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Factors related to occupational accidents at an informal metal industry

Factores relacionados con los accidentes laborales en una industria informal del metal

P.A ALAYYANNUR

ORCID: <https://orcid.org/0000-0001-8701-6547>

putri.a.a@fkm.unair.ac.id

Universitas Airlangga, Surabaya, Indonesia

D. NASIRUL HAQI

ORCID: <https://orcid.org/0000-0002-6291-3230>

haqidani92@gmail.com

Universitas Airlangga, Surabaya, Indonesia

M. ERNAWATI

ORCID: <https://orcid.org/0000-0001-7897-1075>

meirina@fkm.unair.ac.id

Universitas Airlangga, Surabaya, Indonesia

ABSTRACT

A large number of employees in the informal sector located in Waru, Sidoarjo, especially in the metal industry sector, has become a target for the Occupational Health Post of Waru. The OHS management system requires a commitment to all elements so that the OHS aspects can be well implemented. The objective of this research was to analyze the relationship between the lack of control and occupational accidents in the metal industry. It was analytical research with a cross-sectional study approach. 75 employees in the informal metal industry were taken as the respondents in this research.

Keywords: Metal, Occupational Accident, OHS Management, Waru.

RESUMEN

Un gran número de empleados en el sector informal ubicado en Waru, Sidoarjo, especialmente en el sector de la industria del metal, se ha convertido en un objetivo para el Puesto de Salud Ocupacional de Waru. El sistema de gestión de OHS requiere un compromiso con todos los elementos para que los aspectos de OHS puedan implementarse bien. El objetivo de esta investigación fue analizar la relación entre la falta de control y el accidente laboral en la industria del metal. Fue una investigación analítica con un enfoque de estudio transversal. 75 empleados en la industria informal del metal fueron tomados como los encuestados en esta investigación.

Palabras clave: accidente laboral, gestión de OHS, metal, Waru.

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1. INTRODUCTION

Commitment is an intention or a strong desire to perform an action that becomes a strong motivation to achieve a specific goal (Bird: 2003). The existence of intense desire and willingness will be reflected in behavior and action related to OHS matter. Commitment is not only verbally expressed or written on a paper and then being instructed to it to all people in an organization, but it should also be realized in the form of daily actions and behaviors in the OHS implementation by each work unit (Åkerstedt et al.: 2002).

An occupational accident in employees in the informal sector in Waru, Sidoarjo has become a concern for some parties. The research shows it by Wignjosoebroto et al. (2006) in one of the metal industries in Waru, Sidoarjo. In that research, it was found that there were two occupational accidents in 2002, three occupational accidents in 2003, and 2 occupational accidents in 2004. All of those occupational accidents happened in employees who work on a lathe machine in that industry (Oliver et al.: 2002).

The result of the measurement of hazardous substances performed by the community service team of the faculty of Public Health of Unair in 2018 in one of the production plants in the metal industry in Waru, Sidoarjo, showed that noise, the availability of lead (Pb), cadmium (Cd), and total dust in that place were not the problems. Based on the activity of hazard mapping, it was found that there were five hazards in that place, including physical, chemical, biological, ergonomic, and psychological hazards (Villanueva & Garcia: 2011).

OHS in the informal sector is attempted to be presented in the activity of the Occupational Health Post. The primary activity of the Occupational Health Post is an essential health service package for employees, especially in the informal sector. This organization is established to improve occupational health so that it can improve work productivity. This Occupational Health Post is built due to a large number of employees who experience occupational disease and occupational accidents that can decrease work productivity (Depkes: 2004). This Occupational Health Post is expected to be the commitment of the government in guaranteeing occupational health and safety in employees who work in the informal sector (Chau et al.: 2004).

The implementation of OHS in an organization depends on each individual in the organization. If the OHS management system is good and completed with documentation and work procedure, but each individual does not comply with it, the OHS will not be successfully operated (Cheng et al.: 2010). Therefore, the OHS management system requires the role and the responsibility of all individuals in implementing the OHS program in their environment. They have to understand the applicable OHS stipulations and requirements in the workplace, such as the use of safety equipment, source of hazards in the workplace, required safety equipment, safe work procedure, and they have to perform all of those things (Ramli: 2010).

