

Risk Perception and COVID-19 Transmission Experiences in Indonesia 2022

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ABSTRACT

Introduction: The COVID-19 pandemic in Indonesia has not officially ended, and due to the apparent underestimation of protective behavior, it is imperative to continuously promote public awareness and implement health protocols to control its spread. Therefore, this study aims to analyze the community's risk perception and experiences of COVID-19 transmission in Indonesia. **Method:** This study was conducted in 2022 using an online survey. The questionnaire was developed based on a standard questionnaire (ECOM, 2015) on the risk perception of an infectious disease outbreak. It was then distributed through various social media platforms, including WhatsApp, Facebook, and Instagram. **Result:** According to all ten risk perception distribution data, the majority of respondents considered COVID-19 a threat. This showed that most respondents had intense COVID-19 transmission directly or indirectly. This study also revealed that there were more female respondents than men. **Conclusion:** Individuals who had contracted COVID-19 might have different perceptions compared to those who had not been infected. Furthermore, experiences such as the COVID-19 transmission involving relatives and friends might also shape an individual's risk perception, particularly in implementing protective behavior, in this case, health protocol. Control measures based on gender should also be considered to ensure the effectiveness of the COVID-19 risk management.

Keywords: COVID-19, Indonesia, risk perception, transmission experience

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INTRODUCTION

The COVID-19 pandemic has persisted in Indonesia for more than two years and has yet to be officially concluded. Despite a decline in the number of cases, positive cases continue to be reported (Covid-19 Treatment Task Force, 2021), as communicated by the World Health Organization, (2022b). In addition, the provinces with the highest number of cases include DKI Jakarta, West Java, Central Java, East Java, and Banten.

COVID-19 is primarily transmitted through the human respiratory tract, specifically in the absence of health precautions such as mask usage, hand hygiene, and physical distancing (Triggle *et al.*, 2021). Viruses attached to droplets or splashes produced during coughing or sneezing can enter the respiratory tracts of others (Kumar *et al.*, 2021),

potentially altering how individuals and society perceive and interpret the risks associated with the disease.

Risk perception refers to individuals' subjective responses to disease, death, and injury and their assessment of managing the attached risks (Paek and Hove, 2017). Factors influencing risk perception range from individual aspects, such as experience, beliefs, judgment, attitude, knowledge, conception, and misconceptions, to wider aspects, such as social, cultural, and organizational structure (Cori *et al.*, 2020).

The World Health Organization (2022a) issued preventive measures in the form of health protocols after observing the characteristics of the transmission mode of COVID-19. Such measures include wearing masks to cover the nose and mouth, maintaining a 1.5meter distance between individuals, and frequent hand washing using water and soap, or alcohol. The study conducted in the United States by Bruine de Bruin and Bennett (2020) showed that communities have implemented protective behaviors

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to avoid COVID-19 transmission and other severe consequences.

It is essential to consistently promote efforts to raise public awareness about the virus and control its spread by implementing health protocols since it is a present public health risk (Aldila, Ndi, and Samiadji, 2020). By suppressing the spread, the burden on health facilities in terms of accommodating and treating patients will be reduced (Kendzierska *et al.*, 2021). In addition, learning from the occurrences in various countries, transmission can only be successfully suppressed through discipline and strict implementation of control measures (Khanna *et al.*, 2020). Health promotion is one measure expected to suppress the spread of COVID-19 by shaping behaviors, both individually and in groups (Dryhurst *et al.*, 2020).

The implementation of health protocol still appears to be underestimated. This might be due to the lack of proper risk perception in the community or ignorance of the effects and transmission of COVID-19 in the community.

This study aims to analyze community risk perception information regarding COVID-19 transmission experiences in Indonesia. This covers several aspects, including the number of victims, severity, transmission, speed of transmission, seriousness, fear, outdoor transmission, not wearing masks, ability to control transmission, and transmission readiness.

