

BAB 7

SIMPULAN DAN SARAN

7.1 Simpulan

Berdasarkan dari hasil penelitian yang telah dilakukan dengan judul “Perbandingan Derajat Keparahan COVID-19 Berdasarkan Komorbid Hipertensi Di RS Gotong Royong Surabaya” dapat disimpulkan bahwa:

1. Didapatkan sebesar 45% pasien yang memiliki komorbid hipertensi rata-rata berada di usia 51-70 tahun.
2. Derajat keparahan COVID-19 dengan komorbid hipertensi terbanyak pada derajat berat-kritis 37,5%.
3. Hasil analisis perbedaan kedua variabel menunjukkan terdapat perbedaan derajat keparahan pasien COVID-19 yang memiliki komorbid hipertensi dan tidak memiliki komorbid hipertensi di Rumah Sakit Gotong Royong Surabaya.

7.2 Saran

Hasil penelitian yang didapatkan memunculkan beberapa saran dengan memperhatikan beberapa hal sebagai berikut:

1. Bagi peneliti selanjutnya diharapkan agar dapat mengembangkan dan melakukan penelitian lebih lanjut tentang faktor-faktor lain yang dapat memperberat derajat keparahan COVID-19.

DAFTAR PUSTAKA

1. Harapan H, Itoh N, Yufika A, Winardi W. Coronavirus disease 2019 (COVID-19): a literature review. *J Infect Public Health* [Internet]. 2020 May [disitasi 2022 Mar 2]; 13(5): 667–673. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32340833/>
DOI: <https://dx.doi.org/10.1016%2Fj.jiph.2020.03.019>
2. Susilo A, Rumende CM, Pitoyo CV, Santoso WD, Yulianti M. Coronavirus disease 2019: tinjauan literatur terkini. *Jurnal Penyakit Dalam Indonesia* [Internet]. 2020 [disitasi 2022 Mar 2]; 7(1): 45-67. Diunduh dari: <http://jurnalpenyakitdalam.ui.ac.id/index.php/jpdi/article/view/415>
DOI: <http://dx.doi.org/10.7454/jpdi.v7i1.415>
3. World Health Organization. Coronavirus (COVID-19) Disease Report. WHO [Internet]. 2020 [disitasi 2022 Mar 2]. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>
4. Yang J, Zheng Y, Gou Xi, Pu K, Chen Z, Guo Q. Prevalence of comorbidities and its effects in patients infected with SARS-CoV-2: a systematic review and meta-analysis. *Int J Infect Dis* [Internet]. 2020 May [disitasi 2022 Mar 2]; 94: 91-95. Diunduh dari: <https://www.sciencedirect.com/science/article/pii/S1201971220301363>
5. Sanyaolu A, Okorie C, Marinkovic A, Patidar R. Comorbidity and its impact on patients with COVID-19. *SN Compr Clin Med* [Internet]. 2020 Jun [disitasi 2022 Mar 2]; 29(8): 1069-1076. Diunduh dari <https://pubmed.ncbi.nlm.nih.gov/32838147/>
DOI: <https://dx.doi.org/10.1007%2Fs42399-020-00363-4>
6. Koshy AN, Murphy AC, Farouque O, Ramchand J, Burrell LM, Yudi MB. Renin-angiotensin system inhibition and risk of infection and mortality in COVID-19: a systematic review and meta-analysis. *Intern Med J* [Internet]. 2020 Dec [disitasi 2022 Mar 7]; 50(12): 1468-1474. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/33191600/> DOI: <https://doi.org/10.1111/imj.15002>
7. Zhou F, Yu T, Du R, Guohui K. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* [Internet]. 2020 Mar [disitasi 2022 Apr 6]; 95(10229):1054-1062. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32171076/>
DOI: [https://doi.org/10.1016/s0140-6736\(20\)30566-3](https://doi.org/10.1016/s0140-6736(20)30566-3)
8. Kementrian kesehatan RI. Hasil Utama Riskesdas. Badan Penelitian dan Pengembangan Kesehatan [Internet]. 2018 [disitasi 2022 Mar 4]. https://kesmas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/Hasil-riskesdas-2018_1274.pdf
9. Zhou X, Zhu J, Xu T. Clinical characteristics of coronavirus disease 2019 (COVID-19) patients with hypertension on renin – angiotensin system inhibitors. *Clinical and Experimental Hypertension* [Internet]. 2020 Oct [disitasi 2022 Mar 4]; 42(7): 656-660. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32404011/> DOI: <https://doi.org/10.1080/10641963.2020.1764018>