The OHS management system requires the availability of commitment in all elements so that the OHS aspects can be implemented in all functions in an organization, including all activities, functions, and departments. The objective of this research was to analyze the relationship between lack of control and occupational accident in the metal industry (Suzuki et al.: 2005).

2. METHODS

This research used a quantitative approach method. Based on the aspects of the data collection, this research was an observational study because it only observed the variables without providing them with treatment. The design of this research was a cross-sectional study because the data was collected in a certain period when investigating the variables in the field (Clarke & T Robertson: 2005).

The data was collected by distributing questionnaires. It was distributed to all respondents, and the respondents were interviewed according to the guideline in the questionnaire. In this stage, the respondents did not need to write down their responses on the questionnaire because the interviewer did that for them (Halvani et al.: 2009). The observed variables in this research were OHS policy, OHS training, the provision of PPE, individual commitment, work behavior, and occupational accident (Suzuki et al.: 2004).

The population of this research was all employees in one of the Occupational Health Posts in the work area of Public Health Community in Waru, Sidoarjo Regency. The sample in this research was limited only for 75 people taken by using the snowball sampling technique. The researcher used the key informant that led the researcher to the persons who could answer the issue that was being investigated. It was done because the data related to the occupational accident did not exist. Therefore, the total target as the population of this research was unclear (Blank et al.: 1996).

The data collection was done by distributing questionnaires and conducting an interview. The questionnaire used here was a questionnaire with closed questions based on a Likert scale (Nakata et al.: 2006). The total number of questions in the questionnaire was 92 items. The questions in the questionnaire were divided into several independent variables that were investigated.

The independent variables in this research were the factor of lack of control taken from the theory of the ILCI Loss Causation Model, which consisted of OHS policy, OHS training, and the provision of PPE. Besides, the independent variable of the fundamental cause was the individual commitment, and the independent variable from the immediate cause was work behavior. Meanwhile, the dependent variable in this research was the occupational accident. The significance test between the two variables was conducted using Pearson's correlation test (Picard et al.: 2008).

The research was conducted under the approval of the ethics committee, Faculty of Public Health, Universitas Airlangga (Reference No: 131/EA/KEPK/2019).

3. RESULTS

The Relationship between *Lack of Control* and Individual Commitment:

		Individual Commitment	Conclusion
OHS Policy	<i>Pearson Correlation</i>	0.335*	Significant
	<i>Sig. (2-tailed)</i>	0.003	
OHS Training	<i>Pearson Correlation</i>	0.225	Non-significant
	<i>Sig. (2-tailed)</i>	0.052	
The Provision of PPE	<i>Pearson Correlation</i>	0.210	Non-significant
	<i>Sig. (2-tailed)</i>	0.070	

Table 1. The Analysis of the Relationship between *Lack of Control* and Individual Commitment at an Informal Metal Industry, Sidoarjo in 2019

Lack of Control in this research consisted of three variables, namely OHS policy, OHS training, and the provision of PPE. From those three variables, the only variable that had a deep and positive relationship with individual commitment was OHS policy because the value was 0.003, which was less than 0.05 with a value correlation coefficient of 0.335.

The Relationship between Individual Commitment and Work Behavior:

		Work Behavior	Conclusion
Individual	<i>Pearson Correlation</i>	0.060	Non-significant
Commitment	<i>Sig. (2-tailed)</i>	0.606	

Table 2. The Analysis of the Relationship between Work Behavior and Individual Commitment at an Informal Metal Industry, Sidoarjo in 2019

An individual commitment was included in the human factor that was the fundamental cause according to the theory of the Loss Causation Model. In this research, the individual commitment had no significant relationship with work behavior because the p-value was 0.060, which was greater than 0.05.

The Relationship between Work Behavior and Occupational Accident:

		Occupational Accident	Conclusion
Work Behavior	<i>Pearson Correlation</i>	0.007	Non-significant
	<i>Sig. (2-tailed)</i>	0.950	

Table 3. The Analysis of the Relationship between Work Behavior and Occupational Accident at an Informal Metal Industry, Sidoarjo in 2019

Work behavior is related to two things, namely employee behavior in using PPE and their compliance with the applicable SOP. Work behavior had no relationship with the occupational accident because the p-value was higher than 0.05. Therefore, there was no relationship between one variable and another variable.

