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## RESEARCH ARTICLE

The Use of Masks for Women During the Covid-19 Pandemic: Cloth Masks Are the Main Choice for Rural Communities, Banyumas, Indonesia

Isna Hikmawati<sup>1</sup>, Ragil Setiyabudi<sup>1</sup>, Yuliarti Yuliarti<sup>1</sup>

<sup>1</sup> Universitas Muhammadiyah Purwokerto

\* [isnahikmawati@ump.ac.id](mailto:isnahikmawati@ump.ac.id)

## ABSTRACT

**Background:** The coronavirus (Covid-19) epidemic first occurred in China at the end of 2019, developing into a pandemic almost all over the world. Its massive spread has made several countries adopt a policy of using masks during the pandemic. The purpose of the study was to describe the use of masks during the Covid-19 pandemic in rural communities.

**Methods:** The research design was a cross-sectional study with a sample of the community in Purwodadi Village, Banyumas Regency, Central Java, Indonesia. Sampling with a total sampling, as many as 50 members of the PKK (*Pemberdayaan Kesejahteraan Keluarga*) at the village level. The project team obtained written informed consent from respondents. The research instrument used a questionnaire. The questions have been validated and the reliability. Data were analyzed using Chi square ( $X^2$ ) with p value < 0.05.

**Results:** Research shows 70% of people use masks when leaving the house during the Covid-19 pandemic, 46% of people feel uncomfortable wearing masks, 88% use cloth masks, 60% have masks > 5 pieces, 44% of mothers' role in reminding them to wear masks and 72% wash masks every day. There is a difference in the proportion in preventing Covid-19 between people who have received health education and good knowledge about Covid-19, but there is no difference in the level of education.

**Conclusion:** 30% of rural communities have not participated in wearing masks to prevent Covid-19, and cloth masks are the first choice of types of masks used during the Covid-19 pandemic.

**Keywords:** Masks, Rural Communities, Covid-19

## Introduction

The coronavirus (Covid-19) epidemic first occurred in China at the end of 2019, developed into a pandemic and almost all countries reported cases.<sup>1</sup> Since appearing in Wuhan, China, at the end of 2019, the corona virus has now spread to more than 213 countries with patients reaching 2,724,809 people and deaths reaching 187,847 people.<sup>2</sup> Indonesia is one of the countries where the Covid-19 pandemic occurred, in a period of approximately one month, from March 2 to April 24, 2020 there were 689 deaths. The occurrence of cases at the beginning of the pandemic has an upward trend, although there has been a decrease from time to time. The Covid-19 outbreak was possible initially because of exposure to the same and common sources, including mobilization abroad, mobilization to areas with a high incidence of Covid-19, the second cause was due to the massive person-to-person transmission. Transmission can occur due to touch, crowds in activities, etc., it is predicted that the two types of causes of the outbreak (common source and propagated source) were involved.<sup>3</sup> World Health Organization (WHO) reports that human-to-human transmission limited to close contact has been confirmed in China and other countries. Standard recommendations to prevent the spread of infection include wearing a mask, washing hands regularly, applying cough and sneezing etiquette, avoiding close contact with people showing symptoms of respiratory illness such as coughing and sneezing. In addition, implementing Infection Prevention and Control while in health facilities, especially emergency units.<sup>4</sup> During the Covid-19 pandemic, many people wore mouth masks when traveling for various reasons, according to a preliminary survey, one of the most common reasons was to prevent disease transmission, especially Covid-19. The Covid-19 virus is transmitted through direct contact with droplets of sputum from an infected person (through coughing and sneezing), or touching surfaces that are contaminated with the virus. So that wearing masks is not only for the prevention of the covid-19 virus but also to prevent the transmission and spread of other diseases such as: flu, cough, severe acute respiratory syndrome, etc. Various types of masks used by the community include: cloth masks, medical masks and N95 masks. The various types of masks have their own advantages and disadvantages. The drawback is that small particles such as viruses in the air can still be inhaled even when wearing this mask. Meanwhile, N95 masks are thought to be able to filter particles in the air up to 95%. Based on the Covid-19 transmission mechanism, the use of

