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Compliance with the Covid-19 Protocol for Pregnant Women in Pagelaran

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Abstract

The COVID-19 pandemic resulted in more than 30 million deaths in 2020. Pregnant women are a vulnerable group. They tend to be at risk of contracting and experiencing complications that can affect pregnancy and fetal development. This research aims to analyze behavioral factors that influence compliance with the COVID-19 protocol for pregnant women using the health belief model approach in the working area of the Pagelaran Health Center. This research is a cross-sectional study of pregnant women in the Pagelaran health center. The sampling technique used in this study was random sampling and found 107 respondents. The analysis technique used in this study is multiple logistic regression. The research results show a significant influence between perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy with compliance. But there is no influence between cues to action on compliance. Variables included in the modeling and proven to influence pregnant women's adherence to the COVID-19 protocol include perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy, with perceived severity being the most dominant variable. So it is hoped that policy maker will consider more of perceived severity, benefits, barriers, and self-efficacy.

Introduction

Since COVID-19 was first announced in Wuhan until WHO declared COVID-19 a pandemic, there have been more than 30 million deaths in 2020 (Palacios Cruz et al., 2021). It is due to the transmission of COVID-19 in the closed spaces and several cases in public spaces (Peng et al., 2022). COVID-19 can mutate and create new variants, of which there are 5 variables. Namely alpha, beta, gamma, delta, and omicron. Each variant has a different character of transmission and severity. The omicron variant has milder symptoms than the delta variant, but the transmission rate of omicron is much faster (Young et al., 2022). More protection is needed for vulnerable groups, including the elderly, disabled groups, groups with comorbidities, and pregnant women. Data on maternal mortality in the UK increased by 20% during the pandemic (Lewis, Martin and Guzman, 2022). This is because pregnant women tend to be at risk of contracting and experiencing complications that can affect pregnancy and fetal development (Panahi, Amiri and Pouy, 2020). COVID-19 in pregnant women is associated with physiological changes in pregnancy, including increased heart rate and oxygen consumption, decreased lung capacity, and increased thromboembolic risk (Zambrano et al., 2020). Several other factors underlie the severity of COVID-19 in pregnant women, including age and previous medical history (Young et al., 2022). Pregnant women aged 35-44 years who are infected with COVID-19 are 4 times more likely to need invasive ventilation and are 2 times more at risk of dying (Zambrano et al., 2020)

Community transmission of pregnant

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women is high (Panahi, Amiri and Pouy, 2020). More than 11,400 pregnant women infected with COVID-19 have to be hospitalized, 62% need treatment Intensive Care Unit (ICU), and 88% higher need invasive ventilation in pregnant women (Subbaraman, 2021). COVID-19 can increase the risk of preterm, ICU needs, neonatal unit needs, and maternal death (Subbaraman, 2021). Silasi et al., (2015), also argue that COVID-19 in pregnant women can result in IUGR (intrauterine growth restriction), premature birth, spontaneous abortion, increased risk of admission to the PICU NICU, even perinatal death.

The COVID-19 outbreak in Indonesia until May 2022 recorded 6054173 confirmed cases of COVID-19 and 2972 active cases, including cases in pregnant women (COVID-19. go. id, 2022). East Java reached 576193 confirmed cases, with 23 new daily cases and 104 active cases, with an additional 6 daily (East Java Health Office, 2022). The COVID-19 outbreak in Malang Regency over the past 10 days has seen an increase in confirmed cases of 11 new cases, 38 new suspected cases, and 55 new close contact cases (Malang District Health Office, 2022). cases of pregnant women infected with COVID-19 in Indonesia reached 9.7% of cases, with 0.2% dying (Motlagh et al., 2020). Preliminary studies conducted in the working area of the performance health center show that 71.4% of pregnant women do not comply with the COVID-19 protocol, 23.8% of pregnant women are sufficiently compliant with the COVID-19 protocol, and only 4.8% of pregnant women comply with the COVID-19 protocol.

