Analysis of the Effect of Handwashing Facilities and Personal Hygiene on Covid-19 Cases for Indoor Employees of PT. Telkom Access North Surabaya

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Abstract

The first COVID-19 infection in Indonesia which occurred in March 2020 led to the implementation of government policies to prevent the spread of the virus. This easy transmission of COVID-19 has made the government urge the implementation of social distancing and the application of health protocols. Some of the health protocols implemented are maintaining cleanliness and frequent hand washing for everyone, including workers. This study aims to analyze the effect of providing hand washing facilities and personal hygiene to cases of COVID-19 in indoor employees of PT. Telkom Access North Surabaya. The data used are secondary data and primary data in the form of a questionnaire. In achieving this goal, the data analysis used in this study is descriptive statistical analysis to determine the characteristics of the data, bivariate Chi Square, and logistic regression analysis. The results of the descriptive statistical analysis showed that more than 85% of the cleaning facilities had been provided. Improving handwashing with soap (CTPS) facilities will reduce the chance of COVID-19 infection by 8.85 times (odd ratio 0.113) than not implementing CTPS. Through the results of logistic regression analysis, it can also be concluded that the variables of Hand Washing, Frequency of Disinfectants, Clean Water Facilities and Use of Masks have an effect on COVID-19 cases in indoor employees of PT Telkom Access Surabaya Utara.

Key Words: Hand Washing with Soap, COVID-19, Personal Hygiene, Chi Square Test, Logistics Regression

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Introduction

The COVID-19 (Corona Virus Disease 2019) pandemic was announced for the first time in Indonesia in March 2020, this was conveyed directly by the President of Indonesia. Furthermore, the president asked to conduct further investigations to deal with the spread of the corona virus which has become a national and international disaster. The COVID-19 pandemic was declared a national disaster because it had an impact on various sectors of work, both formal and informal, such as education, tourism, trade and transportation, having to work hard to adapt to the development of COVID-19 infection.

The government has made various efforts to deal with the spread of COVID-19 through various policies. One of the policies made is the implementation of "social distancing" by limiting visits to crowded places and avoiding direct contact with other people. One of the methods used to implement social distancing is to work from home or "Work from Home" (WFH). This policy is considered to be able to prevent a very massive transmission.

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Factors that are thought to affect the transmission of the COVID-19 virus are hand washing facilities. Gwenzi (2021) explains that developing countries have a very high risk of COVID-19 transmission caused by infrastructure for hand washing facilities and poor hygiene practices. This is supported by the research findings of Silva et al (2021) which explain that there is a significant relationship in areas with poor handwashing facilities to the prevention of COVID-19 transmission. The same thing was also expressed by Roy et al (2020) where there is a strong relationship between the low impact of COVID-19 with clean water and good hand washing facilities.

The next factor suspected of influencing the transmission of the COVID-19 virus is personal hygiene. The results of research conducted by Yoo & Song (2021) show that the habit of maintaining personal hygiene has a positive influence on self-efficacy for preventing viral infections. In addition, the habit of maintaining personal hygiene indirectly affects the behavior of preventing the spread of the virus.

Methodology

The general objective of this study is to analyze the effect of hand washing facilities and personal hygiene on cases of COVID-19 among indoor employees of PT. Telkom Access North Surabaya. This research is an analytic observational research because it was conducted by document study as secondary data and supported by using a questionnaire as primary data. There are three methods of data analysis used, namely descriptive univariate analysis which is used to describe the data of the dependent, independent variables studied using frequency and distribution tables. Chi Square Bivariate Analysis to determine the relationship of each independent variable to the dependent variable. Multivariate analysis using multiple logistic regression to see the effect of hand washing facilities and personal hygiene on COVID-19 cases in indoor employees of PT. Telkom Access North Surabaya.

Results and Discussion

Descriptive Univariate Analysis Results

Quantitative descriptive analysis is intended to determine the characteristics of each variable and can perform an objective representation of the research problem. The variables used to analyze this are hand washing facilities, and personal hygiene against COVID-19 transmission in indoor employees of PT. Telkom Access Surabaya.

