

## The Relationship between Compliance Use PPE Eyes With Metal Welding Chips in Eyes Welders in The Welding Workshop in Boja

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### ABSTRACT

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Accident that occurred in the workplace there are several interrelated causes can be a death cause, disable and work-related disease (WRD). Welders in welding workshop have some several eye injuries incident. One of them was metal welding chips. The use of PPE eyes is very importance for welders. Infact still many welders who neglect in this health. This study aim to determined the relationship between compliance use PPE eyes with metal welding chips on the eyes welders in the welding workshop in Boja village. This research used survey analytic research with cross sectional approach. The population in this study was all welders in welding workshop in Boja village. The sampling technique with total sampling that accorded to the inclusion criteria. The sample was 34 respondents. The instrument that was used were questionnaires and checklist sheets. The results indicated that the welders that compliance using PPE eyes as much as 44,1%. The welders rarely exposed by metal welding chips as much as 47,1%. The data analyzed with Chi-Square test there was significant relationship between compliance PPE eyes with metal welding chips on the eyes welders in the welding workshop in Boja village. {p value = 0,001; PR= 3,947 (1,4-11,2)} Based on result of the study, the welding workshop holders are being recommended to provide PPE eyes and supervise the use of PPE eyes for the welders.

## INTRODUCTION

In Indonesia, many micro and developing industries, among which are growing are welding workshops. Welding workshops are part of the informal economy which is at high risk for accidents due to bolster up the welding work. The welding workshops use heavy equipment that has a high hazard and environment that is less conducive to the health of workers such as exposure to heavy dust from burning iron, exposure to heat, danger of explosion, and the danger of electric shock (1).

Welding workers to experienced of incidents of eye injury , which is about 1390 cases of eye injury caused by exposure to welding sparks and resulted in photokeratitis. Based on BLS data, it was stated that around two million workers were related to welding and around 365,000 suffered eye injuries and resulted in the loss of 1400 working days (2).

Based on previous research conducted by Junita Anggraini in 2015 showed that there was a significant relationship between the use of eye protection equipment for the incidence of trauma *et causa corpus alienum* iron flakes in the eyes of iron grinding workers in Lamongan district. In line with research conducted by B. Fiebai and EA Awoyesuku which states that there is a relationship between the use of PPE eye and the incidence of injury in the welding industry in Port Harcourt, Nigeria (3).

Obedience is obedience or disobedience to orders, rules and discipline (4). Changes in individual attitudes and behavior starts from the stage of compliance, identification, then, internalization (5). So if someone's compliance is lacking, it will have a negative impact on himself and the environment around him, if someone's compliance is good, it will be good for himself and the environment (6).

According to the hierarchy of hazard control, there are five hazard controls, namely elimination, substitution, *engineering* , administrative and personal protective equipment. Elimination is by eliminating work hazards, substitution by replacing materials or work processes with safer, *engineering* by making protectors on machine parts that endanger workers, administratively by *job rotation* and finally Personal Protective Equipment (7).

The use of Personal Protective Equipment (PPE) is the final step in controlling hazards. Eye and face protection for welding workers using welding goggles, welding masks, helmets, ear protectors and respiratory protection (8). For protective clothing workers wear *safety boots* and protective clothing made of *wool* because it is not flammable (9).

Based on the initial survey conducted in the L&N welding workshop through interviews, work accidents that often occur in workers in the welding workshop are exposed to grams of iron in the eye, with a record of 4 workers in the previous week exposed to a small amount of iron gram splashes such as dust or grains such as sand even more. Workers experience complaints of eye pain, pain, and blurred vision (decreased visual acuity). Eye protection equipment has been provided by the party in the form of welding glasses, but the workers are not willing to use it because they feel uncomfortable, and ignore the impact of work that produces iron dust (grams). From the results of the survey, it is necessary to conduct research on the relationship of compliance with the use of PPE eye with the incidence of iron gram splashes in the eyes of workers at Boja Village . This research purposed to knowing the relationship between compliance with the use of personal protective equipment (PPE) of the eye with the incidence of iron gram splashes in the eyes of workers in the Boja Village welding workshop.

## **METHODE**

This research used analytic survey with cros -sectional approach. The population in this study were all workers in the Boja Village welding workshop, Boja District. Sampling technique with *total sampling* with inclusion criteria. The research sample amounted to 34 respondents. The instruments used were questionnaires and checklist sheets.

