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The relationship between predisposing factors, enabling factors, and reinforcing factors with infection prevention behavior on health worker and non-health worker at Pengadang health center in COVID-19 pandemic era

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Abstract---COVID-19 is a respiratory infectious disease caused by SARS-CoV-2 and has been designated a pandemic by the WHO. Health workers are at the forefront of dealing directly with patients to handle confirmed or suspected cases of COVID-19 so that they are at high risk for infection. Infection prevention behavior is one of the main problems causing infection in health workers. This study aims to determine the relationship between predisposing factors, enabling factors, and reinforcing factors with infection prevention behavior on health workers and non-health workers at the Pengadang Health Center. This study used an observational analytic design, with a cross-sectional approach. The sampling technique used total sampling. This research was conducted on December 16th, 2021 until December 31st, 2021. The research sample consisted of 97 respondents. The data obtained were analyzed by using SPSS Version

23 with statistical tests Chi-Square method. The limit of significance value in this research is ($p < 0.05$). The results of this study were dominated by female respondents (72.16%) with an age range of 34 years, the respondent's occupa dominated by health workers, while the average tenure of the respondents is 9 years and all respondents have a high school education equivalent or more. In bivariate analysis, it was found ($p < 0.05$) and ($p > 0.05$). There is no relationship between age, gender, type of work, length of service, workload, perception, availability of PPE, quality of PPE, and availability of cleaning facilities for respondents. There is a relationship between workload and infection prevention behavior in respondents.

Keywords---predisposing factors, supporting factors, reinforcing factors, infection prevention behavior, health workers, non-health workers.

Introduction

On December 31st, 2019, the World Health Organization (WHO) China Country Office reported a case of pneumonia of unknown etiology in Wuhan City, Hubei Province, China. On January 7th 2020, China identified the case as a new type of coronavirus. This disease is named Coronavirus Disease 2019 (COVID-19). On January 30th, 2020 WHO declared the incident a Public Health Emergency of International Concern (PHEIC) and on March 11th, 2020, WHO had declared COVID-19 a pandemic (WHO, 2020).

As of August 5th, 2021, the total number of confirmed global COVID-19 cases was 201,010,829 cases with 4,270,279 deaths in 222 affected countries including Indonesia (Worldometer, 2021). Indonesia ranks 14th highest globally and 4th highest in Asia with confirmed cases of COVID-19 as of 5th August 2021 as many as 3,532,267 people with 100,636 deaths (Kemenkes RI, 2021). Indonesia ranks fourth in the highest Case Fatality Rate (CFR) among the 20 countries in the world with the most confirmed positive cases of COVID-19, which is 2.8% (Johns Hopkins University & Medicine, 2021). The number of vaccination coverage is also still low, the target of vaccination is dose one from 208,265,720 new residents of 51,111,565 who are vaccinated (24.54%), while dose 2 of 208,265,720 new residents is 24,315. 368 were vaccinated (11.68%). In West Nusa Tenggara Province alone, the number of confirmed cases of COVID-19 as of August 5th, 2021, was recorded at 21,138 cases with the total number of cases dying as many as 706 cases. In Central Lombok as of August 5^t, 2021, there were 1933 cases with 85 deaths, then at Pengadang Health Center, Central Praya, from January 2021 to June 2021 there were 49 cases with 4 deaths (West Nusa Tenggara Health Office, 2021).

Meanwhile, the number of deaths of health workers in Indonesia due to COVID-19 as of August 2nd, 2021 was recorded at 1,636 deaths, including 640 doctors, 503 nurses, 306 midwives, 48 pharmacists, 46 dentists, 45 Medical Laboratory Technologists, 10 radiology records, 5 sanitarians, 3 electromedics, 3 ambulance

officers, 3 pharmacists, 3 dental therapists, 2 epidemiologists, 1 health entomologist, 1 medical physicist, and 45 deaths from other health workers (Report Covid-19, 2021). Compared to other countries, Indonesia is one of the countries with a high mortality rate of health workers, which is 6.50% (Irwandy, 2020). In West Nusa Tenggara, the number of cases of health workers infected with COVID-19 during 2020 was recorded at 1037 people with five deaths. At the Pengadang Health Center, Central Praya, Central Lombok,

The spread of the SARS-CoV-2 virus that occurs very quickly with the number of cases continues to increase is influenced by several factors. Based on the epidemiological triangle theory by John Gordon and La Riche (1950), the occurrence or absence of disease in humans is influenced by three factors. The first is host factors, such as age, gender, belief, immunological status, physiological state, human contact, occupation, herd immunity, other previous diseases, and individual behavior. The second factor is the agent or pathogen that causes it, such as mutations and the ability of the virus. The third factor is environmental factors such as geology, climate, biological factors, socio-economic factors such as population density, poor sanitation, and the availability of health services.