4. CONCLUSION

The Relationship between *Lack of Control* and Individual Commitment:

Lack of Control consisted of OHS policy, OHS training, and the provision of PPE. OHS policy is the real form of management commitment towards OHS presented in written statements (Ramli: 2013). The majority of the respondents stated that the OHS policy in this company was good. In this research, the OHS policy had a relationship with individual commitment. The better OHS policy indicates the better individual commitment of the employees.

Individual commitment can be developed since the organization provides something valuable that is not replaceable. Besides, the psychological contract (a trust from each party that there will be feedback) between the members and the organization is also the factor (Umam: 2012). OHS training is a valuable thing given by an organization to the employees, and it cannot be reciprocated by the employees. The correlation analysis stated that there was no relationship between OHS training and individual commitment. The respondents' assessment of OHS training showed that it was satisfactory. Adequate OHS training resulted in a satisfactory level of individual commitment.

The correlation analysis stated that there was no relationship between the provision of PPE and individual commitment. Good PPE facility did not determine whether the individual commitment was good or bad. The

majority of the respondents stated that the provision of PPE and individual commitment were categorized as satisfactory. The members of an organization with high individual commitment will continuously become the members of the organization because they feel that they should stay in that organization (Umam: 2012). The respondents evaluated that even though the company provided less number of PPE, it did not affect the level of individual commitment.

The Relationship between Individual Commitment and Work Behavior:

Based on the correlation analysis, there was no relationship between individual commitment and work behavior so that better individual commitment did not influence the safety of work behavior. It happens because the respondents with good individual commitment performed unsafe work behavior.

The individual with passive individual commitment will let the condition do not work well (Umam :2012). The employees who have such individual commitment in that condition might let unsafe work behavior to be performed by either them or the people around them.

The Relationship between Work Behavior and Occupational Accident:

Work behavior in this research consisted of compliance with the use of PPE and SOP. The respondents with safe work behavior also experienced an occupational accident. According to Zumrotum (2012), by implementing SOP, the organization can ensure whether the operation works according to the available procedure or not, and if SOP has been conducted well, the organization will receive many benefits from the SOP implementation.

An occupational accident occurs in a work process or something related to it. The occupational accident is a series of an accident caused by some factors or potential hazards that correlated to each other (Tarwaka: 2012). In this research, the occupational accident is related to an accident that occurs when performing the job or when commuting to the workplace.

Based on the results of this research, the only variable that has a relationship with individual commitment is OHS policy. OHS training and the provision of PPE have no relationship with work behavior, and work behavior has no relationship with an occupational accident.

BIBLIOGRAPHY

ÅKERSTEDT, T, FREDLUND, P, GILLBERG, M, & JANSSON, B (2002). "A prospective study of fatal occupational accidents—relationship to sleeping difficulties and occupational factors", in: *Journal of sleep research*, 11(1), pp.69-71.

BLANK, VL, DIDERICHSEN, F, & ANDERSSON, R (1996). "Technological development and occupational accidents as a conditional relationship: A study of over eighty years in the Swedish Mining industry", in: *Journal of Safety Research*, 27(3), pp.137-146.

CHAU, N, GAUCHARD, GC, SIEGFRIED, C, BENAMGHAR, L, DANGELZER, JL, FRANÇAIS, M, JACQUIN, R, SOURDOT, A, PERRIN, PP, & MUR, JM (2004). "Relationships of job, age, and life conditions with the causes and severity of occupational injuries in construction workers", in: *International archives of occupational and environmental health*, 77(1), pp.60-66.

CHENG, CW, LEU, SS, LIN, CC, & FAN, C (2010). "Characteristic analysis of occupational accidents at small construction enterprises", in: *Safety Science*, 48(6), pp.698-707.

CLARKE, S, & T ROBERTSON, I (2005). "A meta-analytic review of the Big Five personality factors and accident involvement in occupational and non-occupational settings", in: *Journal of Occupational and Organizational Psychology*, 78(3), pp.355-376.

DEPKES, RI (2004). National Health System. Jakarta: Depkes.

