

DAFTAR PUSTAKA

- Adamo, L., Rocha-Resende, C., Prabhu, S. D., Mann, D. L. 2020. Reappraising the role of inflammation in heart failure. *Nature Reviews Cardiology*. doi:10.1038/s41569-019-0315-x
- Altara, R., Giordano, M., Norden, E. S. 2017. 'Targeting obesity and diabetes to treat heart failure with preserved ejection fraction'. *Front Endocrinol*. 2017;8:160. <https://doi.org/10.3389/fendo.2017.00160>
- Amario, D. D. 2019. Microvascular Dysfunction in Heart Failure With Preserved Ejection Fraction 10. doi:10.3389/fphys.2019.01347
- Bansal, S. S., Ismahil, M. A., Goel, M., Patel, B., Hamid, T., Rokosh, G., *et al*. 2017. 'Activated T lymphocytes are essential drivers of pathological remodeling in ischemic heart failure', *Circulation: Heart Failure*, 10(3), e003688. doi: 10.1161/CIRCHEARTFAILURE.116.003688
- Beale, A. L., Meyer, P., Marwick, T. H., Lam, C. S., Kaye, D. M. 2018. Sex differences in cardiovascular pathophysiology: Why women are overrepresented in heart failure with preserved ejection fraction. *Circulation*, 138(2), 198–205. doi: 10.1161/CIRCULATIONAHA.118.034271
- Bell, D. S., Goncalves, E. 2019. Heart failure in the patient with diabetes: Epidemiology, aetiology, prognosis, therapy and the effect of glucose-lowering medications. *Diabetes, Obesity and Metabolism*, 21(6), 1277–1290. doi: 10.1111/dom.13652
- Beurel, E., Toups, M., Nemeroff, C. B. 2020. The Bidirectional Relationship of Depression and Inflammation: Double trouble. *Neuron*. doi:10.1016/j.neuron.2020.06.002
- Bhat, T., Bhat, H., Raza, M., Khoueiry, G., Meghani, M., Akhtar, M. 2013 'Neutrophil to lymphocyte ratio and cardiovascular diseases: a review'. *Expert Rev Cardiovasc Ther*. 2013;11(1):55–60. doi: 10.1586/erc.12.159
- Birkeland, K. I., Bodegard, J., Eriksson, J. W., Norhammar, A., Haller, H., Linssen, G. C., *et al*. 2020. Heart failure and chronic kidney disease

- manifestation and mortality risk associations in type 2 diabetes: A large multinational cohort study. *Diabetes, Obesity and Metabolism*, 22(9), 1607–1618. doi: 10.1111/dom.14074
- Boyle, P. J. 2007. ‘Diabetes mellitus and macrovascular disease: mechanisms and mediators’. *Am J Med*. 2007;120(9 suppl 2):S12eS17. <https://doi.org/10.1016/j.amjmed.2007.07.003>.
- Burhans, M. S., Hagman, D. K., Kuzma, J. N., Schmidt, K. A., Kratz, M. 2018. Contribution of adipose tissue inflammation to the development of type 2 diabetes mellitus. *Comprehensive Physiology*, 9(1), 1. doi: 10.1002/cphy.c170040
- Carbone, S., Lavie, C. J., Arena, R. 2017. *Obesity and heart failure: Focus on the obesity paradox*. 92(2), 266–279. doi: 10.1016/j.mayocp.2016.11.001
- Centers for Disease Control and Prevention. 2017. ‘National Diabetes Statistics Report’, 2017. Atlanta, GA: Centers for Disease Control and Prevention, 2017. <https://www.cdc.gov/diabetes/data/statistics-report/index.html>.
- Chen, H., Ho, C., Li, C. 2019. Risk of heart failure in a population with type 2 diabetes versus a population without diabetes with and without coronary heart disease. *Diabetes, Obesity and Metabolism*, 21(1), 112–119. doi: 10.1111/dom.13493
- Chester, R., Sander, G., Fernandez, C., Chen, W., Berenson, G., Giles, T. 2013. Women have significantly greater difference between central and peripheral arterial pressure compared with men: The Bogalusa Heart Study. *Journal of the American Society of Hypertension*, 7(5), 379–385. doi: 10.1016/j.jash.2013.05.007
- Christiansen, M. N., Køber, L., Weeke, P., Vasan, R. S., Jeppesen, J. L., Smith, J. G., *et al.* 2017. Age-specific trends in incidence, mortality, and comorbidities of heart failure in Denmark, 1995 to 2012. *Circulation*, 135(13), 1214–1223. doi: 10.1161/CIRCULATIONAHA.116.025941
- Corwin, E. 2000. Buku saku patofisiologi (*Handbook of pathophysiology*). Terjemahan Braham Pendit. Jakarta: EGC