10. Li X, Xu S, Yu M. Risk factors for severity and mortality in adult COVID-19 inpatients in Wuhan. *J Allergy Clin Immunol* [Internet]. 2020 Jul [disitasi 2022 Mar 4];146(1):110-118. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32294485/> DOI: 0.1016/j.jaci.2020.04.006
11. Zheng YY, Ma TY, Zhang YJ, Xie X. COVID-19 and the cardiovascular system. *Nat Rev Cardiol* [Internet]. 2020 Mar [disitasi 2022 Mar 28]; 17(5): 259-260. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32139904/> DOI: <https://doi.org/10.1038/s41569-020-0360-5>
12. Alkautsar Ahmad. Hubungan penyakit komorbid dengan tingkat keparahan pasien COVID-19. *Jurnal Medika Utama*. 2021 Okt [disitasi 2022 Mar 28]; (3):1488-1494. Diunduh dari: <https://jurnalmedikahutama.com/index.php/JMH/article/view/302>
13. Li X, Geng M, Peng Y, Meng L, Lu S. Molecular immune pathogenesis and diagnosis of COVID-19. *J Pharm Anal* [Internet]. 2020 Apr [disitasi 2022 Apr 28];10(2):102-108. Diunduh dari: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7104082/> DOI: 10.1016/j.jpha.2020.03.001
14. Rahayu L, Admianti J, Khalda Y, Ahda F, Agistany NF, Setiawati S, Shofiyanti N, Warnaini C. Hypertension, diabetes melitus, and obesity as the main comorbidity factors of mortality in COVID-19 patients: a literature review. *JIMKI* [Internet]. 2021 Jul [disitasi 2022 Apr 28];9(1):90-7. Di unduh dari: <https://bapin-ismki.e-journal.id/jimki/article/view/342>
15. Burhan E, Susanto AD, Isbaniah F, Nasution SA. Pedoman tatalaksana COVID-19 edisi 4. *PDPI* [Internet]. 2022 Feb [disitasi 2022 Apr 28]. Diunduh dari: <https://covid19.go.id/artikel/2022/02/03/pedoman-tatalaksana-covid-19-edisi-4>
16. Jafar N, Edriss H, Nugent K. The effect of short-term hyperglycemia on the innate immune system. *Am J Med Sci* [Internet]. 2016 Feb [disitasi 2022 Apr 25]; 351(2):201–11. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/26897277/> DOI: 10.1016/j.amjms.2015.11.011
17. Wu C, Chen X, Cai Y, Xia J, Zhou X. Risk factors associated with acute respiratory distress syndrome and death in patients with Coronavirus Disease 2019 pneumonia in Wuhan, China. *JAMA Intern Med* [Internet]. 2020 Jul [disitasi 2022 Apr 25];180(7):934-943. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32167524/> DOI: 10.1001/jamainternmed.2020.0994
18. PERKI, Konsensus penatalaksanaan hipertensi 2021: update konsensus PERHI 2019. Perhimpunan Dokter Spesialis Kardiovaskular Indonesia. 2021
19. Setiati S, Alwi I, Sudoyo AW. *Buku Ajar Ilmu Penyakit Dalam*. Edisi 6 Jilid II. Jakarta. InternaPublishing. 2014
20. Hegde S, Aeddula NR. Secondary hypertension. In: *StatPearls. Treasure Island (FL)* [Internet]. 2021 Jun [disitasi 2022 Apr 30] diunduh dari: <https://www.ncbi.nlm.nih.gov/books/NBK544305/>
21. Amanda D, Martini S. The Relationship between demographical characteristic and central obesity with hypertension. *JBE* [Internet]. 2018 Aug [disitasi 2022 Apr 30];6(1):43-50. Diunduh dari: <https://e-journal.unair.ac.id/JBE/article/view/9485>

