## **DAFTAR PUSTAKA**

- Listiana A, Adistikah A, Maulidiah I, editors. Kementrian Kesehatan Republik Indonesia. Pedoman Pencegahan dan Pengendalian Coronavirus Disease (COVID-19). Juli 2020. Vol. 5. Jakarta: Kementerian Kesehatan RI; 2020. 1–214 p)
- World Health Organization. COVID-19 Clinical Management 4th version.
   World Health Organization. Geneva; 2021.
- 3. Kementrian Kesehatan Republik Indonesia. Situasi Terkini Perkembangan COVID-19. Jakarta; 2021
- 4. Williamson EJ, Walker AJ, Bhaskaran K, et al. Factors associated with COVID-19-related death using OpenSAFELY. Nature.2020;584:430–6.
- 5. Albashir AAD. The potential impacts of obesity on COVID-19. Clin Med (Lond). 2020;20(4):109-13.
- 6. Rao X, Wu C, Wang S. The importance of overweight in COVID-19: A retrospective analysis in a single center of Wuhan, China. Medicine (Baltimore). 2020;99(43):1-11
- 7. Bello-Chavolla OY, Bahena-López JP, Antonio-Villa NE. Predicting Mortality Due to SARS-CoV-2: A Mechanistic Score Relating Obesity and Diabetes to COVID-19 Outcomes in Mexico. J Clin Endocrinol Metab. 2020;105(8):346-74
- 8. Yu W, Rohli KE, Yang S, Jia P. Impact of obesity on COVID-19 patients.
  J Diabetes Complications. 2021;35(3):1-13
- 9. Moriconi D, Masi S, Rebelos E, Virdis A, Manca ML, De Marco S, et al. Obesity prolongs the hospital stay in patients affected by COVID-19, and may impact on SARS-COV-2 shedding. Obes Res Clin Pract 2020;14:205-9.
- Dreher M, Kersten A, Bickenbach J, Balfanz P, Hartmann B, Cornelissen C, et al. The characteristics of 50 hospitalized COVID-19 patients with and without ARDS. Dtsch Arztebl Int 2020;117:271-8
- 11. Gupta S, Hayek SS, WangW, Chan L, Mathews KS, Melamed ML, et al. Factors associated with death in critically ill patients with coronavirus disease 2019 in the US.JAMA Intern Med 2020;180:1-12.

- 12. Crusio WE, Dong H, Radeke HH, Rezaei N, Xiao J. Advances in Experimental Medicine and Biology. Tehran: Springer; 2020. p. 61.
- 13. World Health Organization. COVID-19 Weekly Epidemiological Update Edition 54. World Health Organization. Geneva; 2021.
- 14. Harrison AG, Lin T, Wang P. Mechanisms of SARS-CoV-2 Transmission and Pathogenesis. Trends in Immunology 2020; 41: 1100–15.
- Tangianu F, Para O, Capello F. COVID-19 in Clinical Practice Lessons Learned and Future Perspectives. 1st edition. Switzerland: Springer; 2021. p. 10-2.
- 16. Krishnan A, Hamilton JP, Alqahtani SA. COVID-19: An overview and a clinical update. World Journal of Clinical Cases 2021; 9: 8–23.
- 17. Harjatmo TP, Par'i HM, Wiyono S. Buku Ajar Penilaian Status Gizi. Jakarta: EGC; 2017. p. 212-24.
- 18. Lim JU, Lee JH, Kim JS. Comparison of World Health Organization and Asia-Pacific body mass index classifications in COPD patients. Int J Chron Obstruct Pulmon Dis. 2017; 12: 2465-75.
- Kementrian Kesehatan Republik Indonesia. Klasifikasi Obesitas setelah pengukuran IMT. Jakarta: P2PTM; 7 November 2018 [diakses 20 Agustus 2021].
- 20. Dixon AE, Peters U. The effect of obesity on lung function. Expert Rev Respir Med. 2018; 12(9): 755-67.
- 21. Peters U, Suratt BT, Bates JHT, Dixon AE. Beyond BMI: Obesity and Lung Disease. Chest. 2018; 153(3): 702-9.
- 22. De Bandt JP, Monin C. Obesity, Nutrients and the Immune System in the Era of COVID-19. Nutrients. 2021; 13(610): 1-14.
- 23. De Frel DL, Atsma DE, Pijl H. The Impact of Obesity and Lifestyle on the Immune System and Susceptibility to Infections Such as COVID-19. Front Nutr. 2020;7(5):1-12.
- 24. Gleeson LE, Roche HM, Sheedy FJ. Obesity, COVID-19 and innate immunometabolism. Br J Nutr. 2021;125(6):628-32.
- 25. Mustafa MI, Abdelmoneim AH, Mahmoud EM, Makhawi AM. Cytokine Storm in COVID-19 Patients, Its Impact on Organs and Potential Treatment

