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Identification and recognition of hazards in the work environment in welding workshops

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ABSTRACT

The workplace is a place in which there are workers or the environment that is often entered by many workers who also intersect with sources of danger. The high number of work accident cases shows that there is still a lack of awareness of workers and companies in handling work safety issues. The welding workshop is one of the workplaces in the informal industry that needs attention in the implementation Occupational Safety and Health (OSH) in the workplace. Therefore, it is necessary to identify and recognize hazards in the work environment carried out by the welding workshop. The implementation of identification and recognition of hazards in the work environment was carried out on the welding workshop Jl. Jemur Ngawingan, the city of Surabaya. Activities have the main target is workers. The number of workers who became respondents was a total of 8 people. The implementation method carried out is identification and socialization related to the risk of hazards in the workplace, using poster media. The understanding given to workers is Knowledge of Occupational Safety and Health (OSH), Knowledge of the risk of hazards in the workplace, and the Importance of Using PPE (Personal Protective Equipment). There is an increase in workers' knowledge based on the results of the pretest and post test conducted. So that most workers understand the importance of implementing OSH, hazards in the work environment, to the importance of using appropriate PPE (personal protective equipment). Furthermore, it is necessary to do a deeper understanding of OSH, especially in occupational health. Workers need to know more about what hazard factors exist in the environment they work in and how to overcome them.

INTRODUCTION

The workplace is a place in which there are workers who work or the environment that is often entered by workers for business affairs and the existence of sources of danger. So it can be ascertained that in the workplace there must be potential hazards that threaten the safety and health of workers. Work safety is one of the factors that must be done during work. Hazards that exist in the workplace can affect the safety, health, and productivity of the workforce (Sunaryo & Sahri, 2019).

According to (Kurniawidjaja, 2015), the rate of work accidents in Indonesia is still relatively high and tends to increase every year, even data from international and national institutions shows work accidents are still high. Improving occupational safety and occupational health needs to be pursued to protect human capital assets and support the nation's competitive advantage. The high number of work accidents can have a huge impact, both direct and indirect losses, both for workers and for the company.

Every job in both formal and informal workers has risks that can cause health problems. In general, informal sector workers lack awareness and knowledge about hazards in their work environment (Ramdan, 2012). These include dangerous working conditions, health problems such as skeletal muscle disorders, eye disorders and skin health disorders. Informal workers are exposed to potential occupational hazards with a tendency that no business entity or owner is directly responsible for their occupational health and safety, especially those related to various diseases and disorders due to occupational health and accidents (Suma'mur, 2014).

Occupational Health and Safety (OHS) means protection for workers who are valuable assets for organizations and companies from the occurrence of occupational diseases to work accidents, The statement has been regulated in the Law of the Republic of Indonesia No. 13 of 2003 concerning Manpower. This regulation is needed in order to create a workplace that is guaranteed to be safe, healthy and comfortable for workers in carrying out their duties and can prevent the occurrence of occupational diseases to work accidents (Tarwaka, 2009).

The higher the informal workers, the higher the hazards and impacts on health and safety issues on workers. Occupational Safety and Health (OSH) in the informal industry there are many problems, such as in terms of safety and health. Many safety problems occur such as the occurrence of major or small accidents at work, then health problems at work as an example is work fatigue (Dainur, 2012). The welding workshop is one of the non-formal industries that makes various kinds of objects such as machines, iron fences, etc. Based on this background, it is necessary to understand the identification of hazards in the workplace to their prevention, so that this community service activity is carried out. The welding workshop industry that will be a partner in community service is located on Jl. Jemur ngawingan the city of Surabaya.

METHOD

The implementation of hazard identification and recognition in the work environment was conducted at the Sumber Makmur welding workshop located on Jl. Jemur Ngawingan, Surabaya. The primary target of this activity was the workers. The sampling technique employed in this study was total population sampling, involving all members of the population. The total population consisted of 8 individuals, including 7 workers and 1 workshop owner. This community service activity was carried out through several stages, namely target group surveys, preparation of facilities and infrastructure, implementation of activities, and evaluation.