Table 1. Results of Frequency Descriptive Statistical Analysis

Variable	Information	Frequency	Percentage
Handwashing facilities	Yes	143	89.9%
	Not	16	10.1%
Sum		159	100%
The frequency of spraying disinfectants	Yes	145	91.2%
	Not	14	8.8%
Sum		159	100%
Clean water facilities	Yes	151	95%
	Not	8	5%
Sum		159	100%
Wearing a mask	Yes	132	83%
	Not	27	17%
Sum		159	100%

The results of the frequency descriptive analysis in table 5.2 show that the variable hand washing facilities in the office which include hand washing facilities, spraying disinfectants, and clean water facilities are also well available in the majority. However, there were still respondents who stated that hand washing facilities were not well available, as many as 16 respondents or 10.1% answered that hand washing facilities (soap, hand washing, running water) were not available properly, as many as 14 respondents or 8.8% answered spraying periodic disinfection has not been implemented properly, and 8 respondents or 5% answered that clean water facilities are not yet available in the office. In addition, for the personal hygiene variable using masks, the majority of employees wore masks as many as 132 respondents or 83% and did not wear masks as many as 17% or 27 respondents.

Bivariate Results

Bivariate analysis is an analysis used on two variables that are thought to be related or correlated, one of the tests in bivariate analysis is the chi square test. Chi Square statistic is used when the variable to be used is nominal scale (also called categorical). Nominal scale data has the characteristics of each category being exclusive. That is, there are no levels between categories. Chi Square statistics are used to determine the relationship between two variables with the basis of testing the difference in the proportion value of the observation value with the expected value. The hypothesis used in the Chi Square test is as follows:

H0 : There is no relationship between the two variables.

H1 : There is a relationship between two variables.

Chi Square test decision making is based on two things. namely the calculated value compared to the critical value and the p-value (Asymp Value Sig) which is compared to the significance level (5%). The test results decide to reject H0 if: Asymp value. Sig. (2-sided) < 5%. The following is the result of Chi Square analysis to determine the relationship between each independent variable to the dependent variable.

Table 2. The Relationship between CTPS Facilities and Covid-19

CTPS Facilities	Covid-19				Total		P-value	OR
	Negative		Positive					
	n	%	n	%	n	%		
Not	11	68.8%	5	31.3%	1	100%	0.000	0.113
Yes	136	95.1%	7	4.9%	158	100%		

Based on the table above, information is obtained that the significant value shows a number of 0.000, the value is < 0.05, meaning that there is a relationship between ctps facilities and covid-19, in addition, an odd ratio value of 0.113 is obtained, which means that respondents who have ctps facilities have the potential of 0.113 times the respondents experience negative Covid-19 than those without ctps facilities.

Table 3. The Relationship of Periodic Disinfectants with Covid-19

Periodic Disinfectants	Covid-19				Total		P-value	OR
	Negative		Positive					
	n	%	n	%	n	%		
Not	11	78.6%	3	21.4%	14	100%	0.039	0.243
Yes	136	93.8%	9	6.2%	145	100%		

Based on the table above, information is obtained that the significant value shows a number of 0.039, the value is < 0.05, meaning that there is a relationship between disinfectants and covid-19, in addition, an odd ratio value of 0.243 is obtained, which means that respondents with regular disinfectants have the potential to experience 0.243 negative Covid-19 cases. 19 than respondents who do not regularly disinfect.

Table 4. The Relationship between Clean Water Facilities and Covid-19

Clean Water Facilities	Covid-19				Total		P-value	OR
	Negative		Positive					
	n	%	n	%	N	%		
Not	4	50%	4	50%	8	100%	0.000	0.056
Yes	143	94.7%	8	5.3%	151	100%		

Based on the table above, information is obtained that the significant value shows a number of 0.000, the value is < 0.05, meaning that there is a relationship between clean water facilities and COVID-19, in addition to that, an odd ratio value of 0.056 means that respondents with clean water facilities have the potential to experience a negative

0.056 times. Covid-19 than respondents who do not have clean water facilities.