- by QTY Code-Designed Detergent-Free Chemokine Receptors. Mediators Inflamm. 2020;2020(8):1-7.
- 26. Mehanna O, Askary A el, Ali E. Impact of obesity and its associated comorbid conditions on COVID-19 presentation. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy 2021; 14: 409–15.
- 27. Khasawneh L, Al-Omar K, Adnan Tarifi A. The correlation between BMI and COVID-19 outcomes. Systematic Reviews in Pharmacy 2020; 11: 1236–9.
- 28. Demeulemeester F, de Punder K, van Heijningen M, van Doesburg F. Obesity as a Risk Factor for Severe COVID-19 and Complications: A Review. Cells. 2021; 10(933): 5-11. ANDALA
- 29. Aghili SMM, Ebrahimpur M, Arjmand B. Obesity in COVID-19 era, implications for mechanisms, comorbidities, and prognosis: a review and meta-analysis. Int J Obes (Lond). 2021;45(5):998-1016.
- 30. Hamer M, Gale CR, Kivimäki M, Batty GD. Overweight, obesity, and risk of hospitalization for COVID-19: A community-based cohort study of adults in the United Kingdom. Proc Natl Acad Sci U S A. 2020;117(35):21011-13.
- 31. Rossi AP, Gottin L, Donadello K. Obesity as a risk factor for unfavourable outcomes in critically ill patients affected by Covid 19. Nutr Metab Cardiovasc Dis. 2021;31(3):762-8.
- 32. Sjögren L, Stenberg E, Thuccani M. Impact of obesity on intensive care outcomes in patients with COVID-19 in Sweden-A cohort study. PLoS One. 2021;16(10): 1-7.
- 33. Popkin BM, Du S, Green WD. Individuals with obesity and COVID-19: A global perspective on the epidemiology and biological relationships. Obesity Reviews. 2021; 22(10): 1-17.
- 34. Ellulu MS, Patimah I, Khaza'ai H. Obesity & inflammation: The linking mechanism & the complications. Archives of Medical Science 2017; 13: 851–63.

- 35. McNeill JN, Lau ES, Paniagua SM. The role of obesity in inflammatory markers in COVID-19 patients. Obesity Research and Clinical Practice 2021; 15: 96–9.
- 36. Chiappetta S, Sharma AM, Bottino V. COVID-19 and the role of chronic inflammation in patients with obesity. International Journal of Obesity 2020; 44: 1790–2.
- 37. Helvaci N, Eyupoglu ND, Karabulut E, Yildiz BO. Prevalence of Obesity and Its Impact on Outcome in Patients With COVID-19: A Systematic Review and Meta-Analysis. Front Endocrinol (Lausanne). 2021; 12(598249: 1-13.
- 38. El Kassas GM, Shehata MA, el Wakeel MA. Role of procalcitonin as an inflammatory marker in a sample of egyptian children with simple obesity.

