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# The Profile of Mortality Among Healthcare Workers in Indonesia due to Covid-19

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## ABSTRACT

**Background:** The increasing number of people infected with Covid-19 worldwide has brought many countries to the next wave of this pandemic. Indonesia was estimated to face the third wave in early 2022 unless active precautions were put into action. Healthcare workers (HCWs) are the essential frontline in the effort to minimize the spreading of the disease. Nevertheless, HCWs are amongst the casualties of the disease, especially in Indonesia, which is regarded as among the countries with the highest HCW mortality. This study aims to describe the mortality rates of HCWs in Indonesia.

**Methods:** The retrospective data were obtained from the official website of LaporCovid, an independent Indonesian initiative to provide information regarding Covid-19, to obtain secondary data following the research objectives.

**Results:** Our study found that 1,551 health workers in Indonesia died from Covid-19 until 25 July 2021, and almost one-third of them were doctors. Furthermore, East Java is the most prevalent province and only one province (out of 33) has not reported causality.

**Conclusions:** The second wave of the pandemic has overwhelmed health workers and has become infected and eventually many health workers have died more than in the previous months.

**Keywords:** Covid-19; Healthcare Workers; Mortality Profile; Second Wave

## INTRODUCTION

The prevalence of the COVID-19 pandemic in Indonesia in 2020-2021 has triggered important considerations regarding morbidity and mortality<sup>1</sup>. This disease not only has infected many general publics but also killed healthcare workers<sup>2</sup>. COVID-19 has the potential to annihilate all medical specialties, especially those who are older and

work in front-line positions<sup>3</sup>. Risky contact frequently occurred while providing healthcare to patients and during social interactions between employees, in addition to services where COVID-19 patients were treated<sup>4</sup>. For instance, Nguyen et al<sup>5</sup> said that one of the great risks for health workers to contract SARS-CoV-2 infection is due to repeated exposure in the workplace<sup>5</sup>. In a short time, the number of Covid-19 patients

increased very rapidly. Alshamrani *et.al*<sup>4</sup> concludes that HCWs are at a ten-fold higher risk of COVID-19 infection but have much better outcomes compared with non-HCWs.

The second wave of the pandemic in 2021 is inevitable since hospitals and medical personnel are already overwhelmed. To make it worse, the number of healthcare workers who contracted and died due to Covid-19 in Indonesia is increasing daily. On 5 July 2021, the number of cases in the country increased by 29,745, contributing to a total of 2.31 million people<sup>5</sup>.

Therefore, the primary objective of this research was to determine the incidence of severe or critical disease and deaths among HCWs, especially among medical doctors because of Covid-19. Furthermore, this study aimed to assess the risks and mortality of COVID-19 among medical doctors in Indonesia.

**METODE**

In this retrospective study, data were collected from the official website to obtain secondary data based on the research objectives. This study uses COVID-19 statistical mortality data collected by the Covid-19 data report team. We accessed the LaporCovid Instagram page and the website of LaporCovid (<https://laporcovid19.org/>), the two initiatives aimed to provide information in regard to Covid-19. HCWs in this regard were doctors, nurses, midwives, pharmacists, dentists, and medical laboratory personnel.

**RESULTS**

Figure 1 shows that cases of infection and death due to Covid-19 occur in the various profession of health workers. The Covid-19 report noted that 1,551 health workers in Indonesia died due to the Covid-19 coronavirus on Sunday 25 July 2021. The majority of these health workers were doctors, reaching up to 545 people. A total of 494

nurses have also died and 243 midwives died from exposure to the virus. The number of pharmacists, dentists, and medical laboratory personnel dying due to the disease is 47, 46, and 43 people, respectively.

There were nine radiology records and five sanitarian staff who died from the coronavirus. There was the same number of dental therapists, electromedical staff, pharmacy staff, and ambulance workers who died due to corona, which were 3 people in each category. Furthermore, two epidemiologists, one medical physicist, and one entomologist contracted and died from coronavirus. Other 63 deaths recorded are other unspecified health workers. Nevertheless, in Indonesia the highest number of deaths due to Covid-19 among health workers is doctors who directly interacted with infected patients.

Figure 2 illustrates the mortality rates of health workers due to Covid-19 in 2020 and 2021. There was an observable fluctuation in the number of deaths reported from March to December 2020. The most-reported deaths during 2020 were in December, which was 143 reports. There were 160 reported deaths in January 2021 before a significant decrease from February until May 2021, with the lowest of 11 reports in April 2021.