Health workers are at the forefront of dealing directly with patients to handle confirmed or suspected cases of COVID-19, so they are at high risk for exposure and infection that can lead to death (WHO, 2020). The handling of COVID-19 patients is carried out on the role of health workers, which based on Article 1 Number 1 of Law Number 36 of 2014 concerning Health Workers stipulates that, "Health workers are any party who has skills and knowledge in the health sector and plays a role in health activities. anything in the health sector" (Hira et al., 2020).

Of the several risk factors above, infection prevention behavior is one of the main problems causing infection in health workers. Inappropriate and adequate infection prevention and control behavior at work can result in an increased risk of contracting work-related diseases among health workers, which can lead to death of health workers (Minister of Health Regulation, 2017). To protect the health, safety, and welfare of health workers, the risk of being infected with COVID-19 needs to be minimized and for that a coordinated and comprehensive action/behavior is needed in infection prevention and control (Minister of Health Regulation, 2017).

Due to the increasing number of COVID-19 cases, the risk of being infected with COVID-19 for health workers in charge of handling COVID-19 patients is also increasing, even leading to death. There are many factors that can determine how a person's infection prevention behavior adheres, especially health workers. From some of the results of the previous studies above, not all positive results were obtained, there was a relationship between these factors and infection prevention behavior. This makes researchers interested in knowing the relationship between these factors and infection prevention behavior in the community health center. Based on the conditions at the local health center and other references related to factors that influence behavior, researchers are interested in knowing the relationship between predisposing factors (age, gender, type of occupation,

education, length of occupation, workload, knowledge, attitude, belief and perception), and enabling factors (availability of Personal Protective Equipment, quality of Personal Protective Equipment, availability of cleaning facilities, and training, and reinforcing factors (monitoring and Operational Standard Procedure) in infection prevention behavior on health workers and nonhealth workers at Pangadang Health Center.

Method

This research is a quantitative research with an analytical observational research design and cross-sectional approach. This research was conducted at the Pangadang Health Center, Pangadang Village, Central Praya District, Central Lombok Regency, West Nusa Tenggara. This research was conducted on December 16th, 2021 until December 31st, 2021. The sampling technique used a total sampling of 97 people.

This study used 13 questionnaires. The 6 questionnaires were created and modified by the researcher and have been tested for validity and reliability, namely the workload questionnaire (3 question items), Personal Protective Equipment availability (2 question items), Personal Protective Equipment quality (2 question items), availability of cleaning facilities (4 question items), and infection prevention behavior (5 question items). The other four questionnaire items are adaptation questionnaires from other researchers that have been tested for validity and reliability, the questionnaire is a characteristic questionnaire (4 question items consisting of name, age, gender, occupation, years of service, and education), knowledge questionnaire (17 items). questions), attitude questionnaire (10 question items), and perception questionnaire (9 question items). The other 3 questionnaires were used to assess the distribution of SOPs, training,

The collected data will be processed and analyzed using computer software, namely the Statistical Package for The Social Sciences (SPSS) version 23 computer. Two analyzes were carried out, namely univariate and bivariate analysis. Univariate analysis aims to describe the characteristics of each variable, both independent and dependent variables (Notoatmodjo, 2014). Bivariate analysis was conducted to see the relationship between the independent variable and the dependent variable. In health research, the significant test is carried out using the limit of significance (α) = 0.05 with the provision that the P-value 0.05 means that there is a relationship between the variables studied.