METHOD

Instrument

This analytic-descriptive cross-sectional study was conducted involving participants aged 18 years and above. It was carried out from June to November 2022 and covered all provinces in Indonesia. Ethical approval was obtained from the Research and Community Engagement Ethical Committee, Faculty of Public Health, University of Indonesia (545/UN2.F10.D11/PPM.00.02/2022). Data collection involved the use of online forms designed using Google Forms and distributed through social media. The questions presented to the respondents contained sociodemographic data, including COVID-19 experiences and ten questions on the risk perception of COVID-19. The questionnaire was standardized based on Effective Communication in Outbreak Management for Europe (ECOM), 2015. Furthermore, the health belief model approach was

used as a framework to construct the survey before combining it with demographic backgrounds such as gender, COVID-19 transmission experiences, religion, occupation, and education.

Sample Size

In this study, the sampling method used was purposive sampling, and the population sampled was obtained from the updated Covid-19 cases in Indonesia. Reference was made to the Indonesian government's COVID-19 database on August 2022, with a total of 6,049,541 cases (WHO, 2022). Using the Slovin formula (95% CI and margin of error of 5%), the minimum sample size required was 400 respondents. Chi-Square was used to analyze the data, while the software used was SPSS version 25.

$$n = \frac{N}{1 + Ne^2}$$

RESULTS

Demographic Characteristics

Data were collected from 775 respondents from several regions in Indonesia. The majority of respondents were Muslim (80.8%), followed by Catholic (1.9%), Protestant (6.1%), Buddha (0.3%), Hindu (10.3%), Konghucu (0), and those who were not willing to mention (0.6%). The place of origin was mostly West Java (20.6%), DKI Jakarta (19.2%), South Sulawesi (15.7%), Bali (12.4%), Central Java (9.3%), Banten (5.4%), East Kalimantan (1.4%), and other provinces (15.9%). Most respondents were female (61.3%), private employees (32.3%), and bachelor's degree holders (48.5%). Furthermore, the COVID-19 experience data were collected from 760 respondents, with 47.4% reporting no transmission and 43.8% previously infected. Table 1 presents the sociodemographic data of respondents.

Regarding the distribution of risk perception data among respondents, the majority perceived that COVID-19 results in many victims (85.81%), causes severe health effects (81.94%), is contagious (86.45%), has a fast transmission rate (86.84%), and is a serious disease (83.61%). Additionally, 62.06% of the respondents reported fear of this disease, and 76.26% believed that outdoor activity increased the risk of transmission, specifically when they were not wearing a mask (81.81%). Despite most respondents considering the disease as a serious threat, 82.06% reported readiness to face the transmission risk, and

81.68% of respondents are able to control the risk, as shown in Figure 1.

Data Analysis

The data analysis revealed a significant correlation between COVID-19 experience and various factors, including the perceived number of victims, severity, transmission, transmission

Table 1. Respondents' Sociodemographic Distribution Data

| Characteristics | Respondents | |
|----------------------------|-------------|------|
| | n | % |
| Religion | N = 775 | |
| Islam | 626 | 80.8 |
| Catholic | 15 | 1.9 |
| Protestant | 47 | 6.1 |
| Buddha | 2 | 0.3 |
| Hindu | 80 | 10.3 |
| Konghucu | 0 | 0 |
| Not willing to mention | 5 | 0.6 |
| Provinces | N = 775 | |
| West Java | 160 | 20.6 |
| DKI Jakarta | 149 | 19.2 |
| South Sulawesi | 122 | 15.7 |
| Bali | 96 | 12.4 |
| Central Java | 72 | 9.3 |
| Banten | 42 | 5.4 |
| East Kalimantan | 11 | 1.4 |
| Others | 123 | 15.9 |
| Gender | N = 775 | |
| Male | 300 | 38.7 |
| Female | 475 | 61.3 |
| Occupation | N = 775 | |
| Government official | 154 | 19.9 |
| Private employee | 250 | 32.3 |
| Student | 219 | 28.3 |
| Housewife | 44 | 5.7 |
| Unemployed | 36 | 4.6 |
| Other professions | 72 | 9.3 |
| Education | N = 775 | |
| Senior High School | 264 | 34.1 |
| Bachelor's degree | 376 | 48.5 |
| Master's degree | 135 | 17.4 |
| COVID-19 Experience | N = 760 | |
| Never | 360 | 47.4 |
| Been transmitted | 333 | 43.8 |
| Unknown | 67 | 8.8 |

