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The IAC Model Approach as an Effort to Increase Early Awareness of Gasoline Disease Risk at Mini Pom Operators in Depok City

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Abstract

The number of mini poms (pertamini) in parts of Indonesia certainly has a good impact on the distribution of fuel. However, adverse effects also accompany, one of which is the safety and health aspects. Types of health effects that occur / diseases caused by gasoline (PAB), are dizziness, nausea, vomiting, hypertension, cancer, throat cancer and sudden sniffing death. The purpose of this study is to increase early awareness of the risk of diseases caused by gasoline through the IAC model (Identification - action - prevention) at the mini pump operators in the city of Depok.the type of method used in this study is divided into 2 parts, namely the first is an analytical observational (survey) study with a cross sectional study design and the type of statistical test used is the t test (t test), the total sample of 127 respondents. Whereas in the second part is action research in the form of the implementation of health education in the distribution of masks to mini operators to be used as PPE (personal protective equipment) when working. Statistical tests show that there are differences in behavior to be aware of diseases caused by gasoline in respondents who lack knowledge and good (p value = 0,000), furthermore the attitude variable is also that there are differences in behavior between respondents who have negative and positive attitudes (p value = 0.027).health education is needed for mini pump operators to improve their knowledge and the need for regulations issued by the government to regulate the use of masks when in direct contact with gasoline.

Keywords
PAB; IAC; gasoline; mini pom operator

I. Introduction

Vehicle growth in Indonesia is so fast every year, reports fromThe Association of Indonesian Automotive Industries (Gaikindo) and the Indonesian Motorcycle Industry Association (Aisi) stated that motor vehicle sales in 2016 reached 1.06 million units. (CNN Indonesia, 2017).

West Java is one of the areas with fast vehicle growth in Indonesia, the city in this region that has a significant growth is Depok City because its growth exceeds 100%, in 2011, there were 429,468 units of motorcycles, 62,855 units of cars. In 2012, there were 671,041 units of motorcycles and 104,393 cars. In 2013 there were 747,726 units of motorcycles and 119,110 units of cars. Then in 2014, there were 817,850 motorcycles and 132,270 units of cars. (Ashari, 2015).

The rapid growth of vehicles has triggered an increase in the need for fuel oil consumption (BBM), Pertamina reports (2016) Indonesia's fuel consumption reaches 1.6 million barrels per day (bpd). Such a large need certainly needs to be supported by fast distribution in order to bring services closer to the community, one of which is the opening

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of gas stations in various regions in Indonesia. However, this situation has not been able to bring services closer to the maximum, so that community (private) involvement is also needed. One proof of community involvement in the distribution and sale of fuel oil (BBM) is the emergence of retail gasoline traders packaged in kiosks. Initially, the kiosk was started by selling using bottles, then innovating using mini pumps or what is often known as Pertamina.

The proliferation of mini pumps (pertamini) in almost all of Indonesia certainly has a good impact on the distribution of fuel. However, bad impacts also accompany, one of which is the aspect of safety and health. The community is so enthusiastic about being involved in the economic activity of selling fuel but it is not accompanied by an understanding of the safe management and operation (SOP) of mini pumps, especially for mini pump operators. The economic condition of the population is a condition that describes human life that has economic score (Shah et al, 2020). Economic growth is still an important goal in a country's economy, especially for developing countries like Indonesia (Magdalena and Suhatman, 2020). One of the negative impacts of fuel is disease due to direct contact with gasoline or which is acronymized with PAB (gasoline-related illness).

The results of research conducted in Nigeria show that the health effects of inhaling gasoline vapors are dizziness, nausea/vomiting. cancer, throat cancer and damage to the nervous system. Meanwhile, a report from the New South Wales Department of Education states that the most fatal effect of gasoline is sudden sniffing death.

Based on the facts above, of course, more attention is needed from various elements to help mini pump operators in being aware of the risk of disease caused by gasoline, one element is academics. After the proliferation of mini-poms in the last 1 year, no special research has ever been conducted to examine the health aspects of mini-pom operators. Based on this situation, the researcher is interested in conducting research to identify the factors that influence the behavior of mini pump operators in being aware of the risk of disease caused by gasoline. Researchers chose Depok as the research site because of the dense population and relatively fast growth of mini-pom. BBased on the initial identification carried out by the Indonesian Pom Mini Traders Alliance (APPMI) Depok, it is stated that currently the number of pertamini (mini poms) is 127 units spread across 11 sub-districts.

The results of interviews conducted by researchers in March 2018 of 65 traders (pom mini operators) in Depok about health changes experienced when selling, 90.7% said they were often dizzy and irritable, 69.2% often had nausea and 44.6% had vomiting due to accidentally swallowing gasoline while transferring gasoline from the jerrycan into the mini-pom drum (canister) which is sucked in by mouth through the connecting tube. Even the results of the interview show that 96.9% of mini pump operators never use PPE when selling, not only that 95.3% of them do not know that gasoline can endanger health.