Results

This research was conducted on December 16th, 2021 until December 31st, 2021. The sampling technique used was a total sampling of 97 people and data collection was carried out using 13 questionnaires. Based on data obtained from 97 respondents, the average age of the respondents was 34.06 years, it is known that respondents with below average age were 68 (70.10%) and respondents with above average age were 29 respondents (29, 89%). Based on the data obtained from 97 respondents, the most gender is female, where the number of women is 70 (72.16%) and men are 27 (27.84%). Based on data obtained from 97 respondents, it was found that the most respondents consisted of health workers,

where the number of health workers was 88 (90, 72%) and the number of non-health workers is 9 (9.28%). Based on the data obtained from 97 respondents, the average length of service for the respondents was 9 years with the longest working period of 34 years. Respondents with more than 6 years of service were more than those with less than equal to 6 years, namely 66 (68.04%) for respondents who worked more than 6 years and 31 (31.95%) for respondents who worked less than equal to 6 years.

Based on data obtained from 97 respondents, it was found that 5 respondents (5.15%) had a high school education, 45 respondents (46.39%) had a Diploma III degree, 46 respondents (47.42%) had a bachelor's degree, and 1 respondent (1.03%) graduated with a master's degree. Based on data obtained from 97 respondents, 97 respondents (100%) had sufficient knowledge and 97 respondents (100%) had a positive attitude. Based on data obtained from 97 respondents, 93 (95.87%) respondents had sufficient perceptions and 4 (4.12%) had poor perceptions. Based on the data obtained from 97 respondents, 58 (59.8%) respondents had a high workload and 39 (40.2%) had a low workload. Based on the data obtained from 97 respondents, 75 respondents (77.31%) had sufficient PPE availability at health centers and 22 (22.68%) had insufficient PPE availability at health centers.

Based on data obtained from 97 respondents, 63 respondents (64.94) stated that the existing PPE had sufficient quality and 34 respondents (35.05%) stated that the existing PPE had poor quality. Based on the data obtained from 97 respondents, it was found that 70 (72.16%) sufficient PPE availability and 27 (27.83%) lack of PPE availability at the Pengadang Health Center. Based on the data obtained from 97 respondents, it was found that 95 (97.93%) had sufficient SOPs and 2 (2.06%) there were insufficient SOPs at the Pengadang Health Center.

Based on data obtained from 97 respondents, it was found that 68 respondents (70.10%) had attended sufficient training related to COVID-19 and 29 respondents (29.89%) attended COVID-19 training less. Based on data obtained from 97 respondents, 72 respondents (74.22%) stated that there was sufficient supervision at the Pematang Health Center and 25 respondents (25.77%) stated that there was insufficient supervision. Based on the data obtained from 97 respondents, it was found that 76 respondents (78.35%) at the Pengadang Health Center had sufficient infection prevention behavior and 21 respondents (22.68%) had less infection prevention behavior. Based on the results of bivariate analysis using Chi-Square, a p-value of 0.220 ($p\text{-value} > 0.05$) was obtained, which indicated that there was no significant relationship between age and the behavior of preventing COVID-19 infection at the Pengadang Health Center.

Discussion

This result is in line with Pasaribu's research (2020), it is known that respondents in Medan City and Batam City aged 20-29 years are more well-behaved than less well-behaved. Similarly, respondents aged 50 years are more well behaved than less well behaved. Based on statistical tests obtained $p\text{-value} > 0.05$ both in respondents in the city of Medan and Batam. This means that there is no significant relationship between age and infection prevention behavior while

working at Health Center in the red zones of Medan City and Batam City during the COVID-19 pandemic. The results of this study are also in line with the research of Nepal et al. (2020) and Saqlain et al.

The results of this study are not in line with the research of Olum et al. (2020) which states that there is a significant relationship between age and infection prevention behavior in health workers at the Makerere Teaching Hospital, Uganda. This result is also not in line with research by Presty et al. (2020) where the p value obtained shows that age has a significant influence on infection prevention behavior carried out by respondents, namely with a value below 0.05 (0.027).

Associated with age that is not related to infection prevention behavior in this study, there may be confounding or other external factors that influence so that the test results are not statistically related. Several other factors that influence a person's infection prevention behavior are gender, attitudes, knowledge, beliefs, perceptions, workload, etc. Age is not a factor related to the formation of infection prevention behavior in this study, it could be because health and non-health workers of all will continue to behave well to prevent COVID-19 infection if the individual has the attitude, knowledge, education, motivation, or good perception too (Widiyanto, 2018).

