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The Application of SNQ Questionnaires for SME workers: A case study of a tofu SME in Medan

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Abstract. Small and Medium Enterprises (SMEs) are potential economic sources in the community that are able to move the economy to the lower levels of society. From the various advancements in SME, there are also things that need to be improved, one of which is the operator's working method. The Standard Nordic Questionnaire, or abbreviated as SNQ, is a tool that can determine the parts of the muscles that have complaints with the level of complaints ranging from No Pain (TS), mild pain (AS), and Pain (S). The improvement begins with identifying the complaints of operators through the distribution of the Standard Nordic Questionnaire (SNQ) questionnaire. The results of this identification are known to operators experiencing complaints of Musculoskeletal Disorders (MSDs) at the waist, back, arms and shoulders.

1. Introduction

Small and medium enterprises are one of the fields that have enormous potential in national development. This is because small and medium industries can function socially which can absorb labor and reduce the unemployment rate even though the scope is not large. The era of globalization is marked by increasingly intense competition such as the increasing establishment of this type of industry in various places. Most small industries only focus attention in efforts to overcome management and marketing problems in addition to capital while what is often overlooked is the problem of working conditions and the work environment where production activities are carried out.

According to Jusoh and Zahid (2018), the realization of ergonomic risk evaluation among workers nowadays are getting firm in industries. As many workers use almost 7 to 8 hours of their working time in the workstation, it is then considered necessary. The foregoing research reveals that consuming excessive time with fixed posture in a seated position in the workstation can preside to Musculoskeletal Disorders. The consequences are not only hazardous to the workers' body but then also affect the workers' productivity. F Kautsar *et al* (2018) defined that disorders of musculoskeletal refer to an entirety of degenerative and inflammatory disorders exacerbated mainly by the accomplishment of work. Kautsar considered that as the primary cause of ache, absenteeism, paralysis,



and shaven productivity amongst workers worldwide. Despite its non-fatality, MSDs also have the likelihood to evolve into solemn damage in the system of musculoskeletal if ignored.

Standardized Nordic Questionnaire (SNQ) for analysing of Musculoskeletal Symptoms is one of the many method to analyze MSDs (Kurinka et al (1987) in Lopez-Aragorn et al, 2017). This questionnaire is used generally (it is already recognized and validated internationally) to detects symptoms in the body section such as shoulders, neck, back, and other extremities. By using 28 questions with multiple choices that is arranged in two well-disparate section. The first portion of the questionnaire generally refers to every symptoms in each of 9 section of the body including shoulders, neck, wrists/hands, elbow, lower back, upper back, knees, hip or thighs, and also feet or ankles throughout the latest 12 months. Meanwhile, the second portion specifically refers to symptoms from three body section including shoulders, neck, and lower part of back during the respondent's working life throughout 7 days earlier. In each case, complementary data such as qualitative variables, gender, age, origin of the every workers would be handy, but not mandatory, just to assure a better assessment (Lopez Aragon et al, 2017). One instance of its utilization is when Iti et al (2016) did a a cross-sectional study to discover the prevalence of musculoskeletal disorders (MSDs) between students of computer engineering and teachers in Gulbarga city by assesment using standardized nordic questionnaire.



Figure 1. SME Workers



Figure 2. SME Workers

Many manufacturers know that they have problems with workers so that the Body Map Questionnaire is used for workers to see complaints of worker fatigue at work facilities in the production process. Seeing this condition, research was conducted to find out the complaints felt by workers and then carried out an analysis and improvement of activities and work postures. This is an effort to reduce MSDs and complaints that are felt by the operator during work.

2. Methods

The research was carried out by observations at workplaces with targets that included workers and work facilities. The first stage of data collection is to spread the Standard Nordic Questionnaire (SNQ) questionnaire to find out which part of the body the operator feels complaints. Then, the highest risk level for the operator will be calculated. The object of this research is workers at one of SME in the city of Medan that produces tofu every day.

3. Result and Discussion

3.1. SNQ questionnaires

This data was obtained through the dissemination of SNQ questionnaires. This data is intended to find out the body part of the operator who experienced the complaint while carrying out its activities. Data from the spread of the Standard Nordic Questionnaire were given an assessment or weighting for each category, namely 0 for No Pain, 1 for Mild Pain, and 2 for Pain.

The SNQ questionnaire is given to workers and consists of 0 to 27 questions.

