

# DISPOSABLE OR REUSABLE MASK? STUDENT PREFERENCE IN THE ERA OF COVID-19 PANDEMIC

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## Abstract:

Healthscience students havean understanding ofthe high effectiveness of disposable masks. Many masks on the market can change the choice of mask type for their daily needs. This qualitative research with a phenomenological approach was usedin-depth interviews. The research sample was six students in the Faculty of Health Sciences at the University of JenderalSoedirman. The results found some factors related to mask preference in health sciences students. Further research may be needed in production and marketing issues.

**Keywords:** COVID-19 pandemic, health sciences student, mask preference

## INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an acute respiratory infectious disease caused by a novel coronavirus (SARS-CoV-2), which was first discovered in pneumonia patients in December 2019 and was declared as a world pandemic since the beginning of 2020. Various health protocols such as quarantine, lockdown, physical distancing, washing hands, and wearing a mask have begun to be implemented to prevent the transmission of COVID-19. The virus is dangerous because it can be transmitted to other people through human physical contact, i.e., droplets through the air (Nasruddin&Haq, 2020). However, the daily needs push people, especially the lower and middle class, to go outside and do activities. People wear the mask available on the market as a protective of the COVID-19.

Many studies have shown that wearing a mask in public places is effective in reducing or preventing COVID-19 transmission (Howard et al., 2021). During the COVID-19 pandemic, the spike in cases happensgenerally due to a lack of safety precautions. Health experts strongly recommend the use of masks for self-protecting and to reduce virus transmission(Khan et al., 2020). Therefore, to prevent outbreaks or future repeated waves of the pandemic, the government needs to strengthen policies along with proactive communication with society regarding the benefits of wearing masks such as reducingthe risk of transmission and protecting each other(Betsch et al., 2020).

Mask is one of the breathing protective equipment to protect individuals from inhaling harmful substances in the air or as self-control and protection from COVID-19 infection (Chan & Yuen, 2020; Mittal et al., 2020). In general, masks can be classified into various types based on their fabric materials and functions, that are disposable masks such as medical masks and reusable masks which are generally made of fabric cloth. Each type of mask has different effectiveness and filtration capabilities (Dwirusman, 2020). Masks or other respiratory protections are not intended to eliminate the disease, but masks are used for adequate protection (Cohen & Jacob, 2008). Masks are very vital to reduce the virus transmission that is potentially carried by droplets and aerosols and for inhalation protection (Wang et al., 2020). Chao et al. (2020) showed a significant relationship between the use of masks and a reduced level of risk of exposure to COVID-19 infection.

To prevent COVID-19 transmission, masks need to wear by everyone regardless of their physical condition and profession – not only sick people or health professionals. The need to wear masks during daily activities has made masks a mandatory necessity for public society, including college students.

Health science students are considered knowledgeable of the effectiveness of various available masks in the market. However, given that college students are in the late adolescence and early adulthood stage of task development, who are characterized by strengthening their identity, various designs and prices of masks, such as scuba masks, lycra masks, fabric masks, or batik face masks, may influence their preferences in choosing suitable masks for them. This study aims to determinethe mask preference of health science students in the era of the COVID-19 pandemic and explore the factors that influence the selection of masks.

## LITERATURE REVIEW

### 1. College students

A college student is someone who is studying and is registered at institutions, either university, polytechnic, or institutes, and in the age range of 18-25 years old (Leonita&Tulisstyantoro, 2017). Looking at the developmental task, that age can be categorized as late adolescence to early adulthood when in this stage, college students are strengthening their identity formation(Pujiono, 2015). At the stage of adolescence, an individual is looking for his identity, while early adulthood is the time when a person adapts to new environmental conditions. All habits that are formed in the environment can affect a person's behavior and further shape his lifestyle (Saufika, 2012).

## **2. Masks**

Masks become a necessity during the COVID-19 pandemic to prevent transmission. All age group is advised to wear masks since it is easier for preventing virus transmission rather than quarantine or travel restrictions(Punsalan&Salunga, 2021). Various masks are available in marketplaces. The role of masks in the prevention and reduction of disease transmission is evaluated in various types, structures, and functions (Wang et al., 2020), which are as follows.

### **a. Reusable masks**

#### **1) Fabric masks**

Previous studies show that fabric or cloth masks have a lower filtration ability than medical masks and respirators and cannot protect from infection. Cloth masks should not be used in health facilities such as hospitals, but are recommended for the general society for walking, shopping, or using public transportation. The effectiveness of cloth masks can be determined based on the number of threads, the type of fabric, and the level of water resistance (Chughtai et al., 2020). Cloth masks have various filtrations ranging from 0.7% to 60% (Juang et al., 2020). The type of washcloth for tea has a filtration efficiency of 72.46% but has a high-pressure drop (7.23), indicating discomfort when wearing the mask, which can cause people to be disobedient to wear masks (Davies, et al., 2013).