Efforts to reduce mortality and morbidity in the mother and fetus during the pandemic have been carried out, including health protocols for mothers and newborns during a pandemic COVID-19. In practice, are still many pregnant women who do not comply with this policy. Siregar, Aritonang and Anita, (2020) stated that 57% of pregnant women were lacking in preventing COVID-19 during pregnancy. Health behavior is an individual attribute in the maintenance, recovery, and improvement of health status. Health behavior includes beliefs, motives, perceptions, values, expectations, behavior patterns, and individual habits (Gadarian, Goodman and Pepinsky, 2021).

The theory of the health belief model is an appropriate theory to explain health behavior because the health belief model explains that individuals tend to participate in health behavior if it is based on a positive perception that health is a valuable outcome, with a positive perception, it will make it easier to predict behavior with the perception of the disease, experienced, and the determinant factors affecting attitude change (Afro, Isfiya and Rochmah, 2021). The health belief model becomes a framework for analyzing behavior and identifying individual beliefs about health. The health belief model has succeeded in predicting health behavior (Barakat and Kasemy, 2020). The health belief model is also often used in several health studies, such as research by Jose et al. (2021), which states that the health belief model is significantly related to behavior change, Huang, Dai and Xu (2020), also argue that health belief has an indirect relationship with prevention behavior. The health belief model can also explain the initiation of the COVID-19 vaccination.

Based on this description, the researcher is interested in analyzing behavioral factors that affect compliance with the COVID-19 protocol for pregnant women using the health belief model approach in the Pagelaran Health Center

Method

The method in this study is observational analytic with a quantitative approach. The research design used is Cross Sectional. The dependent variable in this study is compliance with the COVID-19 protocol. The independent variables in this study are perceived susceptibility, perceived severity, perceived benefits, perceived barriers, perceived self-efficacy, and cues to action. The population in this study was 257 pregnant women in the working area of the Pagelaran Health Center. The sampling technique used is simple random sampling, where every pregnant woman has the same opportunity to be a sample, the number of samples is calculated using the Lemeshow formula, and the results are 107 respondents.

The research took time from March 2022-November 2022 in the Working Area of

the Pagelaran Health Center. Data collection used the COVID-19 protocol compliance questionnaire instrument and the health belief model questionnaire. Data analysis in this study used univariate, bivariate, and multivariate analysis, univariate analysis to describe the characteristics of the respondents and an overview of the research variables, and bivariate analysis used simple logistic regression to determine the effect of the independent variable on the dependent variable, and multivariate analysis used multiple logistic regression with the backward wald method to find out the variables that most influence compliance with the COVID-19 protocol.

Result and Discussion

This research took place in the Pagelaran Health Center in Malang Regency in September 2022, 107 pregnant women involved as respondents in this study. The data collection process was carried out within 1 month, during which the researcher visited each respondent. Then the researcher explained the purpose and description of the research, and then the willing respondents were asked to fill out the provided questionnaire accompanied by the researcher. The research analysis uses descriptive to identify the characteristics of respondents and research variables, bivariate test with simple logistic regression to identify the effect of independent variables on the dependent variable, and multivariate test with multiple logistic regression. The following table shows the frequency distribution of the characteristics of the respondents.

Based on Table 1, out of 107 respondents, 53.3% were 15-26 years, 41.1% were 27-38 years and 5.6% were 39-49 years. 43% had a high school education equivalent, 32.7% had graduated from junior high school or equivalent, followed by 14% college graduates, and finally, elementary school graduates with 10.3%. Judging from the work of the respondents, 58.9% of the respondents worked as housewives, 29% of the respondents were private workers, and 12.1% of the respondents' jobs were self-employed. Based on the number of pregnancies, 51.4% were the first, 30.8% were second, and 17.8% were third pregnancies or more. And if seen based on the trimester of pregnancy, 40.2% of pregnancies are in the second trimester, 33.6% are in the first trimester, and 26,2% are in the third trimester.