speed, seriousness, readiness to face the risk of transmission, perceived ability to control transmission risk, and perceived risk of transmission, while not wearing a mask and engaging in outdoor activities. The p values for these correlations are 0.001, 0.010, 0.000, 0.000, 0.005, 0.018, 0.004, and 0.002, respectively. However, there was no correlation between COVID-19 experience and perceived dread) or perceived risk of transmission during outdoor activity, with p values of 0.105 and 0.111, respectively.

DISCUSSION

Experience with COVID-19 Transmission

Table 3 presents the responses to the question of whether respondents had ever been infected with COVID-19, which were divided into three

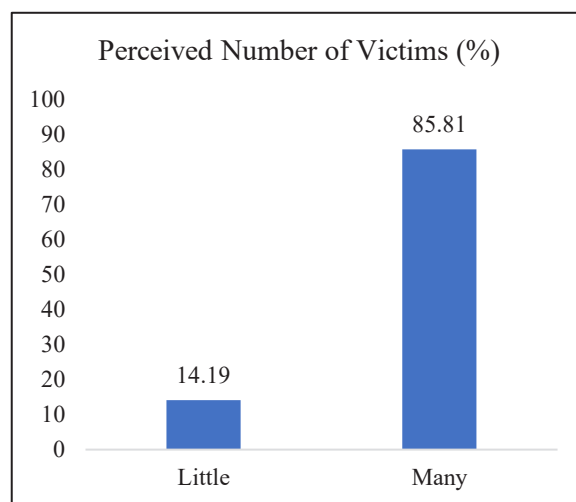


Figure 1a. Perceived Number of Victims

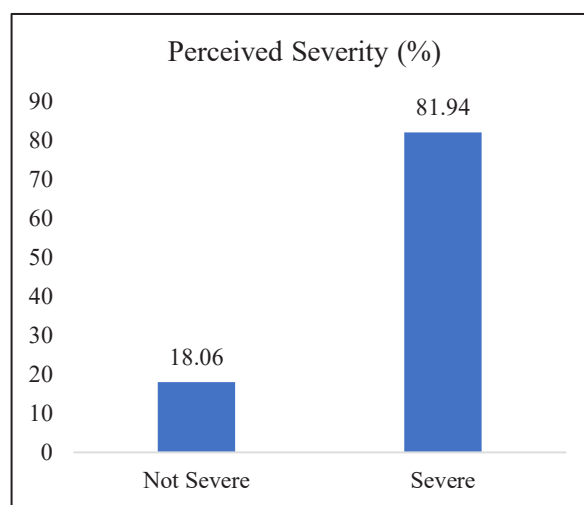


Figure 1b. Perceived Severity

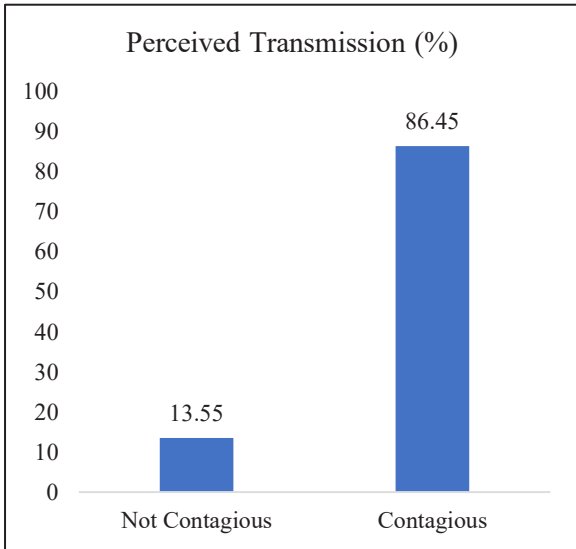


Figure 1c. Perceived Transmission

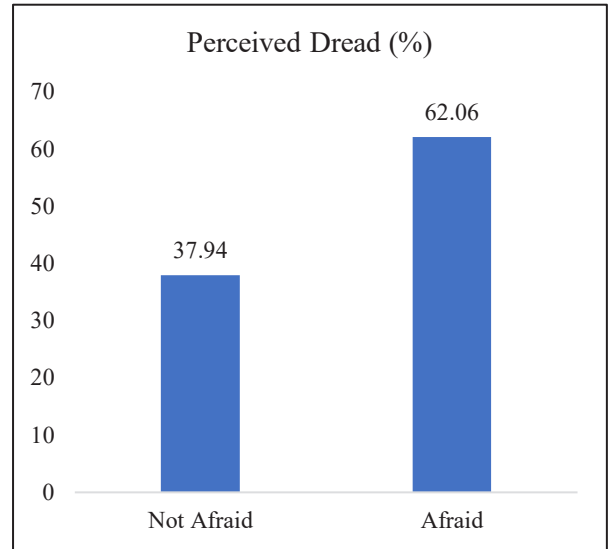


Figure 1f. Perceived Dread

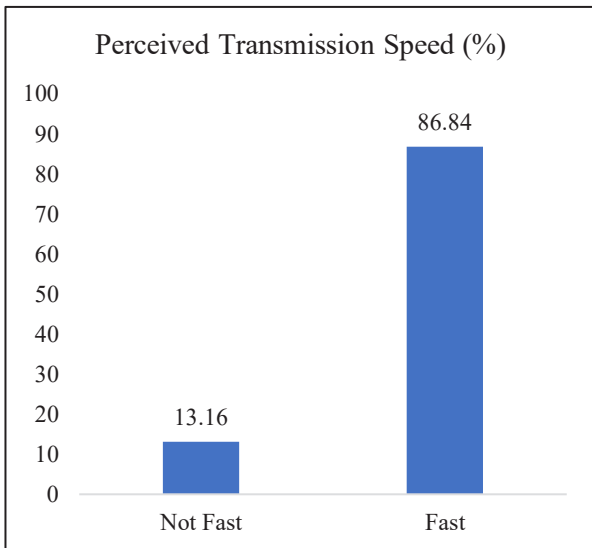


Figure 1d. Perceived Transmission Speed