## RESULTS AND DISCUSSION

**Table 1. Distribution of Respondents Education Levels**

No	Education	Frequency	Percentage
1	No School	6	17,6%
2	Graduated from Elementary School	4	11,8%
3	Graduated from middle School	7	20,6%
4	Graduation from high school	17	50%
Total		34	100%

**Table 2. Age Distribution of Respondents**

Variabel	Mean	Median	Mode	Std. deviation	Min-max
Age	34,44	34,00	29 <sup>a</sup>	8,102	22-51
Years of Service	5,0760	3,0000	0,50	5,31647	1 month – 19 years

**Table 3. Distribution of Compliance with the Use of PPE Eyes in The Respondents**

No	Compliance with Eye Protection PPE	Frequency	Percentage
1	Not Obey	19	55,9%
2	Obedient	15	44,1%
Total		34	100%

**Table 4. Distribution of Metal Welding Chips in The Respondents**

No	Level of Occurrence Affected by Metal Welding Chips	Frequency	P
1	Often	18	52,9%
2	Rarely	16	47,1%
Total		34	100%

**Table 5. The Analyze Results of Compliance Analyze in the Use of PPE Eyes with the occurrence of metal welding chips in the Respondents**

Compliance with the use of PPE Eyes	Splash of metal welding chips		Total	P Value	PR (95% CI)
	often	Rarely			
Not Obey	15 (78,9%)	4 (21,1%)	19 (100%)	0,002	3,947 (1,4-11,2) 95% CI
Obedient	3 (20%)	12 (80%)	15 (100%)		
Total	18 (52,9%)	16 (47,1%)	34 (100%)		

Based on the above table, known that most of the respondents education is graduating high school / vocational many as 17 people (50%), junior high school graduation of 7 people (20.6%), primary school of 4 people (11.8%), and who did not go to school as many as 6 people (17.6%). The average respondent worked for 5 years. The fastest time to work for respondents is 1 month (new worker) and a maximum of 19 years.

The longer the workforce works, the more experience the workforce has. conversely, the shorter the work period, the less experience gained. Respondents who have worked for more than 5 years have techniques to prevent the occurrence of iron gram splashes. Based on the results of interviews using a questionnaire, obtained results from 34 respondents who adhered to the use of eye APD as many as 15 people (44.1%), while respondents who were not compliant in the use of eye PPE were 19 people (55.9%). Most non-compliant respondents stated that the use of eye PPE disrupts activities when working because it is uncomfortable to use. A person's lack of compliance will adversely affect himself and the environment around him, if someone's compliance is good it will be good for himself and the environment. (Suprianto dan Evendi, 2015) In the respondents often splash grams of iron in the eyes of as many as 18 people (52.9%), while respondents who rarely splash grams of iron in the eyes of many as 16 people (47.1%).

From the results of the *chi-square* statistical test showed that 78.9% of respondents who did not comply were often exposed to iron gram splashes, whereas 80% of respondents who were obedient were not exposed to iron gram splashes. In the eye PPE usage variable, the p value obtained in *Continuity - Correction* is 0.002 (<0.05) so that H<sub>0</sub> is rejected. This means that there is a relationship between compliance with the use of PPE eye with the incidence of iron gram splashes in the eyes of workers in the Boja Village welding workshop. The results of the analysis obtained a PR value of 3.947 (1.4 - 11.2), meaning that workers who are not compliant in using eye PPE are at risk 3,947 times more likely to experience iron gram splashes.

The results of this study are in line with research conducted by Juanita Anggraini which shows a significant relationship between the use of eye protection equipment with complaints of trauma *et causa corpus alienum* iron flakes. While research from Priyanto also shows the same results, there is a very strong relationship between the level of

discipline of the use of eye protection equipment and eye health problems in welding *home industry* workers in Kartasura.

## CONCLUSION

Based on research on the relationship between compliance with the use of eye protection equipment with the occurrence of iron gram splashes in the eyes of workers in the Boja Village welding workshop, Boja District, the following conclusions are obtained:

1. Workers in Boja Village welding workshop who comply with the use of eye protection equipment as many as 15 people (44.1%) of 34 workers in welding workshops.
2. Workers who are often exposed to iron gram splashes are 18 people (52.9%) out of 34 workers in welding workshops. work which is often exposed by iron gram splashes is during grinding process with 22 workers (64.7%) exposed to the exposed workers.
3. There is a relationship between compliance with the use of eye protection equipment with the incidence of iron gram splashes in the eyes of workers, with a p value of 0.001 ( $<0.05$ ).

## SUGGESTION

1. The employees of the Boja Village office set up a UKK POS / association for workers in the informal industrial sector, especially in the welding workshop. By opening a network to the Puskesmas medical personnel so they can educate workers and monitor the health of their workers.
2. The owner of the welding shop is obliged to facilitate its workers by using eye protection equipment and supervise workers. If you do not use PPE, you will be penalized.
3. Eye protection devices that are not comfortable to be modified, but still pay attention to their safety functions and choose glasses (*spectacles*) that fit the function and are comfortable to wear.

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