Associated with systematic error (non-random error) which includes the analysis used, the test in this study uses chi square. Chi square is sensitive to the number of samples used. This test will be less accurate if there is an expected frequency value of less than 5 in the contingency table cell. Even this test cannot be used if the expected frequency of less than 5 is more than 20% of the total cells or if there is an expected frequency value of less than 1 effective for small samples.

Based on the results of the analysis using Chi-Square, a p-value of 0.525 was obtained ($p\text{-value} > 0.05$) which indicates that there is no significant relationship between gender and the behavior of preventing COVID-19 infection at the Pengadang Health Center. These results are in line with research by Lin and Chen (2021) which showed there was no significant difference between genders in COVID-19 prevention behavior. In contrast, previous research, namely Hayashi et al. (2019), Ek (2015), and Yu et al. (2020) reported that women tend to practice health-promoting behaviors more often than men. In terms of gender differences, Ek (2015) reports that women are more concerned and more concerned about the global potential of a pandemic compared to men. Compared to men, women usually have better health promotion practices and behaviors than men. In addition, women tend to engage in prosocial behavior more frequently than men. Therefore, women may be more likely to practice COVID-19 prevention behaviors compared to men. Gender is said to be associated with infection prevention behavior. However, in some conditions such as during the COVID-19 pandemic, because the perceived health threat of COVID-19 is generally much higher than for other diseases, regardless of gender, all respondents who perceive a high threat of COVID-19 will be motivated to practice disease prevention behaviors.

Regarding gender, which is not related to infection prevention behavior in this study, there may be confounding or other external factors that influence so that

the test results are not statistically related. Several other factors that influence a person's infection prevention behavior are age, attitude, knowledge, beliefs, perceptions, workload, etc. Gender is not a factor related to the formation of infection prevention behavior in this study, it could be because health and non-health workers of all will continue to behave well to prevent COVID-19 infection if the individual has the attitude, knowledge, education, motivation, or good perception too.

Based on the results of the analysis using Chi-Square, a p-value of 0.268 (p-value > 0.05) showed that there was no significant relationship between the type of work and the behavior of preventing COVID-19 infection at the Pengadang Health Center. These results are in line with research conducted by Pasaribu (2020) that there is no significant relationship between type of work and infection prevention behavior while working for health workers at Health Center in the red zones of Medan City and Batam City during the COVID-19 pandemic. The results of this study are also in line with the research of Nepal, et al. (2020), Saqlain, et al. (2020), and Olum, et al. (2020) which states that there is no significant relationship between the type of work and the behavior of preventing COVID-19 infection in health workers in Nepal, Pakistan, and Uganda. Research by Gunawan et al. (2021) also showed that the type of work was not related to the behavior of preventing COVID-19 infection.

In this study, it is known that the type of work is not related to infection prevention behavior in this study, there may be confounding or other external factors that influence so that the test results are not statistically related. Several other factors that influence a person's infection prevention behavior are age, attitudes, knowledge, beliefs, perceptions, workload, SOPs etc. It is known that the respondents in this study were dominated by respondents who had sufficient/positive knowledge, attitudes, education, and training regarding COVID-19, this is likely to influence the test results. In addition, at the Pengadang Health Center there are SOPs and supervision related to the prevention of COVID-19 infection which must be obeyed by all officers there, both health and non-health workers.

Based on the bivariate analysis conducted from 97 respondents, the results showed that 97 (100%) who had more than high school education had sufficient infection prevention behavior as many as 76 respondents (78.35%) and those who had less infection prevention were 21 respondents (21, 64%). On this study, the p-value cannot be reported because there are cells in the 2x2 table that have a value of zero (0) so they do not meet the requirements of chi-square analysis.

Based on the bivariate analysis conducted from 97 respondents, it was found that 31 respondents (31.95%) with a working period of less than 6 years had sufficient infection prevention behavior as many as 24 respondents (25.74%) and those who had less infection prevention behavior were 7 respondents (7.21%). The respondents who have a working period of more than 6 years have sufficient infection prevention behavior as many as 52 respondents (53%.60) and those who have less infection prevention behavior are 14 respondents (14.43%). Based on the results of the analysis using Chi-Square, a p-value of 0.879 (P-value > 0.05) was obtained, which indicated that there was no significant relationship between

working period and the behavior of preventing COVID-19 infection at the Pengadang Health Center.

