

## The Relationship of Individual Characteristics With the Use of PPE at Workers of Public Fuel Filling Station (Spu) in South Aceh Regency

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### ABSTRACT

The job that gets much exposure to gasoline is selling gasoline, exposed to gasoline fumes quite often. Workers are significantly at risk of DNA damage due to the genotoxic nature of these substances. Currently, there are still many gas station workers who do not use PPE when working. Workers do not seem to pay attention and maintain personal hygiene while working. After holding the gas station and holding the money directly, eat food. Protective equipment in the workplace is often neglected by workers or employees, even by workplace management. Therefore, this study aims to analyze the characteristics of individuals using PPE at Public Fuel Filling Station (SPBU) workers. Method: This type of research is cross-sectional. The population is 46 people; using Saturated Sampling, that is the whole population. Results: the results of the study found that there was a relationship between Age, Education, Marital Status, and Period of Service with the Use of Personal Protective Equipment (PPE) at Public Fuel Filling Station (Spu) Workers in South Aceh Regency as evidenced by a value  $> 0.00$ . The group that completed PPE was more dominant than the female sex group as many as ten people (62.5%), aged 30 years ten people (71.4%), secondary education 12 people (63.2%), marital status 11 people (68.8%), 11 people (64.7%), the p-value for each indicator is less than 0.05, so there is a significant relationship between each characteristic: gender, age, education, marital status, and years of service with the use of Personal Protective Equipment (PPE). Female gender, age group more than or equal to 30 years, married status, secondary education, and working period of more or equal to 2 years are more aware of completing PPE. It is recommended that male workers under 30 years, unmarried, with primary education, and working period of under two years must use complete PPE when working. Companies and the government pay attention to the safety and health of workers.

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## 1. Introduction

Efforts to increase protection for worker productivity must be carried out by every company, both private companies and companies under the auspices of the State [ 1]. The increase in productivity is carried out so that the human resources owned can be used effectively and efficiently, so there is no use of wasted costs, and the company's targets can be achieved maximally and minimize losses [ 2]. It can be interpreted that workers as valuable assets for the company must be maintained, maintained, and maintained their existence because the company's progress can be seen from the achievements the workers give [ 3]. Public Refueling Station (SPBU) officers are one of the groups that have a high risk of being exposed to lead directly. In addition to gas stations as a place for refueling vehicles, it is common knowledge that gas stations are also one of people's choices to become meeting point locations before traveling far. This is because the

facilities owned by gas stations are increasingly diverse; generally, gas stations in Indonesia sell several types of products and fuels, including; Pertamina, Petamax dex, diesel, biodiesel, petalite, and premium [4]. Other additional facilities are rest areas, toilets, prayer rooms, mini markets, nitrogen air boosters, turbo pulse counters and data packages, vehicle oil service, ATMs, and souvenir shops typical of specific areas. Public refueling stations (SPBU) are places that serve the purchase of fuel oil (BBM). Gas stations are one of the workplaces that also have a high risk for the health of their workers. Besides being exposed to dust and gas from motor vehicles, workers at gas stations, especially the operator section, are also exposed to gasoline fumes when filling consumer vehicles. However, there are still many gas station operators who ignore the danger. Workers should be required to use personal protective equipment to reduce exposure to hazards and to stay healthy and safe at work [5].

Gas station operators are one of the populations with a high risk of exposure to benzene through inhalation [6]. The study results show that the operator's lack of concern at three gas stations in Mamuju Regency uses PPE when working. The incidence of pulmonary function disorders in gas station operators was 14 people (41.2%), with restrictive lung function in seven people (20.6%), obstructive in five people (14.7%), and a combination of 2 respondents (5.9%). So it is necessary to provide counseling about the importance of using PPE to prevent workers from harm [7]. Based on the results of the study, it was found that 3 out of 16 officers had abnormal blood profile levels, and there was no significant relationship between work period, use of PPE, and smoking habits of gas station operators on exposure to benzene at gas stations in Tuak Daun Merah Village, Kupang City ( $P_{value} > 0,05$ ) [8]. The population of fuel pump operators is at risk of carcinogenic effects on lifetime exposure duration [9]. So PPE is an important thing that must be considered in ensuring the safety of workers at gas stations. The responsibility for the safety of gas station operators is for themselves and the company where they work. Based on the study results, the facts on the ground prove the company's lack of attention to workplace safety for its workers. Many companies still do not meet work safety standards in accordance with applicable laws and regulations, so many actions harm the workers [10].