Table 5. The Relationship between Mask Wearing and Covid-19

Mask Wearing	Covid-19				Total		P-value	OR
	Negative		Positive					
	n	%	n	%	N	%		
Not	22	81.5%	5	18.5%	27	100%	0.018	0.246
Yes	125	94.7%	7	5.3%	132	100%		

Based on the table above, information is obtained that the significant value shows a number of 0.018, the value is < 0.05, meaning that there is a relationship between the use of masks and Covid-19, in addition, an odd ratio value of 0.0246 is obtained, which means that respondents who use masks have the potential to experience 0.246 negative Covid-19 cases. 19 than respondents who did not use masks.

Multivariate Results

Inferential statistical analysis in this study uses multiple logistic regression analysis. The reason for using multiple regression analysis tools is because the dependent variable is dummy. Multiple logistic regression is almost the same as discriminant analysis, which is used to test whether the probability of occurrence of the dependent variable can be predicted by the independent variable. Logistic regression is a regression that is used to test whether the probability of the occurrence of the dependent variable can be predicted by the independent variable. The logistic regression analysis technique no longer requires normality tests and classical assumption tests on the independent variables (Ghozali, 2011:333).

Assessing Model Feasibility

The feasibility test of the regression model was assessed using Hosmer and Lemeshow's as measured by the chi square value. If the statistical value of Prob. Chi-Sq Hosmer and Lemeshow's Goodness of Fit Test is equal to or less than 0.05, then the null hypothesis is rejected, which means that there is a significant difference between the model and the observed value so that the Goodness of fit model is not good because the model cannot predict the observed value. However, if otherwise, the value of Prob. Chi-Sq shows greater than 0.05, then the model is considered good and can predict the value of the observations.

Table 6. Model Due Diligence Results

Iteration		*-2 Log likelihood*	*Coefficients*
			Constant
	1	94.203	-1.698
	2	85.564	-2.304
	3	85.089	-2.490
	4	85.087	-2.505
	5	85.087	-2.506
Initial -2 Log Likelihood: 85.087			

Table 7. Model Alignment Test Results (Iteration 1)

-2 Log likelihood	*Cox & Snell R Square*	*Nagelkerke R Square*
55.545	0.170	0.409

From the model, it turns out that the overall model fit at -2 Log Likelihood Block Number = 0 indicates a decrease in -2 Log Likelihood Block Number = 1. This decrease in likelihood indicates the hypothesized model fits the data.

Coefficient of Determination Test Results

The coefficient of determination in multiple logistic regression is seen from the McFadden R-squared, because the McFadden R-squared value can be interpreted as the R Square value in multiple regression. The McFadden R-squared value close to zero indicates that the ability of the variables to

explain the dependent variable is very limited, while the McFadden R-squared value close to one indicates that the independent variable is able to provide all the information needed to predict the variability of the dependent variable (Ghozali, 2011).

Table 8. Determination Coefficient Test Results

-2 Log likelihood	*Cox & Snell R Square*	*Nagelkerke R Square*
55.545	0.170	0.409

Based on the test results, the results were 0.409 or 40.9%. This means that the influence of the variable factors of Hand Washing Facilities, Periodic Disinfectants, Clean Water Facilities and the Use of Masks on COVID-19 cases is 40.9%. The remaining 59.1% is explained by other independent variables outside this research model.

Hypothesis Test Results

Hypothesis testing is carried out to test the significance level of all coefficients in the regression modeling of the research variables by comparing the acquisition of probability values to the significance level specified in hypothesis decision making. The analysis used to answer the research hypothesis using multiple logistic regression analysis. There is a relationship between the two variables based on the z-Statistic and Probability <0.05. It is said to have a significant effect if Probability < 0.05.

Table 9. Hypothesis Test Result Table

Variables	B	S.E.	*Wald*	Sig.	Exp (B)
Handwashing	-2.297	0.789	8.483	0.004	0.101
Disinfectant frequency	-2.097	0.899	5.438	0.020	0.123
Clean Water Facilities	-3.740	0.985	14.414	0.000	0.024
Use of Masks	-1.576	0.771	4.175	0.041	0.207
Constant	15.037	3.782	15.810	0.000	3392546.064

The regression equation is a measuring tool used to measure the presence or absence of a causal relationship between the independent variable and the dependent variable. The following are the results of the regression equation, based on the table above.

