FACTORS RELATED WITH WORK FATIGUE IN TAILOR CONVECTION BUSINESS IN MAKASSAR CITY

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ABSTRACT

Work safety is an important thing that must be considered by the company, because it is closely related to the survival of workers. One of the K3 problems that can be a trigger for workplace accidents is fatigue. The purpose of this study was to known the determine the factors associated with work fatigue in Convection Business Tailors in Makassar City. These factors include age, nutritional status, years of service, workload and work attitude. This type of research is an observational analytic study with a cross sectional study (cross sectional) approach. The population in this study were all tailors in the CV. F4 Collection, CV. Gaya Baru, CV. Emerald and CV. Dahan Raya as many as 54 people. The sample in this study were 35 people. The sampling technique is using simple random sampling. Analysis of the data used is univariate and bivariate with chi-square test. The results obtained by variables associated with work fatigue are age (p = 0.002), nutritional status (p = 0.030), years of service (p = 0.027). While unrelated variables are workload (p = 0.057) and work attitude (p = 0.652). Workers are advised to stretch their body between work hours of approximately five minutes every two hours.

Keywords: Work safety, work fatigue, tailor.

INTRODUCTION

Work safety is an important thing that must be considered by the company, because work safety is closely related to the survival of workers (Budiman et al., 2016). One of the problems of K3 (Occupational Health and Safety) that can be a trigger for workplace accidents is fatigue (Gaol et al., 2018). Fatigue is a body protection mechanism so that the body avoid further damage so that recovery occurs after rest, fatigue usually shows different conditions of each individual, but it all leads to loss of efficiency and decreased work capacity and endurance (Tarwaka et al, 2004). Data from the International Labor Organization (ILO) in 2003 shows that every year as many as two million workers die due to workplace accidents caused by work fatigue (International Labour Organization, 2003).

Work fatigue can affect a decrease in a person's performance as indicated by a decrease in product quality, increased errors and damage and inaccuracy in doing work. The long-term impact of work fatigue is that it can cause occupational disease (PAK) and work accidents (Atiqoh et al., 2014). There are two factors causing work fatigue, external factors including length of work, length of work, work monotony, environmental conditions, workload and work attitude and internal factors, namely age, sex, history of illness, psychological state and nutritional status (Frely et al., 2017).

Sewing is work done with a static work attitude, which is sitting in front of a sewing machine for about eight hours. Working with a sit position for too long can cause the abdominal muscles to soften and the spine will bend so they get tired quickly. Sewing also requires precision,

concentration, accuracy and skills that allow fatigue to occur when working for long periods (Zuhriyah, 2010).

Convection Business is a business that is quite popular in Indonesia, spread in almost every region. The popularity of the convection business is because clothing is a primary need that must be met by every individual. The production process is carried out as a whole by each worker, one worker will sew one shirt starting from sewing the collar, arms, and so on until it becomes one piece of clothing (Ridwan, 2017).

Research conducted at CV. Aneka Garment Gunungpati Semarang on sewing stitching workers in 2014 with a total sample of 31 people obtained results as many as 19 people (61.3%) respondents experienced severe work fatigue before work and after work obtained results as many as 22 people (71.0%) experienced heavy work fatigue (Atiqoh et al., 2014).

Research conducted at CV. Source of Makassar City Entrenchment with a sample of 40 workers obtained the results of 22 respondents in the age category. A total of 21 respondents (95.45%) were experiencing fatigue and there was only 1 respondent (4.55%) who did not experience fatigue. The results showed there was a relationship between age and work fatigue in workers in the paving block production unit CV. Source of Entrenchment (Irma, 2014).

Data from Makassar City Industry and Trade Office from 2016 to 2018 reached the highest number of convection business workers in 2018 with 134 people while the lowest number of convection business workers in 2016 was 119 people. This shows an increase in the number of workers in the convection business in the city of Makassar. Of the 14 sub-districts in Makassar, the highest number of workers is in the sub-district of Mamajang, as many as 40 workers in 2018 (Makassar Industry and Trade Office, 2018). This study aims to determine the factors associated with work fatigue in Convection Business Tailors in Makassar City.