Based on a bivariate analysis conducted from 97 respondents, it was found that 97 respondents (100%) had good knowledge about COVID-19. In this study, the p-value cannot be reported because there is 1 cell in the 2x2 table which has a value of zero (0) so it does not meet the requirements of chi-square analysis. Lawrence Green's theory in Siregar (2019) tries to analyze human behavior from the level of health. The health of a person or society is influenced by two main factors, namely behavioral causes and non-behavioral causes. Furthermore, the behavior itself is determined or formed from three factors, namely predisposing factors (predisposing factors), supporting factors (enabling factors), and also reinforcing factors (reinforcing factors). The knowledge is included in the predisposing factors, namely the factors that exist from within a person and make it easier for someone to take an action.

Based on the data above, it is known that 97 respondents (100%) have good knowledge, this happens because the pandemic situation when this research was conducted, namely in December 2021, was different from the situation when COVID-19 was first designated as a pandemic in March 2020. Currently the media has lot of information about COVID-19, both from newspapers, television, and social media so that the public, including health center employees, will tend to have sufficient knowledge regarding this matter. In addition, as health workers working at the health center, education and training Regarding the prevention of infection, especially COVID-19 in the pandemic era, of course it will continue to be carried out considering that the health center is the first health service facility for the community.

Based on a bivariate analysis conducted from 97 respondents, it was found that 97 respondents (100%) had a positive attitude about COVID-19. In this study, the p-value cannot be reported because there are cells in the 2x2 table that have a value of zero (0) so they do not meet the requirements of chi-square analysis. Attitudes are included in the predisposing factor in the theory of behavior by Lawrence Green. Attitude is a reaction or response of a person who is still closed to a certain stimulus or object, which already involves factors of opinion and emotion concerned, agree-disagree, good-bad, likes-dislikes, and so on and is a predisposition or factors that facilitate the occurrence of behavior (Notoatmodjo, 2010).

Based on the results of the analysis using Chi-Square, a p-value of 0.160 was obtained ($P\text{-value} > 0.05$) which indicates that there is no significant relationship between perception and behavior to prevent COVID-19 infection at the Pengadang Health Center. The results of this study are in line with research by Fauzi et al (2021) which states that the relationship between perceptions of tuberculosis and attitudes of health officers in Tuberculosis Personal Protective Infection was not significant ($p = 0.308$). The results of this study are not in line with research by Willy (2020), based on the results, it was found that there was a significant relationship between knowledge, perceptions, attitudes and behavior to prevent the corona virus outbreak (COVID-19).

Based on the results of the analysis using Chi-Square, a p-value of 0.889 (P-value > 0.05) showed that there was no significant relationship between the availability of Personal Protective Equipment and the behavior of preventing COVID-19 infection at the Pengadang Health Center. In this study, there was no significant relationship between the availability of PPE and infection prevention behavior. Several things that might cause this test to be insignificant are the lack of samples, the chi-square test, the study design with cross sectional, the cut of value used, and the data collection method.

In this study, there was no significant relationship between the availability of PPE and infection prevention behavior. Several things that might cause this test to be insignificant are the lack of samples, the chi-square test, the study design with cross sectional, the cut of value used, and the data collection method. Based on the results of the analysis using Chi-Square, a p-value of 0.236 (p-value > 0.05) showed that there was no relationship between the availability of cleaning facilities and the behavior of preventing COVID-19 infection at the Pengadang Health Center.

This result is in line with research by Pasaribu (2020), from statistical tests at the Batam City Health Center, a p-value of > 0.05 (p = 0.621) which means that there is no significant relationship between the availability of hygiene facilities and infection prevention behavior while working in Health Center in the red zone of Batam City during the COVID-19 pandemic. The results of this study are not in line with the literature review study conducted by Houghton et al. (2020) which states that many health workers have difficulty implementing infection prevention behaviors due to the lack of availability of hygiene facilities.