Based on the study results, the use of PPE is terrible in the East Ciputat area, where the gas station only requires wearing shoes and uniforms but the shoes used are not following the work practice of benzene chemicals [11]. The level of employee awareness in implementing K3LL at the Dagen gas station is 44,571.13 based on work discipline in using PPE is 40% [12]. One of the districts/cities that has adequate gas stations in Aceh is South Aceh District. South Aceh Regency has 5 (five) units of Public Fuel Filling Stations (SPBU). It accommodates several workers spread over 5 (five) gas stations, including the Labuhan Haji Barat gas station with 12 (twelve) workers, Tapaktuan gas station Amounting 12 (twelve) people 12 (twelve) workers, North Kliet gas station with 8 (eight) workers, Bakongan gas station with 8 (eight) workers, and East Trumon gas station with 6 (six) workers. All these gas stations are here to help people find and fill up fuel at their nearest location. With the number of workers spread over the five gas stations, around 46 people are to provide a friendly and clean service to add a visual impression to visitors, as well as free radiator water filling and tire pump services to add convenience to the service. From the results of observations and initial observations, it can be seen that there are still some gas station workers who do not use personal protective equipment such as uniforms, masks, shoes, helmets or hats, and gloves. The workers do not seem to pay attention and maintain personal hygiene while working. We have seen that they directly eat food after holding the gas station and holding the money. Their ages vary from under 17 to over 40 years, as well as their education category, some have not finished elementary school, and some have finished high school and the equivalent. They were considering the lack of publications regarding the area's occupational health of gas station workers. So researchers are interested in researching The Relationship of Individual Characteristics with the Use of PPE for Public Fuel Filling Station (SPBU) Workers in South Aceh Regency .

## **2. Methods**

This research is analytical survey research Using a Cross-Sectional approach, a study to study the dynamics of the correlation between risk factors and effects with an observation approach or data collection at once ( point to approach ) 14. The location of this research has been carried out in 5 (five) public refueling stations in South Aceh Regency. This research has been implemented for 4

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(four) days, namely Thursday, Friday, Saturday, and Sunday. This research takes nine (9) months, from March to November. The population in this study was 46 people; using saturated sampling, the entire population was taken entirely. Primary data was obtained by conducting direct interviews using questionnaires and field observations. Secondary data were obtained from journal literature, books, and articles that were collecting data by observation by researchers using a checklist. Data processing was carried out using Statistical Product and Service Solution version 20. The results were then analyzed descriptively and analyzed using Chi-square.

## 3. Results And Discussion

### 3.1 Univariate Analysis

#### a. Gender Frequency Distribution

**Table 1**

Distribution of Gender Frequency of South Aceh Gas Station Employees

| No | Gender | Frequency | Percent |
|----|--------|-----------|---------|
| 1. | Man    | 30        | 65.2    |
| 2. | Woman  | 16        | 34.8    |
|    | Amount | 46        | 100     |

Based on table 5.2, the sex distribution frequency of gas station employees is known to be 30 men (65.2%) and 16 women (34.8%), with a Amount of 46 people.

#### b. Age Frequency Distribution

**Table 2**

Distribution of Age Frequency of South Aceh Gas Station Employees

| No | Age            | Frequency | Percent |
|----|----------------|-----------|---------|
| 1. | < 30 years old | 32        | 69.6    |
| 2. | 30 years       | 14        | 30.4    |
|    | Amount         | 46        | 100     |

Based on table 5.3, the age distribution frequency of General Filling Station employees is known to be less than 30 years old, as many as 32 people (69.6%) and over 30 years, as many as 14 people (30.4%) with a Amount of 46 people.