Table 1. Distribution of Characteristics of Pregnant Women in Pagelaran Health Center 2022

Variables	Amount (n)	Percentage(%)
Age		
15-26	57	53.3%
27-38	44	41.1%
39-49	6	5.6%
Total	107	100%
Level of education		
SD equivalent	11	10.3%
Middle school equivalent	35	32.7%
high school equivalent	46	43.0%
College	15	14.0%
Total	107	100%
Variable	**Amount (n)**	**Percentage(%)**
Work		
Housewife	63	58.9%
Self-employed	13	12.1%
Private	31	29.0%
Total	107	100%
Gravida		
First	55	51.4%
Second	33	30.8%
Third or More	19	17.8%
Total	107	100%
Trimester		
First	36	33,6%
Second	43	40,2%
Third	28	26,2%
Total	107	100%

Source: Primary Data, 2022

Table 2. Distribution of Perceived Factors and Compliance of Pregnant Women at Pagelaran Health Center in 2022

Variables	**Amount (n)**	**Percentage(%)**
Perceived susceptibility		
Good	18	16.8%
Enough	50	46.7%
Not enough	39	36.4%
Total	107	100%
Perceived severity		
Good	24	22.4%
Enough	67	62.6%
Not enough	16	15.0%
Total	107	100%
Perceived benefits		
Good	15	14.0%
Enough	69	64.5%
Not enough	23	21.5%
Total	107	100%
Perceived Barrier		
Good	5	4.7%
Enough	72	67.3%
Not enough	30	28.0%
Total	107	100%
Perceived self-efficacy		
Good	11	10.3%
Enough	82	76.6%
Not enough	14	13.1%
Total	107	100%
Cues to action		
Good	6	5.6%
Enough	89	83.2%
Not enough	12	11.2%
Total	107	100%
Obedience		
Good	94	87.9%
Bad	13	12.1%
Total	107	100%

Source: Primary Data, 2022

Based on Table 2, most respondents' perceptions were adequate, with the variable perception of cues to action having the highest presentation (83.2%) and the perception of severity having the lowest (only 4.7%). Most respondents (87.9%) reported good compliance. Only 12.1% reported poor compliance.

Based on Table 3 above, the variables perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy influence obedience. It can be seen from the p-value of less than 0.05, while the cues to action variable have no effect because the p-value of 0.626 is higher than 0.05. Based on the odds ratio, the category with the highest odds ratio is perceived severity, with 17.2%, which means that pregnant women who have a good sense of perceived severity tend to be more compliant with the COVID-19 protocol.

Table 3. The Effect of Perceived on Compliance with the COVID-19 Protocol for Pregnant Women in the Pagelaran Health Center Area in 2022

Perceived	Obedience				P-Value	OR
	Good		Bad			
	Amount	%	Amount	%		
Perceived susceptibility						
Good	66	61.7%	2	1.8%	0.000	12,964
Not enough	28	26.2%	11	10.3%		
Total	94	87.9%	13	12.1%		
Perceived severity						
Good	79	73.8%	5	4.7%	0.000	17,200
Not enough	15	14.0%	8	7.5%		
Total	94	87.8%	13	12.2%		
Perceived benefits						
Good	79	73.8%	5	4.7%	0.001	8,427
Not enough	15	14.0%	8	7.5%		
Total	94	87.8%	13	12.2%		
Perceived barriers						
Good	74	69.1%	3	2.8%	0.000	12,333
Not enough	20	18.7%	10	9.3%		
Total	94	87.8%	13	12.2%		
Perceived self-efficacy						
Good	87	81.4%	6	5.6%	0.000	14,500
Not enough	7	6.5%	7	6.5%		
Total	94	100%	13	100%		
Cues to action						
Good	84	78.6%	11	10.3%	0.626	1,527
Not enough	10	9.3%	2	1.8%		
Total	94	87.9%	13	12.1%		