Conclusion

The conclusions that can be drawn from the research are "The Relationship Between Predisposing Factors (Predisposing Factors), Supporting Factors (Enabling Factors), and Reinforcing Factors (Reinforcing Factors) with Infection Prevention Behavior While Working on Health and Non-Health Personnel at the Puskesmas Pengadang during the Covid-19 Pandemic. 19" is as follows:

- The characteristics of health workers and non-health workers at the Pengadang Health Center were mostly at the age of 34.06 years, with the highest gender being 70 respondents (72.16%), the respondent's occupation was dominated by health workers, while the average working period of the respondents was 9 years and all respondents have a high school education equivalent or more.
- The knowledge of health workers and non-health workers at the Pengadang Health Center is sufficient for 97 respondents (100%).
- The attitude of health workers and non-health workers at the Pengadang Health Center was positive for 97 respondents (100%).
- Perceptions of health and non-health workers from 97 respondents found 93 (95.87%) respondents had sufficient perceptions and 4 (4.12%) had poor perceptions.
- The workload of health and non-health workers from 97 respondents found 58 (59.8%) respondents had high workloads and 39 (40.2%) had low

workloads.

- The availability of PPE at the Pengadang Health Center found that 75 respondents (77.31%) had sufficient PPE availability at the puskesmas and 22 respondents (22.68%) had insufficient PPE availability at the puskesmas.
- The quality of PPE at the Pengadang Health Center was found that 63 respondents (64.94%) had sufficient PPE quality and 34 respondents (35.05%) had poor PPE quality.
- The availability of cleaning facilities at the Pengadang Health Center found 70 respondents (72.16%) had sufficient PPE availability and 27 respondents (27.83%) had less PPE availability.
- SOPs in the respondent's health centers found 95 respondents (97.93%) had sufficient SOPs and 2 respondents (2.06%) had insufficient SOPs.
- The training at the Pengadang Health Center was obtained by 68 respondents (70.06%) of respondents having attended sufficient training related to COVID-19 and 29 (29.89%) of respondents participating in insufficient COVID-19 training.
- Supervision at the Pengadang Health Center was obtained by 72 respondents (74.22%) stating that the supervision at the Pengadang Health Center was sufficient and 25 respondents (25.77%) stating that there was insufficient supervision.
- Infection prevention behavior in health and non-health workers at the Health Center Pengadang found 76 respondents (78.35%) had sufficient infection prevention behavior and 21 respondents (22.68%) had poor infection prevention behavior.
- There is no relationship between age and COVID-19 infection prevention behavior at the Pengadang Health Center, p-value 0.220 (p-value > 0.05).
- There is no relationship between gender and COVID-19 infection prevention behavior at the Pengadang Health Center, p-value 0.525 (p-value > 0.05).
- There is no relationship between the type of work and the behavior of preventing COVID-19 infection at the Pengadang Health Center, the p-value is 0.268 (p-value > 0.05).
- There is no relationship between work period and the behavior of preventing COVID-19 infection at the Pengadang Health Center. Based on the results of the analysis using Chi-Square, the p-value is 0.879 (p-value > 0.05).
- There is a relationship between workload and the behavior of preventing COVID-19 infection at the Pengadang Health Center, obtained a p-value of 0.025 (p-value < 0.05). The prevalence ratio value of 0.27 means that respondents who have a low workload have a 0.27 times greater chance of preventing COVID-19 infection lower than respondents who have a high workload. The prevalence value of 0.27 means that the variable provides a protective effect.
- The relationship between knowledge and behavior to prevent COVID-19 infection at the Pengadang Health Center cannot be analyzed because in this study the p-value cannot be reported because there are cells in the 2x2 table that are zero (0) so they do not meet the requirements of chi-square analysis.
- The relationship between attitudes and behavior to prevent COVID-19 infection at the Pengadang Health Center cannot be analyzed because in this study the p-value cannot be reported because there are cells in the 2x2

table that have a value of zero (0) so they do not meet the requirements of chi-square analysis.

- There is no relationship between perception and behavior to prevent COVID-19 infection at the Pengadang Health Center. Based on the results of the analysis using Chi-Square, the p-value was 0.160 (p-value>0.05).
- There is no relationship between the availability of PPE with the behavior of preventing COVID-19 infection at the Pengadang Health Center. Based on the results of the analysis using Chi-Square, the p-value is 0.889 (p-value>0.05).
- There is no relationship between the quality of PPE and the behavior of preventing COVID-19 infection at the Pengadang Health Center.
- There is no relationship between the availability of cleaning facilities and the behavior of preventing COVID-19 infection at the Pengadang Health Center, based on the results of the analysis using Chi-Square, the p-value is 0.236 (p-value> 0.05).

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