#### c. Education Distribution

**Table 3**

Distribution of Education Frequency for South Aceh Gas Station Employees

| No | Education    | Frequency | Percent |
|----|--------------|-----------|---------|
| 1. | Base         | 27        | 58.7    |
| 2. | Intermediate | 19        | 41.3    |
|    | Amount       | 46        | 100     |

Based on table 5.4, the distribution frequency of gas station employees' education is known to be low, as many as 27 people (58.7%), and medium, as many as 19 people (41.3%) with a Amount of 46 people. Low education is education that does not pass or attends high school education (SMA)/equivalent, while secondary education is the type that has attended or has completed high school education/equivalent.

#### d. Marital Status Distribution

**Table 4**

Frequency Distribution of Marital Status of South Aceh Gas Station Employees

| No | Marital status | Frequency | Percent |
|----|----------------|-----------|---------|
| 1. | Single         | 30        | 65.2    |
| 2. | Marry          | 16        | 34.8    |
|    | Amount         | 46        | 100     |

Based on table 5.5, the frequency distribution of the marital status of gas station employees is known that 30 people (65.2%) are unmarried and 16 people (34.8%) are married, with a Amount sample of 46 people.

**e. Working Period Distribution**

**Table 5**  
Distribution of the Frequency of Service Period of South Aceh Gas Station Employees

| No | Years of service | Frequency | Percent |
|----|------------------|-----------|---------|
| 1. | < 2 years        | 29        | 63      |
| 2. | Two years        | 17        | 37      |
|    | Amount           | 46        | 100     |

Based on table 5.6, the distribution frequency of service period of SPBU employees is known to be less than two years for as many as 29 people (63%) and more than or equal to 2 years for as many as 17 people (37%) with a Amount of 46 people (100%).

**f. Distribution of Personal Protective Equipment (PPE)**

**Table 6**  
Frequency Distribution of Complete Personal Protective Equipment for South Aceh Gas Station Employees

| No | PPE Equipment | Frequency | Percent |
|----|---------------|-----------|---------|
| 1. | Incomplete    | 28        | 60.9    |
| 2. | Complete      | 18        | 30.1    |
|    | Amount        | 46        | 100     |

Based on table 5.7, the frequency of distribution of PPE equipment used by gas station employees is known to be incomplete for as many as 28 people (60.9%) and complete for as many as 18 people (30.1%) with a Amount of 46 people.

**3.2 Bivariat Analysis**

**a. The Relationship Between Gender and PPE**

**Table 8**  
The Relationship Between Gender and PPE for South Aceh Gas Station Employees

| No | Gender | Use of PPE |            | Amount (Percentage) | P Value |
|----|--------|------------|------------|---------------------|---------|
|    |        | Incomplete | Complete   |                     |         |
| 1. | Man    | 22 (73.3%) | 8 (26.7%)  | 30 (100%)           | 0.040   |
| 2. | Woman  | 6 (37.5%)  | 10 (62.5%) | 16 (100%)           |         |
|    | Amount | 28 (60.9%) | 18(39.1%)  | 25(100%)            |         |

Based on table 5.8, the relationship between gender and PPE employees of SPBU Aceh Selatan is known to be 22 men (73.3%) incomplete using PPE and eight men (26.7%) complete using PPE. a Amount of 30 men. There were six women (37.5%), while the women who did not complete PPE were ten people (62.5%), with a Amount of 16 women. From the SPSS test with an error rate of 0.05, the number is 0.040, so there is a significant relationship between gender and the use of PPE.

