

## THE RELATIONSHIP BETWEEN COMPLIANCE WITH THE USE OF APD AND NOISE INTENSITY WITH HEARING COMPLAINTS IN PRODUCTION WORKERS AT PT. BEURATA SUBUR PERSADA

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### *Abstract*

Hearing loss is one of the health problems that risks reducing worker productivity. Someone who suffers from hearing loss, not only can be seen from several things such as difficulty speaking, but also can be seen from the physiological condition of the worker himself. Hearing loss can be caused by several factors including noise intensity, compliance with the use of personal protective equipment. The purpose of this study was to determine the effect of SOP compliance in the use of PPE and noise intensity on hearing complaints in production workers at PT Beurata Subur Persada. This type of research is quantitative with a cross sectional design. The research location was at PT Beurata Subur Persada. The population in the study were all workers in the production department as many as 96 workers and a sample of 49 workers. Data were analyzed with the chi square statistical test. Results: based on the results of the analysis that has been done, there is a relationship between noise intensity with subjective hearing complaints (pvalue = 0.027) and there is a relationship between SOP compliance with subjective hearing complaints (pvalue = 0.000). It is recommended that companies establish hearing conservation programs and audiometric tests for workers to prevent deafness and complaints of hearing loss due to noise exposure.

**Keywords:** *Compliance, PPE, Noise, Hearing Impairment*

### INTRODUCTION

The National Institute on Deafness and Other Communication Disorders (NIDCD) in 2010 stated that the incidence of noise-induced hearing loss is due to exposure to high-intensity sound at 85dB for a long period of time. About 16% of hearing loss worldwide is occupational noise-induced hearing loss, varying from 7-21% in each sub-region. The effect of noise exposure is higher in developing countries. NIDCD estimates that about 15% or 26 million American citizens aged 20-69 years experience high frequency hearing loss due to exposure to loud or noisy sounds in the workplace and entertainment (Marisdayana, 2017). Every worker who is exposed to noise has a risk of hearing loss. The higher the noise intensity and the longer the worker is exposed to noise, the higher the risk of hearing loss. In the manufacturing and mining sectors, 40% of workers are exposed to high noise levels for more than half of their working time, for the construction sector it is 35% and other sectors such as agriculture, transportation, and communication are 20% (Kahari, 2019).

Based on the Law of the Republic of Indonesia Number 13 of 2003 concerning Manpower, Article 86 confirms that every worker / laborer has the right to obtain protection for occupational safety and occupational health in order to realize maximum work productivity, health and occupational health efforts are organized. One of the efforts to control the safety and health of workers in a noisy environment is through the use of personal protective equipment, namely the use of ear protection equipment. PT Berata Subur Persada is located in Babah Dua Village, Tadu Raya District, Nagan Raya Regency, Aceh Province. This company is one of the companies engaged in palm oil processing. In supporting the production process to meet the demands of increasing productivity and reducing labor, both in the plantation sector and in the industrial sector, the palm oil mill has implemented a mechanization system in the tools and machinery of the palm fruit processing industry which has the potential to cause potential hazards in processing palm fruit.

In the daily activities of workers at PT Beurata Subur Persada in direct contact with machines that produce noise, but there are still some workers who do not apply the SOP for the use

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of PPE completely, this can be one of the risk factors for hearing complaints in workers. The results of a preliminary survey conducted on 10 workers in the production section of PT Beurata Subur Persada, found that 70% of workers complained of ringing in the ears while working, and had difficulty communicating, and 80% of workers felt disturbed working in a noisy place. Based on observations obtained in production activities at PT. Beurata Subur Persada, there are still workers who do not carry out the SOP for the use of PPE, namely 7 out of 10 workers observed not using ear protection equipment (APT) while working.

### METHOD

This type of research is quantitative using a cross sectional design. The research location is at PT Beurata Subur Persada. Data collection was done with a questionnaire sheet and measurements using a sound level meter. This research was analyzed by univariate and bivariate. Bivariate analysis using chi square test with 95% confidence level and  $\alpha$  0.05.

### RESULTS AND DISCUSSION

#### A. Univariate Analysis

**Tabel 1. Frequency Distribution of Hearing Complaints, Noise Intensity and SOP Compliance in Workers**

Variabel	(f)	(%)
<b>Hearing Complaints</b>		
Severe Complaints	32	65,3
Minor Complaints	17	34,7
<b>Noise Intensity</b>		
No Threshold Value	43	87,8
Appropriate Threshold Value	6	12,2
<b>SOP Compliance</b>		
Not Compliant	28	57,1
Compliant	21	42,9

Based on the table above, it is found that out of 49 workers, more than half experience severe hearing complaints (65.3%). Most of the workers (87.8%) experienced noise intensity that did not match the NAB and was above the noise threshold value of > 85 dB. more than half of the workers were not compliant (57.1%) with the existing SOPs at PT Beurata Subur Persada.