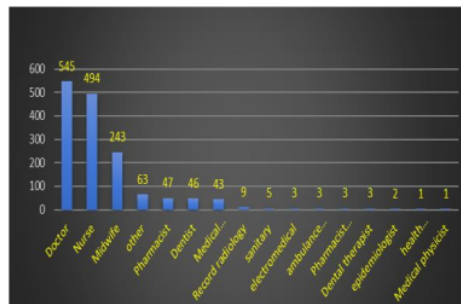


Figure 1. The distribution mortality rate of health workers due to Covid-19 by profession

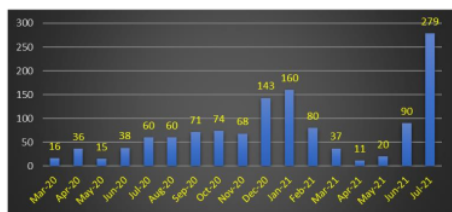


Figure 2. The distribution mortality rate of health workers due to Covid-19 by month of occurrence

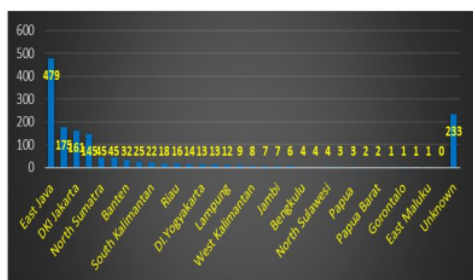


Figure 3. The distribution mortality rate of health workers due to Covid-19 by provinces

However, the number of reported deaths rose again in June up to 90 cases. The number of reported deaths reached its peak at 279 deaths in July 2021 (recorded data are until 25 July).

Figure 3 explains that thousands of health workers who died were spread across 33 provinces in Indonesia. The province with the highest number was East Java which recorded 479 health workers' death; followed by West Java, Jakarta, and Central Java at 175, 161, and 145 deaths, respectively. Meanwhile, 233 health workers died in unknown locations and there is no reported death on Bangka Belitung Island.

**DISCUSSION**

Healthcare workers in Indonesia and many other countries have been on the verge of death <sup>2</sup> in the last 18 months. The number of health workers who died due to Covid-19 is increasing as the number of patients who had to be treated continues to grow. In July 2021,

<sup>11</sup> there was a sharp increase in the number of confirmed positive Covid-19 patients, causing health service places to be in a state of collapses, such as health centers, and hospitals. This has caused extreme exhaustion among the health workforce as well as the existing healthcare system. The impact of all this is that many patients have died, both in the hospital and at home while self-isolating. In addition, there has also been an increase in cases of death among health workers <sup>1,2</sup>.

Based on the data published by the Indonesian Doctors Association (IDI), there are 545 doctors died from Covid-19 on 17 July 2021, and 63 doctors died in July 2022. Infection rates among COVID team members were higher than any other active and high-risk workers.

Doctors are at a lower risk of infection than respiratory therapists, nurses, and patient transporters, all of whom should reconsider their interventions. Diabetes, obesity, hypertension, hemolytic anemia, and HIV all increased the risk of COVID-19 complications<sup>6</sup>. Employees' unprotected workplace contact was identified as a significant source of risk because the inadequate use of personal protective equipment resulted in increased medium and high-risk contact. The physically improved rest areas and scheduled breaks will reduce risky social contact between co-workers<sup>4</sup>. Furthermore, adequate precautions combined with strict enforcement can maintain healthcare workers from becoming infected with SARS-CoV-2 and continue to dedicate <sup>6</sup> their lives to saving the lives of others<sup>7</sup>. Many patients and healthcare workers were killed in the COVID-19 pandemic. COVID will potentially eliminate all medical specialties if these conditions are ignored. Several people have died as a result of a lack of personal protective equipment. There should be more consideration on whether to assign older doctors to front-line positions<sup>3</sup>. Healthcare workers had high rates of seroconversion,

which reflected community epidemiology. Many participants found asymptomatic infections, highlighting the need for better surveillance among health care workers<sup>8</sup>.