During this activity, hazard risks in the welding process in the workshop were also identified. This identification became one of the focuses of problem findings and improvement recommendations. The implementation method involved identifying and recognizing workplace hazards, with poster media utilized as an educational tool. The activity was supported by students from the D-IV Occupational Safety and Health study program. Pretest and posttest assessments were conducted before and after the intervention to measure workers' levels of knowledge, insight, and awareness regarding workplace hazard risks.

RESULT AND DISCUSSION

The results achieved from the implementation of hazard identification and recognition activities in the workplace of the welding workshop industry are as follows:

1.1. Respondent Overview

Overview of the participants of the socialization of Occupational Health in the Furniture Informal Sector Industry, all of which are male, along with the distribution of participant spark plugs based on age

Table 1. Distribution of participants by age

No.	Age	Sum	Percentage
2.	30 - 39 years	2	25
3.	40 - 49 years	4	50
4.	50 - 59 years	2	25
Total		8	100

Source: Primary Data 2022

Based on Table 1. Above, information was obtained that the participants of this community service activity had the characteristics of the majority aged 40 years to 49 years with a total of 4 people (50%), all participants were male.

1.2. Identify Potential Hazards

Table 2. Analysis of potential hazards at the stage before welding

Stages of Work	Potential Hazards	Control
Preparing the material to be welded	Scratched sharp material	Using gloves and <i>safety shoes</i>

Cleaning the material to be welded	Material dust inhaled workers	Wearing a mask
Connecting mass pliers	Pinched hands	Using gloves
Activating the welding machine and setting the ampere	Electrocuted	Using gloves and <i>safety shoes</i>

Source: Primary Data 2022

Based on table 2 of the Potential Hazards Analysis at the Stage Before Welding, it can be seen that the most severe work accident is electric shock which can cause death.

Table 3. Analysis of potential hazards at the welding stage

Stages of Work	Potential Hazards	Control
Welding	Burning to the body of workers Asap combustion inhalation of workers Exposed to welding rays	Use face protection or welding glasses, use gloves and <i>safety shoes</i>
Cooling the material	Hands touched by hot metal	Using gloves
Moving welded material	Hands scratched by sharp material Bumped or crushed by material	Using gloves and <i>safety shoes</i>

Source: Primary Data 2022

Based on table 3, the potential hazards that often occur to workers according to the results of observation are known, namely at the stage of welding work. It is known that most work accidents are exposed to welding rays that can cause injury to the eye.

Table 4. Analysis of Potential Material Grinding Hazards

Stages of Work	Potential Hazards	Control
Moving material to the place of burrs	Scratched and crushed material	Using gloves and <i>safety shoes</i>
Turning on the burrs	Exposed to electric shock Grinding turns hit workers	Using gloves and mounting a shield on grindstone

Grinding (smoothing) Material	Hit by fire fragments due to grinding Hands hit by grinding wheels Exposed to materials released by workers	Using hand harun, mounting shields on grinding wheels, grinding goggles and tightly trimming material during grinding
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Source: Primary Data 2022

Based on Table 4, the stages of work in the material smoothing process have a high risk because they are related to electricity and sharp grinding wheels.

1.3. Overview of K3 Knowledge

Table 5. Distribution of Workers' Knowledge Regarding OHS

Pre Test				Post Test			
Know		Do not know		Know		Do not know	
N	%	N	%	N	%	N	%
2	25	6	75	7	87	1	13

Source: Primary Data 2022

Based on Table 5. It can be stated that the pre-test results of respondents who know about occupational health and safety are 2 respondents (25%). Meanwhile, based on the results of the post test about respondents who knew about occupational health and safety as many as 7 respondents (87%). Based on the results obtained during community service activities, it can be seen that socialization activities are successful because they have increased knowledge about occupational health and safety in workers. There was an increase of 87% in the post-test results which previously only 25% of respondents knew about occupational health and safety challenges.

1.4. Overview of knowledge about the risk of workplace hazards

Table 6. Distribution of knowledge about the risk of hazards in the workplace

Pre Test				Post Test			
Know		Do not know		Know		Do not know	
N	%	N	%	N	%	N	%
0	0	7	100	6	75	2	25

Source: Primary Data 2022

Based on Table 6. it can be stated that the results of the pre-test on Risk of Hazards in the Workplace are known that all respondents do not know about the risk of hazards in the workplace. Meanwhile, based on the results of the post test about respondents who knew about the Risk of Workplace Hazards as many as 6 respondents (75%). Based on the results obtained during community service activities, it can be seen that socialization activities are successful, because they have increased workers' knowledge about the Risk of Workplace Hazards in workers. There was an increase of 75% in the post-test results that previously all respondents did not know about the Risk of Hazards in the Workplace.