HALVANI, GH, ZARE, M, & MIRMOHAMMADI, SJ (2009). "The relation between shift work, sleepiness, fatigue and accidents in Iranian Industrial Mining Group workers", in: *Industrial Health*, 47(2), pp.134-138.

NAKATA, A, IKEDA, T, TAKAHASHI, M, HARATANI, T, HOJOU, M, FUJIOKA, Y, SWANSON, NG, & ARAKI, S (2006). "Impact of psychosocial job stress on non-fatal occupational injuries in small and medium-sized manufacturing enterprises", in: *American journal of industrial medicine*, 49(8), pp.658-669.

OLIVER, A, CHEYNE, A, TOMAS, JM, & COX, S (2002). "The effects of organizational and individual factors on occupational accidents", in: *Journal of Occupational and Organizational psychology*, 75(4), pp.473-488.

PICARD, M, GIRARD, SA, SIMARD, M, LAROCQUE, R, LEROUX, T, & TURCOTTE, F (2008). "Association of work-related accidents with noise exposure in the workplace and noise-induced hearing loss based on the experience of some 240,000 person-years of observation", in: *Accident Analysis & Prevention*, 40(5), pp.1644-1652.

RAMLI, S (2010). Management System of Occupational Safety and Health OHSAS 18001. Jakarta: PT. Dian Rakyat.

RAMLI, S (2013) Smart Safety, Guidelines for Effective Implementation of SMK3. Jakarta: PT. Dian Rakyat.

SUZUKI, K, OHIDA, T, KANEITA, Y, YOKOYAMA, E, & UCHIYAMA, M (2005). "Daytime sleepiness, sleep habits and occupational accidents among hospital nurses", in: *Journal of Advanced Nursing*, 52(4), pp.445-453.

SUZUKI, K, OHIDA, T, KANEITA, Y, YOKOYAMA, E, MIYAKE, T, HARANO, S, YAGI, Y, IBUKA, E, KANEKO, A, TSUTSUI, T, & UCHIYAMA, M (2004). "Mental health status, shift work, and occupational accidents among hospital nurses in Japan", in: *Journal of occupational health*, 46(6), pp.448-454.

TARWAKA (2012). Basics of Work Safety and Accident Prevention at Work. Surakarta: Harapan Press.

UMAM, K (2012). Organizational Behaviour. Bandung: CV Pustaka Setia

VILLANUEVA, V, & GARCIA, AM (2011). "Individual and occupational factors related to fatal occupational injuries: A case-control study", in: *Accident Analysis & Prevention*, 43(1), pp.123-127.

WIGNJOSOE BROTO, S, RAHMAN, A, & PRAMONO, D (2006). Perancangan Lingkungan Kerja dan Alat Bantu yang Ergonomis untuk Mengurangi Masalah Back Injury dan Tingkat Kecelakaan Kerja pada Departemen Mesin Bubut. Jurnal Institut Teknologi Sepuluh Nopember (ITS). Surabaya, 8(7), p.10.

ZUMROTUM (2012). Overview of Factors Causing the Incident of Trans Jakarta Bus Corridor Corridor III (Kalideres-Harmoni) in 2012. *Bachelor Thesis*. FKIK UIN Syarif Hidayatullah.

BIODATA

PUTRI AYUNI ALAYYANNUR: Putri Ayuni Alayyannuris is a lecturer at the Department of Occupational Safety and Health, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia. She got her B.Sc. from UNAIR in 2012 and her master's degree from the Faculty of Public Health Universitas Airlangga in 2016. Her research interests are the risk analysis of accidents, industrial hygiene, and occupational health.

DANI NASIRUL HAQI: Dani Nasirul Haqi is an assistant professor in the Safety and Health Department, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia. He got his B.Sc. and Ph.D. in public health from Airlangga University in 2010 and 2013, respectively. His research interests are risk management, industrial hygiene, occupational health, and work safety.

MEIRINA ERNAWATI: Meirina Ernawati is a lecturer in the Safety and Health Department, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia. She got her B.Sc. and M.Sc. from Airlangga University and Gadjah Mada University in 1986 and 1998, respectively. She got an award titled "SATYALANCANA KARYA SATYA X TAHUN" in 2006. Her research interests are occupational safety and health.

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