Conference Paper

Determinant Factors Related to Near Miss Accident in Ship Inspector Officers

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Abstract

Work accident or occupational accident is an unplanned and uncontrolled event resulting from an action or reaction of an object, material, person, or radiation resulting in injury or other possibilities. The purpose of this study was to identify the determinant factors related to near miss accident in ship inspectors. This study was conducted at Port X by using analytic observational approach where both observed variables were observed at the same time. This study was a cross-sectional study, in which the sampling used incidental sampling based on a coincidental reality to measure determinant factors within the one-month range of measurements. Samples were taken with total sampling. Methods of data collection included interviews, field observations and document studies. The results of this study indicated that all male ship inspector workers were 56 percent and those who had a history of near miss were as many as eight individuals (32%), and those who never experienced near miss were as many as 17 individuals (68%). In addition, occupational health and safety knowledge and training was ever attended by 23 individuals (92%), while two individuals (8%) never attended. At the time of near miss, all respondents used PPE. The types of PPE used by all respondents who had near miss accident were safety shoes and safety helmet. In addition to PPE safety shoes and safety helmet, some respondents also used PPE in the form of masks, buoys, and gloves. In conclusion, the determinant factors of near miss accident in ship inspector officers in this study were respondent characteristics, knowledge of occupational health and safety, intention, and perception of occupational health and safety.

Keywords: occupational accidents, near miss, determinant factors

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1. Introduction

Work accident or occupational accident is an unplanned and uncontrolled event resulting from an action or reaction of an object, material, person, or radiation resulting in

injury or other possibility. Work accidents can harm human, company, and environment [1]. Industrial employment accidents in Indonesia in the last six years continue to increase. In 2006, there were 95,624 cases of occupational accidents (362 cases per day) and continued to increase. In 2012, cases of work accidents reached 103,074 cases (388 cases per day). Likewise, the value of insurance claims in 2006 amounted to Rp. 222 billion and became Rp. 585 billion in 2012 [2].

The International Labor Organization or ILO recorded a global work accidents of 337 million cases per year and 2.3 million of them died. The average number of accidents in Indonesia reaches 99,000 per year, 70 percent result in death and/or lifelong disability. Losses reached 4 percent of the total Gross Domestic Product (GDP of the nation) [3]. Research conducted by the National Safety Council (NSC) in Prasetyawati stated that 88 percent cause of work accident is unsafe action, 10 percent caused by unsafe condition, and 2 percent unknown cause.

73 percent of work accidents are caused by unsafe behavior and 24 percent are caused by unsuitable environments or equipment [4]. According to some studies, 85–90 percent of work accidents caused unsafe behavior.

Unsafe behaviors undertaken by workers include not using PPE completely and correctly, work not in accordance with SOP, smoking while working and working not as authorized. In this article we examine the determinant factors associated with near miss accident in ship inspector officers.

2. Methods

This study was an observational study with cross sectional approach. Samples were taken by total sampling method to find out the near miss accident which is often experienced by ship inspecting workers. Instruments used in this study included data collection sheets to record general data of respondents, and questionnaire sheet for the potential danger that often occurs. Data collection was done in several methods, among others, by using in-depth interviews to obtain factors that affect the incidence of near miss accident among ship inspector officers. Data analysis was done descriptively. The results were analyzed using related theories, then presented in narrative form.

3. Results

From the results of the identification of respondents, the targeted respondents were the ship inspecting workers. Those respondents were ship inspector officers as many as 25 persons. Respondents were taken based on accidental sampling technique for 1 (one) month.

Table 1: Characteristics of ship inspector officers.

Variables	Categories	Total	Percentage (%)
Sex	Male	14	56
	Female	11	44
Age	21–30 years	9	36
	31–40 years	8	32
	41–50 years	6	24
	> 50 years	2	8
Working Period	< 6 years	10	40
	6–10 years	6	24
	> 10 years	9	36
Education	Vocational	10	40
	Undergraduate	9	36
	Master	6	24
Employment Status	Gov. employee	16	64
	Non-gov.	9	36
OHS Training	Attended	9	36
	Never Attended	16	64
Work accident	Once	0	0
	Never	25	100
Near miss experience	Once	8	32
	Never	17	68
Total		25	100

Table 1 shows that most respondents were male (56%), aged 21–30 years (36%), and had a working period of less than 6 years (40%). Most of the respondents graduated from vocational programs (40%) and were civil servants (64%). Whereas, the ship employees (64%) never received OHS training and only 9 (36%) respondents had received OHS training. The types of trainings followed by the respondents were General Occupational Safety Training, Sea SAR Training, Medical SAR Training, PPE

Training, Basic Sea Survival Training, Health and Safety Training for Health Facility I, and Occupational Health and Safety Training.