In the early stages of the pandemic, no country can avoid the high mortality rate among healthcare workers. COVID-19 was a novel disease when it was first described. The public's understanding of transmission and prevention mechanisms and the availability of standardized personal protective equipment are still evolving. The Korean government has failed to provide up-to-date and detailed information about the epidemic, making it difficult to care for COVID patients. As a result, doctors were forced to search for and use "illegal information" on the internet to treat patients<sup>9</sup>. The COVID-19 epidemic has strained the global healthcare infrastructure. A poll found that the COVID-19 epidemic has harmed medical and surgical doctor training and the healthcare infrastructure. To attain these goals, we will need to adapt and innovate in doctor training and patient care<sup>10</sup>. Personnel contracting COVID-19 "unarmed" should wear a surgical mask, N-95 respirator, gloves, goggles, gowns, face shields, and hand sanitizer. To reduce overburdening and infection transmission, COVID-19 testing is assigned to trained front-line health care professionals<sup>11</sup>.

After a year of combating COVID-19, it has become clear that the causes of the high death rate among healthcare workers are far more complex. It takes more than just providing appropriate personal protective equipment (PPE) and raising awareness about transmission prevention. The solution is more complicated than simply prioritizing the vaccination of healthcare workers. There will be no easy solution to the issue of high infection rates and deaths among healthcare workers. Among contributing factors to the high level of occupational morbidity of COVID-19 in Ukrainian medical personnel are personal negligence, insufficient staffing

of treatment facilities (TF) with medical workers, insufficient provision of medical workers with lack of use of PPE even when available, lack of or poor-quality labor protection instruction, and a shortage of medical staff, including epidemiologists, hygienists, and occupational pathologists<sup>12</sup>. Most doctors were aware of the new COVID-19 virus, but not all were aware of the consequences of coronavirus infection. To ensure proper treatment and disease containment, those in charge of initial COVID-19 patient management must be given guidelines and safety precautions<sup>13</sup>. COVID-19 has been linked to an increase in the mortality of doctors and other healthcare workers. Workplace risk assessments, mitigating confounding factors, adequate PPE supplies, and enhanced infection protection are required until a cure or adequate vaccine coverage is achieved<sup>14</sup>. Also, personal protective equipment is essential for both the general public and health care workers. Because the virus spreads through the respiratory system, including the eyes, nose, and mouth, travelers<sup>15</sup> must take precautions. Health care workers should not take on too many responsibilities and work long hours. A healthy immune system is achieved by eating a nutritious, balanced diet, taking vitamin supplements, and getting enough sleep. Health workers should also avoid eating or drinking while working, and avoid close contact without protective clothing<sup>15</sup>.

The high mortality rate of doctors and other health care professionals is possibly due to fatigue. Emotional exhaustion, loss of empathy, and low self-esteem are all symptoms of occupational stress. Medical professionals around the world have been recognized for their selfless service and acts during the COVID-19 pandemic. Two of an array of ways government could express gratitude for their hard work and sacrifice is by providing housing near hospitals and increasing life insurance benefits to assist



physicians in caring for their families<sup>16</sup>. Frontline healthcare providers have suffered severe psychological and mental health issues because of fatigue<sup>16</sup> and exhaustion. Support from co-workers, family, the general public, and the government may be critical to sustaining healthcare workers' mental health at work<sup>17</sup>.

Since June 2021, the second wave of COVID-19 transmission had caused hospitals and healthcare facilities to be overburdened with services. To minimize the spectrum of the COVID-19 pandemic, the hospital community must be prepared to meet international standards. Non-clinical staff should be educated, and practical approaches for the official inclusion of relevant information into clinical practice should be implemented to limit COVID-19 transmission<sup>18</sup>. The SARS coronavirus type 2 is highly contagious among healthcare workers. The current state of the COVID-19 outbreak is unknown, particularly in less affected areas. In a low COVID-19 valence, the development of public health policies to control the spread of the COVID-19 virus in low-intensity COVID-19 zones<sup>19</sup>. Supporting the primary health care sector should include adequate payment for COVID-19 care and revenue loss due to the pandemic and measures to support the implementation of prevention measures in both specialized and primary care practices<sup>20</sup>. Only a small percentage of COVID-19 cases in Singapore tested positive, with healthcare workers accounting for a small portion of the total. Because of the possibility of transmission through family/household exposure and social interactions, constant precautionary measures are required even when away from their workstations<sup>21</sup>. SARS-CoV-2 infections and COVID-19 illnesses among German and Malaysian health workers reported that doctors are at a higher risk of serious illness than other workers. When patients contracted COVID-19 and no PPE

was worn, health workers in Malaysia became infected. Despite a limited understanding of the spread of SARS-CoV-2 infection among health workers, occupational health examinations should be analyzed to understand COVID-19 epidemiology among HW better. In Malaysia, the risk of infection from HW appears to have decreased as PPE supply and use have improved<sup>22</sup>. Hospitals and front-line workers were overworked during the COVID-19 pandemic. Service workers in water, sanitation, hygiene, and food service are not adequately recognized or compensated. The relationship between social determinants of health and COVID-19-related morbidity and mortality in this population urges institutions to rethink how they could support their health workers<sup>23</sup>.