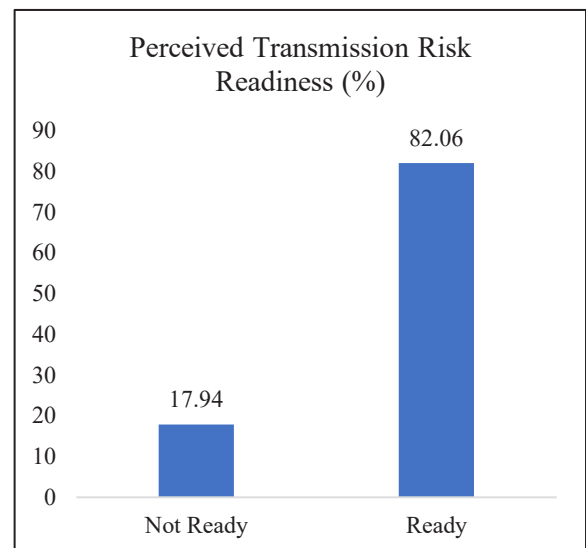


Figure 1g. Perceived Transmission Risk Readiness

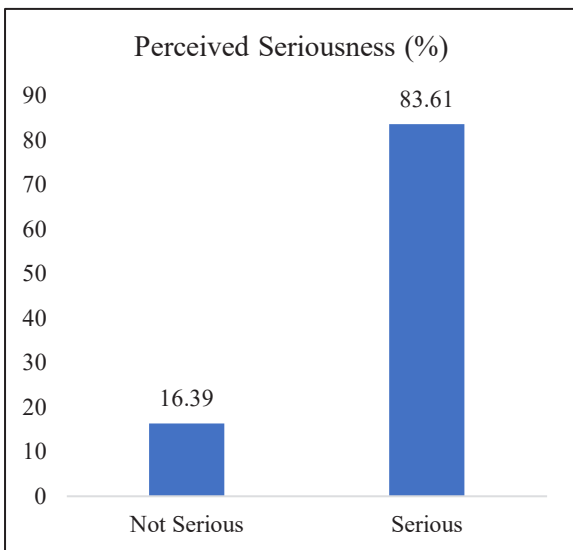


Figure 1e. Perceived Seriousness

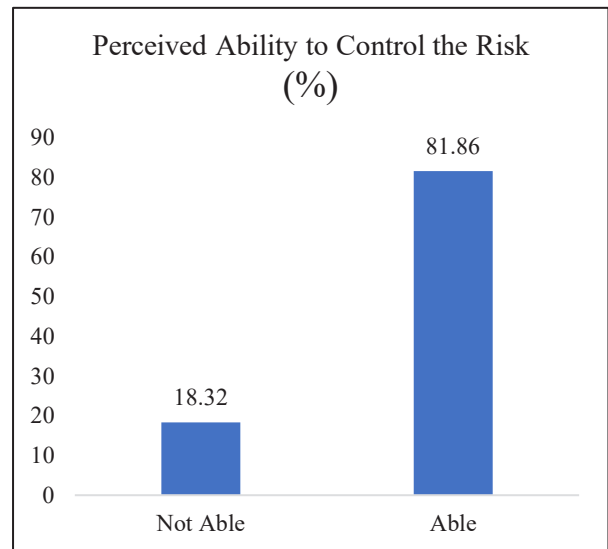


Figure 1h. Perceived ability to Control the Risk

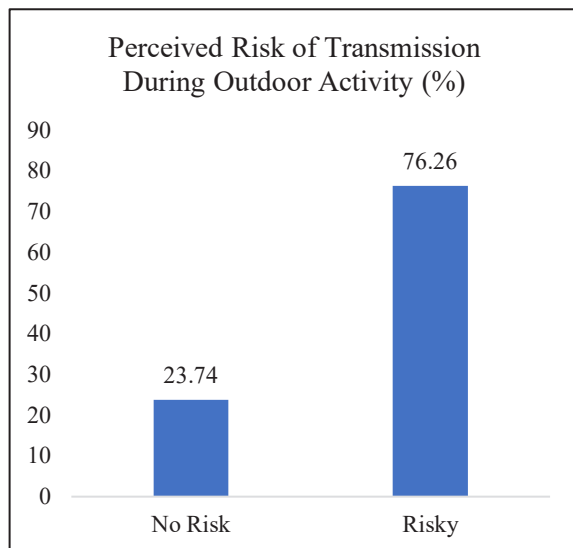


Figure 1i. Perceived Risk of Transmission During Outdoor Activity

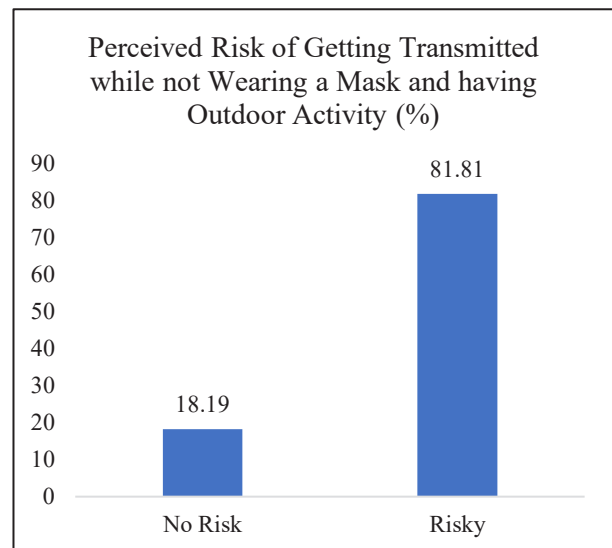


Figure 1j. Perceived Risk of Getting Transmitted while not Wearing Mask and Having Outdoor Activity