The characteristics of the ship inspector officers also indicate that all respondents never experienced work accident during ship inspection. However, as many as 8 persons (32%) had experienced near miss during the inspection of the ship. The types of near miss they have ever experienced were: almost falling on the floor of the ship, tripping over the rope, slip because of floor slippery the (presence of oil spills), vests/shirts stuck, and hit the wall and mast of the ship. At the time of near miss all respondents used PPE. PPE types used were safety shoes and safety helmet. Some of the respondents also used PPE in the form of masks, buoys, and gloves.

After the near miss, of the 8 respondents only one reported the near miss events to his superiors, while the other seven did not report. The superior's response was that the employee was requested to be more careful when conducting ship inspection. The reason for not reporting the near miss events was because the incident was fine, not too severe, no risk, and did not cause injury or fall. The act of not reporting the near miss accident caused the incident not to be recorded by the company's management.

Table 2: Frequency distribution of perception among ship inspector officers on OHS policy.

Variables	Categories	Total	Percentage (%)
Policy	Moderate	16	64
	Good	9	36
Sanction	Moderate	8	32
	Adequate	17	68
Total		25	100

Table 2 shows the mean of respondents 'perceptions of OSH policy was 37.76 ± 3.7 and the mean of respondents' perceptions about sanctions was 17.44 ± 3.33. Most respondents' perception of OHS policies was categorized as adequate (64%). The OHS policy was related to the use of PPE, PPE training, monitoring the use of PPE, and the implementation of reward and punishment system. Most perceptions of ship inspector officers on sanctions fell into good category (68%). The data were collected through in-depth interviews using questionnaires on respondents' knowledge.

Questionnaire data on OHS knowledge found that the minimum score of the respondents about OHS knowledge was 5, while the maximum score was 13. Mean score of OHS knowledge in the respondents was 9.32 ± 2.41. OHS knowledge category of the respondents is shown in Table 3.

Table 3: Frequency distribution of OHS knowledge in ship inspectors.

OHS knowledge	Total	Percentage (%)
Moderate	10	40
Adequate	15	60
Total	25	100

Frequency of OHS knowledge among ship inspection officers shows that most of them (60%) had knowledge on OHS related to ship inspection in good category.

Table 4 shows that most respondents with good knowledge were in female group (32%), age group 21–30 years (24%) and 31–40 years (24%), years of work < 6 years (28%), education level was undergraduate (24%), civil servant (36%), attended OHS training (32%), never experienced work accident (60%) and near miss (40%). The respondents with adequate knowledge were mostly in male group (28%), age group 21–30 years (12%) and 41–50 years (12%), years of work > 10 years (20%), vocational education (20%), civil servants (28%), never attended OHS training (36%), never experienced work accident (40%) and near miss (28%).

4. Discussion

Table 1 shows that most of the respondents were male. Sex is the difference between men and women biologically since a person was born. Men and women differ both physically and psychologically. Men have on average 50 percent more physical power than women. This physical difference causes men to be more suited to field work that requires a lot of power. Psychologically, men are more action-oriented and less talked, and pay less attention to something in detail, whereas women are on the contrary [5].

Ship inspection is a field work that requires a lot of energy to go up and down the ship, especially in carrying out off-shore ship inspection. In addition, the inspection work of the ship also requires the ability to see things in detail, such as performing document checks, ship sanitary inspections, and medicines inspection.

Several studies have shown that there are many differences between male and female workers in terms of work performance, motivation, leadership, specialization skills, and learning ability. Good job analysis is a comprehensive effort to prepare and ensure a job done by the right person according to his or her expertise. The right man on the right job.