22. Ekarini N L P, Wahyuni J D, Sulistyowati D. Faktor-faktor berhubungan dengan hipertensi pada usia dewasa. JKEP [Internet]. 2020 May [disitasi 2022 Mar 4];(5)1. Diunduh dari: <https://ejurnal.poltekkesjakarta3.ac.id/index.php/JKep/article/download/357/201/>
23. Ramdani HT, Rilla EV, Yuningsih W. Hubungan tingkat stress dengan kejadian hipertensi. Jurnal keperawatan [Internet]. 2017 Jun [disitasi 2022 May 6];4(1):37-5. Diunduh dari: <http://journal.unisa-bandung.ac.id/index.php/jka/article/view/5>
24. Rahmatika AF. Hubungan kebiasaan merokok dengan kejadian hipertensi. Jurnal Medika Utama. 2021 Jan [disitasi 2022 Mar 4]; (2)2 Diunduh dari: <https://jurnalmedikahutama.com/index.php/JMH/article/download/159/99/>
25. Oparil S, Acelajado C M, Bakris L G, Berlowitz R D. Hypertension. *Nat Rev Dis Primers* [Internet]. 2019 Apr [disitasi 2022 Mar 4]; 4:18014. Diunduh dari: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6477925/> DOI: [10.1038/nrdp.2018.14](https://doi.org/10.1038/nrdp.2018.14)
26. Sisniegues LCE, Espeche, WG, Salazar, MR. Arterial hypertension and the risk of severity and mortality of COVID-19. *European Respiratory Journal* [Internet]. 2020 Jun [disitasi 2022 Apr 25]; 55(6):2001148. Diunduh dari <https://pubmed.ncbi.nlm.nih.gov/32398296/> DOI: [10.1183/13993003.01148-2020](https://doi.org/10.1183/13993003.01148-2020)
27. Cheng H, Wang Y, Wang GQ. Organ-protective effect of angiotensin-converting enzyme 2 and its effect on the prognosis of COVID-19. *Journal of medical virology* [Internet]. 2020 Jul [disitasi 2022 Apr 25]; 92(7), 726–730. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32221983/> DOI: [10.1002/jmv.25785](https://doi.org/10.1002/jmv.25785)
28. Zhou X, Zhu J, Xu T. Clinical characteristics of coronavirus disease 2019 (COVID-19) patients with hypertension on renin-angiotensin system inhibitors. *Clin Exp Hypertens* [Internet]. 2020 Oct [disitasi 2022 Apr 30]; 42(7):656-660. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32404011/> DOI: [10.1080/10641963.2020.1764018](https://doi.org/10.1080/10641963.2020.1764018)
29. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA* [Internet]. 2020 Mar [disitasi 2022 Apr 30];323(11):1061-9. Diunduh dari: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7042881/> DOI: [10.1001/jama.2020.1585](https://doi.org/10.1001/jama.2020.1585)
30. Li X, Xu S, Yu M. Risk factors for severity and mortality in adult COVID-19 inpatients in Wuhan. *J Allergy Clin Immunol* [Internet]. 2020 Jul [disitasi 2022 May 1];146(1):110-118. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32294485/> DOI: [10.1016/j.jaci.2020.04.006](https://doi.org/10.1016/j.jaci.2020.04.006)
31. Koyyada R, Nagalla B, Tummala, A, Singh A D. Prevalence and impact of Preexisting Comorbidities on Overall Clinical Outcomes of Hospitalized COVID-19 Patients. *BioMed research international* [Internet]. 2022 Apr [disitasi 2022 May 1];2349890. Diunduh dari: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8984738/> DOI: [10.1155/2022/2349890](https://doi.org/10.1155/2022/2349890)
32. Masdalena, Muryanto Irwan, Efendi S. A, Jasrida Y. Faktor komorbid pada kematian COVID-19 di Rumah Sakit X Pekan Baru tahun 2021. *Jurnal Kesehatan*