masks is an indispensable measure to prevent droplets and the possibility of aerosol transmission, reducing face-to-face contact, especially in crowded places. Although most countries have established guidelines for the use of masks to deal with the pandemic, there are still different perspectives on masks. The Centers for Disease Control (CDC) recommends that cloth masks can be used for people over 2 years old when leaving the house/public places, while cloth masks are not recommended for health workers.<sup>5</sup> The use of masks in public places is highly recommended.<sup>6</sup> In Washington, D.C. wearing masks in public could lower the daily Covid-19 growth after there is a policy from the government regarding the use of masks in public places. The results of this study indicate that the use of face masks in public places can reduce the spread of Covid-19.<sup>7</sup> The use of masks is one of the efforts made by the Indonesian government in addition to various other policies during the Covid-19 pandemic. The various policies implemented include: (1) staying at home (2) Social Distancing (3) Physical Distancing (4) washing hands (5) Work/Study From Home (6) Postpone activities that gather large crowds (7) Large-Scale Social Restrictions (8) Enforcement of new life adaptation policies.<sup>8</sup> Banyumas is one of the districts in the province of Central Java, Indonesia, is one of the districts with a dense population, the use of masks as an effort to prevent Covid-19 is highly emphasized. In this study we address two questions:

1. How to use masks in rural women during the Covid-19 pandemic
2. How to prevent Covid-19 in rural women with different characteristics

## Material & Methods

The research design used a cross-sectional study. The population in this study were *Pemberdayaan Kesejahteraan Keluarga (PKK)* members in Kamulyan village, Banyumas district. PKK is a special women's organization that is a partner of the government and community organizations, which functions as facilitators, planners, implementers, controllers and drivers at every level of implementation of the family welfare empowerment program. Samples were taken from village PKK members (who were representative of all components) The total number of village PKK members was 50 people, sampling technique with a total sample. The project team obtained written informed consent from respondents. The dependent variable is Covid-19 prevention. The Covid-19 prevention questionnaire with interview sheets

includes: the use of masks, washing hands with soap, maintaining distance and mobilization. The independent variables consisted of the use of masks (types of masks, number owned, washing masks, the role of families in using masks, complaints about wearing masks), participation in health education, knowledge about Covid-19. Prevention and

knowledge questionnaire with a cut point using the median, if below the median of prevention and knowledge is lacking and the median of prevention and knowledge is good. The questions have been validated and the reliability. Data were analyzed using Chi square ( $X^2$ ) with p value < 0.05.

## Results

### a. Use of Rural Community Masks

**Table 1.** Characteristics of the Use of Rural Community Masks

No	Variable	Frequency	%
1	Wearing a Mask		
	Sometimes	15	30
	Always	35	70
2	Complaints Wearing Masks		
	Bother	16	32
	Uncomfortable	23	46
	Out of breath	11	22
3	Mask Material		
	Medical Mask	6	12
	Cloth mask	44	88
4	Availability of masks		
	1-2 piece	3	6
	3-4 piece	17	34
	≥ 5 piece	30	60
5	Remember to wear a mask		
	Father	11	22
	Mother	22	44
	Other	17	34
6	Mask Wash Time		
	1 day	36	72
	2 days	12	24
	3 days	2	4