categories, namely never, been infected, and unknown. Based on the responses, 47.4% of the respondents reported that they had never been infected, while 43.8% had been infected. Figure 1 shows that regardless of their transmission experience category, most respondents perceived COVID-19 as a threat, with 85.81% believing it causes many fatalities and 81.94% reporting severe health effects. The same trend was observed for other risk perception questions. An example of respondents' COVID-19 transmission experience is their infection or that of their close relatives. This result is consistent with the expectations that the COVID-19 transmission experience would trigger and impact community risk perception. Numerous factors affect individuals' risk perception, which can be classified into internal and external factors. Internal factors include demographic data, such as gender, education level, and occupation. These data are closely related to individual perceptions when observing certain objects or events (Wang *et al.*, 2021).

Regarding respondents' occupation data distribution, the majority work in the private sector (32.3%), followed by students (28.3%) and government officials (19.9%). These areas have the most information regarding Covid-19 and also have a high potential for transmission due to their intense and frequent interaction. Another data distribution also revealed that most respondents are from DKI Jakarta and West Java, both of which have a high number of active cases (Covid-19 Treatment Task Force, 2022). The educational background of most

respondents is a bachelor's degree, which provides greater access to COVID-19 profile information.

Several studies showed that the community dreads the rapid transmission of COVID-19. According to Domínguez *et al.* (2020), direct contact with a person who suffered from COVID-19 has a significant impact on the community's risk perception. This is evident when individuals have relatives who work in healthcare facilities or live with relatives who suffered from COVID-19, as the likelihood of transmission increases. Another study conducted by Ruiz-Frutos *et al.* (2021) revealed that the pandemic has resulted in a decrease in individual psychological conditions. This is attributed to the fact that many individuals work outside the home, and meet and interact with other people (71.6% women and 52.4% men working in non-healthcare industry), resulting in exhaustion, decreased sleep, and increased work stress. Subsequently, this affects the psychological aspect and body endurance and causes reduced personal hygiene. Dyregrov, *et al.* (2021) found that young people in Norway experience three essential qualitative aspects related to Covid-19 dread. The first is the fear that the virus will infect their family members or close relatives, despite implementing tight health protocols. The second aspect is the fear of contracting it themselves, as it could limit interaction with parents and friends and influence their performance at work and school. The last aspect is related to social situations, such as the pandemic persisting for a long time, deteriorating or collapsing the social life order and economic conditions,

or leading to massive deaths. The COVID-19 pandemic has created various ways for individuals or communities to respond to the transmission and prevent it. Individual risk perception plays an important role in the effectiveness of implementing voluntary health protocols. Abdelrahman (2022) stated that individuals who tend to comply with social norms and have anxiety or fear prefer to implement physical distancing. This is because in direct social interaction, there is a risk of rapid transmission. Furthermore, the willingness to implement health protocols is influenced by how the community perceives COVID-19, whether as a threat or not. Individuals who have had any experience with the virus, regardless of whether or not they have been infected, will have many considerations when implementing health protocol.

Different perceptions might arise among individuals who have varying experiences with COVID-19. For example, those who have no experience may not prioritize the implementation of health protocols. Meanwhile, individuals who have had close relatives, friends, or themselves infected would consider health protocol implementation essential and mandatory (Savadori and Lauriola, 2021).

Risk Perception and Self Efficacy

The distribution of risk perception data from the number of COVID-19 victims, severity, transmission rate, seriousness, dread, and the perceived risk of transmission during outdoor activities without wearing a mask showed that over 70% of respondents perceive COVID-19 as a threat with negative outcomes. Interestingly, more than 80% of respondents, despite perceiving it as a threat, were ready to face the transmission and believe they can control the transmission. This suggested that most respondents were well informed, had prepared, and understand how to control the transmission.