Cloth masks are reusable and need to be washed, and their use can be adjusted to the face shape (Yudhastuti, 2020). World Health Organization (WHO) (2020) recommended three-layer cloth masks that are the inner layer of absorbent materials (e.g., cotton), the middle layer of non-woven non-absorbent materials (e.g., polypropylene), and the outer layer of non-absorbent materials (e.g., polyester or polyester blend).

#### **2) Masker respirator N-95**

The N95 mask has passed the standardized tests for air filtration level from the US National Institute for Occupational Safety and Health (NIOSH). N95 provides a filtered respirator that can filter at least 95%, 99%, and 99.97%, respectively, of particles with a diameter of 0.3  $\mu\text{m}$  (CDC, 2020). According to NIOSH standards, filtered respirator includes N95, N99, and N100 masks. N95 is recommended for health workers during conducting clinical care for COVID-19 patients (Bartoszko et al., 2020; CDC, 2020).

### **b. Disposable masks**

Disposable masks include surgical masks which have a pressure drop of 5.23 and are considered comfortable and breathable to wear compared to cloth masks (Davies et al., 2013). This kind of mask is usually available at the nearest store, marketplaces, or pharmacy. Surgical masks are made of non-woven fabric with a multi-layered structure consisting of a leak-proof layer, a high-density filter layer, and a direct contact skin layer (Henneberry, 2020). The mask can protect from droplets of large particles from the mouth and splash resistant with a filtration effectiveness of 0.1 microns, 10% to 95% (Anonymous, 2020).

Disposable masks are very effective for people who have to be in crowded places in a short time, such as those who use public transportation (Phan & Ching, 2020). Some types of disposable masks are as follows.

#### **1) MNP (Medical Mouth-Nose Protection)**

Industries that produce MNP must adhere to strict rules to provide protection against infections. MNP is recommended for health professionals to prevent transmission through aerosols (WHO, 2020).

#### **2) FFP2 (Filtering Mask Piece)/N95 masks**

FFP2 masks have higher protection of Bacterial Filtration Efficiency (BFE) >95%(WHO, 2020).

#### **3) FFP3**

FFP3 masks have the highest protection of Bacterial Filtration Efficiency (BFE) >99%, as well as protecting the environment if there is no breathing valve(WHO, 2020).

## **3. Preference**

There are several factors that influence consumer preference in choosing masks including:

### **a. Income**

Income is defined as the total amount of money or wages received by a person during a certain period of time after doing a job to fulfill their needs (Samuelson& Nordhaus, 2003). Income will affect the consumer's purchasing power – the greater income, the greater ability to buy a variety of needs, and vice versa.

### **b. Consumer spending**

Consumer spending or called consumption is the value of spending made by households to buy various types of needs such as food, clothing, and other necessities in a certain year (Sukirno,1994). Engel’s theory states that the higher the income, the less consumption expenditure on food and the more saved money. Individuals with a high income prefer the quality of an item even though the quantity they get is less. Individuals with low income tend to spend their money on food consumption and other basic needs, and sometimes the income is no longer left for savings.

c. Price

Price is the amount of money that customers have to pay to obtain a product or service (Kotler & Armstrong, 2008). Consumers prefer to choose a product that is the most economical with more quantities as well as considering the quality of the product or service since the price can be a benchmark for product or service quality (Mullins & Walker, 2013). Meanwhile, consumptive consumers prioritize desire or satisfaction without considering the benefits or urgent needs or and the price of the product or service (Marwan, 1986).

d. Product quality

Product quality is defined as a reflection of the product’s ability and related to durability, reliability or product excellence, strength, and ease of packaging and repair (Kotler & Armstrong, 2014).

**METHODOLOGY**

This isa qualitative research with a phenomenological approach. Data was collected from April to May 2021 using in-depth interviews with six respondents, consisting of health sciences students of nursing, public health, pharmacy, nutrition, and physical education study programs at the Faculty of Health Sciences, JenderalSoedirman University, Purwokerto, Banyumas. Credibility of data using source triangulation.

**RESULTS**

A total of 6 respondents as informants participated in this study, with the following general characteristics.