- Cosmi, F., Shen, L., Magnoli, M., Abraham, W. T., Anand, I. S., Cleland, J. G., *et al.* 2018. Treatment with insulin is associated with worse outcome in patients with chronic heart failure and diabetes. *European Journal of Heart Failure*, 20(5), 888–895. doi: 10.1002/ejhf.1146
- Dei Cas, A., Fonarow, G. C., Gheorghiade, M., Butler, J. 2015. ‘Concomitant diabetes mellitus and heart failure’. *Curr Probl Cardiol.* 2015;40:7–43. doi: 10.1016/j.cpcardiol.2014.09.002
- Dickstein, K., Cohen-Solal, A., Filippatos, G. 2008. ‘ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2008’. *Eur Heart J* 2008;29:2388–442. doi: 10.1093/eurheartj/ehn309
- Dludla, P. V., Nyambuya, T. M., Johnson, R., Silvestri, S., Orlando, P., Mazibuko-Mbeje, *et al.* 2021. Metformin and heart failure–related outcomes in patients with or without diabetes: A systematic review of randomized controlled trials. *Heart Failure Reviews*, 26(6), 1437–1445. doi: 10.1007/s10741-020-09942-y
- Duan, C. M., Wan, T. F., Wang, Y., Yang, Q. W. 2019. Cardiovascular outcomes of liraglutide in patients with type 2 diabetes: A systematic review and meta-analysis. *Medicine*, 98(46). doi: 10.1097/MD.00000000000017860
- Dunlay, S. M., Roger, V. L., Redfield, M. M. 2017. Epidemiology of heart failure with preserved ejection fraction. *Nature Reviews Cardiology*, 14(10), 591–602. doi: 10.1038/nrcardio.2017.65
- Dunlay, S. M. 2019. ‘Type 2 diabetes mellitus and heart failure a scientific statement from the American Heart Association and the Heart Failure Society of America’, *Circulation*. doi: 10.1161/CIR.0000000000000691.
- Ejiri, K., Miyoshi, T., Nakamura, K., Sakuragi, S., Munemasa, M., Namba, S., Takaishi, A., Ito, H. 2019. The effect of luseogliflozin and alpha-glucosidase inhibitor on heart failure with preserved ejection fraction in diabetic patients: Rationale and design of the MUSCAT-HF randomised controlled trial. *BMJ Open*, 9(3), e026590. <https://doi.org/10.1136/bmjopen-2018-026590>
- Emilia D’Elia. 2015. ‘Role of biomarkers in cardiac structure phenotyping in heart failure with preserve ejection fraction: critical appraisal an practical

- use'. *European Journal of Heart Failure* (2015) 17, 1231-1239. doi:10.1002/ejhf.430
- Esenboğa, K., Kurtul, A., Yamantürk, Y. Y., Tan, T. S., Tutar, D. E. 2021. Systemic immune-inflammation index predicts no-reflow phenomenon after primary percutaneous coronary intervention. *Acta Cardiologica*, 1–8. doi: 10.1080/00015385.2021.1884786
- Ferrucci, L., Fabbri, E. 2018. Inflammageing: Chronic inflammation in ageing, cardiovascular disease, and frailty. *Nature Reviews Cardiology*, 15(9), 505–522. doi: 10.1038/s41569-018-0064-2
- Filep, J. G. 2021. Leukocytes in inflammation, resolution of inflammation, autoimmune diseases and cancer. *Cells*, 10(7), 1735. doi: 10.3390/cells10071735
- Fowler, M. J. 2008. 'Microvascular and macrovascular complications of diabetes'. *Clin Diabetes*. 2008; 26 (2) : 77e82. <https://doi.org/10.2337/diaclin.26.2.77>.
- Frangogiannis, N. G. 2014. The inflammatory response in myocardial injury, repair, and remodelling. *Nature Reviews Cardiology*, 11(5), 255–265. doi: 10.1038/nrcardio.2014.28
- Gilbert, R. E., Krum, H. 2015. Heart failure in diabetes: Effects of anti-hyperglycaemic drug therapy. *The Lancet*, 385(9982), 2107–2117. doi: 10.1016/S0140-6736(14)61402-1
- Glovaci, D., Fan, W., Wong, N. D. 2019. Epidemiology of diabetes mellitus and cardiovascular disease. *Current Cardiology Reports*, 21(4), 1–8. DOI: 10.1007/s11886-019-1107-y
- Halade, G. V., Kain, V. 2017. Obesity and cardiometabolic defects in heart failure pathology. *Comprehensive Physiology*, 7(4), 1463. doi: 10.1002/cphy.c170011
- Hamdani, N., Paulus, W. J. 2011. 'Treatment of heart failure with normal ejection fraction'. *Current treatment options in cardiovascular medicine* 2011;13:26-34. doi: 10.1007/s11936-010-0103-8
- Hamdani, N., Bishu, K.G., Frieling-Salewsky, M., Redfield, M. M., Linke, W. A. 2013. 'Deranged myofibrillar phosphorylation and function in experimental