Source: Primary Data, 2022

Table 4. Table of Modeling Factors Affecting Compliance with the COCID-19 Protocol for Pregnant Women in the Pagelaran Health Center Working Area in 2022

Variables	**B**	**Sig.**	**OR**	-2 lifetime logs without variables	-2 log likelihood 5 variables	Nagelkerke R Square	Hosmer and lemeshow test	Omnibus test
perceived severity	2,494	0.002	12,110	79,157	40,241	0.583	0.258	0.000
perceived benefits	1,583	0.064	4,869					
Perceived barriers	2,239	0.015	9,380					
Perceived self-efficacy	1,870	0.033	6,491					

Source: Primary Data, 2022

Based on Table 4, variables with a significant effect on compliance with the COVID-19 protocol on the final modeling are perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy. The variable most related to compliance with the COVID-19 protocol is perceived severity 12.1% (95% CI OR: 2.249-65.206) which means that pregnant women with less perceived severity are more at risk of not complying with the COVID-19 protocol 12.1% times compared to pregnant women with great perceived severity.

This modeling is a fit model, it can be seen from -2logL without variables, and after adding variables, there is a significant decrease of 38.916, which means adding variables to the model can affect the fit model. Based on the Nagelkerke R Square, the value is 0.504. It means that the independent variables in the model can explain compliance with the COVID-19 protocol by 58.3% and 41. The other 7% can be explained by factors outside the existing variables. Based on the results of the omnibus test, the p-value was 0.000 <0.05. It can be interpreted that the model formed is declared feasible because it fulfills the significance of the model. The Hosmer and Lemeshow tests show a p-value of 0.258> 0.05, which means that H0

is rejected and H7 is accepted. So the model is fitted with the data, and the model is acceptable.

Respondents in this study were 53.3% aged 15-26 years, 43.0% had a high school education level equivalent, 58.9% were housewife, 51.4% were first pregnancies, and 40.2% were second-trimester pregnancies. Age is related to preventive behavior. Older individuals and not working are more likely to apply less preventive behavior than younger individuals (Liao et al., 2019). Young mothers tend to be creative, curious about information, have a good memory, and could understand information better than older mothers. However, most pregnant women at a young age experience pregnancy disorders related to the immaturity of the reproductive organs and the immune system (Londero et al., 2019). This level of formal education can affect knowledge and decision-making. The lower the level of education, the more difficult it is to receive and understand information (Zannah, 2020). High knowledge will form proper beliefs, attitudes, and prevention practices (Anikwe et al., 2020)

Work related to adherence to health behavior relate to the availability of time owned, working individuals tend to have less time to go to health services (Tambuwun et al., 2021). working mothers were more likely to be disobedient to having their condition checked during a pandemic due to not having time. Pregnant women who have never given birth have a high-risk perception of COVID-19 (Londero et al., 2019). Individuals who do not work have less preventive behavior (Liao et al., 2019). Primiparous pregnant women have no experience dealing with pregnancy, so they have more concerns. Pregnancy and childbirth experiences can reduce perceived risk perceptions and predict preventive behavior (Sari et al., 2021). Nwafor et al., (2020) stated grande multiparous women have 3 times worse health behavior than nulliparas. Multiparous pregnant women have less behavior in preventing COVID-19 because many families can affect the economy, and it becomes difficult to implement the COVID-19 protocol (Ayele et al., 2021). Pregnant women who are positive for COVID-19 in trimesters 1 and 2 are more at risk of experiencing fetal death (IUFD) (Donders et al., 2020) because in this phase, the organs in the fetus are formed so that the fetus is more easily exposed to the virus resulting in a negative impact on the fetus. Pregnant women infected with COVID-19 in the first trimester of pregnancy experience spontaneous abortion, which is possible due to hypoxia due to acute respiratory distress (Priyadharshini et al., 2021).