METHODOLOGY

This type of research is an observational analytic study with a cross sectional study (cross sectional) approach. The study was conducted in four Convection businesses in Makassar City, namely CV. F4 Collection, CV. Emerald, located in the District of Mamajang, CV. New Style, CV. Dahan Raya, located in Bontoala District in July-August 2019. The population in this study were all tailors in CV. F4 Collection, CV. New Style, CV. Emerald and CV. Dahan Raya as many as 54 people. The sample in this study was taken using the simple random sampling method, which is a random sampling technique of 35 people.

The equipment used for data retrieval in this study were Reaction timers, body scales, Mikrotoice, Stopwath, Repaid Entire Body Assessment (REBA) assessment sheets, Stationery and Digital Cameras. Analysis of the data used is univariate and bivariate with chi-square test using the SPSS program. Data that has been analyzed are presented in tabular and narrative form.

RESULTS

Table 1. Distribution of Respondents Based on Work Fatigue in the Convection Business Tailors in Makassar City

Work Fatigue	Frequency (n)	Percent (%)
Tired	24	68,6
Not tired	11	31,4
Total	**35**	**100.0**

Source: Primary Data, 2019

Table 2. Distribution of Respondents by Age, Nutrition Status, Length of Work, Workload and Work Attitudes in Convection Business Tailors in Makassar City

Characteristics	Frequency (n)	Percent (%)
Age		
Old	21	60,0
Young	14	40,0
Nutritional Status		
Abnormal	19	54,3
Normal	16	45,7
Years of service		
Long	16	45,7
New	19	54,3
Workload		
Weight	22	62,9
Light	13	37,1
Work attitude		
Not Ergonomic	7	20,0
Ergonomics	28	80,0

Source: Primary Data, 2019

Respondents who experienced work fatigue (68.6%) more than respondents who did not experience fatigue (31.4%) work (Table 1). The results obtained based on the characteristics of respondents that the most age included in the old category as many as (60.0%) and young (40.0%), the nutritional status of respondents as measured by BMI measurement shows that respondents with BMI are not normal (54, 3%) and respondents with a normal BMI (45.7%) and based on the length of service of the respondents showed that the number of workers with new tenure was more (54.3%) compared to the long tenure (45.7%) (Table 2).

Most respondents had heavy workloads (62.9%) while respondents with light workloads (37.1%) (Table 2). Based on respondents' work attitudes which are divided into 2 categories namely ergonomic and non-ergonomic, respondents with non-ergonomic work attitudes (20.0%) are less than respondents with ergonomic work attitudes (80.0%) (Table 2).

Table 3. Relationship of Independent Variables with Work Fatigue in Convection Business Tailors in Makassar City

Independent Variable	Work Fatigue				Total		Statistical Test Results
	Tired		Not Tired				
	n	%	n	%	n	%	
Age							
Old	19	90,5	2	9,5	21	100	p = 0,002
Young	5	35,7	9	64,3	14	100	
Nutritional Status							
Abnormal	16	84,2	3	15,8	19	100	p = 0,030
Normal	8	50	8	50	16	100	
Years of service							
Long	14	87,5	2	12,5	16	100	p = 0,027
New	10	52,6	9	47,4	19	100	
Workload							
Weight	18	81,8	4	18,2	22	100	p = 0,057
Light	6	46,2	7	53,8	13	100	
Work attitude							
Not Ergonomic	4	57,1	3	42,9	7	100	p = 0,652
Ergonomic	20	71,4	8	28,6	28	100	

Source: Primary Data, 2019

Statistical test results with fisher exact on age variable obtained p value = 0.002 (p <0.05), it can be concluded that age has a relationship with work fatigue. Furthermore, the results of statistical tests with chi-square on the nutritional status variable obtained p value = 0.030 (p <0.05), it can be concluded that nutritional status has a relationship with work fatigue. Variable length of service has a relationship with work fatigue based on the results of data analysis using the Chi-square test obtained p value = 0.027 (p <0.05). Then for the workload and work attitude variables both do not have a relationship, this is based on the fisher exact statistical test results with each value p = 0.057 (p> 0.05) for workload and p = 0.652 (p> 0.05) for work attitude (Table 3).

