# The Influence of Knowledge, Attitude, and Action on Fire Disaster Preparedness in Palu City Health Center

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**Abstract**

This study aims to determine the effect of knowledge, attitudes, and actions on fire disaster management at the Palu Health Center. The type of research used was observational with a cross-sectional study design. The population of this study was all workers at the Palu City Health Center, totaling 81 people. The sample was taken based on a total sampling of 81 people and collecting data using questionnaires and observation sheets. Data analysis was performed using univariate, bivariate, and multivariate analysis using chi-square and likelihood tests to determine the relationship between variables and logistic regression tests to determine the most influencing variables. The results showed that there was no relationship between knowledge ($p=0.774$) and attitude ($p=546$) with fire prevention preparedness at the Palu City Health Center, and there was a relationship between action ($p=0.028$) and fire prevention preparedness at the Palu City Health Center. The most influential variable was the action variable ($p=0.021$). We suggest that the Palu City Health Center increase knowledge related to fire safety, emergency situations (fire) preparedness, and actions in overcoming fires for its employees.

**Keywords:** Preparedness, Knowledge, Health Centre, Attitudes, Actions

**Key Messages:**
- Attention and provision of fire extinguishers in every corner of the puskesmas and paying more attention to emergency exits for patients, visitors, and Puskesmas staff

## 1. Introduction

The health center (in Indonesian: Puskesmas) building is one of the buildings with a risk of fire; if a fire occurs, it will have an extensive impact. In the classification of fire risk, the Puskesmas is classified as mild (1). However, the health center still has the potential to cause fires on a large scale, considering the activities of these health centers, which use a large amount of electricity because they operate 24 hours, use pressurized gas cylinders and use chemicals that are flammable and explosive. Based on this, special handling in fire prevention efforts is needed to anticipate the occurrence of fires. Community Health Centers have a high risk of causing fatalities in the event of a fire. Apart from that, the building, activity process, social impact, and the image of the health center. This is because the health center stores flammable objects, with most of the occupants being patients who are physically unable, so they need assistance in evacuation (2).

Based on data from the National Disaster Mitigation Agency (in Indonesian: Badan Nasional Penanggulangan Bencana/BNPB), there were 979 fire cases consisting of 978 fire cases in residential areas and 1 fire case in health centers that occurred in Indonesia from 2011-2015. Of 979 fire cases, 4 cases occurred in Yogyakarta from 2012-2013. These data show that most fire incidents occur in residential areas, but we must remain vigilant because health center houses are always in densely populated residential areas (3).

This study focuses on fire disaster preparedness at the Palu City Public Health Center. Based on a preliminary study by researchers, it was found that there were still some employees at the Palu City Public Health Center who did not know what to do in the event of a fire. This study aims to determine the effect of knowledge, attitudes, and actions on fire disaster management at the Palu Health Center.

## 2. Methods

The type of research used was observational, using the cross-sectional study method because this study observed the independent and dependent variables simultaneously. This study aimed to see the effect of the two variables, namely the independent and dependent variables. The study population was all employees at the Palu City Health Center: the Talise Health Center and the Birobuli Health Center, with as many as 81 people. Data collection was carried out in two ways through direct interviews using a questionnaire. Data processing used the SPSS program and was presented in tabular form accompanied by an explanation in narrative form.

## 3. Results

**Table 1. Distribution of Respondents Based on Independent and Dependent Variables**

| Variable | n | % |
|---|---|---|
| **Preparedness** | | |
| Good | 60 | 74.1 |
| Lack | 21 | 25.9 |
| **Knowledge** | | |
| Good | 48 | 59.3 |
| Lack | 33 | 40.7 |
| **Attitude** | | |
| Good | 79 | 97.5 |
| Lack | 2 | 2.5 |
| **Action** | | |
| Secure | 61 | 75.3 |
| Insecure | 20 | 24.7 |
| **Total** | **81** | **100** |

Source: Primary Data, 2022

Univariate analysis in this study was the number and percentage of respondents based on grouping characteristics. Based on the distribution of preparedness, it shows that out of 81 respondents there were 60 (74.1%) included in the good preparedness/alert category, while 21 (25.9%) were still in the alert category. Distribution of knowledge from 81 respondents there were 48 (59.3%) respondents included in the category of having good knowledge, while 33 (40.7%) respondents lacked knowledge. In 81 respondents' attitudes distribution, 79 (97.5%) respondents were included in the category of having a good attitude, while 2 (2.5%) respondents had a bad attitude. In 81 respondents' actions distribution, 61 (75.3%) respondents were included in the safe action category, while 20 (24.7%) respondents were still in the unsafe action category.

