Relationship Between Safety Promotion and Perception of the Use of Personal Protective Equipment (PPE) on Workers at PT Aneka Gas Industri Region V East Java

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Relationship Between Safety Promotion and Perception of the Use of Personal Protective Equipment (PPE) on Workers at Pt Aneka Gas Industri Region V East Java

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Abstract

Context: The behavior of not using personal protective equipment (PPE) is an unsafe decision that can increase the number of work accidents and work-related illnesses in the industrial environment. One of the factors that can influence the behavior of using PPE is individuals' perception. Perception can be analyzed using a theory called as the Health Belief Model (HBM). Cues to action according to the safety promotion is one component of HBM, which is an external factor that can influence individual's perception. Hence, this study aims to analyze the relationship between safety promotion and worker's perception about the use of PPE.

This research is a quantitative descriptive study with a cross-sectional design. The samples were chosen based on the slovinformula and obtained a total sample of 87 operating unit workers of various departments at PT. Aneka Gas Industri Region V, East Java. The independent variable in this study is the effectiveness of Safety Promotion. While the dependent variable in this study is the perception of the use of PPE. The data was analyzed using the Chi-Square correlation test.

The results show that there is a relationship between the effectiveness of safety promotion and the perception of PPE (p = 0.013). This study concludes that there is a relationship between the effectiveness of safety promotion with the perception of the use of PPE.

Keywords: *Safety Promotion, Personal Protective Equipment (PPE), Health Belief Model (HBM).*

Introduction

The rapid development of industrial sector may be affected by increased potential hazards in the workplace. If industries do not controlled their application of good occupational safety and health, it will cause increase the number of work accidents and occupational diseases. Data from the International Labor Organization (ILO) in 2018 states that 2.78 million workers die each year due to workplace accidents and occupational diseases(1). Heinrich's research (1959) shows that 88% of work accidents are generally caused by unsafe behavior (2) One example of workers' unsafe behavior that has a high risk of work accidents and occupational diseases is non-compliance in the use of Personal Protective Equipment (PPE).

Non-compliance behavior using PPE can be influenced by several factors and one of them is workers' perception on the use of PPE during work. A research by Ristia (2017) revealed that perceived risk and knowledge influenced workers compliance in using PPE(3).One

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method for understanding workers perceptions is by analyzing it through the Health Belief Model (HBM) theory. There are four main types of perceptions within the HBM theory, namely the perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. In its development, the HBM model is expanded by adding a couple of variables, namely self-efficacy and cues to action[4].

According to Rosenstock (1966), cues to action was added to the HBM model based on the assumption that it would stimulate individual perceptions[5].Thus, programs in the workplace are capable of forming or changing worker's perceptions, especially in regard to information and messages related to the use of PPE, one of which is by implementing safety promotions. According to WHO (1998), Safety promotion is a process applied at a local, national and international level by individuals, communities, governments and others, including enterprises and non-government organizations, to maintain and develop safety[6].A research by Saragih *et al.* (2016) shows that most workers have positive perception about the use of PPE due to the exposure of safety talk carried out every morning before they start to work [7]

As one of the leading companies in the industrial gas processing sector in Indonesia, PT. Aneka Gas Industri Region V still encounter some issues related to the use of PPE. No studies have analyzed the workers' perceptions about using PPE and the association with safety promotion that has been taken by the company. Therefore, this study aims to analyze the relationship between the company's effort to perform safety promotion with the workers' perception of the use of PPE at PT. Aneka Gas Industri Region V based onthe theory of HBM.

Material and Method

This study is based on a framework of HBM theoretical concepts that was developed by Glanz *et al* (2015). This framework explains that cues to action can affect individual healthy behaviour, both directly and indirectly, through its influence on individual perceptions which consist of perceived risk (perceived susceptibility & severity), perceived benefits, perceived barriers, and perceived self-efficacy[8]

This research is a quantitative descriptive research with a Cross-Sectional study. This research was conducted at PT. Aneka Gas Industri Region V, East Java, Indonesia in February-May 2019. The sample of this study includes 87 operational unit workers from various departments; the number sample was determined by Slovin formula from a total of 105 worker populations. The primary data is obtained by distributing questionnaire to the respondents. Meanwhile, the secondary data was obtained by analyzing data owned by the company, including a general description of the company and safety programs. Alldata that obtained are displayed in the form of narratives, tables of frequency distribution and cross tabulation using the Chi-Square correlation test.