**Table 1.**Characteristics of respondents

Sex	Age (years)	Study program	Monthly expenditure for masks (IDR/month)	Mask preference
Female	19	Nutrition	30,000	Cloth mask
Female	19	Nursing (transfer program)	150,000	Surgical mask
Female	19	Physical education	30,000	Cloth mask
Female	19	Pharmacy	30,000	Surgical mask
Female	19	Public health	30,000	Cloth
Female	19	Nursing (regular program)	150,000	Surgical mask

Table 1 shows that as many as four respondents (66.66%) are female and 2 respondents (33.33%) are male. A total of three respondents (50%) were 19 years old, two respondents (33.33%) were 20 years old, and one respondent (16.66%) was 25 years old. Respondents spent a minimum of IDR 30,000 and a maximum of IDR 150,000 per month for buying masks. Three respondents (50%) preferred to buy cloth masks, as well as the rest of the three respondents chose surgical masks to buy.

Based on indepth interview, the cloth masks that are mostly selected and purchased are plain cloth masks or pattern masks such as floral motifs, stripes, and batik motifs. Respondents mentioned masks made from t-shirts and cotton materials as their favorite to scuba, buff, or regular mask models. As for medical masks, they prefer KN95 masks, 3 ply surgical masks, and duckbill masks. Two respondents more often bought masks at supermarkets or the nearest pharmacy. Four respondents more often get masks through online purchases.

Respondents use hand sanitizer as well as masks as daily attributes with different duration of wearing masks. Respondents who wear cloth masks on average change masks once per day, while respondents who wear medical masks change their masks on average between 1-3 times per day.

**DISCUSSION**

This study reveals that there are seven factors of mask preferences among the health sciences students as respondents in this study, which are age, gender, level of knowledge, economic status, environment, variation of masks, and how to get masks.

Age affects individuals’ preferences in choosing masks. Most of the respondents in this study were 19-25 years old (early adulthood). Respondents mostly said the reason for wearing masks was to protect themselves and the people around them from COVID-19. This statement is in line with a previous research which stated that over 25 years old was

significantly more likely to wear masks than the younger age group (Knotek II et al., 2020). This is associated with an increased risk of being exposed to COVID-19 at an older age due to decreased body, cognitive, and psychological functions (Fluetti et al., 2018).

Furthermore, gender may affect the preference of masks. In this study, male and female respondents agreed that the use of masks caused shortness of breath and interfered with their daily activities. However, female respondents said that the mandatory use of masks from the government made them feel less attractive even though they had applied make-up, so they wore masks that matched the clothes they wore or masks with contrasting motifs. This is in line with research from Howard (2021) which stated that gender is not associated with the use of masks, but is significantly related to perceptions of the use of masks. Men are more likely to perceive that the use of masks can impair self-autonomy, while women are likely to perceive that masks can increase discomfort (Howard, 2021).

Individuals' level of knowledge is believed to influence decisions in wearing masks. This study found that exposure to information about the effectiveness of various kinds of masks made most academics in the health sector choose to wear medical masks because they are considered more effective in preventing COVID-19 transmission. This is in line with the research by Alhwamidh et al. (2021) which found that the level of knowledge relates to nurses' attitudes of COVID-19 transmission. Research in Mumbai City showed that 71.2% of health professionals and health students have adequate awareness of wearing masks during the COVID-19 pandemic (Modi et al., 2020). The study of Dwivedi et al. (2021) also proved that the majority of academics are aware to wear masks during the pandemic. They are considered knowledgeable about the design, size, materials, and even face masks chain and other accessories of masks. Academics indicated their preference for masks made of 3-ply and environmentally friendly cotton (Dwivedi et al., 2021). This is in line with Xu and Cheng's (2020) study which noted that people who have a higher level of cognitive and self-control are seen more practicing social distancing and wearing masks.

The living environment also is a factor of mask preference. Most of the respondents stated that when they were in their home surroundings, particularly when gathering with neighbors, they did not use masks because the social distance was still around 1 meter. Knotek II et al., (2020) showed that respondents in their research wore masks as a tool to reduce the COVID-19 transmission as well as to show that they obey the policies of the government of wearing masks in the pandemic era. The effect of social identity is the main reason for individuals' decision to wear masks during the pandemic. People wear masks to protect themselves and others and for social equality regardless of other people wearing masks or not (Powdthavee et al., 2021).

Furthermore, this study shows that generally, respondents wear various masks available on the market, such as cloth masks and medical masks. Similar results came from research on residents of Batuan, Sumenep, East Java, who showed an interest in cloth masks with picture motifs (Gunawan, 2020). Homemade cloth masks are in great demand by society because they feel it is comfortable to wear in daily activities. In general, people's considerations in choosing masks are related to the thermal, hygroscopic, and airflow properties of the masks to provide comfort during activities (Morishima et al., 2021).