Based on the table above, the following regression equation is obtained.

Y=15.037-2.297X_1-2.097X_2-3.740X_3-1.576X_4

Based on the results of the hypothesis testing that has been carried out, the variables of Hand Washing, Frequency of Disinfectants, Clean Water Facilities and Use of Masks have an influence on COVID-19 cases in PT Telkom Access North Surabaya employees because they have Sig < 0.05.

In addition, in the table above there is also an odd ratio, the following is an explanation of the odd ratio.

In the Handwashing variable, an odd ratio value of 0.101 is obtained, based on this, it can be decided that if the other variables are zero, then the handwashing variable with the "yes" criterion will make the respondent experience negative COVID-19 by 0.101 times compared to the handwashing with the "no" criterion.

On the Disinfectant Frequency variable, an odd ratio value of 0.123 was obtained, based on this, it can be decided that if the other variables are zero, then the "yes" criterion disinfectant frequency variable will make the respondent experience COVID-19 negative 0.123 times compared to the "no" criterion disinfectant frequency.

In the Clean Water Facility variable, an odd ratio value of 0.024 is obtained, based on this, it can be decided that if the other variables are zero, the Clean Water Facility variable with the "yes" criteria will make the respondent experience COVID-19 negative by 0.024 times compared to the Clean Water Facility with the criteria "no".

In the mask use variable, an odd ratio value of 0.207 is obtained, based on this, it can be decided that if the other variables are zero, then the mask use variable with the "yes" criterion will make the respondent experience negative Covid-19 by 0.207 times compared to the use of the mask with the "no" criterion.

Effect of Office Handwashing Facilities on COVID-19 Cases

The variable of office hand washing facilities in this study was proven to affect the COVID-19 case of indoor employees of PT Telkom Access North Surabaya which included the availability of hand

washing facilities with Sig. 0.004, periodically spraying disinfectant with Sig. 0.020, and the availability of clean water facilities in the office with Sig. 0.000.

According to Purnama & Susanna (2020), the availability of hand washing facilities has an influence on COVID-19 cases. This is because hands, as a medium of transmission of COVID-19, touch surfaces contaminated with SARS COV-2 and then touch the nose, mouth, and eyes. In addition, WHO also recommends washing hands with soap and running water to prevent COVID-19 because washing hands not only prevents COVID-19 but also other diseases such as diarrhea and pneumonia. In addition, the provision of hand washing facilities in offices is useful to support employee habits in an effort to prevent the transmission of COVID-19 within the company.

With the existence of hand washing facilities in offices, employees are expected to be more aware of the importance of washing hands, especially during the COVID-19 pandemic era. Washing hands with soap is one of the sanitation measures by cleaning hands and fingers using water and soap by humans to be clean and break the chain of germs. Washing hands with soap is also known as an effort to prevent disease. This is done because hands are often agents that carry germs and cause pathogens to transfer from one person to another, either by direct contact or indirect contact (using other surfaces such as towels, glasses) (Yuliani, 2021).

Washing hands with soap is proven to be effective in preventing transmission of the corona virus because clean hands after washing with soap can reduce the risk of the virus entering the body, remembering; without realizing it, people often touch their eyes, nose, and mouth so that the virus can enter the body; Corona virus from unwashed hands can transfer to other objects or surfaces that are often touched - such as stair railings or escalators, doorknobs, table surfaces or toys, thus creating a risk of spreading the virus to others (Yuliani, 2021).

In addition, routine spraying of disinfectants is known to affect the increase/decrease in COVID-19 cases. This is because spraying disinfectants can kill the COVID-19 virus that is on the surface of objects such as wood, plastic, metal, aluminum, copper, and cardboard surfaces. The COVID-19 virus can last up to 72 hours on these objects, so it is necessary to routinely sterilize items for objects that are frequently touched (Purnama & Susanna, 2020). In addition, disinfectants are substances that can kill pathogens in the environment. Disinfectants usually contain glutaraldehyde and formaldehyde. The use of these substances was previously the responsibility of medical personnel, but for now the use of these substances can be used not only in hospitals, but at home and even offices will often be used (Larasati & Haribowo, 2020).