Result

PT. Aneka Gas Industri Region V East Java is a company that produces different types of gases that are needed for the production of other industries. The company has a Safety Health and Environment (SHE) Department who is responsible for identifying and mapping potential hazards, as well as making ideas related to the safety program. One of the safety programs that has been implemented is Safety Promotion,which includes having safety talk, safety induction, safety sign & safety training.

The majority of respondents in this study were >35 years old male workers. The majority of respondents are high school graduates and the majority of respondents are classified as workers who have work in the company for, at leaset, 3 years.

1. **Effectiveness of Safety Promotion:** The effectiveness of the safety promotion is measured through a questionnaire containing 14 statements that represent 5 main components of safety promotion effectiveness measurement. The measurements consists of the content of the message, types of media used, the goal target, target involvement and leader involvement. Frequency distribution effectiveness of safety promotion for each statement can be seen in **Table 1.**

Table 1: Frequency distribution effectiveness of safety promotion

Component of effectiveness of safety promotion	Answer	N	%
Message Content			
1. There is information about using PPE on Safety Promotion	Yes	79	90,8
	No	8	9,2
2. The messages on Safety Promotion are informative or explains in detail	Yes	66	75,9
	No	21	24,1
3. The messages on Safety Promotion are persuasive or invites	Yes	77	88,5
	No	10	11,5
4. The messages on Safety Promotion are emotional or has the effect of fear and deterrence	Yes	16	18,4
	No	71	81,6
Media			
5. The Safety Promotion is delivered using media that are easily seen and understand	Yes	84	96,6
	No	3	3,4
6. The Safety Promotion uses various and diverse media	Yes	31	35,6
	No	56	64,4
7. The Safety Promotion medias always replaced and updated	Yes	46	52,9
	No	41	47,1
8. There is a media platform that shows the Safety Promotion messages,which contains picture of thepractices, training or video	Yes	58	66,7
	No	29	33,3
Goal Target			
9. The Safety Promotion has delivered equally to all workers	Yes	55	63,2
	No	32	36,8
10. At least every week the workers received Safety Promotion	Yes	33	37,9
	No	54	62,1
Target Involvement			
11. The workers are involved in planning and making of the Safety Promotion	Yes	25	28,7
	No	62	71,3
12. The workers can give advice or feedback on the Safety Promotion	Yes	81	93,1
	No	6	6,9
Leader Involvement			
13. The leader of the company is involved in the planning and the making of the Safety Promotion	Yes	73	83,9
	No	14	16,1
14. Safety Promotion is given bythe SHE (Safety, Health & Environment) department	Yes	85	97,7
	No	2	2,3

Based on **Table 1**, the 4 components have a less effective category. Respondents who have assessed the messages on the Safety Promotion said that the messages weren't emotional or does not create a fear and deterrence emotion. Respondents considered the Safety Promotion doesn't use various and diverse types of media. Respondents considered the safety promotion is not applied every week. While some workers, felt that they were not involved in the design and manufacture of the safety promotion .

Table 2: Frequency distribution total effectiveness of safety promotion

Safety Promotion	N	%
Effective	70	80,5
Less effective	17	19,5
Total	87	100

Overall, 70 respondents (80.5%) agree that the safety promotion applied at PT. Aneka Gas Industri Region V have been effective. While as many as 17 respondents

(19.5%) say that the safety promotions that was applied is still not as effective.

2. **Perception of Use of PPE:** The perception of the use of PPE consists of 4 components, namely perceived risk, perceived benefits, perceived barriers and perceived self-efficacy. Each component consists of 5 statements that are answered based on a Likert scale.

Table 3: Frequency distribution Perception of Use of PPE

Perception of the use of PPE	Category	N	%
Perceived Risk	Positive	76	87,4
	Negative	11	12,6
	Total	87	100
Perceived Benefits	Positive	56	64,4
	Negative	31	35,6
	Total	87	100
Perceived Barriers	Positive	59	67,8
	Negative	28	32,2
	Total	87	100
Perceived Self-Efficacy	Positive	86	98,9
	Negative	1	1,1
	Total	87	100

Based on Table 3, all components are included in the positive category. The number of respondents with the highest number of positive perception category isthe perceived self-efficacy (98.9%). While the number of respondents with the least positive perception category is perceived benefits (64.4%). Overall, 29 respondents (33.3%) had negative perceptions while 58 respondents (66.7%) had positive perceptions about the use of PPE.

3. **Relationship Between Safety Promotion and Perception of the Use of PPE:** Based on Table 4, the highest value shows that the workers who assess the safety promotion aggrees that the promotion have been effective and create positive perception about the use of PPE during work (58.6%). The relationship between the effectiveness of safety promotion and the perception of the use of PPE was then analyzed using the Pearson chi-square statistical test and obtained a p-value = 0.013 ($p < \alpha$). This shows that there is a relationship between the effectiveness of safety promotion and the perception of the use of PPE.