#### B. Bivariate Analysis

**Table 2. Relationship between SOP Compliance and Subjective Hearing Complaints in Production Workers of PT. Beurata Subur Persada**

SOP Compliance	Severe Complaints		Minor Complaints		P Value
	f	%	f	%	
Not Compliant	27	96,4	1	3,6	0,000
Compliant	5	23,8	16	76,2	
Total	32	65,3	17	34,7	

Based on the results of the analysis, it is known that workers who experience severe hearing complaints are more in non-compliant SOP compliance, namely (96.4%) compared to compliant SOP compliance, namely (23.8%). The statistical test results obtained a P value of 0, 000 or <0.05. So it can be concluded that there is a relationship between SOP compliance and subjective hearing complaints.

**Table 3. Relationship between Noise Intensity and Subjective Hearing Complaints in Production Workers of PT. Beurata Subur Persada**

Noise Intensity	Severe Complaints		Minor Complaints		P Value
	f	%	f	%	
No Threshold Value	31	72,1	12	27,9	0,027
Appropriate Threshold Value	1	16,7	5	83,3	
Total	32	65,3	17	34,7	

Based on the results of the analysis, it is known that workers who experience severe hearing complaints are more at noise intensity that does not match the NAB, namely (72, 1%) compared to noise intensity that matches the NAB, namely (16.7%). Statistical test results obtained P value of 0, 027 or <0.05. So it can be concluded that there is a relationship between noise intensity and subjective hearing complaints.

### Contents of Discussion Results

Noise induced hearing loss is hearing loss caused by exposure to noise that is loud enough for a long time and is usually caused by workplace noise. (Marisdayana, 2016). Noise-induced hearing loss is cochlear nerve deafness in the inner ear and generally affects both ears. In general, noise is unwanted sound. Audiologically, noise is a mixture of pure tone sounds of various frequencies. Noise whose intensity is 85 decibels or more can cause damage to hearing receptors, especially frequencies of 3000-6000 Hz and the heaviest 4000 Hz (Okniyoza, 2017). The results of the study are in line with those conducted by Rahmi Okniyoza, where 55.4% of workers experience severe hearing complaints. Hearing complaints felt by respondents, namely 50.8% of respondents felt buzzing ears after work (Okniyoza, 2017).

The high intensity of noise received by production workers is caused by the sound of production machinery in the workplace. In the context of health protection for workers, noise is defined as all unwanted sounds originating from production process equipment or work equipment that at a certain level can cause hearing loss (Decree of the Minister of Manpower of the Republic of Indonesia Number: Kep-51/Men/1999). To overcome hearing loss due to high noise intensity, supervision by the company is needed for workers, especially in the use of APT which functions to reduce and reduce intensity. Workers who use APT properly can be interpreted that these workers are aware of the importance of complying with SOPs at work for their own good, but other data shows that there are still workers who do not comply with SOPs at work, one of which is using APT, this can be caused by the sound when communicating with fellow workers and a sense of discomfort when wearing APT.

In addition to being useful to protect the wearer from the danger of sparks or hot metals, this tool also works to reduce the intensity of sound entering the ear (Nugroho, 2017). Compliance with using APT (ear plugs) is very important in creating occupational health and safety. There are several factors that allow workers to be non-compliant in using personal protective equipment including the lack of knowledge of workers about potential hazards in the workplace. (Fitriyani, 2016). To prevent worker deafness due to exposure to high noise, noise control efforts can be made in the workplace. Some measures to control and prevent the occurrence of high noise levels that cause hearing loss can be done by intensive machine maintenance. Machine maintenance can be done by replacing old or hardened machine components, applying lubricant to rubbing machine parts and tightening loose machine parts. Furthermore, prevention can be done by measuring noise levels regularly and periodically. As well as supervising the use of APT strictly in work areas that are declared to have noise values exceeding the threshold. In addition to supervision, procurement or replacement of APT that is no longer suitable for use also needs to be considered properly. For

workers who have been identified with hearing loss, they should be transferred to a noisy work area. Moving workers to a noisy area can prevent more severe hearing loss.

## CLOSING

### Conclusion

Based on the results of research, testing, and analysis studied regarding factors related to subjective hearing complaints in production workers of PT Beurata Subur Persada in 2024, it can be concluded that 65.3% of production workers experienced severe hearing complaints, 87.8% of production workers were exposed to noise not in accordance with the NAB, the highest measurement result was 95.7 dB, most of the 57.1% of production workers did not comply with SOP compliance and there was a relationship between noise intensity and SOP compliance with subjective hearing complaints in production workers of PT Beurata Subur Persada.

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