b. Differences in the Proportion

**Table 2.** Differences in the Proportion of Covid-19 Prevention

		<b>Covid-19 Prevention</b>			<i>P</i> value	$X^2$
		<i>Sometimes</i>	<i>Always</i>	<i>Total</i>		
health education	Never	3 (23,1%)	10 (76,9%)	13 (100%)	0,928	0,008
	Ever	9 (24,3%)	28 (75,7%)	37 (100%)		
	Total	12 (24%)	38(76%)	50 (100%)		
		<b>Covid-19 Prevention</b>			<i>P</i> value	$X^2$
		<i>Sometimes</i>	<i>Always</i>	<i>Total</i>		
Knowledge about Covid-19	Less	1 (50%)	1 (50%)	2 (100%)	0,380	0,772
	Good	11 (22,9%)	37 (77,1%)	48 (100%)		
	Total	12 (24%)	38(76%)	50 (100%)		
		<b>Covid-19 Prevention</b>			<i>P</i> value	$X^2$
		<i>Sometime</i>	<i>Always</i>	<i>Total</i>		
Education	elementary school	1 (6.7%)	14(93,3,7%)	15 (100%)	0,089	6.506
	Junior High School	6 (30%)	70 (80%)	20 (100%)		
	High School	2 (20%)	8(80%)	10 (100%)		
	College	2 (40%)	3(60%)	5(100%)		
	Total	12(24%)	38(76%)	50(100%)		

The results of the study obtained various things related to the characteristics of the use of masks in rural communities (Table.1). Based on the existing results from 50 respondents, 70% always use masks, 46% are uncomfortable when using masks, 88% use cloth masks, 60% have masks of more than 5 pieces, 44% are reminded by mothers to use masks and 72% wash masks every day. Furthermore, on the characteristics of the difference in the proportion of Covid-19 prevention (Table. 2), the results obtained in respondents who have received Health Education, there are still 24.3% who sometimes do Covid-19 prevention, on the characteristics of knowledge about Covid-19, respondents with good knowledge, still 22.9% who sometimes do Covid-19 prevention, on the characteristics of education, respondents with higher education, 20% sometimes do Covid-19 prevention. The results of the statistical test show that there is no difference in the proportion of Covid-19 prevention on the characteristics of exposure to health education, knowledge of Covid-19 and level of education.

**Discussion**

During the Covid-19 pandemic, policies regarding the use of masks by authorized officials

were heterogeneous and inconsistent. For example, the policy by the World Health Organization (WHO), previously recommended, masks only for those who have symptoms suggestive of Covid-19 and by health workers.<sup>9</sup> However, on another occasion, WHO recommended the use of masks by the general public, especially in areas with a high proportion of cases of Covid-19, because it has been shown to provide partial protection and has a major influence on transmission.<sup>10</sup> Indonesia, especially the people of Banyumas, Central Java as one of the areas affected by the Covid-19 pandemic, through existing government policies, During the Covid-19 pandemic, people are expected to be able to use masks correctly, namely covering the mouth and nose both for people who have symptoms of Covid-19 or in healthy people. Wearing a mask correctly can protect yourself and others from the spread of Covid-19. It is recommended that they wear masks when they have to leave the house or go to public places. for example, to the shop, to the market, to the hospital, to the workplace and so on. The use of masks should not be worn on children under the age of 2 years or on people who have difficulty breathing or are unconscious or paralyzed, in addition to the use of masks, it is also a policy to maintain a distance of

about 6 feet (2 m) from other people, so that masks are not a substitute for social distancing.<sup>11</sup> The results showed that community compliance in using masks was 80%, meaning that there were still 20% who had not complied with the adaptation of the new habit of using masks. This needs to be a concern because the transmission of Covid-19 is the same as MERS and SARS. Human-to-human transmission occurs through droplets, contact and contaminated objects.<sup>1</sup>

The policy on the use of masks includes shop workers, restaurant workers, teachers, child care services, laborers and others. Some of the things that are felt include: wearing a mask is considered uncomfortable, impractical, disturbing. In addition, there are concerns that the use of masks for a long time may be unhealthy or dangerous.<sup>12</sup> The results show that most people feel discomfort while wearing masks, discomfort occurs because the behavior of wearing masks has not become a behavior that was usually done before the Covid-19 pandemic, although some people have done it. The results of interviews with respondents, only 5% before the pandemic used masks, even then it was incidental. The results of previous research concluded that the impact of wearing a mask was related to oxygen saturation levels and heart rate, the results of this study were an observational study of 52 surgeons who wore surgical masks for 1-4 hours, revealing that there was a decrease in arterial O<sub>2</sub> saturation from about 98% before surgery to 96% and an increase in heart rate from ~85 bpm before surgery to 90 bpm after surgery.<sup>13</sup> Although there was a change in O<sub>2</sub> saturation and heart rate but statistically, it did not have a clinically significant impact, because the decrease in postoperative oxygen saturation remained in the normal range (90-98%), as well as the increase in heart rate value was still in the normal range (60-100 beats per minute).<sup>13,14</sup>