Table 4: Frequency distribution Perception of Use of PPE

Safety Promotion	Perception of the Use of PPE				Total		Pearson Chi-Square
	Positive		Negative				
	N	%	N	%	N	%	
Effective	51	58,6	19	21,8	70	80,5	0,013
Less effective	7	8,1	10	11,5	17	19,5	
Total	58	66,7	29	33,3	87	100	

Discussion

1. **Effectiveness of Safety Promotion:** Overall, majority of respondents agree that the safety promotion applied at PT. Aneka Gas Industri Region V have been effective. But there are 4 components show asa less effective category. The first component is the messages on safety promotion aren't emotional or does not form a feeling of fear and deterrence. The most frequently way to arouse emotions is to touch the feeling of fear. According to Planek (1998) in Primadana (2013), emotional messages can increase the strength of safety promotion because it can cause feelings of pressure, which makes workers be more careful when working[9].

The second component is Safety Promotion doesn't use various and diverse types of media. According to Notoatmodjo (2005), the use of several diverse and integrated media will increase the scope, frequency, and the effectiveness of the messages delivered to the target audience. The diversity of media will be able to attract the attention of the workers so that workers are not bored and always interested in seeing and understanding the content of the messages[10]

The third component is frequency of applying the safety promotion, which so far has been done weekly. According to the Department of Safety, Health, and Environment (SHE), most of the safety programs has been done daily, including the safety talk. However,

other programs, such as renewal of safety sign and OHS training, are rarely implemented. The frequency of communication about safety messages is useful to reach a broad range of target population and also to deepen the recognition, understanding, and formation of images of these messages (Salmon, 2003)[11]

The fourth component is that workers are not actively involved in the design and manufacture of the safety promotion. According to Planek (1998) in Primadana (2015), the involvement of workers in planning and designing safety promotion is beneficial to increase the positive effect of the safety promotion[9]. Involving the workers in the process of creating the safety instructions will increase the interest of the workers. In addition, feedbacks from the workers is needed so that the company can choose messages that suit the needs of the workers accordingly.

2. **Perception of the use of PPE:** Based on the results of the questionnaire, 76 respondents (87.4%) responded positively towards the perceived risk of the use of PPE. This shows that the workers are aware of the risk when they do not use PPE at work. Individuals who believe that they have a high risk of an illness or accident are more likely to carry out healthy or safer behaviors[12]. Perceived self-efficacy is classified on the positive perception category (98.9%). The workers in the company feel confident that they are able to implement safe and obedient behavior in using PPE. The behavior to prevent health problems can be influenced by how confident the individual is to their ability in making healthy behavioral changes. People tend to adopt healthy behaviors if they think they will succeed [13]

Perceived benefit in using PPE has a positive value, but is not too high (64.4%). This shows that a number of respondents have a negative perception about the use of PPE. So, the company must evaluate their safety promotion actions by assessing each aspects of the information, more importantly information that may increase workers' perception about the benefits of implementing PPE. Perceived barrier also has a positive value that is not too high (67.8%). Some respondents felt there were still some barriers in using PPE when working. Perceived barriers will affect a person's healthy behaviour and decision. If there are a lot of barriers exist in performing the behavior, then the individuals are less likely to adopt the behavior.

3. **Relationship Between Safety Promotion and Perception of the Use of PPE:** The results of this study shows thatthere is a relationship between the effectiveness of safety promotion with the perception of the use of PPE. The results of this study are in line with Tinoco *et al.* (2019) research which explains that the perceptions of using PPE is related to daily behavior as a result of the interpretation of external stimuli (information). External factors, such as safety training, have an indirect effect on the behavior of using PPE through its influence on risk perceptions. Thus, the higher the availability of instructions on matters relating to health, work safety, and the correct use of PPE, the higher the chance of using PPE effectively[14]". Saragih's research (2016) also shows a similar result where most workers have a positive perception of PPE when a company held a safety talk every morning before starting work[7]

Conclusion

1. The majority of the respondents agree that the safety promotion at PT. Aneka Gas Industri Region V has been effectively applied. However, the company needs to reconsidered several components related to the existing safety promotion, such as messages that are less emotional, limited variety of media use, not enough frequency of application that needs, and the lack of workers involvement in designing the safety promotion
2. Respondents have a positive perception regarding the use of PPE.
3. There is a relationship between the effectiveness of safety promotion with the perception of the use of PPE.

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