To maintain the stamina and mental condition of health workers, Rr. Halimatu Hira and Tania Amelia<sup>24</sup> proposed setting working hours. Under normal conditions or before an emergency due to a pandemic, based on Articles 77 to 85 of Law Number 13 of 2003 concerning Manpower, they can only work for 40 hours in one week and eight hours per day for five working days. Meanwhile, during this pandemic, working hours can be reduced to six hours per day (30 hours in one week). By reducing working hours, it is expected that health workers can restore their health both physically and psychologically due to longer rest periods. In addition, reducing working hours means minimizing the risk of disease transmission because spending a long time in an area of virus transmission will also increase the risk of exposure<sup>24</sup>.

Furthermore, most of the death among health workers occurred in East Java. This situation caused the referral system for corona patients in East Java not to be well organized, especially in Greater Surabaya. Therefore, health workers handling the coronavirus in East Java are very overwhelmed because the referral system that has not been well

organized. The East Java Indonesian Doctors Association has advised the government in East Java to evaluate the existing Covid-19 referral system in East Java. With a good referral system, it is hoped that corona patients in East Java can be divided into several referral hospitals and not concentrated in one hospital.

## CONCLUSION

The mortality rates of health workers increased along with the number of patients who had to be treated. The second wave of the pandemic has overwhelmed health workers and has become infected and eventually many health workers have died more than in the previous months. To prevent the severity of the second wave of COVID-19 and the increase in mortality rates among health workers, the Indonesian Government needs to increase the vaccination rate, testing, tracing, treatment, and discipline in following health protocols. In addition, the Government needs to strengthen the referral system.

## ACKNOWLEDGMENTS

"Those who have left will not return. Nevertheless, memories cannot be extinguished. The health workers who have died fighting COVID-19 are not just numbers. They have stories and social relationships in the past. They also have a role in our lives now and in the future. They will be eternal. For family, colleagues, and friends, please sow flowers in this "digital tomb" by giving a testimony about their struggles. Let us honor the struggle of our heroes by surviving and uniting against this pandemic"<sup>25</sup>.

## REFERENCES

1. Government I. Indonesia fights back the covid-19 second wave [Internet]. 2021. Available from: <https://covid19.go.id/p/berita/indonesia-fights-back-covid-19-second-wave>
2. LaporanCovid-19. No Title [Internet]. 2021. Available from: <https://nakes.laporcovid19.org/statistik>
3. Ing EB, Xu QA, Salimi A, Torun N. Physician deaths from corona virus (COVID-19) disease. *Occup Med (Chic Ill)*. 2020;70(5):370–4.
4. Yapici G, Kurt AÖ, Solmaz ET, Tunç AY, Bozdağ F, Yalçın BNB, et al. Assessment of COVID-19 risky contact of healthcare workers in a University Hospital. *Mikrobiyol Bul*. 2021;55(2):161–79.
5. Nguyen LH, Drew DA, Graham MS, Joshi AD, Guo C-G, Ma W, et al. Risk of COVID-19 among front-line health-care workers and the general community: a prospective cohort study. *Lancet Public Heal*. 2020;5(9):e475–83.
6. Shamrani MM, El-Saed A, Al Zunitan M, Almulhem R, Almohrij S. Risk of COVID-19 morbidity and mortality among healthcare workers working in a Large Tertiary Care Hospital. *Int J Infect Dis*. 2021 Aug;109:238-243. doi: 10.1016/j.ijid.2021.07.009. Epub 2021 Jul 7. PMID: 34242766; PMCID: PMC8260475.
7. Robles-Pérez E, González-Díaz B, Miranda-García M, Borja-Aburto VH. Infection and death by COVID-19 in a cohort of healthcare workers in Mexico. *Scand J Work Environ Health*. 2021;47(5):349–55.
8. Zhan M, Qin Y, Xue X, Zhu S. Death from COVID-19 health care workers in China. *N Engl J Med*. 2020;382(23):2267–8.
9. Sitter M, Schlesinger T, Reinhold K, Scholler A, Heymann C von, Welfle S, et al. [COVID-19 in obstetric anesthesia: Prospective surveillance of peripartum infections with SARS-CoV-2 and peripartum course of disease in affected women]. *Der Anaesthesist*. 2021.
10. Ma SH. Shortcomings of the Korean government's policies to combat the COVID-19 pandemic and suggestions for improvement. *J Korean Med Sci*. 2021;36(20):1–3.
11. Laloo R, Santhosh Karri R, Wanigasooriya K, Beedham W, Darr A, Layton GR, et al. The perceived global impact of the COVID-19 pandemic on doctors' medical and surgical training: An international survey. *Int J Clin Pract*. 2021;(March):1–9.
12. Manzoor MS. Shortage of PPEs in Pakistan; A health risk for Doctors and other health care professionals during the COVID-19. *J Rawalpindi Med Coll*. 2020;24(Suppl-1):4–5.
13. Yavorovsky A, Skaletsky YM, Brukhno R, Shkurba A, Kirichuk I, Regan M. Problems of safety, occupational hygiene and infection control in the fight against occupational

