




COVID-19 Among Indonesian College Students; Epidemiology Characteristic and Clinical Phenomenon During Infection

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Abstract. The information about COVID-19 prevalence, symptoms, and treatment among Indonesian college students has been limited. This study aims to discover the epidemiological characteristic and clinical phenomenon of COVID-19 infection among university students in Indonesia to provide valuable references for better future prevention. We surveyed 285 college students aged 18–28 between February and June 2022. An online form was used to gain information about the experience of COVID-19 infection, transmission, symptoms, treatments, and activity during infection since the pandemic began until 30th June 2022. Ninety-five students contracted COVID-19, and almost half (49.5%) were infected in 2021. The most frequently reported source of infection was household transmission (33.3%), followed by public places (30.5%), campus (4.2%), and unknown (31.6%). The predominant symptoms included fever (76.8%), cough (63.1%), and loss of taste or smell (57.9%). Most students (77.9%) experienced mild symptoms, 9.5% without any symptoms, 10.5% were hospitalized, and 2.1% required Intensive Care Unit treatment. Almost all of them (88.4%) were isolated at home or in the hospital, and 50.5% had no restriction to following lectures and doing assignments. Around a third of students experienced COVID-19 during the pandemic. The most common symptoms are fever, cough, and loss of taste or smell. Most symptoms are mild, and almost half of the students actively attended online lectures.

Keywords: COVID-19 · Prevalence · Symptoms · Treatment

1 Introduction

Coronavirus Disease 2019 (COVID-19) is an acute respiratory disease caused by SARS-CoV-2, which was first discovered in December 2019 in Wuhan, China [1]. The infection rapidly involved almost all counties, and the World Health Organization declared COVID-19 as a pandemic disease on March 11, 2020 [2]. The Indonesian government announced the first two cases of positive COVID-19 in Indonesia on March 2, 2020 [3].

The coronavirus is mainly transmitted through infected respiratory droplets. It replicates in the respiratory tract, with the maximum viral load occurring within the first 3–5 days of symptoms [4]. Symptoms include fever or chills, cough, shortness of breath, nasal congestion, fatigue, sore throat, muscle aches, rash, nausea or vomiting, headache, stomach pain or anorexia, loss of taste or smell, diarrhea, and confusion [2]. Asymptomatic infection can also result in transmission [5]. Most people infected with the COVID-19 Virus have mild disease and recover. Approximately 80% of laboratory-confirmed patients have had mild to moderate disease, 13.8% have severe disease, and 6.1% are critical [6]. Older people and people with previous chronic conditions are at higher risk of developing severe symptoms [7]. However, the binding effect of COVID-19 among young adults cannot be underestimated. A study reported that among more than 3,000 adults ages 18 to 34 infected by the SARS-COV-2 Virus, 21% ended up in intensive care, and 2.7% died [8].

The pandemic has impacted the education sector environment, including universities, in an unprecedented way. College campuses are densely populated, with students performing activities in close proximity to others that facilitate the transmission of the Virus. Currently, limited reports have available regarding the surveillance and epidemiological investigation of COVID-19 among college students. Understanding the epidemiology of COVID-19 cases is of paramount importance to help formulate and implement effective control strategies for the containment of the disease. Therefore, this study aimed to understand the epidemiological characteristics of confirmed COVID-19 among Indonesian students.

2 Methods

This study surveyed 285 Indonesian college students aged 18–28 recruited conveniently from Indonesian student social media groups or other platforms between February and June 2022. An online form was used to gain information on COVID-19 infection, time of infection, transmission source, signs and symptoms, treatment, and activities during infection since the pandemic began until 30th June 2022. Subjects were defined to have COVID-19 if they had a Reverse Transcription Polymerase Chain Reaction (RT-PCR) test and or antigen test for SARS-CoV-2. Descriptive statistic was calculated in SPSS version 25.

3 Results

The majority of respondents were female and located on Java Island, the youngest students were 18 years old, and the oldest was 28 years old, with an average age of 22 years. The students came from diverse educational fields, including social (43.9%), health (27.0%), math and science (22.5%), and education (6.7%) (Table 1).

Table 1. Subjects Characteristic

		Frequency	Percent
Gender	Male	72	25.3
	Female	213	74.7
Age	18–20	60	21.01
	20–25	221	77.4
	> 25	4	1.5
Location of University (Islands)	Bali	7	2.5
	Maluku	1	0.4
	Nusa Tenggara	1	0.4
	Papua	1	0.4
	Jawa	253	88.8
	Kalimantan	7	2.5
	Sulawesi	6	2.1
	Sumatera	9	3.2
Educational Fields	Social	125	43.9
	Health	77	27.0
	Math and Science	64	22.5
	Education	19	6.7

Table 2 shows the epidemiological and phenomenon description of COVID-19 among college students. The number of students who contracted COVID-19 from March 2020 to June 2022 was 95 (33.3%). The most frequent infection happened from January to December 2021. The disease was confirmed by PCR (64.5%) and COVID-19 antigen (35.6%). The majority of students reported household transmission (33.7%), followed by public places (30.5%), campus (4.2%), and unknown (31.6%).

The most dominant symptoms of COVID-19 were fever (76.8%), followed by cough (63.1%), and loss of taste or smell (7.9%). The rarest symptom was diarrhea (7.3%). Almost all students who had mild symptoms or were asymptomatic isolated themselves at home, and 50.5% could follow online lectures and complete the study tasks. However, 10.5% of students experienced moderate symptoms that required them to be hospitalized, and 2.1% of students needed care in the intensive care unit because they suffered from severe pneumonia (Table 3).