DISCUSSION

In this study, physical work fatigue was measured by using a reaction timer and psychological fatigue or feeling tired by using a work fatigue measurement tool (KAUPK2) conducted by direct interview with respondents. The results of fatigue measurement using the Reaction Timer tool to find out physical work fatigue experienced by workers were obtained from 35 respondents, more respondents were experiencing fatigue.

The results of the measurement of work fatigue using a reaction timer and a feeling of work fatigue measurement (KAUPK2) have differences where based on the results of a questionnaire interview of 35 respondents have experienced signs of fatigue while based on the measurement results with the measuring instrument reaction timer obtained only 24 respondents who experienced physical fatigue . This is caused by the measurement using a questionnaire that is only subjective about what is felt by the worker while the measurement of physical fatigue uses a reaction timer tool, an approach that can be used to test accuracy and speed in responding. The more tired a person is, the level of speed, accuracy and concentration will decrease.

In this study, more fatigue was felt by respondents with old age. Entering the age of 40 years workers tend to experience heavy work fatigue, this is because at an increased age will be followed by a degeneration process of organ function so that the ability of organs will decrease,

causing labor will more easily experience fatigue (Atiqoh et al., 2014). Age is one of the characteristics of an individual that is classified as important because age has a relationship with the magnitude of the risk of certain diseases. The older a person is, then the energy needs decrease, this is followed by the ability of the muscles to work downward, the main functions of the body such as vision, hearing and reaction speed tend to decrease, this will affect worker productivity and more quickly experience fatigue (Jumiati, 2016).

Based on research that has been done, from the Fisher's Exact test results there is a relationship between age and work fatigue in the Convection Business Tailors in Makassar City in 2019. The results showed that work fatigue was more experienced by respondents with old age compared with young age. The results of this study are in line with the research conducted by Malonda et al., (2015) which shows that the level of fatigue is higher in old age ≥ 35 years as many as 27 respondents (46.2%). The results of statistical analysis with the Fisher's Exact test obtained the value of p = 0.012 (p <0.05) which means there is a significant relationship between age and work fatigue in workers in the production of PT. Sari Usaha Mandiri Bitung. In old age, muscle tissue will shrink and will be replaced by connective tissue. Muscle shrinkage will cause the muscle's elasticity to decrease which results in an increase in the body's inability to do activities (Malonda et al., 2015).

The results of the study differed from the research conducted by Pasira 'on tofu factory workers in the Mamajang District of Makassar City from the results of data analysis using the Fisher test showing a value of p = 0.591 (p> 0.05) which means there is no relationship between age and work fatigue. From the results of cross-tabulation of age with work fatigue, more workers with young age are experiencing fatigue, this is due to other factors such as workloads and a hot work environment that can trigger fatigue (Pasira', 2016).

Nutritional status is an important part of one's health, because nutritional status indicates a person's condition caused by consumption, absorption and use of nutrients from food for a long time. The nutritional status of a worker aged 18 years and over is indicated by a Body Mass Index (BMI) calculated based on body weight and height. BMI is a simple way to find out the nutritional status of adults, especially those related to underweight and overweight. Malnutrition or excess nutrition in adults is an important problem, because in addition to having certain disease risks, it can also affect work productivity (Permatasari et al., 2017).

Based on the results of the study, it was found that most of those who experienced work exhaustion were tailors with abnormal nutritional status. The results of this study are in line with the results of the study obtained by Salasa et al., (2017), a worker in the Loining section of PT. Sinar Pure Foods International Bitung with a total sample of 75 people. Based on the Spearman Correlation test results showed that the p value 0,000 <0.05, it can be stated there is a relationship between nutritional status with work fatigue. A worker with a good nutritional condition will have a better work capacity and endurance compared to workers with poor and over-nutrition status, nutritious food is also needed to carry out activities including work. Food is needed by the human body to be used as a source of energy, a source of protein, and a source of vitamins and minerals (Salasa et al., 2017).

The results of the study were different from the results of a study conducted by Atiqoh et al., (2014) of sewing stitching workers at CV. Aneka Garment Gunungpati Semarang with a total sample of 31 people, the results of statistical tests using the Rank-Spearman test showed that there was no relationship between nutritional status with work fatigue. Respondents who experience heavy work exhaustion suffered by many workers in the normal nutrition category.

