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COVID-19 in Southeast Asia

Leila Moradi [1, *]

[1]Department of Epidemiology, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran

[*]*Corresponding author*: Department of Epidemiology, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran. Email: leilamoradi073@gmail.com

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Abstract

Background: The emerging disease COVID-19 was first identified in China in late 2019. It soon spread to most countries and continents. The symptoms of this disease range from asymptomatic to severe and fatal. This disease is now an important pandemic and has created an emergency in the world.
Objectives: This study aimed to investigate the epidemiology of COVID-19 in Southeast Asia.
Methods: This ecological study describes the epidemiological features of COVID-19 in southeastern Asia. Data related to identified definite cases and deaths due to this disease along with other information were extracted from the reports of the World Health Organization and imported to SPSS software. The case fatality rate was calculated separately for each country.
Results: The highest number of reported cases of this disease was 30,458,251 in India, and the highest number of death was in this country with 400,312 cases, and the highest mortality rate was in Indonesia with 2.67%.
Conclusions: Using masks and observing social distance and quarantine rules, as well as upgrading diagnostic and laboratory equipment to identify patients, are effective ways to prevent COVID-19 transmission.

Keywords: COVID-19, Coronavirus, Southeast Asia

1. Background

A severe respiratory illness of unknown origin was reported in Wuhan, China, in late December 2019. Epidemiological studies have shown that the primary source of this disease has been a major seafood market (1, 2). The disease spread rapidly to other Chinese provinces and around the world (3). The respiratory disease caused by the coronavirus was later named COVID-19 by the World Health Organization (4). In March 2020, a pandemic of the disease was officially declared by the World Health Organization (5). Most patients had symptoms of fever, cough, and shortness of breath for two to 14 days after exposure to the virus (4). Other symptoms of this disease in mild to moderate cases are loss of smell and taste. However, in some cases of severe disease, the patient needs hospitalization and ventilation support, which potentially leads to death (6). Risk factors for severe COVID-19 are obesity, diabetes, and heart disease. Kidney disease, cancer, and high blood pressure also increase the risk of developing the severe disease (7-9). The pandemic led to quarantine and traffic restrictions, which have had a mixed effect on different economies (10). Today, COVID- 19 is considered a major threat to human health worldwide because it has high infectivity and case fatality rate. Epidemiological models predict that deaths from COVID-19 in densely populated countries could reach as many as one million (11).

2. Objectives

This study aimed to describe the epidemiology of COVID-19 in Southeast Asia.

3. Methods

The initial data of this study, which included information about the total identified definite cases, total definite deaths due to COVID-19, and the population of the countries, were extracted from the reports of the World Health Organization from the beginning to July 2, 2021, using SPSS 24 software (12, 13). Also, the case fatality rate was obtained using the following formula (14): case fatality rate (percent) = (No of individuals dying during a specified period after disease onset or diagnosis/of the individuals with the specified disease) $\times$ 100.

4. Results

The total number of countries in the region was 11 countries according to the World Health Organization clas-

Table 1. Frequency Distribution of Identified Definite Cases and Definite Cases of Death and Case Fatality Rates of COVID-19 in Southeast Asia

Country	Population	Total Cases of COVID-19	Total Deaths of COVID-19	Case Fatality Rates
India	1324171000	30458251	400312	1.31
Indonesia	261115000	2228938	59534	2.67
Bangladesh	162952000	930042	14778	1.59
Nepal	28983000	642053	9179	1.43
Thailand	68864000	270921	2141	0.79
Sri Lanka	20798000	260972	3063	1.17
Myanmar	52885000	161210	3364	2.09
Maldives	428000	73931	213	0.29
Timor-Le	1269000	9361	24	0.26
Bhutan	798000	2122	1	0.05

sification. Data from definitive cases and deaths caused by COVID-19 in the Democratic People's Republic of Korea were not included in the World Health Organization reports. The most populous country in this region is India, with 1,324,171,000 people, and the least populous country is the Maldives, with 428,000 people. The highest confirmed cases of COVID-19 in this region were in India, with 30,458,251 cases, and the lowest confirmed cases of COVID-19 were related to Bhutan with 2,122 cases. The highest mortality rate was in Indonesia with 2.67%, and the lowest in Bhutan with 0.05% (Table 1).