Table 2. Frequency Distribution of epidemiological characteristic of COVID-19 among Undergraduate Students in Indonesia

		Frequency (n = 95)	Percent
SARS-CoV-2 tests	RT-PCR and Antigen	39	41
	RT-PCR	22	23.2
	Antigen	34	35.8
Time of infection	March - Dec 2020	22	23.1
	Jan – Dec 2021	47	49.5
	Jan – June 2022	26	27.4
Source or location of transmission	Campus	4	4.2
	Household	32	33.7
	Public places	29	30.5
	Unknown	30	31.6

Table 3. Frequency Distribution of clinical phenomenon of COVID-19 among Undergraduate Students in Indonesia

		Frequency (n = 95)	Percent
Signs or symptoms	Fever	73	76.8
	Cough	60	63.1
	Loss of taste or smell	55	57.9
	Fatigue	53	55.8
	Headache	53	55.8
	Sore throat	52	54.7
	Muscle or body aches	38	40.0
	Nausea or vomiting	20	21.0
	Shortness of breath	19	20.0
	Chest pain	12	12.6
	Diarrhea	7	7.3
	Without symptoms	9	9.5
The degree of symptoms	Mild	74	77.9
	Moderate	10	10.5
	Severe	2	2.1
	Without symptoms	9	9.5

(continued)

Table 3. (continued)

		Frequency (n = 95)	Percent
Treatment during infection	Isolation at home	72	72.4
	No restriction or treatment	11	11.6
	Hospital care	10	10.5
	Intensive care unit	2	2.1
Other activities	Doing exercises	47	49.5
	Sunbathe	81	85.3
	Following online lectures and doing tasks	48	50.5

4 Discussion

The present survey succeeded in describing the epidemiological characteristic and clinical phenomenon of COVID-19 among Indonesian college students. These findings enrich the epidemiological characteristic of COVID-19, particularly among college students, that is still limited in Indonesia. These results serve as a considerable reference for improving public health responses to COVID-19 among college students in the future.

This study indicated that one-third of college students contracted COVID-19 during the pandemic. Cohen et al. reported a similar figure that found that 35% of American College Students experienced any COVID-19-related symptoms from February to June 2020 [9]. Another report from Indonesia mentioned that 15,9% of students in Jakarta, West Java, and Central Java have ever contracted COVID-19 [10]. The different reports of COVID-19 among students could be stemmed from the different confirmation tests for the disease and the time of the study being conducted [11].

Household is an important site of SARS-CoV-2 transmission [12, 13]. This study found that the most frequent source of infection is household transmission, similar to the Study from Jordan by Kofahi [14]. Furthermore, a study from Switzerland discovered that working-age adults had the highest infection risk from household transmission [15]. Prevention strategies, such as voluntary isolation at external facilities, improved ventilation, and mask-wearing at home, should be further cruised [16–18].

The COVID-19 symptoms are non-specific, and the disease presentation can range from no symptoms (asymptomatic) to severe pneumonia and death. The WHO documented that the most common symptoms of COVID-19 are fever, dry cough, and fatigue. Other less common symptoms that some patients may experience include aches and pains, nasal congestion, headache, conjunctivitis, sore throat, diarrhea, loss of sense of taste or smell, skin rash, or discoloration of fingers or toes [19]. A survey in China reported that typical signs and symptoms included fever (87.9%), dry cough (67.7%), and fatigue (38.1%) [20]. This study indicated that fever, dry cough, loss of taste or smell, fatigue, and headache are suffered by more than 50% of students who contracted COVID-19. All studies reported fever and dry cough as the most frequent symptoms

among symptomatic COVID-19 cases. The different symptoms experienced by COVID-19 patients could have resulted from a different variant of the virus, speed of replication, modes of transmission, and host factors [21].

The WHO-China joint mission on COVID-19 acknowledged that 13.8% of laboratory-confirmed COVID-19 suffered severe COVID-19, and 6.1% fell into critical conditions. People over 60 are at the highest risk for severe diseases [20]. Nevertheless, Cunningham from the US uncovered facts that 21% of young adults hospitalized with COVID-19 required intensive care, and 2.7% died [8]. The previous results supported this study's findings that 2 of 12 students who required being hospitalized needed intensive care. All reports suggest that prevention effort is necessary for young people because they also have the potential to get severe COVID-19 and even fatality.

In addition, this study noticed that around 50% of students infected by COVID-19 could follow online lectures and complete their tasks, have exercises, and sunbathe. Moreover, it was noticed that 11% of COVID-19 patients had no restrictions to do activities. Unfortunately, as a part of the limitation of the study, this present study did not go into detail about analyzing the pattern of the symptoms in relation to the time of infection, the mode of transmission, and other factors. Further studies are needed to discover the phenomenon. Nevertheless, this study has filled the gap between epidemiological characteristics and the clinical phenomenon of COVID-19 among Indonesian undergraduate students.

5 Conclusion

The prevalence of COVID-19 among students from 2020 to 2022 is 33.3%. The most common symptoms are fever, cough, and loss of taste or smell. Most students with COVID-19 have mild symptoms which can be treated at home, and 2.1% of students require intensive care. Prevention efforts are necessary for students to protect them from COVID-19 in the future.

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