  Open Access Macedonian Journal of Medical Sciences 2018; 6: 1349–53.
- 39. Mesgari-Abbasi M, Mahmoudinezhad M, Farhangi MA. Soluble P-selectin, procalcitonin, transforming growth factor (TGF)-β and apo-proteins in association with the components of metabolic syndrome in obese individuals. Clinical Nutrition ESPEN. 2021; 41: 386–90.
- 40. Pasquarelli-do-Nascimento G, Braz-de-Melo HA, Faria SS, Santos IO, Kobinger GP, Magalhães KG. Hypercoagulopathy and Adipose Tissue Exacerbated Inflammation May Explain Higher Mortality in COVID-19 Patients With Obesity. Front Endocrinol (Lausanne). 2020; 11(530): 1-16.
- 41. Sahin S, Sezer H, Cicek E. The role of obesity in predicting the clinical outcomes of COVID-19. Obesity Facts 2021; 14: 481–9.
- 42. Foulkes AS, Selvaggi C, Shinnick D. Understanding the link between obesity and severe COVID-19 outcomes: Causal mediation by systemic inflammatory response. J Clin Endocrinol Metab. 2021;(20):10-39.
- 43. Lemyze M, Courageux N, Maladobry T. Implications of Obesity for the Management of Severe Coronavirus Disease 2019 Pneumonia. Crit Care Med. 2020;48:(9):761-7.
- 44. Peres KC, Riera R, Martimbianco ALC, Ward LS, Cunha LL. Body Mass Index and Prognosis of COVID-19 Infection. A Systematic Review. Front Endocrinol (Lausanne). 2020;11:562-9.

- 45. Recalde M, Pistillo A, Fernandez-Bertolin S. Body mass index and risk of COVID-19 diagnosis, hospitalisation, and death: a cohort study of 2.524.926 Catalans. J Clin Endocrinol Metab. 2021;106:(12):5030-42.
- 46. Thakur B, Dubey P, Benitez J. A systematic review and meta-analysis of geographic differences in comorbidities and associated severity and mortality among individuals with COVID-19. Sci Rep. 2021;11(1):1-14.
- 47. Ge E, Li Y, Wu S, Candido E, Wei X. Association of pre-existing comorbidities with mortality and disease severity among 167,500 individuals with COVID-19 in Canada: A population-based cohort study. PLoS One 2021; 16(10): 1-18.
- 48. Li X, Guan B, Su T. Impact of cardiovascular disease and cardiac injury on in-hospital mortality in patients with COVID-19: A systematic review and meta-analysis. Heart 2020; 106: 1142–7.
- 49. Driggin E, Madhavan MV, Bikdeli B. Cardiovascular Considerations for Patients, Health Care Workers, and Health Systems During the COVID-19 Pandemic. J Am Coll Cardiol. 2020;75(18):2352-71.
- 50. Corrales-Medina VF, Madjid M, Musher DM. Role of acute infection in triggering acute coronary syndromes. Lancet Infect Dis. 2010;10(2):83-92.
- 51. Han Y, Zeng H, Jiang H. CSC Expert Consensus on Principles of Clinical Management of Patients with Severe Emergent Cardiovascular Diseases during the COVID-19 Epidemic. Circulation 2020; E810–E816.
- 52. Guo T, Fan Y, Chen M, et al. Cardiovascular Implications of Fatal Outcomes of Patients With Coronavirus Disease 2019 (COVID-19). JAMA Cardiol. 2020;5(7):811-8.
- 53. Shi S, Qin M, Shen B. Association of Cardiac Injury With Mortality in Hospitalized Patients With COVID-19 in Wuhan, China. JAMA Cardiol 2020;5(7):802-10.
- 54. Zuin M, Rigatelli G, Zuliani G, Rigatelli A, Mazza A, Roncon L. Arterial hypertension and risk of death in patients with COVID-19 infection: Systematic review and meta-analysis. J Infect 2020;81(1):84-6.