The choice of masks is also influenced by the economic status of the respondents. Price and product quality are considered by consumers in buying a product because the price can be a benchmark for product quality (Mullins & Walker, 2013). In buying products, consumers will look for products that match their preferences by considering the most economical ones. However, consumers do not always buy a low-price product. They surely consider the materials of the product as well – they are willing to choose a higher price to get better product quality to fulfil their preferences (Albari&Kartikasari, 2019). Through a critical analysis of social, interpersonal and community, and intrapersonal influences, individual decisions to wear masks vary and are influenced by societal recommendations and government mandates, racism and cultural norms, geography, household income, age, and personal attitudes (Casola et al., 2021). In this study, 5 respondents are regular students who have not worked, and 1 respondent is a transfer student who is already working. 1 respondent (SK) uses their monthly salary, while the rest 5 respondents use the monthly pocket money obtained from their parents to partially buy masks for a month. SK respondent recorded spending more on masks than the other five respondents. This is in line with previous research in Tanzania which stated that people living in urban areas with low income prefer locally-made face masks which generally have low product quality and have less than 3-ply (Magani, 2020).

Furthermore, in this study, 3 respondents stated that they chose to buy medical mask products that had 3-ply. They get information from various mass media that the more layers of cloth, the more difficult it is for the virus to penetrate. This shows that respondents have implemented WHO's advice about the composition of the mask cloth used must have 3 layers (WHO, 2020). Types of disposable masks that have effectiveness above 90% are N95 masks and surgical masks (Atmojo et al., 2020). The other 3 respondents prefer a reusable mask, that is, t-shirt-based mask because they are considered made of the most comfortable materials for the skin. Masks made of cotton, t-shirts, and spandex have various colors and can be adjusted to the appearance of the wearer (Muthia&Hendrawan, 2017).

Easy access to getting masks is also a factor in the decision to buy mask products. Masks can be obtained in stores, supermarkets, pharmacies, or online. In this study, two respondents more often bought masks at supermarkets or the nearest pharmacy. Four respondents more often get masks through online purchases. Respondents thought that by online shopping, they did not need to go out of the house and so as not to meet directly with sellers or other buyers to prevent exposure to COVID-19. In addition, respondents think that the price of goods purchased online is cheaper than the price bought in stores. The various prices that are available usually refer to the brand, the number of layers of fabric, motifs or colors, and the basic material of the mask. Online shopping has indeed become a new trend for the community and provides various advantages such as saving time, saving energy, saving fuel, many price options, available 24 hours, no cashier queue, easy to find the desired item, and many discounts (Ollie, 2008; Lai & Huang, 2020). Although most respondents prefer to buy masks online, respondents feel that they cannot research the products in person and in detail. They are often disappointed because the products they receive do not match the ones advertised. However, they cannot make complaints easily, so they prefer to just accept and use the products they have purchased. According to respondents, this often happens when buying non-medical masks, so some respondents prefer to buy medical masks which are expensive by retail. This is in accordance with research which states that the online shopping method has weaknesses such as not being able to check the goods first, the goods purchased are often not as expected, there are shipping costs, and there is the possibility of fraud (Ollie, 2008).

Although several studies have stated that face masks are not effective in protecting healthy people from COVID-19 transmission, some respondents choose to buy disposable surgical masks. Several respondents stated that they had to use a surgical mask when conducting clinical practice activities. Face masks must be worn by health workers as well as by someone who cares for or is in close contact with people with respiratory infections; not only by individuals who have symptoms of respiratory infections such as coughing, sneezing, or symptoms of fever (Desai & Mehrota, 2020). Likewise, respondents who prefer cloth masks that are reusable choose to buy reusable masks because of their low activity outside the home. The attitude of respondents to prefer this type of mask is in accordance with previous research which stated that consumer attitudes towards masks are a strong predictor of mask purchasing (Shah, 2020).

## **CONCLUSION**

Health students prefer to use disposable medical masks. Associated with the Health Belief Model, consumers seem to have a view on the dangers of COVID-19. With their health knowledge and basic knowledge about COVID-19, respondents wear masks for anticipation. However, even though they already know the effectiveness of the various types of masks, the decision to buy masks is based on several aspects such as purchasing power, the design/model, and the quality of masks. The convenience of consumers in obtaining mask products through online markets and the promotion of new mask products can influence purchasing decisions.

Masks are important during the COVID-19 pandemic, manufacturers should try to fulfil the needs of the society, not only about their health but also the model of masks for their appearance and always follow government policies. The results of this study can be used as a sustainable marketing strategy by adding various interesting promotions and various new mask products.

Future research can take objects about disposable or reusable masks, but the theme is more focused on the behavior of using green products. Beside suggested to take a larger number of respondents, future research can be developed in quantitative research and involves more respondents by examining research indicators from theory and previous research.

## **LIMITATIONS OF THE RESEARCH**

This study only involved health students as respondents, so it is necessary to conduct research with a different target sample background to determine whether the results of this study can be generalized.

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