- Masyarakat Mulawarman [Internet]. 2021 Desember [disitasi 2022 Juni 6];3(2):105-117. Diunduh dari: <http://e-journals.unmul.ac.id/index.php/MJPH/article/view/7139>
33. Emami A, Javanmardi F, Akbari A, Kojuri J, Bakhtiari H, Rezaei T, Keshavarzi A, Falahati F. Survival rate in hypertensive patients with COVID-19. *Clinical and Experimental Hypertension*. 2021 Jan [disitasi 2022 Oct 5];43:1, 77-80. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32835530/DOI:10.1080/10641963.2020.1812624>
 34. Silhol F, Sarlon G, Deharo JC, Vaisse B. Downregulation of ACE2 induces overstimulation of the renin-angiotensin system in COVID-19: should we block the renin-angiotensin system?. *Hypertens Res*. 2020 Aug [disitasi 2022 Oct 8];43(8):854-856. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32439915/> DOI: [10.1038/s41440-020-0476-3](https://doi.org/10.1038/s41440-020-0476-3)
 35. Furuhashi M, Moniwa N, Takizawa H. Potential differential effects of renin-angiotensin system inhibitors on SARS-CoV-2 infection and lung injury in COVID-19. *Hypertens Res*. 2020 Aug [disitasi 2022 Oct 8];43, 837–840. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32433641/> DOI: [10.1038/s41440-020-0478-1](https://doi.org/10.1038/s41440-020-0478-1)
 36. Zhang J, Wu J, Sun X, Xue H, Shao J. Association of hypertension with the severity and fatality of SARS-CoV-2 infection: A meta-analysis. *Epidemiology and Infection*. 2020 May [disitasi 2022 Oct 8];Vol 148. Diunduh dari: <https://www.cambridge.org/core/journals/epidemiology-and-infection/article/association-of-hypertension-with-the-severity-and-fatality-of-sarscov2-infection-a-metaanalysis/4116FAD7D866737099F976E7E7FAEB15> DOI: <https://doi.org/10.1017/S095026882000117X>
 37. Al Mutair A, Alhumaid S, Alhuqbani WN, Zaidi ARZ, Alkoraisi S, Al-Subaie MF. Clinical, epidemiological, and laboratory characteristics of mild-to-moderate COVID-19 patients in Saudi Arabia: an observational cohort study. *Eur J Med Res*. 2020 Nov [disitasi 2022 Oct 8];25(1). Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/33239068/> DOI: [10.1186/s40001-020-00462-x](https://doi.org/10.1186/s40001-020-00462-x)
 38. Radwan NM, Mahmoud NE, Alfaifi AH, Alabdulkareem KI. Comorbidities and severity of coronavirus disease 2019 patients. *Saudi Med J*. 2020 Nov [disitasi Oct 8];41(11):1165–74. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/33130835/> DOI: [10.15537/smj.2020.11.25454](https://doi.org/10.15537/smj.2020.11.25454)
 39. Henry BM, Vikse J. Clinical Characteristics of Covid-19 in China. *N Engl J Med*. 2020 May [disitasi 2022 Oct 8];382(19):1859–62. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32220205/> DOI: [10.1056/NEJMc2005203](https://doi.org/10.1056/NEJMc2005203)
 40. Guan WJ, Liang WH, Zhao Y, Liang HR, Chen ZS, Li YM, Liu XQ, Chen RC, Tang CL, Wang T. Comorbidity and its impact on 1590 patients with COVID-19 in China: a nationwide analysis. *Eur Respir J*. 2020 May [disitasi Oct 8];55(5):2000547. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32217650/> DOI: [10.1183/13993003.00547-2020](https://doi.org/10.1183/13993003.00547-2020)
 41. Chen T, Wu D, Chen H, Yan W, Yang D, Chen G, Ma K, Xu D, Yu H, Wang H, Wang T, Guo W, Chen J, Ding C, Zhang X, Huang J, Han M, Li S, Luo X, Zhao J, Ning Q. Clinical characteristics of 113 deceased patients with coronavirus disease

