

## Conference Paper

# The Effect of Wearing a Mask on Health and Comfort During the COVID-19 Pandemic

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**Abstract.**

The Coronavirus that originated in Hubei province, China was declared a global public health emergency and pandemic. To prevent an increase in the number of COVID-19 patients, the Indonesian Government is undertaking a policy mandating that everyone wears a mask. Masks are used to protect people from droplets. The use of masks during the COVID-19 pandemic is highly recommended by many international authorities. The prolonged use of masks can affect a person's health and discomfort. The purpose of this study was to determine the effect of using masks on health and comfort. This was a descriptive analytical study which used a cross-sectional design. 73 respondents were recruited by total sampling. Data collection was through questionnaires and observations, while data analysis was conducted using logistic regression. The results showed that the effect of using a mask on health was 2.7% and the effect of using a mask on comfort was 64.4%. Based on the results of the study, it is concluded that there is an effect of using a mask on comfort.

**Keywords:** mask, health, comfort, pandemic, COVID-19

## 1. INTRODUCTION

Coronavirus disease 2019 (COVID-19) began in the city of Wuhan in Hubei Province, China, and has already spread to 72 nations. COVID-19 is caused by the severe acute respiratory syndrome coronavirus 2, a new coronavirus (SARS-CoV-2) [2019 novel coronavirus (2019-nCoV), formerly known as 2019 novel coronavirus (2019-nCoV)] [1] [2]. Transmission of the COVID-19 virus is through droplets from the respiratory tract and contacts, additionally, droplets can also be released from the nose or mouth when someone coughs or sneezes [3] [4] [5].

Data from the World Health Organization (World Health Organization 2021) as of March 31, 2021, it has recorded 127,877,462 cases of COVID-19 with 2,796,561 deaths worldwide. Indonesia is at level 20 globally there are 1,492,002 people infected with COVID-19 [6]. The World Health Organization has set preventive measures against the

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increasing number of COVID-19 sufferers, all countries are recommended to use face masks recommended by international, national and local authorities [7].

The current recommendation to wear a face mask during contact with other individuals affects millions of people. Especially health care professionals are required to wear masks for long periods of time [8]. Masks are used to protect themselves from air pollutants. Airborne particulates that are harmful to breathing are 10  $\mu$ m and 2.5  $\mu$ m, so a respirator is needed to prevent them from entering the respiration system [9].

Some of the recommended masks may have side effects such as lack of comfort or discomfort during continuous use. The use of masks that are too long can affect health and comfort, one of which is headaches. Previous research results, when wearing a mask for 2 hours, symptoms such as dizziness, difficulty concentrating, and difficulty in breathing will occur [10]. According to Kyung et al. (2020) [11] the use of a mask for 1 hour has no effect on its use, but continuous use of a mask for more than 4 hours can be associated with headaches. Scheid et al. (2020) [12] stated an observational study of 52 surgeons wearing surgical masks revealed a decrease in arterial O<sub>2</sub> saturation from about 98% before wearing a mask to 96% after wearing a mask for 1-4 hours. In addition, workers in various professions who were previously unfamiliar with wearing masks are suddenly expected to work while wearing masks.

Based on the description above, researchers are interested in researching further about "the effect of using masks on health and comfort during the COVID-19 pandemic".

## 2. METHODS AND STUDY DESIGN

The research design used in this research was descriptive analytic research using cross-sectional. This research was conducted in May, 2021. The sample of this study was PT ATS factory employees, totaling 73 people with inclusion criteria: wearing a mask, having no history of respiratory problems, not smoking, and willing to participate in the study. The sampling technique used was total sampling. The measuring instrument used in this study was a questionnaire for convenience and a health observation sheet consisting of measurements of SpO<sub>2</sub>, pulse, and respiratory rate. The analysis used was logistic regression test using IBM SPSS Statistics 23.

## 3. RESULTS

TABLE 1: Demographic Characteristics of Respondents at PT. ATS.