5. Discussion

According to the results of this study, the most definite cases identified in Southeast Asia belonged to the three countries of India, Indonesia, and Bangladesh, in sequence. According to a study by Gupta et al. on COVID-19 in India, the expansion of COVID-19 varied from state to state. One of the reasons was the wide latitude in this country. According to the findings of spatial distribution, the transmission of this disease is high in semi-arid and wet provinces, and temperature, rainfall, and more trips to these areas are effective factors in the transmission of the disease in these areas (15). The results of a study by Kumar and Kumar on COVID-19 in India showed that the high population of this country, which has a high population density, and lack of medical and laboratory equipment, are factors leading to low patient identification and increased transmission rate. Also, the restriction of traffic and the imposition of quarantine will cause great damage to the economy, logistics, and pharmaceutical sectors of this country (16). According to the results of a study by Sutaryono et al., which examined the epidemiology of COVID-19 in Indonesia, the disease was more common in men, and its severe cases occurred mainly in patients with hypertension and diabetes, as well as cardiovascular patients. The country has been on a large scale in reducing disease transmission, implementing health protocols, and social restrictions policies (17). A study by Islam et al., which surveyed COVID-19 in Bangladesh, found that medical equipment in the country was inadequate and there was a shortage of ventilators and diagnostic facilities, as well as quarantine rules and traffic restrictions, and the experience of an economic crisis in addition to the health crisis (18). According to the findings of this study, the COVID-19 pandemic in Southeast Asia has also been associated with high mortality and morbidity, and the only way of preventing is the use of masks and observing the distance. Due to the significant shortage of diagnostic equipment in most countries in the region, it is recommended that the World Health Organization takes effective measures in this regard.

Footnotes

Authors' Contribution: All steps were performed by L.M.

Conflict of Interests: The author declares that there is no conflict of interest.

Ethical Approval: The author agrees to follow the Helsinki Declaration and does not need to obtain permission from the Ethics Committee as it uses secondary data.

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References

1. Dhar Chowdhury S, Oommen AM. Epidemiology of COVID-19. *J Dig Endosc*. 2020;**11**(1):3–7. https://doi.org/10.1055/s-0040-1712187.
2. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in Wuhan, China, of novel Coronavirus-infected pneumonia.