Bivariate analysis was used to see the relationship between the independent variables, including knowledge, attitudes, and actions of the dependent variable, namely fire disaster preparedness, using the chi-square test; the results of this analysis were then presented in the form of a crosstab. There were 35 (72.9%) respondents in the good knowledge category who were in the good/standby category, and 25 (75.8%) respondents in the less knowledge category were in the good/standby category. Whereas in the good knowledge category, 13 (27.1%) respondents were included in the lack preparedness/less alert category, 8 (24.2%) respondents with less knowledge were included in the lack preparedness/less alert category. Based on the

analysis of the Likelihood test as an alternative to the Chi-Square test, it was found that the p-value = 0.774 > 0.05; it is interpreted that there was no relationship between the knowledge and preparedness of workers at the Palu Health Center. Furthermore, it was found that out of 81 respondents, 58 (73.4%) respondents in the good attitude category were in the good preparedness/standby category, and 2 (100%) respondents in the lack attitude category were in the standby category. Whereas in the good attitude category, there were 21 (26.6%) respondents in the lack preparedness/less alert category, 0 (0%) of the respondents in the less alert category were included in the less alert category. Based on the results of the Chi-Square test analysis, it was found that the p-value = 0.546 > 0.05, so it can be interpreted that there was no relationship between the attitudes and preparedness of workers at the Palu City Health Center. Then it was found that out of 81 respondents, 49 (80.3%) respondents in the secure/safe action category were in the alert category, and 11 (55%) respondents in the insecure action category were in the standby category. While in the safe action category, there were 12 (19.7%) respondents in the lack preparedness category, 9 (45%) of the respondents in insecure actions were included in the less preparedness category. Based on the results of the Chi-Square test analysis, it was found that the p-value = 0.028 <0.05, so it can be interpreted that there was a relationship between action and preparedness for workers at the Palu City Health Center (Table 2).

**Table 2. Relationship Test Results Between Independent and Dependent Variables**

| Independent Variable | Preparedness | | | | Total | | Value (p) |
| | Good | | Lack | | | | |
| | n | % | n | % | n | % | |
|---|---|---|---|---|---|---|---|
| **Knowledge** | | | | | | | |
| Good | 35 | 72.9 | 13 | 27.1 | 48 | 100 | 0.774 |
| Lack | 25 | 75.8 | 8 | 24.2 | 33 | 100 | |
| **Attitude** | | | | | | | |
| Good | 58 | 73.4 | 21 | 26.6 | 79 | 100 | 0.546 |
| Lack | 2 | 100 | 0 | 0 | 2 | 100 | |
| **Action** | | | | | | | |
| Secure | 49 | 80.3 | 12 | 19.7 | 61 | 100 | 0.028 |
| Insecure | 11 | 55 | 9 | 45 | 20 | 100 | |

Source: Primary Data, 2022

**Table 3. Variables influencing fire prevention at the Palu Health Center**

| | | *Variables in the Equation* | | | | | |
| | | *B* | *S.E.* | *Wald* | *df* | *Sig.* | *Exp(B)* |
|---|---|---|---|---|---|---|---|
| Step | Knowledge | -310 | 0.545 | 0.323 | 1 | 0.57 | 0.733 |
| | Attitude | -20.715 | 27377 | 0 | 1 | 0.999 | 0 |
| | Action | 1.31 | 0.566 | 5350 | 1 | 0.021 | 3.706 |
| | Constant | 20.984 | 27377 | 0 | 1 | 0.999 | 0.1222 |

Multivariate analysis was used to see the effect of the independent variables, namely knowledge, attitudes, and actions, with the dependent variable, such as fire disaster preparedness using logistic regression; the results of this analysis were then presented in tabular form. The table shows that the action variable influenced fire prevention at the Palu City Health Center. In the logistic regression test of 0.021 <0.05, the p-value of a variable can be different from the p-value in the bivariate analysis because, in the multivariate analysis, all independent variables were included together to see which variable has the greatest influence on the dependent variable (Table 3).