This can be influenced by other individual characteristic factors that can cause severe levels of fatigue, such as respondents with a normal BMI but are over 40 years old or with a relatively long work period (> 10 years). In addition, the results of fatigue measurements made before the respondent worked, showed the results that the respondent had experienced fatigue before work (Atiqoh et al., 2014).

The length of service is the ability of a person to adapt to work and the work environment. The adaptation process can have a positive effect which can reduce tension and increase activity or work performance (Atiqoh et al., 2014). Conversely, work periods can have a negative effect if the longer work can lead to fatigue and boredom (Maurits, 2016).

A work period of 5 years is a long enough time for workers to adapt and adjust to their daily activities at work. In this study tailors who had a work period of ≥ 5 years who experienced fatigue as many as 14 respondents (87.5%) were not much different from tailors who had a work period of <5 years who experienced work fatigue as many as 10 respondents (52.6%) of Chi-square test results obtained a value of p value 0.028 (p value <0.05) which means there is a relationship between work period and work fatigue at the Convection Business Tailors in Makassar City in 2019.

Research conducted in line with research conducted by Pramitasari on nurses at PKU Muhammadiyah Hospital Surakarta with a total sample of 52 people. In the study 26 respondents or 46.2% were experiencing fatigue with long service periods. Based on the Chi-square test results obtained at value of 0,000 (p <0.05) which means there is a significant relationship between work period with work fatigue (Pramitasari, 2016). In contrast to the results of research conducted by Alimudin et al., (2016) with a total sample of 42 people. Based on data analysis using the Spearman Rank test to determine the effect of work time on work fatigue in tailors workers at the Manado Pasar 45 Presidential Building Complex, the results obtained with a significance value of 0.969 mean pvalue> α (α = 0.05) This means that there is no meaningful relationship between work period with work fatigue (Alimudin et al., 2016).

The workload in this study is the level of workload obtained by measuring the tailor's pulse rate expressed in beats / minutes. Workload is the burden borne by labor according to the type of work, each job will make the body accept the burden from outside the body. In sewing, the workload received by workers is obtained from the number of jobs obtained and the physical working environment (Atiqoh et al., 2014).

Based on research that has been done, as many as 18 respondents (81.8%) with heavy workloads experienced work fatigue and as many as 6 respondents (46.2%) experienced work fatigue with light workloads. Fisher's Exact test results obtained p value = 0.057 (p> 0.05), which means there is no relationship between workload with work fatigue at the Convection Business Tailors in Makassar City in 2019.

The results showed there was no relationship between workload and work fatigue, because the workload measured in this study was physical workload and did not assess the workload mentally while the questionnaire interview results,> 50% of tailors who felt anxious were as many as 22 respondents (62, 9%) with the reason they are required to work with high concentration so that the results of stitches that are done neatly in accordance with what is desired by consumers, as well as the time to complete the stitches must be in accordance with the target.

The results of the study were different from the research conducted by Yasnani et al., (2016) with a total sample of 46 people in convection tailors in Kendari City as many as 29 respondents or 63% who experienced heavy work fatigue while respondents with light workloads who experienced severe fatigue as many as 16 respondents or 13%. Based on the Fisher's Exact test with a p value of 0,000 (p <0.05) which means there is a relationship of workload with work fatigue. There is a meaningful relationship between workload and work fatigue because the activity of sewing requires high concentration. Besides, tailors often feel pressured by the owner of the convection to finish the stitches neatly so that the demand for orders increases (Yasnani et al., 2016).

This study is in line with research conducted by Purba (2018) of nurses at Vita Insani Hospital Pematangsiantar with a sample of 51 people, as many as 4 people (7.8%) with light workloads and 47 people (92.2%) with workloads weight. Based on the Chi-square test results obtained p value = 0.634 because less than 0.05 there is no significant relationship between workload with work fatigue nurses always pay attention to body conditions in carrying out their work and are able to make the best use of breaks. This was also seen when conducting research, the workers used the time to rest briefly before returning to continue work (Purba, 2018).