According to the Health Belief Model theory, the first aspect to be considered in implementing the protective behaviors, in this case, health protocol is to the management of the perceived threat. This involves perceived susceptibility and severity, as well as perceived barriers, and benefits of implementing health protocols, and self-efficacy to trigger cues that promote actions to prevent transmission (Champion, Victoria, Skinner, 2008). All of these aspects of perception are correlated. In addition, the perceived threat will affect individual perceptions when the susceptibility and severity of COVID-19 infection

is significant (Carico, Sheppard, and Thomas, 2021). The health belief model risk perception theory also underscores the importance of the perceived benefit of implementing protective behaviors. In other words, the health protocols will not be established unless these measures provide benefits and eliminate the threat of transmission, susceptibility, and severity (Ranjit *et al.*, 2021). The perceptual entry into the cognitive aspect is also influenced by perceptions of barriers and self-efficacy in determining the necessary protective behaviors and precautions (Limbu, Gautam, and Pham, 2022). Therefore, the lack of complete information, knowledge, socioeconomic condition, and beliefs can impede individuals from implementing health protocols (Tefaw *et al.*, 2021).

The study conducted by Jose *et al.* (2020) also showed that inadequate knowledge may prevent individuals from implementing behavioral changes due to its impact on risk perception. Factors such as learning from experience, new information, and observation can positively and negatively impact individual self-efficacy (Graf, Nehrkorn-Bailey, and Carney, 2021). Social media also plays a vital role in communicating the risks of COVID-19, such as the disease profile, transmission modes, treatments, government policies, and protection programs, particularly for individuals with a lower level of education (Rattay *et al.*, 2021). It aids in conveying new information, forming perceptions, sharing insights, and facilitating interaction with other readers (Cuello-Garcia, Pérez-Gaxiola, and van Amelsvoort 2020), as well as building community resilience in the face of the pandemic (Xie, Pinto and Zhong, 2022). The method used to disseminate information affects the public risk perception, knowledge, and actions taken (Fahrimal *et al.*, 2020). Therefore, the media should communicate clear and accountable information (Tsoy, Tirasawasdichai, and Kurpayanidi, 2021). Misunderstandings can arise when respondents lack awareness of the COVID-19 characteristics or obtain information from inaccurate sources (Ali and Bhatti, 2020).

This study revealed that 61.3% of respondents were women, while 38.7% were men. Several studies have shown that women have higher risk perception than men, including perception of fear and caution (Rodriguez-Besteiro *et al.*, 2021). This could be because women have more data on the severity of COVID-19 than men (Yıldırım and Güler, 2022). This result is also consistent with the study conducted by Yoo, Shim, and Kim (2021)

that stated that at the onset of the pandemic, many housewives with school-age children had more anxiety and sought accurate information on the COVID-19 profile and how to control it.

Self-efficacy is critical in enabling individuals to discover incomplete information, remove barriers, and determine the necessary actions to implement health protocols (Carico, Sheppard, and Thomas, 2021). The threat of COVID-19 transmission can also be seen as fatal, as it creates conditions that are considered severe and uncertain. This transmission risk can also serve as an early warning indicator where individuals apply control measures or health protocols to prevent losses (Renn, 2004). However, the limitation of this study is that it only seeks information and measures the correlation between risk perception and COVID-19 transmission experience among individuals in Indonesia.

CONCLUSION

Based on the results, several factors influence the risk perception of COVID-19 in the community. The accuracy and sources of the received information significantly determine how the public perceives the dangers of COVID-19. Transmission experiences in individuals or communities shape their perspective of the disease profile. Individuals who have been infected with COVID-19 might have a different perception from those who have not been infected. Furthermore, events such as COVID-19 transmission involving their relatives and friends will also shape their risk perception, specifically in implementing protective behaviors, such as health protocols. Control measures based on gender are also considered important to reach effectiveness of the COVID-19 risk management.

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