1.5. Overview of the Importance of Using PPE (Personal Protective Equipment)

Table 7. Distribution of the Importance of PPE Use

Pre Test				Post Test			
Know		Do not know		Know		Do not know	
N	%	N	%	N	%	N	%
4	50	4	50	8	100	0	0

Source: Primary Data 2022

Based on Table 7. It can be stated that the pre-test results of respondents who know about the importance of PPE use are 4 respondents (50%). Meanwhile, based on the results of the post test about respondents who knew about the importance of using PPE as many as 8 respondents (100%). Based on the results obtained during community service activities, it can be seen that the socialization activities were successful, because they have increased workers' knowledge about the importance of using PPE on workers. There was a 100% increase in post-test results, previously only 50% of respondents knew about the importance of PPE use.



Picture. 1

CONCLUSION

Occupational Safety and Health (OHS) has an important function for protection for workers who are to avoid work accidents and occupational diseases. Occupational diseases often occur in workers who do not pay attention to the application of OHS in the workplace. In the world of occupational safety health or OHS, making the work area safe and comfortable can minimize the occurrence of unwanted things in the work area, this is considered important to support the results obtained by the company (Farida et al., 2024). Potential hazards often exist in the workplace that cause losses to the company, the environment, and workers, the right way to overcome is to provide PPE according to the needs of workers. (Wijaya, 2022). This community service is carried out at a welding workshop in the Surabaya area, precisely on Jl. Drying Ngawingan. This activity raised the theme of Identification and Introduction of Hazards in the Work Environment in the Welding Workshop. The number of respondents in this community service activity was 8 workers. Before socialization, most workers still did not understand the importance of implementing OHS, the risk of hazards found in the workplace to the importance of using personal protective equipment. After identification and socialization, almost all workers understand the importance of implementing OHS in the workplace to the importance of using appropriate personal protective equipment. The next suggestion in this community service is that workers should pay more attention to work safety by using complete personal protective equipment and understanding the regulations made by the owner to avoid work accidents. Owners and workers should be more concerned about the importance of OHS and the results of hazard identification can be used as a reference in preventing accidents, and require workers to use PPE (Personal Protective Equipment).

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REFERENCE

- Dainur. (2012). *Public Health Sciences "Subject Matter."* Widya Medika Publisher.
- Farida, E., Sholihah, Q., Andarini, S., & Natsir, M. H. (2024). Comparative Analysis of the PUPR Regulations No. 10 of 2021 and No. 21 of 2019 on the SMK in East Java. *Nongye Jixie Xuebao/Transactions of the Chinese Society of Agricultural Machinery*, 55(6).
- Kurniawidjaja, M. (2015). *Theory and Application of Occupational Health*. University of Indonesia

Publishers.

- Ramdan, I. M. (2012). Memperbaiki kondisi kesehatan dan keselamatan kerja sektor informal melalui program corporate social responsibility perusahaan. *Jurnal Manajemen Pelayanan Kesehatan*, 15(1), 2–6.
- Suma'mur. (2014). *Corporate Higen and Occupational Health (HIPERKES)*. CV Sagung Seto.
- Sunaryo, M., & Sahri, M. (2019). Evaluasi Iklim Kerja di Bagian Produksi pada Industri Keramik di Wilayah Gresik. *ARTERI : Jurnal Ilmu Kesehatan*, 1, 29–35. <https://doi.org/10.37148/arteri.v1i1.14>
- Tarwaka. (2009). *Occupational Safety and Health*. Harapan Press.
- Wijaya, I. (2022). Analisa Kecelakaan Kerja Pada Di PT Cipta Unggul Karya Abadi dengan Metode Job Safety Analysis (JSA) dengan Pendekatan Failure Mode And Effect Analysis (FMEA). *Jurnal Syntax Admiration*, 3(2), 258–277. <https://doi.org/10.46799/jsa.v3i2.399>