Perceived susceptibility is positively related to preventive behavior (Aghababaei et al., 2020). High perceived susceptibility will encourage individuals to do better prevention because they belief that their condition is at a high risk of disease, so perceived susceptibility will encourage preventive behavior (Schwartz and Dhaliwal, 2020). Good perceived susceptibility indicates that the individual believes they are more at risk of contracting the disease, so they take precautions. Then the better the perceived susceptibility, the better the prevention behavior (Zareipour et al., 2020). Perceived susceptibility directly related to health behavior. A research conducted by Jose et al. (2021), stated that increasing perceived susceptibility will reduce health problems. The statement above is in line with the results of this study, where there is a significant influence between perceived susceptibility on compliance with the COVID-19 protocol for pregnant women. Perceived susceptibility can also affect pregnant women's compliance by 12.9%.

Perceived severity refers to the belief in difficulties arising from a medical and social illness so that it can make people more active in carrying out prevention (Mirzaei et al., 2021). perceived severity related to individual beliefs regarding the severity of a disease, the more individuals believe in the impact of the disease, the individual will feel threatened, so they are motivated to carry out health behaviors (Claresta, Christian and Sa'id, 2021). Tong et al. (2020), research shows that perceived severity has a significant relationship with the prevention of COVID-19, which is also supported by research Al-Metwali et al. (2021), which also states that perceived severity is significantly related to receiving the COVID-19 vaccine. This statement is in line with the research results obtaining a significant influence between perceived severity on compliance with the COVID-19 protocol for pregnant women and perceived severity that

can affect compliance for pregnant women.

Perceived benefits can significantly predict infectious disease prevention behavior, as good as being a primary factor in using masks. Perceived benefits are expectations from preventive behavior. Individuals who believe behavior is safe and effective will have a positive attitude and tend to take precautions (Huang, Dai and Xu, 2020). Maharlouei et al. (2020), argues that perceived benefits have a significant relationship with prevention behavior. The relationship between perceived benefits and prevention behavior is possible because when individuals get a lot of benefits from preventing COVID-19, they tend to do all things that can prevent COVID-19. Tao et al. (2021), also state that perceived benefits have a positive relationship with willingness to vaccinate. It is also supported by individuals with high perceived benefits, who tend to be willing to receive the COVID-19 vaccine to protect themselves and others. This statement is in line with the results of this study, where there is a significant influence between perceived benefits on compliance with the COVID-19 protocol for pregnant women. Pregnant women with high perceived benefits tend to be 8.4% more obedient than pregnant women with low perceived benefits.

Perceived barriers are the strongest predictor of health behavior because they can influence the perception of the effectiveness of behavior so that it can motivate individuals to carry out health recommendations (Fall, Izaute and Chakroun-Baggioni, 2018). Individuals must be able to control perceived barriers before engaging in preventive behavior (Bashirian et al., 2020). Perceived barriers refer to a person's belief in the negative impact of changing behavior, for example, considering cost, time, convenience, and side effects. Perceived barriers are inversely related to preventive behavior. The lower the perceived barriers, the higher the possibility of individuals adopting a healthy life. Individuals with low Perceived barriers have a better response to COVID prevention, so to increase adherence, it is necessary to reduce perceived barriers. (Barakat and Kasemy, 2020) argue that perceived barriers are a vital factor because individuals must take control of barriers. Karimy et al. (2017), also significantly mention that perceived barriers are related to Pap smear test adherence. This statement is in line with the research results, which found a significant effect between perceived barriers on compliance with the COVID-19 protocol for pregnant women. Perceived barriers can affect the compliance of pregnant women by 12.3%.