Work attitude is the position of the worker's body when doing work. Body position at work is largely determined by the type of work that varies with the body. Each work position has a different effect (Tarwaka et al., 2004). The results of the research have been obtained Chi-square test results with a p value of 0.466 (p value> 0.05), which means there is no relationship between work attitude and work fatigue in the Convection Business Tailors in Makassar City in 2019. A total of 13 respondents (81, 3%) with an ergonomic attitude still experiencing work fatigue, this shows that with an ergonomic working attitude still experiencing fatigue, this is because sewing is a job done with a static work attitude, which is sitting in front of a sewing machine for about eight hours, it very risky to cause health complaints, lack of relaxation or stretching muscles while working. Static muscle work has a higher energy consumption, increased pulse rate and requires a longer rest period (Atiqoh et al., 2014).

The results of research conducted by Umyati (2009) on tailor workers in the informal business sector in the Cipondoh Ketapang area of Tangerang, respondents who have high-risk work postures are mostly tired, namely as many as 10 respondents (71.4%) while respondents with work postures that have low risks are experienced fatigue of 31 respondents (50.0%). Based on the Chi-square statistical test results obtained p value = 0.146 (p value> 0.05) which means it does not have a significant relationship between work attitude and fatigue (Umyati, 2009).

The results of this study differ from studies conducted by Odi et al., (2018) on tailors in Solor Kupang village with a total sample of 34 people, as many as 16 or 47.1% of tailors with a high level of work attitude risk and as many as 2 or 5.9% of tailors with a degree of attitude risk low work. The results of the analysis using the Chi-square test obtained p value <0.05, with p value = 0.011 which means there is a relationship between work attitude and work fatigue caused by the length of time sitting workers who sew ≥8 hours / day will cause burnout and fatigue, awkward posture and monotonous (repetitive) work can cause neck, back, shoulder, leg and hand pain complaints (Odi et al., 2018).

CONCLUSION

From the results, a view is than derived that there is a relationship between age, nutritional status, and work period with work fatigue in Convection business tailors in Makassar City in

2019, while workload and work attitude do not have a relationship with work fatigue in the Convection business tailor in Makassar City in 2019. Suggestions from this study are the convection management is advised to arrange regular working hours, workers are advised to stretch bodies such as shaking his head, turning his hands, turning his upper body and straightening his legs between work approximately 5 minutes every 2 hours to avoid static work positions so that blood circulation remains smooth to all members of the body and further research is needed for further research related factors that affect work fatigue in sewing workers by taking into account psychological factors of workers and work space management.

REFERENCES

Budiman, A., Husaini, H., & Arifin, S. (2017). Hubungan antara Umur dan Indeks Beban Kerja dengan Kelelahan pada Pekerja di PT. Karias Tabing Kencana. *Jurnal Berkala Kesehatan, 1*(2), 121-129.

Gaol, M. J. L., Camelia, A., & Rahmiwati, A. (2018). Analisis Faktor Risiko Kelelahan Kerja Pada Karyawan Bagian Produksi Pt. Arwana Anugrah Keramik, Tbk. *Jurnal Ilmu Kesehatan Masyarakat*, *9*(1).

Tarwaka, Bakri, S. H. & Sudiajeng, L. (2004). *Ergonomi untuk Keselamatan, Kesehatan Kerja dan Produktivitas*, Universitas Islam Batik Surakarta. UNIBA PRESS.

International Labour Organization. (2003). *Encyclopedia of Occupational Health and Safety*. Geneva.

Frely, A. N., Kawatu, P. A., & Maddusa, S. S. (2017). Hubungan Antara Umur Masa Kerja Dan Lama Kerja Dengan Kelelahan Kerja Pada Pengemudi Truk Tangki Di Terminal Bahan Bakar Minyak (BBM) PT Pertamina Bitung. *Media Kesehatan, 9*(3).

Zuhriyah, F. (2010). *Hubungan Antara Kesesakan dengan Kelelahan Akibat Kerja pada Karyawan Bagian Penjahitan Perusahaan Konveksi PT. Mondrian Klaten Jawa Tengah*. Thesis, Semarang: Universitas Diponegoro.

Ridwan, M. (2017). *Penerapan Metode Economic Order Quantity (EOQ) pada Persediaan Bahan Baku Kain untuk Meminimalkan Biaya Persediaan pada CV. Haqqy Production*. Thesis, Bandung: Universitas Pasundan.