- diseases of healthcare workers with COVID-19 in treatment facilities of Ukraine. *Med Perspekt.* 2020;25(4):159–65.
14. Riaz R, Memon AM, Waqas A, Theba FK, Jabeen Z, Khan S, et al. Knowledge about Novel Coronavirus (COVID-19) among health-care workers working at a Secondary Care Hospital. *Prof Med J.* 2021;28(03):271–6.
15. Iyengar KP, Ish P, Upadhyaya GK, Malhotra N, Vaishya R, Jain VK. COVID-19 and mortality in doctors. *Diabetes Metab Syndr Clin Res Rev.* 2020;14(6):1743–6.
16. Bukhari MH, Mahmood K, Zahra SA. Over view for the truth of COVID-19 pandemic: A guide for the pathologists, health care workers and community'. *Pakistan J Med Sci.* 2020;36(COVID19-S4):S111–4.
17. Vaid N. National doctors' day 2020: To lessen the mortality of COVID-19. *Int Healthc Res J.* 2020;4(4):73–4.
18. Norhayati MN, Yusof RC, Azman MY. Vicarious traumatization in healthcare providers in response to COVID-19 pandemic in Kelantan, Malaysia. *PLoS One.* 2021;16(6 June):1–11.
19. Zafar N, Jamal Z, Mujeeb Khan M. Preparedness of the healthcare personnel against the Coronavirus disease 2019 (COVID-19) outbreak: An audit cycle. *Front Public Heal.* 2020;8(September):1–7.
20. Fukuda H, Seyama K, Ito K, Ai T, Nojiri S, Hori S, et al. SARS-CoV-2 seroprevalence in healthcare workers at a frontline hospital in Tokyo. *Sci Rep.* 2021;11(1):1–7.
21. Roth C, Breckner A, Moellinger S, Schwill S, Peters-Klimm F, Szecsenyi J, et al. Beliefs and practices among primary care physicians during the first wave of the COVID-19 pandemic in Baden-Wuerttemberg (Germany): an observational study. *BMC Fam Pract.* 2021;22(1):1–12.
22. Wong LY, Tan AL, Leo YS, Lee VJM, Toh MPHS. Healthcare workers in Singapore infected with COVID-19: 23 January-17 April 2020. *Influenza Other Respi Viruses.* 2021;15(2):218–26.
23. Nienhaus A, Hod R. COVID-19 among health workers in Germany and Malaysia. *Int J Environ Res Public Health.* 2020;17(13):1–10.
24. Adler S, Bhattacharyya S. Beyond the nurses and doctors: Structural racism and the unseen frontline service workers during the COVID-19 pandemic. *Psychiatr Serv.* 2021;72(5):594–6.
25. Hira RH, Melia T. Healthcare Workers Security Jaminan, Regulasi, Dan Sanksi. 2020;Vol 1(2). Available from: <https://e-journal.iainptk.ac.id/index.php/khalrev/article/view/97/54>
26. Laporan Covid-19. Terimakasih Pahlawan Kesehatan Indonesia [Internet]. Available from: <https://nakes.laporcovid19.org/>



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