- heart failure with preserved ejection fraction'. *Cardiovasc Res* 2013;97:464 – 471. doi: 10.1056/NEJMcp1511175
- Hanefeld, M., Frier, B. M., Pistrosch, F. 2016. Hypoglycemia and cardiovascular risk: Is there a major link? *Diabetes Care*, 39(Supplement_2), S205–S209. doi: 10.2337/dcS15-3014
- Hayiroğlu, M. İ., Assoc, T. Ç., Çinier, G., Pay, L., Yumurtaş, A. Ç., Tezen, O., *et al.* 2022. Evaluating Systemic Immune-Inflammation Index in Patients with ICD for Heart Failure with Reduced Ejection Fraction. *Pacing and Clinical Electrophysiology*. doi: 10.1111/pace.14436
- Hernandez, A. V., Usmani, A., Rajamanickam, A., Moheet, A. 2011. Thiazolidinediones and risk of heart failure in patients with or at high risk of type 2 diabetes mellitus. *American Journal of Cardiovascular Drugs*, 11(2), 115–128. <http://link.springer.com/article/10.2165/11587580-000000000-00000>
- Higashi, H., Okayama, H., Saito, M., Morioka, H., Aono, J., Yoshii, T., *et al.* 2013. Relationship between augmentation index and left ventricular diastolic function in healthy women and men. *American Journal of Hypertension*, 26(11), 1280–1286. <https://doi.org/10.1093/ajh/hpt115>
- House, A. A., Wanner, C., Sarnak, M. J., Piña, I. L., McIntyre, C. W., Komenda, P., *et al.* 2019. Heart failure in chronic kidney disease: Conclusions from a Kidney Disease: Improving Global Outcomes (KDIGO) Controversies Conference. *Kidney International*, 95(6), 1304–1317. doi: 10.1016/j.kint.2019.02.022
- Itoh, A., Ridgway, W. M. 2017. Targeting innate immunity to downmodulate adaptive immunity and reverse type 1 diabetes. *ImmunoTargets and Therapy*, 6, 31. doi: 10.2147/ITT.S117264
- Jiang, J. B., Balschi, J. A., McGowan Jr, F. X., He, H. 2018. Thiazolidinediones Cause Cardiotoxicity via PPAR γ -Independent Mechanism. In *Cardiotoxicity*. IntechOpen. doi: 10.5772/intechopen.78957

- Kannel, W. B., McGee, D. L. 1979 'Diabetes and cardiovascular disease: the Framingham study'. JAMA. 1979;241:2035–2038. doi: 10.1001/jama.241.19.2035
- Karwi, Q. G., Ho, K. L., Pherwani, S., Ketema, E. B., Sun, Q., Lopaschuk, G. D. 2022. Concurrent diabetes and heart failure: Interplay and novel therapeutic approaches. Cardiovascular Research, 118(3), 686–715. doi: 10.2337/diab.23.2.105
- Kelly McHug. 2019. Heart Failure With Preserved Ejection Fraction and Diabetes. *Journal of the American College of Cardiology* 2019; 73:602-11. doi: 10.1016/j.jacc.2018.11.033
- Kementrian Kesehatan RI. 2014. Pusat Data dan Informasi Kesehatan RI: Situasi Jantung Kita. 1-7. <https://www.kemkes.go.id/folder/view/01/structure-publikasi-pusdatin-info-datin.html>
- Kenny, H. C., Abel, E. D. 2019. Heart failure in type 2 diabetes mellitus: Impact of glucose-lowering agents, heart failure therapies, and novel therapeutic strategies. Circulation Research, 124(1), 121–141. doi: 10.1161/CIRCRESAHA.118.311371
- Klein, S. L., Flanagan, K. L. 2016. Sex differences in immune responses. Nature Reviews Immunology, 16(10), 626–638. doi: 10.1038/nri.2016.90
- Kristensen, S. L., Mogensen, U. M., Jhund, P. S., Petrie, M. C., Preiss, D., Win, S., *et al.* 2017. Clinical and echocardiographic characteristics and cardiovascular outcomes according to diabetes status in patients with heart failure and preserved ejection fraction: A report from the I-Preserve Trial (Irbesartan in Heart Failure With Preserved Ejection Fraction). Circulation, 135(8), 724–735. <https://doi.org/10.1161/CIRCULATIONAHA.116.024593>
- Lakatta, E. G., Levy, D. 2003. Arterial and cardiac aging: Major shareholders in cardiovascular disease enterprises: Part ii: The aging heart in health: Links to heart disease. Circulation. 2003; 107:346– 354. doi: 10.1161/01.cir.0000048893.62841.f7
- Lawson, C. A., Testani, J., Mamas, M., Damman, K., Jones, P., Teece, L., *et al.* 2018. Chronic kidney disease, worsening renal function and outcomes in a