**b. Relationship Between Age and PPE**

**Table 9**  
The Relationship Between Age and PPE for South Aceh Gas Station Employees

| No | Age            | Use of PPE |           | Amount (Percentage) | P Value |
|----|----------------|------------|-----------|---------------------|---------|
|    |                | Incomplete | Complete  |                     |         |
| 1. | < 30 years old | 24 (75%)   | 8(25%)    | 32(100%)            | 0.008   |
| 2. | 30 years       | 4 (28.6%)  | 10(71.4%) | 14(100%)            |         |
|    | Amount         | 28 (60.9%) | 18(39.1%) | 25(100%)            |         |

Table 5.9 shows the relationship between age and PPE for South Aceh gas station employees is known; 24 people (75%) incomplete use PPE and eight people (25%) exclusive use PPE for a Amount of 32 people. Four people (28.6%) do not complete PPE, and 10 (71.4%) complete the PPE with a Amount of 14 people. From the SPSS test with an error rate of 0.05, the number is 0.008, so there is a significant relationship between gender and the use of Personal Protective Equipment.

**c. The Relationship Between Education and PPE**

**Table 10**

The Relationship Between Education and PPE for South Aceh Gas Station Employees

| No | Education    | Use of PPE |           | Amount<br>(Percentage) | P Value |
|----|--------------|------------|-----------|------------------------|---------|
|    |              | Incomplete | Complete  |                        |         |
| 1. | Base         | 21 (77.8%) | 6(22.2%)  | 27(100%)               | 0.013   |
| 2. | Intermediate | 7(36.8%)   | 12(63.2%) | 14(100%)               |         |
|    | Amount       | 28(60.9%)  | 18(39.1%) | 25(100%)               |         |

Based on table 5.10, the relationship between education and Personal Protective Equipment of employees of the General Filling Station of South Aceh is known, low education that is incomplete using Personal Protective Equipment as many as 21 people (77.8%) and complete using Personal Protective Equipment as many as six people (22, 2%) with a Amount of 27 people. Secondary education that did not complete Personal Protective Equipment as many as seven people (236.8%), and who completed Personal Protective Equipment as many as 12 people (63.2%), with a Amount of 14 people. From the SPSS test with an error rate of 0.05, the number is 0.013, so there is a significant relationship between gender and the use of Personal Protective Equipment.

**d. Relationship Between Marital Status and PPE****Table 11**

The Relationship Between Marital Status and PPE of Gas Station Employees South Aceh

| No | Marital status | Use of PPE |           | Amount<br>(Percentage) | P Value |
|----|----------------|------------|-----------|------------------------|---------|
|    |                | Incomplete | Complete  |                        |         |
| 1. | Single         | 23 (76.7%) | 7(23.3%)  | 30(100%)               | 0.007   |
| 2. | Marry          | 5(31.3%)   | 11(68.8%) | 16(100%)               |         |
|    | Amount         | 28(60.9%)  | 18(39.1%) | 25(100%)               |         |

Based on table 5.11, the relationship between marital status and Personal Protective Equipment used by employees of the South Aceh General Filling Station is known; incompletely married individuals who use Personal Protective Equipment as many as 23 people (76.7%) and exclusive use of Personal Protective Equipment as many as seven people (23.3%) with a Amount of 30 people. Married workers who do not complete PPE are five people (31.3%), and 11 people (68.8%) complete PPE. From the SPSS test with an error rate of 0.05, the number is 0.007, so there is a significant relationship between gender and the use of Personal Protective Equipment.

**e. Relationship Between Work Period and PPE****Table 12.**

The Relationship Between Working Period and PPE of Gas Station EmployeesSouth Aceh

| No | Years of service | Use of PPE |           | Amount<br>(Percentage) | P Value |
|----|------------------|------------|-----------|------------------------|---------|
|    |                  | Incomplete | Complete  |                        |         |
| 1. | < 2 years        | 22(75.9%)  | 7(24.1%)  | 29(100%)               | 0.016   |
| 2. | Two years        | 6(35.3%)   | 11(64.7%) | 17(100%)               |         |
|    | Amount           | 28(60.9%)  | 18(39.1%) | 25(100%)               |         |

Table 5.12 shows the relationship between service period and PPE for South Aceh gas station employees is known; for less than two years, 22 people (75.9%) incomplete use PPE and seven people (24.1%) complete use PPE with a Amount of 29 people working period of more than or equal to two years who did not complete PPE as many as six people (35.3%), and who completed PPE as many as 11 people (64.7%) for a Amount of 17 people. From the SPSS test with an error rate of 0.05, the number is 0.0016, so there is a significant relationship between gender and the use of PPE.