Atiqoh, J., Wahyuni, I., & Lestantyo, D. (2014). Faktor-Faktor yang berhubungan dengan kelelahan kerja pada pekerja konveksi bagian penjahitan di CV. Aneka Garment Gunungpati Semarang. *Jurnal Kesehatan Masyarakat (e-Journal), 2*(2), 119-126.

Irma. Mr, Russeng, S. S. & Wahyuni, A. (2014). *Faktor yang Berhubungan dengan Kelelahan Kerja pada Unit Produksi Paving Block CV. Sumber Galian Kecamatan Biringkanaya Kota Makassar*. Unhas Repository publication, Makassar: Universitas Hasanuddin.

Makassar Industry and Trade Office. (2018). Data Jumlah Industri Konveksi. Makassar: 10. Makassar Industry and Trade Office.

Jumiati. (2016). *Faktor yang Berhubungan dengan Kelelahan Kerja pada Pekerja di Sawmill Tubeyana Wood Kecamatan Belawa Kabupaten Wajo*. Thesis, Makassar: Universitas Hasanuddin.

Malonda, A. A., Kawatu, P. A. T. & Malonda, N. S. H. (2015). *Hubungan Antara Umur, Waktu Kerja dan Status Gizi Dengan Kelelahan Kerja pada Tenaga Kerja di Bagian Produksi PT. Sari Usaha Mandiri Bitung*. Thesis, Manado: Fakultas Kesehatan Masyarakat USRM.

Pasira', D. (2016). *Faktor yang Berhubungan dengan Kelelahan Kerja pada Pekerja Pabrik Tahu di Kecamatan Mamajang Kota Makassar*. Thesis, Makassar: Universitas Hasanuddin.

Permatasari, A., & Munandar, S. (2017). Faktor yang Berhubungan dengan Kelelahan Kerja pada Karyawan di Matahari Department Store Cabang Lippo Plaza Kendari Tahun 2016. *Jurnal Ilmiah Mahasiswa Kesehatan Masyarakat, 2*(5).

Salasa, N., Kolibu, F. K., & Punuh, M. I. (2017). Hubungan Antara Umur, Masa Kerja dan Status Gizi Dengan Kelelahan Kerja Pada Pekerja di Bagian Loining PT. *Sinar Pure Foods Internasional Bitung. Media Kesehatan, 9*(3).

Maurits, L. S. K. (2010). Selintas Tentang Kelelahan Kerja. Yogyakarta: Penerbit Amara Books.

Pramitasari, R. M. (2016). Pengaruh Masa Kerja dan Shift Kerja terhadap Kelelahan Kerja pada Perawat Inap di Rumah Sakit PKU Muhammadiyah Surakarta. Thesis, Surakarta: Universitas Muhammadiyah Surakarta.

Alimudin, N. I., Josephus, J., & Akili, R. H. (2016). Hubungan Antara Stres Kerja Dan Masa Kerja Dengan Kelelahan Kerja Pada Tukang Jahit Di Kompleks Gedung President Pasar 45 Kota Manado. *Ikmas, 1*(7).

Yasnani, Y., Patala, W. L., & Ardiansyah, R. T. (2019). Faktor Faktor Yang Berhubungan Dengan Kelelahan Kerja Pada Pekerja Penjahit Konveksi Di Kota Kendari Tahun 2016. *Preventif Journal, 2*(1).

Purba, S. I. A. (2018). *Hubungan Beban Kerja dengan Kelelahan Kerja pada Perawat di Rumah Sakit Vita Insani Pematangsiantar*. Thesis, Medan: Universitas Sumatera Utara.

Umyati. (2009). *Faktor-faktor yang Berhubungan dengan Kelelahan Kerja pada Pekerja Penjahit Sektor Usaha Informal di Wilayah Ketapang Cipondoh Tangerang*. Thesis, Tangerang: Universitas Islam Negeri Syarif Hidayatullah.

Odi, K. D., Purimahua, S. L., & Ruliati, L. P. (2018). Hubungan Sikap Kerja, Pencahayaan Dan Suhu Terhadap Kelelahan Kerja Dan Kelelahan Mata Pada Penjahit Di Kampung Solor Kupang 2017. *Ikesma, 14*(1), 65-76.