

## OCCUPATIONAL ACCIDENT IN INDUSTRY: THE CAUSES, TYPE AND IMPACT ON WORKERS IN SIDOARJO, INDONESIA

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**Abstract**— The number of occupational accidents are increased each years<sup>1</sup>. An Occupational accident is causing the workers dies or they suffers a permanent disability. Occupational accident not only injure workers, live and damage workers human capital, but also increase the social costs of a country<sup>2</sup>. The purpose of this study was to analyze the relationship between personal characteristics with occupational accident ( location, type and impact). This research was a cross sectional study, with 364 sample of workers. This research was carried out in workers who experienced accident in Sidoarjo, East Java, Indonesia. This data analysis using chi-square to find out the relationship with a significance level ( $\alpha$ ) of 0.05. There was a relationship between the impact of occupational accident with gender ( $p=0.007$ ) dan age ( $p=0.002$ ). There was a relationship between the location of occupational accident with gender ( $p=0.000$ ) and age ( $p=0.000$ ). There was a relationship between the type of occupational accident with gender ( $p=0.000$ ) and age ( $p=0.000$ ). The conclusion was personal characteristic had a significant relationship with an occupational accident.

**Keywords**—occupatinal accident, causes, type, impact, workers

### I. INTRODUCTION

The potential risk of danger is always present in every job in the form of a occupational accident<sup>1</sup>. The magnitude of the potential for occupational accidents depends on various things, including the type of production, the technology used, the materials used, the spatial layout and the building environment and the quality of management. An Occupational accidents can result from unsafe actions (included personal characteristic, behaviour) and unsafe conditions (included equipment, machinery, tools etc). Unsafe action were the main causes of occupational accidents. Based on that background, the purpose of this study was to analyze the relationship between personal characteristic with occupational accident ( location, type and impact).

### II. METHOD

This study used a cross sectional study. A sample of these studies were 364 workers who experience occupational accident in Sidoarjo, East Java, Indonesia. The independent variables in this study was personal characteristics of injured workers, while the dependent variables was occupational accident ( location, type and impact). The data collected by using questionnaire instruments and interview guidelines. This data analysis using chi-square to find out the relationship.

### III RESULTS

#### 3.1 Characteristics of injured workers

The most (72.3%) of injured workers was male and 27.7% injured workers was female. The age of injured workers in arange between 23-55 years old. The most common educational background level was high school.

*Table 1. Distribution of Frequency of Age of Injured Workers in Sidoarjo Regency, Indonesia*

Age	Frequency (N)	Percentage (%)
< 30 years	105	28,8
31-40 years	98	26,9
41-50 years	122	33,5
> 50 years	39	10,7
Total	364	100

#### 3.2 Occupational Accidents Experienced Respondents

The most (77.5%) of injured workers experienced occupational accidents while working in the company. 12.6% of injured workers had accident on the road when leaving or returning home.

*Table 2. Distribution of Frequency of Occupational Accidents location of Injured Workers in Sidoarjo Regency, Indonesia*

Location	Frequency (N)	Percentage (%)
in the Workplace	282	77.5
On the road	46	12.6
Outside Workplace	36	9.9
Total	364	

Most (41.32%) of injured workers experienced cuts by machine or tools because lack of protective equipment and negligence.

*Table 3. Distribution of Frequency type of Occupational Accidents experienced by injured workers in Sidoarjo Regency, Indonesia*

Occupationan Accident	Frequency (N)	Percentage (%)
Fall from height	3	0.8
Trips	13	3.6
Cuts	150	41.2
Slips	44	12.0
Contusions	41	11.3
Exposure with harmful substances	41	11.3
Object dropped	24	6.6
Others	48	13.2
Total	364	100

#### 3.3 The Impact of occupational accident on injured worker

The most (94.5%) of injured workers recovered without disability after an occupational accident. Nevertheless, there were 3.8% of workers who got disabilities after occupational accidents.