- Huang S, Wang J, Liu F. COVID-19 patients with hypertension have more severe disease: a multicenter retrospective observational study. Hypertens Res 2020;43(8):824-31.
- Moftakhar L, Piraee E, Mohammadi Abnavi M, Moftakhar P, Azarbakhsh H, Valipour A. Epidemiological Features and Predictors of Mortality in Patients with COVID-19 with and without Underlying Hypertension. Int J Hypertens 2021;7427500:1-7.
- 57. Kumar A, Arora A, Sharma P. Is diabetes mellitus associated with mortality and severity of COVID-19? A meta-analysis. Diabetes and Metabolic Syndrome: Clinical Research and Reviews 2020; 14: 535–45.
- 58. Angelidi AM, Belanger MJ, Mantzoros CS. Commentary: COVID-19 and diabetes mellitus: What we know, how our patients should be treated now, and what should happen next. Metabolism. 2020;107:1-6.
- Wu Z hong, Tang Y, Cheng Q. Diabetes increases the mortality of patients with COVID-19: a meta-analysis. Acta Diabetologica 2021;58:139–44.
- 60. Lee SC, Son KJ, Han CH, Park SC, Jung JY. Impact of COPD on COVID-19 prognosis: A nationwide population-based study in South Korea. Sci Rep. 2021;11(1):1-8.
- 61. Lee SC, Son KJ, Han CH, Jung JY, Park SC. Impact of comorbid asthma on severity of coronavirus disease (COVID-19). Sci Rep. 2020;10(1):1-10.
- Yang JM, Koh HY, Moon SY. Allergic disorders and susceptibility to and severity of COVID-19: A nationwide cohort study. Journal of Allergy and Clinical Immunology 2020; 146: 790–8.
- 63. Choi YJ, Park JY, Lee HS. Effect of asthma and asthma medication on the prognosis of patients with COVID-19. Eur Respir J. 2021;57(3):1-11.
- 64. Gao Y, Liu M, Chen Y. Association between tuberculosis and COVID-19 severity and mortality: A rapid systematic review and meta-analysis. Journal of Medical Virology 2021; 93: 194–6.
- 65. Li X, Xu S, Yu M. Risk factors for severity and mortality in adult COVID-19 inpatients in Wuhan. Journal of Allergy and Clinical Immunology 2020; 146: 110–8.

- 66. Singh J, Malik P, Patel N. Kidney disease and COVID-19 disease severity-systematic review and meta-analysis [published online ahead of print, 2021 Apr 23]. Clin Exp Med. 2021;1-11.
- 67. Shao M, Li X, Liu F, Tian T, Luo J, Yang Y. Acute kidney injury is associated with severe infection and fatality in patients with COVID-19: A systematic review and meta-analysis of 40 studies and 24,527 patients. Pharmacol Res. 2020;161:1-13.
- 68. Cheng Y, Luo R, Wang K. Kidney disease is associated with in-hospital death of patients with COVID-19. Kidney International 2020; 97: 829–38.
- 69. Lillicrap D. Disseminated intravascular coagulation in patients with 2019nCoV pneumonia, Journal of Thrombosis and Haemostasis 2020;18:786-7.
- 70. Florez-Perdomo WA, Serrato-Vargas SA, Bosque-Varela P. Relationship between the history of cerebrovascular disease and mortality in COVID-19 patients: A systematic review and meta-analysis. Clin Neurol Neurosurg. 2020;197:1-5.
- 71. Aggarwal G, Lippi G, Michael Henry B. Cerebrovascular disease is associated with an increased disease severity in patients with Coronavirus Disease 2019 (COVID-19): A pooled analysis of published literature. International Journal of Stroke 2020; 15: 385–9.
- 72. Pranata R, Huang I, Lim MA, Wahjoepramono EJ, July J. Impact of cerebrovascular and cardiovascular diseases on mortality and severity of COVID-19-systematic review, meta-analysis, and meta-regression. J Stroke Cerebrovasc Dis. 2020;29(8):1-9.
- 73. Lin L, Lu L, Cao W. Hypothesis for potential pathogenesis of SARS-CoV-2 infection—a review of immune changes in patients with viral pneumonia. Emerging Microbes and Infections 2020; 9: 727–32.
- 74. Yang R, Gui X, Zhang Y. The role of essential organ-based comorbidities in the prognosis of COVID-19 infection patients. Expert Review of Respiratory Medicine 2020; 14: 835–8.
- 75. Kovalic AJ, Satapathy SK, Thuluvath PJ. Prevalence of chronic liverdisease in patients with COVID-19 and their clinical outcomes: a systematic review and meta-analysis. Hepatology International 2020; 14: 612–20.