Many types of masks are used by the public during the Covid-19 pandemic. Medical-grade masks, which include surgical and N95 respirator masks are designed to protect against harmful air or liquid particles and droplets.<sup>15</sup> The results showed that most of the rural communities (88%) used cloth masks. The selection of masks by the community with cloth materials, one of which considers the economic aspect, because cloth masks can be washed again, so there is no waste. In addition, various variations of raw materials for making masks are one of the considerations in choosing the type of mask, for example cotton, t-shirt material and others -other. Based on the results of the study, most of them had more than 5 masks that were given by the village government in the

"mask assistance for the community" program, or bought them at affordable prices, between 5-10 thousand/pcs. The results of previous studies concluded, N95 medical masks with prolonged use were associated with complaints of headaches, dizziness, as well as an increase in perceived exertion and perceived shortness of breath.<sup>16</sup> The results of the study illustrate that mothers have an important role in preventing Covid-19 through efforts to use masks, in families warnings to wear masks when leaving the house 44% are delivered by mothers, in addition to fathers, or families who live with the same house. In addition to the role in reminding to wear masks when leaving the house, the role of mothers is very important in washing masks, because most rural communities wear masks made of cloth. An important finding in this study is related to washing time, there are those who wash their masks more than one day, meaning they do not change masks every day, the data shows that around 24% wear masks for two days, this is certainly not very appropriate, because of the possibility of transmission of various diseases through a contaminated mask.

The results showed that some respondents had received health education about Covid-19. Information about Covid-19 received by the public from various media sources such as: television, radio, newspapers, magazines, including from health educators during regular PKK meetings. The information obtained provides a short-term impact (immediate impact) in the form of changes or increases in knowledge. The more a person receives information about a disease, the knowledge about the disease will increase. Health education is expected to be one way to change or influence human behavior individually, in groups and in society. Knowledge about Covid-19 increases public understanding of the problems that occur in the community and community participation in preventing Covid-19. The results showed that community participation in the prevention of Covid-19 started from planning led by the village head to the formation of a Covid-19 task force team. An integrated approach through an eco-bio-social approach needs to be continuously improved so that the community can participate directly in the decision-making process regarding development programs in their area.<sup>17</sup> The results of the study of community knowledge in Banyumas about the causes and transmission of Covid-19 showed that most of the people had good knowledge about the transmission and causes of Covid-19. This is because, most of them have received health education related to Covid-19 and the intensity of information about Covid-19 is very intensive,

especially from the media and also the village government. The results of the study show a higher proportion, in people who have good knowledge to prevent Covid-19, although there is no statistically significant difference. Meanwhile, the education level variable shows that there is no difference in the proportion of Covid-19 prevention between low education and higher education and statistically there is no significant relationship. In addition to good public knowledge in preventing Covid-19, people need strong motivation to participate in Covid-19 prevention activities. The importance of implementing a bottom-up strategy that involves the community in the design, implementation and evaluation of each health intervention, so that each activity can be sustainable. The results of the study of community knowledge in Banyumas about the causes and transmission of Covid-19 showed that most of the people had good knowledge about the transmission and causes of Covid-19. This is because, most of them have received health education related to Covid-19 and the intensity of information about Covid-19 is very intensive, especially from the media and also the village government. The results of the study show a higher proportion, in people who have good knowledge to prevent Covid-19, although there is no statistically significant difference. Meanwhile, the education level variable shows that there is no difference in the proportion of Covid-19 prevention between low education and higher education and statistically there is no significant relationship. In addition to good public knowledge in preventing Covid-19, people need strong motivation to participate in Covid-19 prevention activities. The importance of implementing a bottom-up strategy that involves the community in the design, implementation and evaluation of each health intervention, so that each activity can be sustainable.<sup>18</sup>