N Engl J Med. 2020;**382**(13):1199–207. [PubMed ID: 31995857]. [PubMed Central ID: PMC7121484]. https://doi.org/10.1056/NEJMoa2001316.
3. Dong Y, Mo X, Hu Y, Qi X, Jiang F, Jiang Z, et al. Epidemiology of COVID-19 among children in China. *Pediatrics*. 2020;**145**(6). [PubMed ID: 32179660]. https://doi.org/10.1542/peds.2020-0702.
4. McMichael TM, Currie DW, Clark S, Pogosjans S, Kay M, Schwartz NG, et al. Epidemiology of Covid-19 in a long-term care facility in King County, Washington. *N Engl J Med*. 2020;**382**(21):2005–11. [PubMed ID: 32220208]. [PubMed Central ID: PMC7121761]. https://doi.org/10.1056/NEJMoa2005412.
5. Ciotti M, Ciccozzi M, Terrinoni A, Jiang WC, Wang CB, Bernardini S. The COVID-19 pandemic. *Crit Rev Clin Lab Sci*. 2020;**57**(6):365–88. [PubMed ID: 32645276]. https://doi.org/10.1080/10408363.2020.1783198.
6. Hyrich KL, Machado PM. Rheumatic disease and COVID-19: Epidemiology and outcomes. *Nat Rev Rheumatol*. 2021;**17**(2):71–2. [PubMed ID: 33339986]. [PubMed Central ID: PMC7747184]. https://doi.org/10.1038/s41584-020-00562-2.
7. Simonnet A, Chetboun M, Poissy J, Raverdy V, Noulette J, Duhamel A, et al. High prevalence of obesity in severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2) requiring invasive mechanical ventilation. *Obesity (Silver Spring)*. 2020;**28**(7):1195–9. [PubMed ID: 32271993]. [PubMed Central ID: PMC7262326]. https://doi.org/10.1002/oby.22831.
8. Sattar N, McInnes IB, McMurray JJV. Obesity is a risk factor for severe COVID-19 infection: Multiple potential mechanisms. *Circulation*. 2020;**142**(1):4–6. [PubMed ID: 32320270]. https://doi.org/10.1161/CIRCULATIONAHA.120.047659.
9. Lighter J, Phillips M, Hochman S, Sterling S, Johnson D, Francois F, et al. Obesity in patients younger than 60 years is a risk factor for COVID-19 hospital admission. *Clin Infect Dis*. 2020;**71**(15):896–7. [PubMed ID: 32271368]. [PubMed Central ID: PMC7184372]. https://doi.org/10.1093/cid/ciaa415.
10. Donthu N, Gustafsson A. Effects of COVID-19 on business and research. *J Bus Res*. 2020;**117**:284–9. [PubMed ID: 32536736]. [PubMed Central ID: PMC7280091]. https://doi.org/10.1016/j.jbusres.2020.06.008.
11. Goldstein JR, Lee RD. Demographic perspectives on the mortality of COVID-19 and other epidemics. *Proc Natl Acad Sci U S A*. 2020;**117**(36):22035–41. [PubMed ID: 32820077]. [PubMed Central ID: PMC7486771]. https://doi.org/10.1073/pnas.2006392117.
12. World Health Organization. *WHO Coronavirus (COVID-19) dashboard*. Geneva, Switzerland: World Health Organization; 2021. Available from: https://covid19.who.int/?adgroupsurvey=\protect\LY1\textbraceleftadgroupsurvey\protect\LY1\textbraceright&gclid=CjwKCAjw7fuJBhBdEiwA2lLMYXmHEhyA5oNZq9HQElgBfQ8gr_h_zRTcl8Mn9Z1ZxLOMmfumncw1LBoCDyUQAvD_BwE.
13. World Health Organization. *Countries*. Geneva, Switzerland: World Health Organization; 2021. Available from: https://www.who.int/southeastasia.
14. Gordis L. *Epidemiology*. 4th ed. Philadelphia, USA: Saunders; 2008.
15. Gupta A, Banerjee S, Das S. Significance of geographical factors to the COVID-19 outbreak in India. *Model Earth Syst Environ*. 2020:1–9. [PubMed ID: 32838021]. [PubMed Central ID: PMC7299143]. https://doi.org/10.1007/s40808-020-00838-2.
16. Kumar SU, Kumar DT, Christopher BP, Doss CGP. The rise and impact of COVID-19 in India. *Front Med*. 2020;**7**:250. [PubMed ID: 32574338]. [PubMed Central ID: PMC7256162]. https://doi.org/10.3389/fmed.2020.00250.
17. Sutaryono S, Andasari SD, Kasjono HS. Diagnosis and epidemiology of Coronavirus (COVID-19) outbreak in Indonesia. *J Teknol Laboratorium*. 2020;**9**(1):49–57. https://doi.org/10.29238/teknolabjournal.v9i1.222.
18. Islam S, Islam R, Mannan F, Rahman S, Islam T. COVID-19 pandemic: An analysis of the healthcare, social and economic challenges in Bangladesh. *Prog Disaster Sci*. 2020;**8**:100135. [PubMed ID: 34173450]. [PubMed Central ID: PMC7669476]. https://doi.org/10.1016/j.pdisas.2020.100135.