## 4. Discussion
**The influence between knowledge and fire preparedness**

The results of the cross-tabulation test showed that between the action and preparedness of 81

respondents there were 35 (72.9%) respondents had good knowledge and were included in the standby category, and 25 (75.8%) respondents had less knowledge and were included in the standby category. In comparison, 13 (27.1%) of respondents have good knowledge, which was included in the category of less preparedness and 24.2 (33%) of respondents have less knowledge which was included in the category of less alert. Based on the results of the Chi-Square test analysis, it was found that the p-value = 0.774 > 0.05, so it can be interpreted that there was no relationship between knowledge of fire prevention preparedness at the Palu City Health Center. Other research shows that there is a significant relationship between knowledge about fires and preparedness with p = 0.000 (4). The level of knowledge is influenced by several factors including information from both formal and non-formal education such as seminars, training and simulations as well as the frequency of information received and other research showing that the majority of respondents have never participated in socialization or fire management training (4) (5). Knowledge is an important subject because knowledge can shape one's actions. This study's results align with the theory put forward by Lawrence Green, knowledge as a predisposing factor also influences nurse preparedness (6). The impact of disaster preparedness knowledge on disaster preparedness behavior is that if employee knowledge is low, employee behavior is automatically low in disaster preparedness. Because knowledge is a motivating factor for employees to behave well, for this reason, employee disaster preparedness knowledge must be increased so that disaster preparedness behavior becomes good (7).

**The influence between attitude and fire preparedness**

The cross-tabulation test showed that between the action and preparedness of 81 respondents there were 58 (73.4%) respondents had a good attitude included in the alert category, and 2 (100%) respondents had a less attitude which was included in the alert category. Meanwhile, 21 (26, 6%) of respondents had a good attitude included in the less alert category and 0 (0%) of respondents had a less attitude included in the less alert category. Based on the results of the chi-square test analysis, it was found that the p-value = 0.546 > 0.05, so it can be interpreted that there is no relationship between attitudes toward fire prevention preparedness at the Palu City Health Center. Other research shows that the positive attitude possessed by residents of high-rise buildings is more prepared for fire emergency response (8).

Although attitude is readiness or willingness to act, attitude is not the implementation of certain motives. So, attitude is not an action (open reaction) or activity but rather a predisposition to behavior or action. To manifest attitudes into concrete actions, supporting factors or enabling conditions are needed, such as facilities and support from the surrounding environment (6). The impact of fire preparedness attitude does not affect fire preparedness behavior; attitude cannot be a benchmark for someone to behave well. The incompatibility of a person's behavior with his attitude will cause various psychological problems for the individual concerned so that the individual will try to change his attitude or behavior (9).

**The influence of action on fire preparedness**

The results of the cross-tabulation test showed that between the actions and preparedness of 81 respondents there were 49 (80.3%) respondents had safe actions included in the good preparedness/alert category, and 11 (55%) respondents had unsafe actions included in the alert category, while 12 (19.7) %) of respondents had safe actions which were included in the less alert category and 9 (45%) of respondents had unsafe actions which were included in the less alert category. Based on the results of the Chi-Square test analysis, it was found that the p-value = 0.028 <0.05, so it can be interpreted that there was a relationship between action and fire prevention preparedness at the Palu City Health Center. Other research shows that knowledge and attitudes simultaneously affected preparedness by 20.5% (10). This research is in line with research conducted by Supriandi in 2020, which stated a significant relationship between respondents' attitudes and preparedness in the city of Palangka Raya (11). This statement is in accordance with Brehm and Kassin's Theory of Reasoned Action that attitudes influence behavior through decision-making (12).

## 5. Conclusion

Knowledge and attitudes do not affect the preparedness of workers at the Palu City Health Center. The action variable influences the preparedness of workers at the Palu City Health Center. Attention and provision of fire extinguishers in every corner of the puskesmas and paying more attention to emergency exits for patients,

visitors, and Puskesmas staff and the importance of increasing knowledge regarding fire safety, preparedness in emergency situations (fire), and actions in overcoming fires.

**Conflicts of Interest**: The authors declare no conflict of interest.

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