- 0 : Neck Bag. On
- 1 : Neck Bag. Under
- 2 : Left shoulder
- 3 : Right Shoulder
- 4 : Left Upper Arm
- 5 : Back
- 6 : Right Upper Arm
- 7 : Waist
- 8 : Backside
- 9 : Bottom
- 10 : Left Elbow
- 11 : Right Elbow
- 12 : Left Forearm
- 13 : Right Forearm
- 14 : Left Hand Wrist
- 15 : Right Hand Wrist
- 16 : Left Hand
- 17 : Right Hand
- 18 : Left Thigh
- 19 : Right Thigh
- 20 : Left Knee
- 21 : Right Knee
- 22 : Left calf
- 23 : Right calf
- 24 : Left Ankle
- 25 : Right Foot Wrist
- 26 : Left Foot

- 27 : Right Foot Palm

3.2. Calculation of Percentage of Body Parts Complaints

After recapitulation of SNQ weight score, then the recapitulation score data is changed into percentages.

Table 1. SNQ Questionnaire Recapitulation

Question	Percentage
0	1,75%
1	0,00%
2	8,77%
3	8,77%
4	9,65%
5	12,28%
6	6,14%
7	16,67%
8	0,00%
9	0,00%
10	0,00%
11	0,00%
12	4,39%
13	3,51%
14	3,51%
15	4,39%
16	7,02%
17	7,02%
18	2,63%
19	0,00%
20	0,00%
21	0,00%
22	0,00%
23	0,00%
24	0,00%
25	0,00%
26	1,75%
27	1,75%

The overall distribution of complaints felt by the operator can be seen in the histogram.

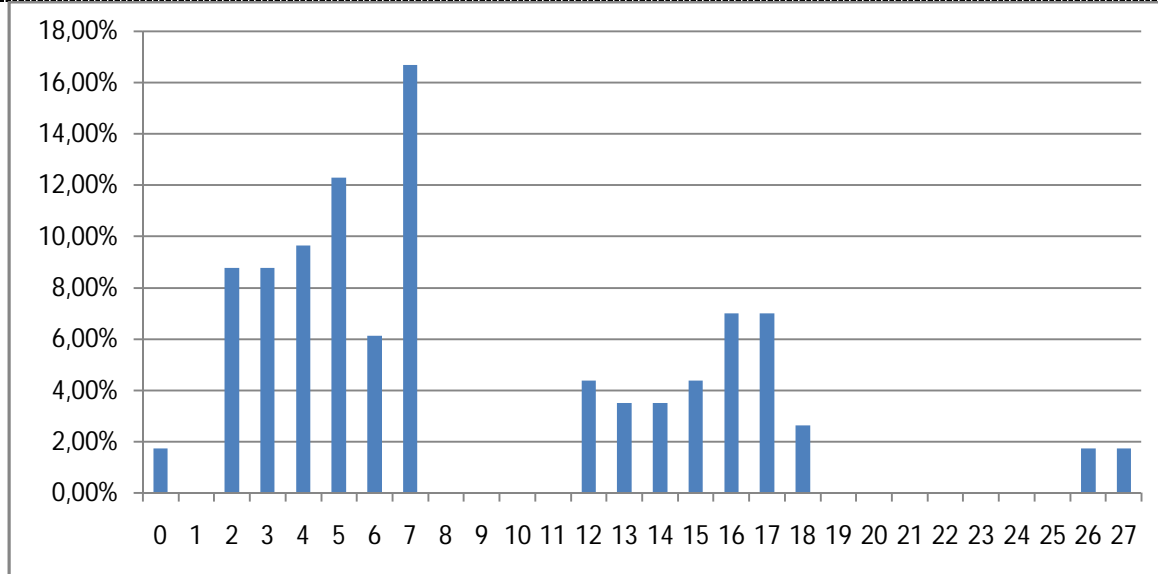


Figure 3. Operator Complaints Histogram

After calculating the percentage of complaints as a whole, it was obtained that the average operator experienced the biggest complaint in parts of the body including:

- Waist section (16,67%)
- Back section (12,28%)
- Left Upper Arm section (9,65%)
- Left Shoulder section (8,77%)
- Right shoulder section (8,77%)

The body parts above can be used as a refinement focus for both researchers and SME owners to be improved.

4. Conclusion

From the results above, we can find out whether workers experience pain or complaints when working. By knowing the percentage of complaints that are often experienced by workers, it can be given treatment to workers to improve work posture if necessary to procure equipment to assist the operator in working. Further study and observation can be performed to determine whether the cause of pains experienced by workers while working.

5. References

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