**3.3 Discussion**

The results of this study indicate that women have the highest level of equipping or wearing Personal Protective Equipment (PPE) while working, which is ten people (62.5%) out of a total of 16 women. Men showed the smallest number using PPE, eight people (26.7%) out of 30 men. The statistical testing results show a relationship between gender and the use of personal protective equipment, as evidenced by  $p. value = 0.0040 < 0.05$ . This study has similarities with previous research, which states that there is a significant relationship between age, length of work,

knowledge, and attitudes toward the behavior of using PPE in health workers in Banjarbaru Hospital [13]. There are several interrelated factors so that gender is related to personal protective equipment in different workplaces. In several other studies, it was found that there was no relationship between age, gender, years of service, knowledge, and supervision with compliance with the use of PPE in outpatient and inpatient nurses at RSU X, p-value more than 0.05 [14].

The results of this study indicate that the highest level of using the completeness of PPE is found in the age group above 30 years of 10 people (71.4%) of the total group over 30 years of age, 14 people. Meanwhile, only eight (25%) of the total age group under 30 complete the PPE, 32. The results of statistical testing show a significant relationship between age and the use of PPE, with a p-value = 0.008. Age is a determining factor when associated with a disease because many diseases are only found in certain age groups. This is a relationship between age and the level of immunity or immunity, the possibility of exposure to the source of the disease, and the physiological activity of various tissues that affect the course of the disease after a person has an infection [15].

In this study, it was found that the highest level of using PPE came from the secondary education group, namely 12 people (63.2%) of the total secondary education, namely 14 people, while the low education level group was known to only six people (22.2%) who completed PPE attributes of 27 people. The results of statistical testing show a significant relationship between gender and the use of PPE with the p. value= of 0.013. The level of education possessed by workers greatly affects knowledge of the use of PPE, so the company or agency participates in increasing workers' knowledge about personal protective equipment [16]. A person's level of education can affect attitudes and behavior in carrying out activities, especially in jobs requiring personal protective equipment to minimize the number of accidents physically or chemically. Marital status is the highest number in the completeness of the use of PPE, namely 11 people (68.8%) out of a total of 16 people, while the most unmarried status is 30 people, only seven people have completed PPE (23.3%).

Statistical testing shows a significant relationship between marital status and the use of PPE, as evidenced by the p-value = 0.007. Marital status can provide insight to someone in minimizing cases or risk factors that occur when working using PPE. In this study, it was found that the highest use of personal protective equipment was in the group with a working period of more than two years, which was around 11 people (64.7%) out of a total of 17 people, while the working period of fewer than two years was only seven people (24.1%) of a total of 29 people. The result of statistical testing shows that there is a significant relationship between the use of Protective Equipment and the use of PPE with the p-value. value= 0.016 . As in previous studies, the correlation coefficient value of 0.690 indicates a positive correlation direction; if the respondent's knowledge is high, the higher the compliance in using Personal Protective Equipment and the sig value. (0.009) < (0.05), which means there is a relationship between knowledge and compliance in the use of personal protective equipment [17]. The longer a person's working period, the more compliance will be created.

#### **4 Conclusion**

There is a relationship between Age, Education, Marital Status, Period of Service, and Use of Personal Protective Equipment (PPE) for Public Fuel Filling Station (Spbu) Workers in the South Aceh Regency. The female gender group is higher in paying attention to and maintaining health; it is proven that the female gender is complete with PPE such as uniforms, gloves, masks, and shoes. . Those aged 30 and over 30 years have almost entirely used PPE compared to those under 30 years old, such as hats, uniforms, masks, gloves, and shoes. The higher the respondents' education, the more they understand safety and health and are aware of using PPE. Respondents with married status-completed more PPE than unmarried. The longer the working period of respondents who work at gas stations, the more they understand using the completeness of PPE attributes.

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