This study aims to increase early awareness of the risk of disease caused by gasoline through the IAC (Identification – action – prevention) model for mini pump operators in Depok City.

II. Research Method

The method to be used in this study is divided into 2 parts, namely the first is an analytical observational (survey) research with a cross sectional study design and the type of statistical test used is the t test (t test), the research implementation in stage 1 only observes, record and analyze. While the second part is action research in the form of implementing health education to all mini-pom operators through the IEC (communication-information and education) program about the risk of disease caused by gasoline, then distributing masks to mini-operators to be used as PPE (protective equipment self) at work.

This research was conducted in Depok City, which consists of 11 sub-districts and 63 urban villages. The time of the research was carried out for 1 year. The population in this study were all retail gasoline business actors/traders (operators) (read: mini-pom) in the Depok City area. The results of observations and communication with the Indonesian Pom Mini Entrepreneurs Alliance of Depok City stated that the number of retail gasoline traders in Depok City was 127 units. The sampling method used is total sampling, meaning that the entire population is used as a sample.

The instrument used to collect data is in the form of a questionnaire. The questionnaire consists of 3 dimensions of questions, namely knowledge (consisting of 9 questions), attitudes (6 questions) and behavior (4 questions). This questionnaire has been tested for validity and reliability involving 15 mini-operators, the results are valid and reliable. The results of instrument testing obtained validity and reliability test values, as follows:

1. knowledge
   The results of the validity test of 9 questions obtained a score of 0.544 (or > 0.444)/feasible
   Reliability test obtained Cronbach's Alpha value of 0.703 > R table = 0.6
2. Attitude
   The results of the validity test of 6 questions obtained a score value = 0.581
   Reliability test obtained Cronbach's Alpha value of 0.820 > R table = 0.6
3. Behavior to be aware of the dangers caused by gasoline
   The results of the validity test of 9 questions obtained a score value = 0.506
   Reliability test obtained Cronbach's Alpha value of 0.726 > R table = 0.6

III. Result and Discussion

3.1 Demographic Data

Table 1. Demographic Data of Mini Pom Operators in Depok City

Variable	Frequency	Percentage
Age		
- mean	35.94 years	-
- Median	35 years old	7.9
- Mode	32 years	10.2
- Minimum	21 years	1.6
- Maximum	55 years old	0.8
Gender		
- Man	96	75.6
- Woman	31	24.4

Figure 1. *How the Mini Pom Operators Traders Move Gasoline*

Based on table 1 on the demographic data of mini-pom operators according to the age variable, it shows that the age interval of the respondents is between 21-55 years, the mean (mean) of respondents is 35.94 years old, most of the respondents are 32 years old (10.2%), and the oldest age of the respondent is 55 years. Furthermore, the percentage of respondents by gender shows that, of the 127 respondents studied, the majority of respondents are male, namely 75.6%. In the interviews conducted by the researcher, information was found that in fact men dominate the profession as retail gasoline traders.

3.2 Bivariate Analysis

Table 2. Bivariate Analysis of Behavioral Differences Between Knowledge and Attitude to Beware of Diseases Due to Gasoline (PAB) in Retail Gasoline Traders in Depok City

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	*Sig. (2-tailed)*	Std. Error Difference	*95% Confidence Interval of the Difference*	
								Lower	*Upper*
Operator knowledge	Equal variances assumed	,004	,948	3,715	125	,000	,550	-3,131	-.955
	Equal variances not assumed			3,735	109,317	,000	,547	-3,127	-,959
Operator attitude	Equal variances assumed	3,784	0.054	2,232	125	0.027	,311	-1,310	-,079
	Equal variances not assumed			2,141	91,694	0.035	,324	-1,339	-,050

In table 2, the results of the statistical test (t test) about differences in behavior between respondents with poor and good knowledge (p value = 0.027, if alpha = 5% or 0.05) are significant, meaning that respondents with less knowledge tend not to understand how to prevent diseases caused by gasoline, and respondents who have good knowledge

tend to act well in preventing diseases caused by gasoline. Furthermore, the attitude variable is the same, that there is a difference in behavior between respondents with positive and negative attitudes (p value = 0.027). Respondents with negative attitudes tend to behave badly in preventing diseases caused by gasoline, respondents do not use masks or nose shields when in contact with gasoline so that gasoline vapors will freely enter the respondent's body through breathing.

The results of this study have shown that the knowledge of mini pump operators varies greatly, even the average knowledge score is 29.27, which means it is still below the median value (31.5), thus meaning that respondents' knowledge is very low regarding the dangers/risks of gasoline. to health. Most of the mini pump operators are not worried about the health hazards of gasoline-related illnesses, even though they directly feel the effects (dizziness, nausea and vomiting).

