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**The Effect of Work Shifts on Work Stress on Employees of Textile
Industry Weaving**

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ABSTRACT

A noisy work environment that exceeds the Threshold Limit (NAV) has a risk of work stress. Employees of the weaving division at PT "S" Sukoharjo Regency, Central Java, work according to shift work. Every day employees work in different shifts with 1 day off per week. This study aims to determine whether work shifts affect work stress on employees in the weaving section by comparing the work stress scores of employees from the three groups based on work shifts: morning, afternoon, and evening. This type of research is observational with a cross-sectional approach. The sample in this study was 125 employees consisting of rice, day and night shifts. Work stress data was assessed using a job stress questionnaire covering psychological, physical, and behavioral indicators of employees. The three groups of work stress data were analyzed using the one-way Anova test. The average work stresses score of morning shift employees: is 120,72; standby shift: is 119.50; night shift 119.67. The results of the Anova test obtained a probability value ($p = 0.191$), which means that there is no significant difference in the average work stress score of employees based on work shifts. There is no difference in the work stress of the weaving section employees based on work shifts because these employees show that they can adapt to the workplace. The average working period of employees is 8.5 years, which means that the weaving section employees have been working in the noisy section for a long time with a shift work system. So that employees always use hearing protection equipment during work to reduce exposure to high-intensity sounds

Keywords: work stress, weaving, work shift

BACKGROUND

The work environment can be interpreted as everything that is around the worker that can affect him in carrying out the tasks given. (Tarwaka. 2017). In general, the work environment is divided into two parts, namely the physical and non-physical work environment. The physical work environment is all physical conditions found around the workplace that can affect workers directly or indirectly. Physical environmental conditions are things that can affect the health of workers for example lighting, noise, vibration, and hot air in Pratiwi, Wahyuningtyas (2016)

Characteristics in the working environment in the textile weaving department have hazards in the form of high-intensity sound and dust from cotton thread fibers, both of which come from the weaving process. The sound intensity in the weaving section is generally high, exceeding a predetermined threshold value. Various research results on the intensity of sound in the

weaving room produced from the weaving process generally exceed 100 dBA. Noise (air vibrations) in the workplace environment comes from the weaving machine propagating through the air medium and is then captured by the sense of hearing. Sound energy can stimulate the five senses or vibrate the eardrum and other ear organs. Continuous noise exposure is responded to as physiological stress or physical stress. While noise as a disturbing sound (annoyance) will be responded to as psychological stress (Hartono, 2010). Through the sensory nervous system, sound energy is transmitted to the pituitary which is located at the base of the brain as an alarm. Nerves send signals to the adrenal glands to release adrenaline and cortisol, which are often used as indicators of stress. Cortisol increases blood sugar, mainly used by the brain (thinking / regulating), increasing the supply of material for body cells, the immune system, reproduction, growth, and stimulating several other body glands for metabolic processes. While adrenaline increases heart rate and increases blood pressure and increases energy supply (Guyton, 2014). Continuous exposure to high-intensity noise can cause prolonged stress or chronic stress. Several research results related to noise in the workplace with stress on employees as conducted by Budiyanto (2010) Exposure to sound with an intensity exceeding NAV for a long time has the potential to cause work stress for employees. Job stress is a form of employee response, both physically and mentally to changes in the environment that are felt to be disturbing or result in him being threatened (Anoraga, 2009). According to Griffin (2010), work stress is a tension that is often experienced by employees which can affect work situations and concentration in completing work. Noise exposure in the weaving work environment is exposure to high-intensity noise and it is unavoidable for the employees of the weaving department. Noise in the workplace is a source of stress from the physical environment that can cause physiological changes in employees. Noise can affect hearing (auditory effects) and not hearing (non-auditory effects). Hearing effects (auditory effects) include communication disorders, hearing loss threshold, permanent and non-permanent hearing loss. Employees who work near weaving machines are at risk of hearing loss (Malu, 2011). Communication disorders cause disruption of work, errors, especially for new employees, and hazards to the safety and health of workers, thereby reducing work performance or quality and reducing work productivity. Non-auditory effects can be in the form of stress, annoyance, immune system disorders, sleep disturbances, decreased performance, and cardiovascular diseases including abnormalities in the electrocardiogram, disorders of the heart, and fast pulse (Sheela, 2000). Noise can cause physiological disturbances such as increased blood pressure and heart rate (Dyah, 2008). an increase in basal metabolism, and constriction of small blood vessels, especially in the legs, can cause pallor, and sensory disturbances (Gayathri et al, 2012).