- Sharma A, Jaiswal P, Kerakhan Y. Liver disease and outcomes among COVID-19 hospitalized patients - A systematic review and meta-analysis. Ann Hepatol. 2021;21:1-24.
- 77. Chai X, Hu L, Zhang Y. Specific ACE2 expression in cholangiocytes may cause liver damage after 2019-nCoV infection. bioRxiv 2020;2:1-13.
- 78. Shields AM, Burns SO, Savic S. COVID-19 in patients with primary and secondary immunodeficiency: The United Kingdom experience. Journal of Allergy and Clinical Immunology 2021; 147: 870-5.
- 79. Docherty AB, Harrison EM, Green CA. Features of 20 133 UK patients in hospital with covid-19 using the ISARIC WHO Clinical Characterisation Protocol: prospective observational cohort study. BMJ 2020;369:1-12.
- 80. Kates OS, Haydel BM, Florman SS. Coronavirus Disease 2019 in Solid Organ Transplant: A Multicenter Cohort Study. Clin Infect Dis. 2021;73(11):4090-9.
- 81. Zhang H, Han H, He T. Clinical Characteristics and Outcomes of COVID-19-Infected Cancer Patients: A Systematic Review and Meta-Analysis. Journal of the National Cancer Institute 2021; 113: 371–80.
- 82. Vijenthira A, Gong IY, Fox TA. Outcomes of patients with hematologic malignancies and COVID-19: a systematic review and meta-analysis of 3377 patients. Blood. 2020;136(25):2881-92.
- 83. Yang L, Chai P, Yu J. Effects of cancer on patients with COVID-19: a systematic review and meta-analysis of 63,019 participants. Cancer Biology and Medicine 2021; 18: 298–307.
- 84. Surendra H, Elyazar IR, Djaafara BA. Clinical characteristics and mortality associated with COVID-19 in Jakarta, Indonesia: A hospital-based retrospective cohort study. Lancet Reg Health West Pac 2021; 9(100108): 1-9.
- 85. Burhan E, Susanto AD, Nasution SA, Ginanjar E, Pitoyo CW, Susilo A, et al. Pedoman Tatalaksana Covid-19 Edisi 3. Perhimpunan Dokter Paru Indonesia (PDPI) Perhimpunan Dokter Spesialis Kardiovaskular Indonesia (PERKI) Perhimpunan Dokter Spesialis Penyakit Dalam Indonesia (PAPDI) Perhimpunan Dokter Anestesiologi dan Terapi. 2020; 6(3): 88–9.

- 86. Dana R, Bannay A, Bourst P. Obesity and mortality in critically ill COVID-19 patients with respiratory failure. International journal of obesity 2021; 45: 2028–37.
- 87. Huang Y, Lu Y, Huang YM. Obesity in patients with COVID-19: a systematic review and meta-analysis. Metabolism. 2020;113:2-13.
- 88. Pettit NN, MacKenzie EL, Ridgway JP. Obesity is Associated with Increased Risk for Mortality Among Hospitalized Patients with COVID-19. Obesity 2020; 28:1806–10.
- Shahid Z, Kalayanamitra R, McClafferty B. COVID-19 and Older Adults:
  What We Know. Journal of the American Geriatrics Society 2020; 68: 926–9.
- 90. Callender LA, Curran M, Bates SM. The Impact of Pre-existing Comorbidities and Therapeutic Interventions on COVID-19. Frontiers in Immunology 2020; 11: 1–16.
- 91. Prasad DS, Kabir Z, Revathi Devi K. Gender differences in central obesity: Implications for cardiometabolic health in South Asians. Indian Heart Journal 2020; 72: 202–4.
- 92. Aslan G, Karadag Arli S, Berivan Bakan A. Obesity and risk factors in women aged between 18 and 64. International Journal of Caring Science 2019; 12: 218–223.
- 93. Verma AA, Hora T, Jung HY. Characteristics and outcomes of hospital admissions for COVID-19 and influenza in the Toronto area. CMAJ. 2021;193(12):410-8.
- 94. Bwire GM. Coronavirus: Why Men are More Vulnerable to Covid-19 Than Women?. SN Compr Clin Med. 2020;2(7):874-6.
- 95. Cai Z, Yang Y, Zhang J. Obesity is associated with severe disease and mortality in patients with coronavirus disease 2019 (COVID-19): a meta-analysis. BMC Public Health. 2021;21(1):1505:1-7.
- 96. Ferreira MER, de Andrade AVS, Queiroz AAF. Covid-19 and obesity: A systematic review and meta-analysis on the pre-existing clinical conditions, covid-19 symptoms, laboratory findings and clinical outcomes. EXCLI Journal 2021; 20: 1610-4.

