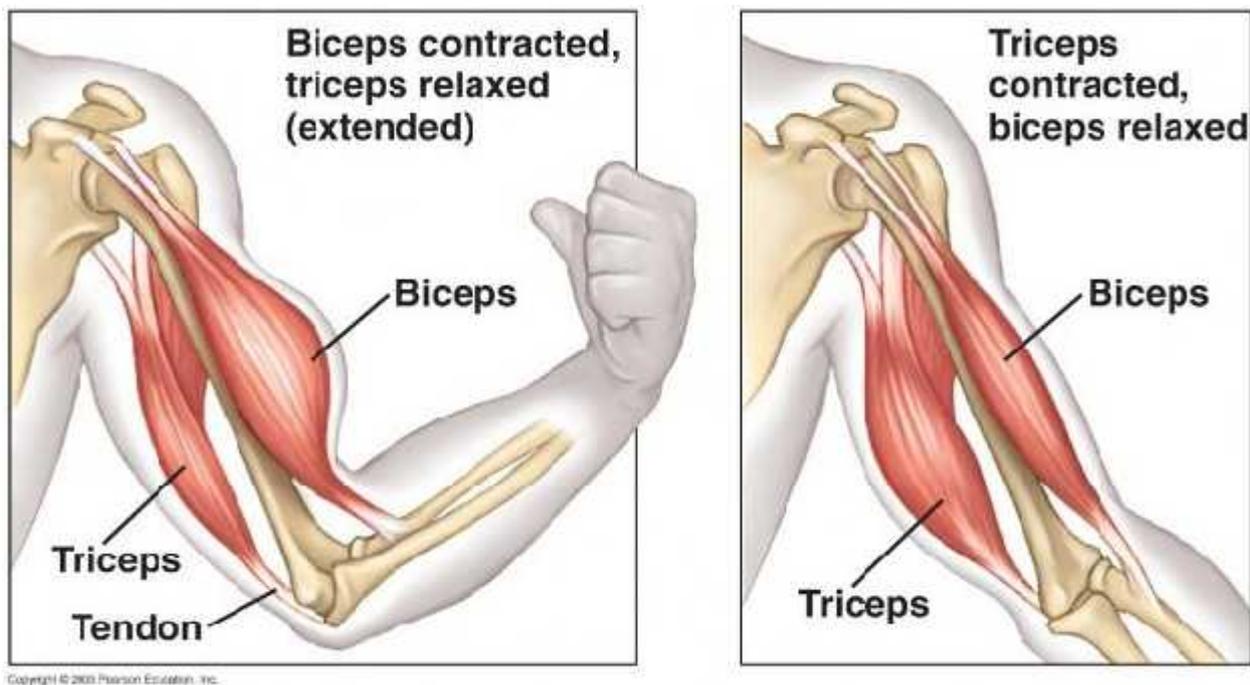


Figure 1. Biceps, Triceps, and Tendon

The labor of batik painting feels pain in the right upper arm, but it is very unlikely to tear the biceps and triceps muscles but it is very possible to only cause pain. See picture 1 above, as Chris (2021) said that the pain of the biceps and triceps muscles often occurs when doing excessive work that uses the right upper arm. Strain in the biceps, or pulled biceps, occurs when performing work that often uses the right upper arm, partly in one or more of the fibers that make up the

biceps muscle. The biceps muscle, or biceps brachii, is located at the front of the upper arm. The biceps are responsible for raising the arm, bending the arm at the elbow, and rotating the forearm. A strain in the triceps, or pulled triceps, occurs when there is pain in one or more of the fibers that make up the triceps muscle. The triceps muscle, or triceps brachii, is located at the back of the upper arm. The triceps is primarily responsible for straightening the arm from the elbow.

Muscle strains and soreness are most commonly the result of eccentric contractions. This happens when we tense a muscle in one direction and at the same time there is a force that opposes the tension. Biceps and triceps pain is caused by the same problem, namely when the resistance applied to the muscle is greater than the force that the muscle can produce. The muscle will lengthen or feel painful when it contracts. Upper arm muscle injury is very common in work that involves the use of the upper arm, for example, writing batik which uses excessive time.

Then, according to Wita Handayani (2011) "the most dominant and affecting the occurrence of complaints of musculoskeletal disorders (incorrect skeletal muscles) is a history of musculoskeletal disorders". It is clear that the complaint occurs because there is something wrong with the skeletal muscles. Every moving body organ must be moved by skeletal muscles. And, skeletal muscles do something on the orders of nerves.

As we know that all cells in the body's organs will regenerate except for muscle and nerve cells. As humans get older, the number of muscle cells and nerve cells will decrease, because they do not regenerate. Sihow Frebrinanda Ramadhanet Darmawan Saputri (2018) that "the inhibiting factor is the age of the batik craftsmen who are old". Old age where muscle cells and nerve cells are reduced greatly affects the movement in carrying out activities.

According to Norwel (2005) Sitanggang (2017) in Gede Randrawan (2020) there are four types of complaints, namely: "mechanical complaint, attitudinal complaint, service related complaint, unusual complaint". Mechanical complaints are complaints related to equipment. Attitudinal complaint related to the behavior of the workforce. Service related complaints related to services in batik. And, the unusual complaint is related to the availability of space. In this study, complaints related to human organs were complained of.

It is clear that the complaints that occur in batik workers are complaints that occur in the skeletal muscles. Most of the batik workers in Jetis village, Sidoarjo

district, do not complain of pain, then they get a little sick, followed by pain, and the lowest or lowest experience pain. It turns out that 12.90% of batik workers experience pain.

Batik is a hard work to draw or make batik. Using canthing and liquid wax to fix the batik cloth. Then the batik process continues. In the ergonomic paradigm that the tool must be adapted to human anthropometry. Not a human adapted tool. Tools for batik that do not match anthropometry (dimensions of the size of human organs), then cause unnatural or unphysiological movements. Equipment is very important in work, according to Manuaba (2006) "work equipment that is not in accordance with worker anthropometry can cause unnatural work attitudes so that it has the potential to cause work-related diseases". Then, according to Santoso, G. (2013) that resistance (reaction) to a load (action) causes the muscles to experience excessive contraction. In batik workers, it is clear that they exert muscle pressure in batik. This results in complaints and the need for ergonomic tools in the work to improve. Wignjosoebroto (2006) also highlights that "fatigue as a result of work is often interpreted as a process of decreasing efficiency, work performance, and reduced physical strength/resistance of the body to continue the activities that must be done.

#### **D. CONCLUSION**

Based on the analysis and discussion above, it can be concluded that the dominant workforce experienced pain in the right upper arm by 53.3%. It shows that the pain complaint is a dominant musculoskeletal disorder (MSDs) in the right upper arm that has not used ergonomic equipment.

#### **E. SUGGESTION**

Based on the conclusions above, it is suggested that batik workers need to be made or redesigned (redesign) batik tools, for

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example in the form of canthing in accordance with the anthropometry of the hand and right arm of the batik maker. This is so that the right upper arm MSDs become comfortable or do not complain of pain.

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