Meanwhile, according to Budiyanto (2010), noise can cause stress to employees. Stress in the long term with a high enough intensity can cause individuals to suffer from fatigue, both physically and mentally.

Noise as a source of physical stressors besides being able to cause physiological changes, and psychological changes, can also cause behavioral changes. Behavior change can be constructive or destructive. Constructive behavior helps a person in solving problems or conflicts. Constructive change will be a challenge for someone who is more accomplished, and more enthusiastic to do something. While destructive is a change in a direction that harms oneself and others.

Shift work is a system established by the company to increase productivity maximally for 24 hours. The Occupational Safety and Health Branch (2008) explains that optimizing arrangements for shift work can help reduce the health effects that may be experienced by employees. Shift work involves various patterns and work schedules where the arrangement must take into account several factors such as the duration of the shift or the length of

working hours per shift, the number of team or group workers, and the hours of work rest per shift. Shift work that cannot be managed properly can affect the quality of sleep of employees and may cause health problems or affect the social life of employees (Hasibuan, 2012). The system of working with alternating work shifts (morning shift, afternoon shift, and night shift) will provide a different time atmosphere for each night. Variations in changing times require employees to adapt to working hours. Changing the working time that is different every day with the same hazard at work, can it cause different stress for each employee.

RESEARCH METHODS

This type of research is a research with an analytical observational method with a cross-sectional approach. The subjects of this study were employees of the weaving division in the textile industry of PT "S" Sukoharjo Regency, Central Java, to be assessed for work stress based on the morning shift, afternoon shift, and night shift. The research sample was part of all employees in the weaving section which was taken using proportional simple random sampling. Job stress includes physiological, psychological, and behavioral changes using a job stress questionnaire. Work stress scores from the morning shift, afternoon shift, and night shift groups were analyzed using the ANOVA test with the help of SPSS. To prove the hypothesis that there is an effect of work shifts on work stress, we will analyze the difference in average work stress scores based on work shifts.

RESULTS AND DISCUSSION

1. Results

a. Employee Characteristics

Table 1: Employee Characteristics of PT "S" Weaving Section
Sukoharjo Central Java Indonesia

No	Variable	Category	frequency	%
1	Education	Elementary	11	8,8
		Medium	114	91,2
		Height	0	0
2	Gander	Male	25	20
		Female	100	80
3	Marital Status	Married	120	96
		Unmarried	1	0,8
		Widow	4	3,2
		Widower	0	0
4	Working period	➤ 10 years	111	88,8
		6-10 years	6	4,8
		< 6 years	8	6,4

Based on table 1, shows that most of the employees (91.2%) have secondary education, while those with basic education are 8.8%. Most of the employees in the weaving division are female by 80% while the other 20% are male. The marital status of most employees (88.8%) is married. Some employees (88.8%) have a tenure of > 10 years and 6.4% have a tenure of fewer than 6 years.

b. Work stress score

Table 2. Distribution of Work Stress Scores for employees of PT "S" Sukoharjo, Central Java, Indonesia based on work shifts

No	Work shifts	Mean	SD	Min	Max
1	Morning	120,72	6,764	105	151
2	Afternoon	119,50	10,299	129	158
3	Evening	119,68	7,646	106	152

Based on table 2, shows that the average work stress score for the weaving section employees has an average work stress score of 120.

c. Statistical analysis results

The results of statistical tests to determine differences in employee work stress based on work shifts using the one-way Anova test obtained a probability value (p) = 0.464, which means that there is no difference in the work stress scores of employees in the weaving section P "S" between those who work the morning shift, afternoon shift, and night shift

2. Discussion

The physical environment in the workplace that has high-intensity noise has a risk of causing stress to employees. The results of this study show that the work stress of employees who work at PT "S" Sukoharjo Regency, Central Java, Indonesia, is proven not to show any difference in work stress scores based on work shifts because most of the employees' working period (88.8%) is more than 10 years. The working period shows the length of time employees get exposed to noise from the weaving machine. Employees who have been exposed to them for a long time have been able to adapt to noise in the workplace even though they all have experience working with the same division of work shifts. The form of employee adaptation in dealing with a noisy physical environment at work is in the form of using hearing protection equipment when employees work. In addition to the working period, which is mostly exposed to noise in the workplace for more than 10 years, the cause of the absence of differences in employee work stress based on work shifts is that employees have mostly the same characteristics, namely the gender of the employees is mostly (80%) female employees. Most (96%) employees are married. In terms of education, most (91.2%) employees have the same level of education, namely secondary education

CONCLUSION AND RECOMMENDATION

Employees who work at PT "S" do not have differences in work stress even though they work on different work shifts. The research recommended that employees always use personal protective equipment properly and correctly at work.

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