Indonesia is one of the countries that are not yet high-income, however, the incidence and mortality of Covid-19 is quite high. The Indonesian government reported that as of May 22, 2020 21,430 cases were confirmed. Based on the incidence ratio, there was an increase to 173 cases / 1 million people.<sup>19</sup> The results of research by Bayati, M explained that the prevalence of Covid-19 was three times higher in high-income countries (17371 vs. 6180 per 1 million population), as well as cases of death (289.68 vs. 147.33 per 1 million population). The results of the research concluded that the prevalence and mortality from Covid-19 were significantly related to the country's per capita income.<sup>20</sup> Regarding the use of masks, Banyumas district : The use of surgical masks and N95 masks is intended for health workers, while the

general public can use masks made of cloth or other materials, cloth masks can be used repeatedly and can be washed their use is not more than 4 hours and then to maintain the availability of masks and at the same time empower the economy of the community through micro-business activities.<sup>11</sup> The use of masks is also part of several policies taken by the Indonesian government.<sup>21</sup> In some countries various factors influence people to wear masks: among others cultural factors, and cultural factors are the main factors throughout the world, for example In East Asia, wearing masks is commonplace and has long been culturally accepted.<sup>22</sup> The next factor, people wear masks for reasons of avoiding air pollution, allergies, and winter, and research results show 63% of Japanese people wear face masks in public places during the spread of Covid-19.<sup>23</sup> The results of the study show that people who routinely wear masks are more than those who don't, this is important considering the massive spread of Covid-19. The use of masks is expected to reduce the spread of the virus, considering that transmission of the virus can be through droplets (splashes of saliva particles from coughing, sneezing or when talking), so close contact with people infected with the virus allows it to spread. Those who are close to the infected person have the potential to spread the virus again when in a crowd. Because not infrequently among them do not even realize they have carried the virus in their bodies. In addition to the massive spread, the Covid-19 death rate is quite high, especially in people who have co-morbidities. The results showed that hypertension and diabetes mellitus were the co-morbidities that caused the most deaths from Covid-19.<sup>3</sup> Recent epidemiological research on Covid-19 concludes that the estimated median serial interval of Covid-19 is 4.0 days, which is shorter than the incubation period, indicating that the rapid cycle of transmission and isolation of cases is of great urgency.<sup>24</sup> The results of Wang, C Y's study showed that the use of masks before disease onset in primary cases and family contacts was 79% effective in reducing transmission, but wearing masks after disease onset in primary cases did not significantly protect.<sup>25</sup> The results of other studies show that wearing a mask is one of the Non-Pharmaceutical Intervention (NPI) measures that can be applied effectively with minimum costs and without dramatically disrupting social practices.<sup>26</sup> Limitations in this study, the sample is homogeneous, so it cannot be described in all community groups about community participation in the use of masks in rural communities.

**Conclusions**

Rural communities during the Covid-19 pandemic, especially the women, 70% of their compliance rate was in wearing masks when leaving the house, most of the complaints were wearing masks because they were uncomfortable (46%), 88% used cloth masks, 60% had masks >5 pieces, 44% the role of mothers in reminding them to wear masks and 72% washing masks every day. There is a difference in the proportion in preventing Covid-19 between people who have received health education and good knowledge about Covid-19, but there is no difference in the level of education. The community continues to be actively motivated to continue to prevent Covid-19. Need an understanding of the use of cloth masks, must cover the nose and mouth and not more than 4 hours and should be washed every day.

**Conflict of interests:** No conflict of interests is declared

**Ethical Considerations**

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy,

etc. have been completely considered by the authors. All procedures performed in this study were in accordance with the national research committee's ethical standards. The study was approved by the Health Research Ethics Commission, Muhammadiyah University of Purwokerto, by Number: No. Kepk/UMP/28/II/2021

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