The provision of clean water in offices also affects the increase/decrease in COVID-19 cases. Sources of clean water must be provided through treatment facilities and piping so that its quality is guaranteed. COVID-19 can contaminate community water sources through contaminated feces. The SARS COV-2 virus can be found in sewers, most of which are in the scope of homes, offices, schools, shopping centers, and so on (Purnama & Susanna, 2020).

Water and sanitation are two things that cannot be separated. Every time there is drinking water or clean water, there will be waste water. No less than 85% of clean water turns into waste water. As an illustration, if one person uses 100 liters of water per day for drinking, bathing, washing, and latrines, then the water that is disposed of as waste water is about 85 liters per day. Therefore, clean water management will also be related to sanitation management. Adequate sanitation facilities that meet health standards accompanied by clean and healthy living behavior are very important elements in improving community health status (Suryani, 2020).

Clean water and sanitation is one of the classic problems that have not been solved in Indonesia. The target of achieving sanitation both in the Millennium Development Goals (MDGs) which ended in 2015, as well as in the Sustainable Development Goals (SDGs) which are still ongoing until now, have not been achieved optimally. However, starting in early 2020, the COVID-19 pandemic that hit various countries in the world, including Indonesia, seemed to make all levels of society aware of the importance of good sanitation to prevent the spread of the virus. As stated by WHO, clean water, sanitation, and hygienic services are needed to limit the spread of the COVID-19 virus and prevent the spread of disease outbreaks in the future (Suryani, 2020).

The existence of the COVID-19 pandemic that has been going on since the beginning of this year (while in Indonesia the first case was announced in early March 2020) seems to have made all parties aware of the importance of clean water, proper sanitation, and PHBS in everyday life. Clean water and proper sanitation are important elements, they can even be considered basic needs for the community during

this pandemic. The health protocols set by WHO mostly contain recommendations for maintaining hygiene and health. Health protocols during the Covid-19 pandemic and must continue to be implemented during the new normal include washing hands with clean water and also bathing when traveling home. Both activities certainly require clean water in sufficient quantities. Likewise, the Hand Washing with Soap Movement (CTPS), which is currently being heavily campaigned, proves that every activity of life requires clean water in sufficient quantities (Suryani, 2020).

A. Effect of Personal Hygiene on COVID-19 Cases

In this study, it was proven that personal hygiene variables in the form of wearing masks had an influence on COVID-19 cases in PT Telkom Access North Surabaya employees because they had Sig. > 0.05. While the variable of wearing masks is known to have an effect on the case of COVID-19 indoor employees of PT Telkom Access North Surabaya with Sig. 0.027.

The use of masks is part of a comprehensive series of prevention and control measures that can limit the spread of certain viral respiratory diseases, including COVID-19. Masks can be used either to protect a healthy person (worn to protect themselves when in contact with an infected person) or to control the source (worn by an infected person to prevent further transmission) (Marzuki et al, 2021).

The spread of COVID-19 can be prevented by wearing masks when traveling or activities that allow you to meet many people. This is necessary because COVID-19 can be easily transmitted through the respiratory tract (droplets from an infected person, through coughing or sneezing) and through contact with contaminated surfaces (Suhartati et al, 2020).

This statement is in accordance with the statement by Wardhani & Azhar (2020) which stated that during the global pandemic, one of the easiest and simplest ways to prevent the spread of the corona virus is to always wear a mask when outside the house. By using masks we can protect ourselves and protect those around us and can help reduce the spread of the COVID-19 pandemic.

Research Limitations

1. The research was only conducted on indoor employees of PT. Telkom Access North Surabaya in 2022.
2. The focus of the research is on the variables of hand washing facilities and personal hygiene in the form of wearing masks for COVID-19 cases. So there are still other factors that have not been studied.

Conclusion

Based on the results of the hypothesis testing that has been carried out, the variables of Hand Washing, Frequency of Disinfectants, Clean Water Facilities and Use of Masks have an influence on COVID-19 cases in PT Telkom Access North Surabaya employees because they have Sig < 0.05.

Suggestion

There is a need for improvements to sanitation facilities in the office environment, because many employees who carry out activities in the office have the potential to be the perfect place for disease transmission, including COVID-19.

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