The results of the analysis of the relationship between attitudes also show the same thing, the correlation is very significant between attitudes and behavior using protectors to prevent diseases caused by gasoline. The results of statistical analysis show that the average knowledge score of mini pump operators is 23.02, the attitude of the operators is still mediocre towards the long-term dangers of gasoline. The mini pump operators still feel indifferent to the risks associated with diseases that can be caused by gasoline.

Figure 2. *Actions to Prevent PAB*

3.3 Discussion

The results of this study have revealed that knowledge and attitudes are significantly related to early alert behavior to avoid gasoline-related diseases in mini pump operators. The majority of respondents have low knowledge and do not know the dangers and impacts of direct contact with gasoline, the indicator is that the average knowledge score of respondents is below the median value. In fact, most of the mini pump operators are not worried about the health hazards of gasoline-related illnesses, even though they directly feel the effects (dizziness, nausea and vomiting).

The results of this study are in line with previous studies8 which revealed that knowledge and attitudes contributed to the behavior of workers (p value < 0.05). Furthermore, other studies also convey the same thing that knowledge and attitudes have a significant effect on a person's behavior9.

Based on the results of this study and previous studies, the researchers concluded that risky behavior (not using PPE) in running a gasoline trading business was caused by public ignorance about the dangers and risks of gasoline on their health. As in L. Green's theory, it is stated that the factors that influence a person's behavior consist of 3, namely: predisposing factors, enabling factors and driving factors. Knowledge and attitude variables are part of the predisposing factors that contribute to influencing a person's

behavior. In theory, it is explained that a person's behavior will be good if his knowledge and attitude are good, and vice versa.

The behavior of mini pump operators in preventing the occurrence of diseases caused by gasoline will be realized if there is good knowledge and attitude. Communication, information and education activities need to be carried out seriously in order to increase the knowledge and understanding of retail gasoline traders. Given, gasoline has a bad effect on a person's health problems.

Smelling the pungent smell of gasoline is certainly unavoidable. But according to the Wisconsin Department of Health Services, inhaling gas fumes that occur during refueling can increase a person's health problems. These health hazards can have short-term and long-term effects.

Gasoline or petrol (commonly called gasoline in the United States and Canada) is a fuel made from refined crude oil and is usually used to fuel cars, boats or motorcycles.

Most people will feel dizzy if they are at the refueling station for a long time. Apart from the pungent smell, gasoline also contains several harmful chemicals. In Paul's research (2009) it was found that PB levels in the blood of fuel pump operators have the potential to cause hypertension.

In Mery's writings (2010), states that there are 4 serious health effects if you frequently inhale gasoline vapors, namely dizziness, cancer, nervous system damage and sudden death):

1. **Dizzy**
   Inhaling gasoline vapors can make people dizzy, even in small amounts. This effect will increase again when a person inhales the fumes of burning gasoline. Dizziness can cause coordination problems that make it difficult for a person to drive.

2. Cancer

According to the Wisconsin Department of Human Services, gasoline contains a chemical called benzene. This substance has been linked to an increased chance of leukemia (blood cancer). Even the Canadian Center for Occupational Health and Safety has identified the presence of ethylene dibromide in gasoline and has been proven to be a carcinogen that can cause cancer.

3. Nervous system damage

Besides being able to cause cancer, inhaling gasoline vapors can cause damage to a person's nervous system. This will interfere with the body's ability to send messages to the brain. In addition, it can also affect the brain's ability to interpret signals and coordinate the body's response to these signals. The more often and the more a person inhales gasoline vapors, the greater the damage will be.

4. **Sudden death (***Sudden Sniffing Death***)**
   *New South Wales Department of Education*reported that there were victims who died suddenly because they were used to inhaling the vapors of gasoline. This condition is called sudden sniffing death.
   This happens because inhaling gasoline vapors can stimulate the nerves in the body, which can slow down the heart rate and can eventually lead to death. Other factors that can cause inhalation death are explosion, fire and choking which can be fatal.

Listening to the dangers and impacts of gasoline on health, it is necessary to pay attention from various parties. Their involvement is expected to have an impact on the smooth running of the mission. The role of the government, private institutions and health observers in disseminating this information must be optimized. We hope that the public will be more aware, willing and able to prevent diseases caused by gasoline without having

to stay away from gasoline, what is needed is personal protective equipment when in contact with gasoline, at least people wear masks or nose coverings.

The government's involvement is very much needed because of the rampant retail gasoline sales that are growing in the community. Before the occurrence of health problems that threaten, it would be nice if this was prevented early. Public knowledge is still very minimal, there needs to be a campaign initiated by the government for preventive action through the puskesmas program and related stakeholders.

IV. Conclusion

Based on the results of this study, several conclusions can be drawn, as follows:

1. The identification results show that there are differences in behavior due to the knowledge and attitudes of the respondents (p value < 0.05).
2. Gasoline-related disease prevention actions can be avoided through the use of masks and avoiding direct contact with gasoline.
3. Gasoline-related disease prevention activities are carried out by installing stickers and distributing masks to each mini pump operator.

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