**Table 4. Distribution of Frequency of Occupational Accident Impacts in Sidoarjo Regency, Indonesia**

<b>Occupational Accident Impact</b>	<b>Frequency (N)</b>	<b>Percentage (%)</b>
Recovered	344	94.5
Disabilities	14	3.8
Died	6	1.6
Total	364	100

### **3.4 The Relationship Between Personal Characteristic With Occupational Accident (location, type and impact).**

The statistical test using chi-square test showed that There was a relationship between the location of the occupational accident with gender ( $p = 0.000$ ) and age ( $p = 0.000$ ). There was a relationship between the type of occupational accident with gender ( $p = 0.000$ ) and age ( $p = 0.000$ ). there was a relationship between the impact of occupational accidents with gender ( $p = 0.007$ ) and age ( $p = 0.002$ ).

## **IV. DISCUSSION**

Occupational accidents caused a great impact on lost workdays, disability and productivity<sup>3</sup>. This study indicated that finger and hand were the parts of the body that most affected. The fingers were the vital organs most often used in work. This condition greatly affected the ability to work for workers. Agents causing occupational accident were materials, tools, machine and work environment. The most of injured workers who experienced accident was in arange between 41-50 years old. High quantities of them had high risk occupations in industries. That condition related to occupational dan safety system, such as fatigue, poor lighting and unprotected workers exposed to hazardous material and machine in factory. there were 3.8% of workers who got disabilities after occupational accidents. Disability impact on work , life social and ability for independent<sup>4</sup>. Disability is also limiting participation in the world of work , increasing financial burdens<sup>5</sup>.

The first and most important step after an accident was for the worker to obtain prompt quality medical care. Workers compensation pays for necessary medical care after injuries or illness, temporary disability benefit, permanent partial and total disability for any permanent impairment from the injury and vocational rehabilitation<sup>6</sup>. Based on the Government Regulation of the Republic of Indonesia Number 44 of 2015, workers who experience accidents will get an accident compensation<sup>7</sup>. Social security is very vital for labor force<sup>8</sup>.

There was relationship between gender and age with the impact of workplace accidents. The relatively young male participant recovered more quickly with a faster rehabilitation process than older participants. There is a relationship between gender and age with the location of the accident. Younger male participants were more likely to have accidents at work. There was a relationship between gender and age with the type of occupational accident. More male workers had cuts by a working device, pinched by a machine. More female workers had accidents of slipping and on the road.

Laws and regulations had to introduce for worker<sup>9</sup>. Occupational accident prevention programs were justified<sup>3</sup>. The supervisor and workers have to had a responsibility to prevent occurrence of accident in work place.

Workplace accidents can be prevented with the following 12 things<sup>10</sup>:

1. Regulations, namely mandatory provisions regarding working conditions in general, planning, construction, maintenance and voting, supervision, testing and workings of

- industrial equipment, tasks of employers and workers training, medical supervision, first aid and health checks.
2. Standardized, semi-official or unofficial standards for example safety requirements in accordance with industrial equipment and personal protective equipment (PPE) instructions.
  3. Supervision so that the provisions of the Act are obeyed.
  4. Research is technical, such as about hazardous materials, safety fencing, PPE testing, prevention of explosion of other equipment.
  5. Medical research, mainly includes physiological and pathological effects, environmental factors and technology and conditions that cause accidents.
  6. Psychological research, including research on patterns - patterns of liability that result in accidents.
  7. Research statistically, to determine the types of accidents that occur.
  8. Education.
  9. Exercises.
  10. Excitement
  11. Insurance, which is a financial incentive to improve accident prevention.
  12. Safety business at the company level.

## V. CONCLUSION

There was a relationship between gender and age with the location of occupational accident. There was a relationship between gender and age with the type of accident. There was a relationship between Gender and age with the impact of occupational accident. The supervisors and workers have a responsibility to prevent the occurrence of accident in work place.

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