Fall, Izaute and Chakroun-Baggioni, (2018) argue that self-efficacy is a level of confidence and belief in overcoming barriers to health behavior, self-efficacy is important in overcoming perceived barriers and effective in adopting COVID-19 prevention behaviors. Because to carry out health behaviors, individuals must be confident in their ability to carry out health recommendations (Mirzaei et al.(2021). Self-Efficacy encourages individuals to adhere more to the prevention of COVID-19, with a high level of confidence that it will control individuals to adopt a healthy life. High self-efficacy will overcome barriers felt and effective in preventing COVID-19 (Shahnazi et al. (2020). Self-efficacy can significantly predict the behavior of preventing infectious diseases such as SARS-CoV, MERS, and other respiratory infections (Mirzaei et al., 2021). Research conducted by Khazaeian et al., (2021) also supports this statement by stating that self-efficacy has a positive relationship with cues to act to prevent COVID-19. This statement reinforces the research results obtained in this study that there is a significant influence between perceived self-efficacy on compliance with the COVID-19 protocol for pregnant women and perceived self-efficacy can affect pregnant women's compliance by 14.5%.

In several studies, cues to action are health behavior predictors, as in research by Li et al., (2020; Tao et al., (2021), and others. Cues to action can be influenced by individual views about beliefs about something, which they then apply. Several factors can trigger, such as environment, education, events, or from other people (Claresta, Christian and Sa'id, 2021). But Al-Sabbagh et al. (2022), held a different opinion. They stated that cues to action were not significantly related to the quarantine program. In line with this research, Afro, et. al. (2021), also cues to action are irrelevant to compliance with health protocols during a pandemic. So is research. It can result from the environment

influencing individual intentions to act. Individuals tend to obey if the environment also obeys. Public awareness regarding the law is still lacking, while the deteriorating economic conditions are also the causes of non-compliance with health protocols, as well as the indecisiveness of rules and witnesses that are reasons for individuals not to comply (Sulat et al., 2018). Most individuals tend to ignore internal factors in acting and are more easily influenced by external factors such as the mass media (Alsulaiman and Rentner, 2018). Therefore, health service providers and the mass media must provide appropriate information, especially for high-risk groups (Khazaeian et al., 2021). With so many media and organizational trends that will influence political decisions and make information more diverse which ultimately makes people confused about behavior changes that must be implemented (Jose et al., 2021). This statement supports research results that show no significant effect between perceived cues to action on compliance with the COVID-19 protocol for pregnant women.

The combination of perceived severity and perceived susceptibility will form a perceived threat, which will make individuals more careful (Mirzaei et al., 2021), with a high perceived threat will make individual health behavior better (Jose et al., 2021). If the perceived threat is not considered, then the motivation to take prevention will be low, or when an individual has low perceived susceptibility and perceived severity then information related to his condition will be ignored. The combination of perceived susceptibility and severity will cause a perceived threat in the end. The aspect of this belief will lead to action in the form of compliance with the COVID-19 protocol (Getachew et al., 2022). However, perceived susceptibility may not be included in the modeling if the individual does not experience symptoms, there is a long-term threat or no history of previous illness (Sulat et al., 2018), or there is a belief that the individual will not get sick or have never met a sufferer (Alsulaiman and Rentner, 2018).

Perceived self- efficacy, perceived barriers, and perceived benefits are the main factors in the prevention of behavior because to understand health problems, individuals must feel the benefits of behavior, and to face obstacles, individuals must also have self- (Mirzaei et al., 2021). Shmueli (2021), also mentioned perceived benefits, perceived barriers, and perceived self-efficacy as keys in health promotion. So adopting the behavior of preventing COVID-19 requires high perceived benefits and perceived self-efficacy, while perceived barriers must be low (Mirzaei et al., 2021). Jose et al. (2021) explained that perceived barriers have a significant effect when the level of perceived barriers low and perceived self-efficacy is high so that it will easily affect perceived benefits. But when perceived self-efficacy and perceived barriers are low, perceived benefits cannot affect behavior.

Conclusion

There is a significant influence between perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy with compliance, but there is no influence between cues to action on compliance. Variables included in the modeling and proven to influence pregnant women's adherence to the COVID-19 protocol include perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy, with perceived severity being the most dominant variable. Recommendations that can be implemented from this research are policy-making and counseling related to the importance of implementing the COVID-19 protocol by considering perceived severity, benefits, barriers, and self-efficacy so that explanations are more acceptable and implemented daily.

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