Characteristics	Amount	Percentage
Gender Man Woman	42 31	58% 42%
Age Early Adulthood (< 35 years) Late Adults (35-45 years)	63 10	86% 14%
Education Elementary school Junior high school Senior High School College	0 5 67 1	7% 92% 1%
Mask type medical mask cloth mask	23 50	32% 68%

### 3.1. Biosociodemographic of respondents

Based on gender, most of them were 42 men (58%). Age is known to be more in early adulthood (< 35 years) by 86% with the type of mask used more than cloth masks, namely 51 people (70%), while medical masks are 22 (30%).

### 3.2. The duration of mask used

TABLE 2: Results Description of the Use of Masks.

	Frequency (n)	Percent (%)
< 4 hours > 4 hours Total	12 61 73	16.4 83.6 100.0

From table 2 shows that length of use of masks obtained by 12 people (16.4%) for <4 hours/day and 61 people (83.6%) for >4 hours per day.

### 3.3. Convenience Results in Using Masks

TABLE 3: Results Description of Comfort.

	Frequency (n)	Percent (%)
Comfortable Not comfortable Total	26 47 73	35.6 64.4 100.0

From table 3 shows that the results of the description of comfort obtained 26 people or 35.6 percent of respondents feel comfortable when using a mask and 47 people or 64.4 percent of respondents feel uncomfortable when using a mask.

TABLE 4: 4 Results Description of Health

	Frequency (n)	Percent (%)
Normal	71	97.3
Not Normal	2	2.7
Total	73	100.0

### 3.4. Health Results on the Use of Masks

The effect of the use of masks on health conditions obtained normal conditions for 71 people (97.3 %). Meanwhile, the effect of using a mask on comfort was obtained by 47 people (64.4%) who felt uncomfortable when using a mask.

### 3.5. Results of the Effect of Mask Usage on Comfort and Health

The results of the logistic regression analysis test showed that there was no significant effect between the variables of the use of masks on the variables of Health and the significant effect of the variables on the use of masks on the variables of comfort.

## 4. DISCUSSION

The results showed that there was no significant effect between the use of masks for a short or long time on a person. There are 71 people or 93.3% of respondents experienced normal health conditions when using masks and 2 people or 2.7% of respondents experienced a decline in health when using masks. The use of a mask can indeed make a person feel short of breath or have a headache, but it does not affect the oxygen level in a person's blood [10].

In addition to physical health, health aspects are divided into three: physical, mental health and social health. Physical health can be defined if a person does not complain of pain or there are no complaints and objectively does not appear sick. All organs in the body can function normally. In this study, physical health was measured by oximetry to measure SpO<sub>2</sub>, pulse and respiratory rate.

The use of masks affects a person's comfort, masks are considered subjectively disturbing and indicate a decrease in physical performance. This is supported by research [8] showed that masks can cause discomfort to respondents during activities. The domains of respiratory distress, heat, shortness of breath, and overall discomfort were the things that had the greatest influence on the respondent's perception. Based on previous research [13] [14] [15], in the majority of individuals surveyed, prolonged

usage of N95 and surgical masks by healthcare personnel during COVID-19 resulted in undesirable consequences such as headaches, rash, acne, skin disintegration, and reduced cognition.

Physical health is measured by oximetry to measure SpO<sub>2</sub>, pulse and respiratory rate, the results show that the respondent's health is within the normal range, indicating that respondents who use masks properly and correctly have a good respiratory rate. The use of masks has a significant effect on the level of comfort and does not affect a person's health.

## 5. CONCLUSION

Based on the results of research and discussion in this study regarding "The Effect of Mask Use on Health and Comfort During the Covid-19 Pandemic", it can be concluded as follows: Characteristics of respondents based on age, gender, education level; the significant value of the effect of using a mask on comfort is 0.020 where the result is smaller than 0.05 (sig <0.05). While the significant value of the effect of using a mask on health is 0.999, these results indicate that the significance value is more than 0.05 (sig > 0.05). The use of masks has a significant effect on the level of comfort and does not affect a person's health.

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