Most respondents aged 21–40 years. According to the developmental psychology theory of workers, ages 21–40 years included in young adult age group [6]. Young

Table 4: Cross-tabulation between OHS knowledge and officers' characteristics.

No.	Variables	Knowledge				Total	Percentage (%)
		Moderate		Adequate			
		n	%	n	%		
1.	**Sex**						
	Male	7	28	7	28	14	56
	Female	3	12	8	32	11	44
2	**Age**						
	21–30 years	3	12	6	24	9	36
	31–40 years	2	8	6	24	8	32
	41–50 years	3	12	3	12	6	24
	'> 50 years	2	8	0	0	2	8
3	**Working Period**						
	'< 6 years	3	12	7	28	10	40
	6–10 years	2	8	4	16	6	24
	'> 10 years	5	20	4	16	9	36
4.	**Education**						
	Vocational	5	20	5	20	10	40
	Undergraduate	3	12	6	24	9	36
	Master	2	8	4	16	6	24
5.	**Employment Status**						
	Gov. Employee	7	28	9	36	16	64
	Non-gov. Employee	3	12	6	24	9	36
6.	**OHS Training**						
	Yes	1	4	8	32	9	36
	No	9	36	7	28	16	64
7.	**Work Accident**						
	Once	0	0	0	0	0	0
	Never	10	40	15	60	25	100
8.	**Near miss accident**						
	Once	3	12	5	20	8	32
	Never	7	28	10	40	17	68
Total						**25**	**100**

workers have strong physical characteristics, dynamic, and creative. However, younger workers also typically have psychological characteristics of quickly get bored, more

unstable emotion, careless, inexperienced, and less responsible. In contrast, old-age workers have declining physical conditions, tenacious, have greater responsibilities, more trustworthy, and more cautious [7].

All respondents never experienced work accident and most respondents never experienced near miss. The existence of work accident and/or near miss is one form of work experience. Work accident and/or near miss experiences, either by self or co-workers, will increase alertness or more careful attitude in work.

Event is one form of cues for a person to act. Other cues may be other people, or anything else that moves an individual to action [8]. Most respondents' perceptions of OHS policies were categorized as adequate and most respondents' perceptions of sanctions fell into good category.

The period of work is a person's length of time in work that is closely related to work experience. The period of work of most respondents included in the category < 6 years. The working period of < 6 years is a new term of employment. The longer the work period, the more workers experience and deprivation. Length of service will affect performance, both positive and negative [9]. Relatively longer working period will enhance experience and skills [10].

Long-term workers have more experience than new workers, so long-term workers can better understand the workplace environment. Workers who better understand the conditions of the work environment will better understand the risks or potential hazards that exist in the workplace so that workers will be more careful in the work. More experienced workers will know and understand the dangers that may arise from his work so that he will be more careful and more aware to protect themselves [11]. Most respondents never received OHS training.

Training is one of the work accident prevention efforts. Training for the workforce is one of the efforts to improve the knowledge about work safety. Increased knowledge of workers will improve understanding of the conditions and risks that exist in the workplace [12].

Table 4 shows that most ship inspectors had good category of knowledge. This study described the level of knowledge of the ship inspecting officer on, for example, safety behavior when conducting ship inspection, the type and function of Personal Protective Equipment (PPE), as well as the risks that may occur when inspecting the vessel.

The main function of knowledge is to explain something, predict something, and control something. The knowledge level of the ship inspector officers can be used to

describe the probability of occurrence of something based on a number of probabilistic cases, explaining the location of the safety behavior in occupational health and safety system, explaining or forecasting causal factors of an event related to health and workplace safety (e.g., occupational accidents and occupational diseases), and possible efforts to control and address occupational health and safety concerns for ship inspectors. Knowledge is one of internal factors that affect one's treatment. Knowledge becomes the basis for a person to make decisions and determine actions or behaviors [13].

5. Conclusion

Most of the respondents were male, included in young adult age group with new work period, had never received OHS training, never experienced near miss, and all respondents never experienced work accident. Most of ship inspector officers' knowledge were in good category. Determinant factors that influence the occurrence of near miss accident on ship inspector officers included respondents' characteristic, knowledge on OHS, intention and perception of OHS.

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