- 2019: retrospective study. *BMJ*. 2020 Mar [disitasi 2022 Oct 8];368:m1091. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32217556/> DOI: [10.1136/bmj.m1091](https://doi.org/10.1136/bmj.m1091)
42. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, Xiang J, Wang Y, Song B, Gu X, Guan L, Wei Y, Li H, Wu X, Xu J, Tu S, Zhang Y, Chen H, Cao B. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*. 2020 Mar [disitasi 2022 Oct 9];395(10229):1054-1062. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32171076/> DOI: [10.1016/S0140-6736\(20\)30566-3](https://doi.org/10.1016/S0140-6736(20)30566-3)
43. Li B, Yang J, Zhao F, Zhi L, Wang X, Liu L, Bi Z, Zhao Y. Prevalence and impact of cardiovascular metabolic diseases on COVID-19 in China. *Clin Res Cardiol*. 2020 May [disitasi 2022 Oct 9];109(5):531-538. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32161990/> DOI: [10.1007/s00392-020-01626-9](https://doi.org/10.1007/s00392-020-01626-9)
44. Lippi G, Wong J, Henry BM. Hypertension in patients with coronavirus disease 2019 (COVID-19): a pooled analysis. *Pol Arch Intern Med*. 2020 Apr 30 [disitasi 2022 Oct 12];130(4):304-309. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32231171/> DOI: [10.20452/pamw.15272](https://doi.org/10.20452/pamw.15272)
45. Nanda, C. C. S., Indaryati, S., & Koerniawan, D. (2021). Pengaruh Komorbid Hipertensi dan Diabetes Melitus terhadap Kejadian COVID-19 di Rumah Sakit Kota Palembang: Comorbid COVID-19. *Jurnal Keperawatan Florence Nightingale*. 2021 Des [disitasi 2022 Oct 12];4(2), 68–72. Diunduh dari: <https://ejournal.stikstellamarismks.ac.id/index.php/JKFN/article/view/72> DOI: <https://doi.org/10.52774/jkfn.v4i2.72>
46. Liu, W., Tao, Z. W., Wang, L., Yuan, M. L., Liu, K., Zhou, L., Wei, S., Deng, Y., Liu, J., Liu, H. G., Yang, M., & Hu, Y. (2020). Analysis of factors associated with disease outcomes in hospitalized patients with 2019 novel coronavirus disease. *Chinese Medical Journal*. 2020 May [disitasi 2022 Oct 12];133(9), 1032–1038. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32118640/> DOI: <https://doi.org/10.1097/CM9.0000000000000775>
47. Wang, B., Li, R., Lu, Z., & Huang, Y. Does comorbidity increase the risk of patients with COVID-19. *Research Paper*. 2020 Apr [disitasi 2022 Oct 12];12(7), 6049–6057. Diunduh dari: <https://pubmed.ncbi.nlm.nih.gov/32267833/> DOI: [10.18632/aging.103000](https://doi.org/10.18632/aging.103000)
48. Biswas M, Rahaman S, Biswas T, K, Haque Z, Ibrahim B: Association of sex, age, and comorbidities with mortality in COVID-19 patients: A systematic review and meta-analysis. *Intervirology*. 2021 Dec [disitasi 2022 Oct 20];64:36-47 DOI: [10.1159/000512592](https://doi.org/10.1159/000512592)
49. Bajaj V, Gadi N, Spihlman PA, Wu SC, Choi CH. Aging, immunity, and COVID-19: how age influences the host immune response to Coronavirus infections?. *Front in Physiology*. 2021 Jan [disitasi 2022 Oct 20]. Diunduh dari: <https://www.frontiersin.org/articles/10.3389/fphys.2020.571416/full> DOI: <https://doi.org/10.3389/fphys.2020.571416>
50. Kemenkes RI. (2020b). Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/MenKes/413/2020 tentang Pedoman Pencegahan dan Pengendalian Corona Virus Disease 2019 (Covid-19). MenKes/413/2020, 2019, 1–207. <https://>

covid19.go.id/storage/app/media/Regulasi/ KMK No. HK.01.07-MENKES-413-2020
ttg Pedoman Pencegahan dan Pengendalian COVID-19.pdf

51. Saba Javed H, Javed A, Aamna Khalid. COVID 19 in hypertensive and non-hypertensive patients: A descriptive comparative study . The Malaysian Journal of Nursing [Internet]. 2022 Jul [disitasi 2022 Nov 7];14(1):20-4. Diunduh dari: <https://ejournal.lucp.net/index.php/mjn/article/view/1511/1894>