- 97. Caci G, Albini A, Malerba M. Covid-19 and obesity: Dangerous liaisons. Journal of Clinical Medicine 2020; 9: 1–12.
- 98. Parmar MY. Obesity and Type 2 diabetes mellitus. Integr Obesity Diabetes. 2018; 4(4): 1-2.
- 99. Al Heialy S, Hachim MY, Hachim IY. Combination of obesity and comorbidities leads to unfavorable outcomes in COVID-19 patients. Saudi Journal of Biological Sciences 2021; 28: 1445–50.
- Osibogun A, Balogun M, Abayomi A. Outcomes of COVID-19 patients with comorbidities in southwest Nigeria. PLoS One. 2021;16(3):e0248281.
   1-12.
- 101. Poly TN, Islam MM, Yang HC. Obesity and Mortality Among Patients Diagnosed With COVID-19: A Systematic Review and Meta-Analysis. Front Med (Lausanne). 2021;8:1-11.
- 102. Tartof SY, Qian L, Hong V. Obesity and mortality among patients diagnosed with COVID-19: Results from an integrated health care organization. Annals of Internal Medicine 2020; 173: 773–81.
- 103. Shariq OA, McKenzie TJ. Obesity-related hypertension: a review of pathophysiology, management, and the role of metabolic surgery. Gland Surg. 2020;9(1):80-93.
- 104. Kotsis V, Martinez F, Trakatelli C, Redon J. Impact of Obesity in Kidney Diseases. Nutrients. 2021;13(12):2-16.
- 105. Pugliese, G., Liccardi, A., Graziadio, C. et al. Obesity and infectious diseases: pathophysiology and epidemiology of a double pandemic condition. Int J Obes. 2022; 46: 449–65.
- 106. Harris R, Card TR, Delahooke T, Aithal GP, Guha IN. Obesity Is the Most Common Risk Factor for Chronic Liver Disease: Results From a Risk Stratification Pathway Using Transient Elastography. Am J Gastroenterol. 2019;114(11):1744-52.
- 107. Ni YN, Yu H, Xu H. High Visceral Adipose Tissue to Subcutaneous Adipose Tissue Ratio as a Predictor of Mortality in Acute Respiratory Distress Syndrome. American Journal of the Medical Sciences 2019; 357: 213–22.

- 108. Bennasrallah C, Zemni I, Dhouib W. Factors associated with a prolonged negative conversion of viral RNA in patients with COVID-19. International Journal of Infectious Diseases 2021; 105: 463–9.
- 109. Mo P, Deng L, Liu X. Risk factors for delayed negative conversion of SARS-CoV-2 in patients with COVID-19 pneumonia: a retrospective cohortstudy. Epidemiol Infect. 2020;148:1-7.
- 110. Zhang X, Lin B, Yang G. Delayed SARS-CoV-2 clearance in patients withObesity. Infection and Drug Resistance 2021; 14: 2823-7.
- 111. Pouwels S, Ramnarain D, Aupers E, Rutjes-Weurding L, van Oers J. Obesity May Not Be Associated with 28-Day Mortality, Duration of Invasive Mechanical Ventilation and Length of Intensive Care Unit and Hospital Stay in Critically Ill Patients with Severe Acute Respiratory Syndrome Coronavirus-2: A Retrospective Cohort Study. Medicina(Kaunas). 2021;57(7):674:1-9.
- 112. Suresh S, Siddiqui M, Abu Ghanimeh M. Association of obesity with illness severity in hospitalized patients with COVID-19: A retrospective cohort study. Obesity Research and Clinical Practice 2021; 15: 172–6.
- 113. Plataki M, Pan D, Goyal P. Association of body mass index with morbidityin patients hospitalised with COVID-19. BMJ Open Respir Res. 2021;8(1):1-11.