- heart failure community setting: A UK national study. *International Journal of Cardiology*, 267, 120–127. doi: 10.1016/j.ijcard.2018.04.090
- Lebovitz, H. E. 2019. Thiazolidinediones: The forgotten diabetes medications. *Current Diabetes Reports*, 19(12), 1–13. doi: 10.1007/s11892-019-1270-y
- Lehrke, M., Marx, N. 2017. Diabetes mellitus and heart failure. *The American Journal of Cardiology*, 120(1), S37–S47. DOI:[https://doi.org/10.1016 / j.amjcard.2017.05.014](https://doi.org/10.1016/j.amjcard.2017.05.014)
- Li, C. 2018. ‘Systemic immune-inflammation index, SII, for prognosis of elderly patients with newly diagnosed tumors’, *Oncotarget*, 9(82), pp. 35293–35299. doi: 10.18632/oncotarget.24293.
- Li, Y., Hu, Y., Ley, S. H., Rajpathak, S., Hu, F. B. 2014. Sulfonylurea use and incident cardiovascular disease among patients with type 2 diabetes: Prospective cohort study among women. *Diabetes Care*, 37(11), 3106–3113. doi: 10.2337/dc14-1306
- Luc, K., Schramm-Luc, A., Guzik, T., Mikolajczyk, T. 2019. Oxidative stress and inflammatory markers in prediabetes and diabetes. *J. Physiol. Pharmacol*, 70(6), 809–824. doi: 10.26402/jpp.2019.6.01
- Lucia, C. de, Eguchi, A., Koch, W. J. 2018. New insights in cardiac β -adrenergic signaling during heart failure and aging. *Frontiers in Pharmacology*, 904. DOI: 10.3389/fphar.2018.00904
- Ma, R. C. 2018. Epidemiology of diabetes and diabetic complications in China. *Diabetologia*, 61(6), 1249–1260. DOI: 10.1007/s00125-018-4557-7
- Margetic Sandra. 2012. ‘Inflammation and haemostasis’. *Biochemia Medica* 2012;22(1):49–62. <https://pubmed.ncbi.nlm.nih.gov/22384519/>
- Marso, S. P., Daniels, G. H., Brown-Frandsen, K., Kristensen, P., Mann, J. F., Nauck, M. A., *et al.* 2016. Liraglutide and cardiovascular outcomes in type 2 diabetes. *New England Journal of Medicine*, 375(4), 311–322. doi: 10.1056/NEJMoa1603827
- Marwick, T. H., Ritchie, R., Shaw, J. E., Kaye, D. 2018. Implications of underlying mechanisms for the recognition and management of diabetic

- cardiomyopathy. *Journal of the American College of Cardiology*, 71(3), 339–351. doi: 10.1016/j.jacc.2017.11.019
- Marx, N., McGuire, D. K. 2016. Sodium-glucose cotransporter-2 inhibition for the reduction of cardiovascular events in high-risk patients with diabetes mellitus. *European Heart Journal*, 37(42), 3192–3200. doi: 10.1093/eurheartj/ehw110
- McAllister, D. A., Read, S. H., Kerssens, J., Livingstone, S., McGurnaghan, S., Jhund, P., *et al.* 2018. Incidence of hospitalization for heart failure and case-fatality among 3.25 million people with and without diabetes mellitus. *Circulation*, 138(24), 2774–2786. doi: 10.1161/CIRCULATIONAHA.118.034986
- Meijers, W. C., de Boer, R. A. 2019. Common risk factors for heart failure and cancer. *Cardiovascular Research*, 115(5), 844–853. <https://doi.org/10.1093/cvr/cvz035>
- Merz, A. A., Cheng, S. 2016. Sex differences in cardiovascular ageing. *Heart*, 102(11), 825–831. doi: 10.1136/heartjnl-2015-308769
- Messerli, F. H., Rimoldi, S. F., Bangalore, S. 2017. The transition from hypertension to heart failure: Contemporary update. *JACC: Heart Failure*, 5(8), 543–551. doi: 10.1016/j.jchf.2017.04.012
- Meyer, S., Brouwers, F. P., Voors, A. A., Hillege, H. L., de Boer, R. A., Gansevoort, R. T., *et al.* 2015. Sex differences in new-onset heart failure. *Clinical Research in Cardiology*, 104(4), 342–350. doi: 10.1007/s00392-014-0788-x
- Miller, A. H., Raison, C. L. 2016. The role of inflammation in depression: from evolutionary imperative to modern treatment target. *Nature Reviews Immunology*, 16(1), 22–34. doi:10.1038/nri.2015.5. doi: 10.1038/nri.2015.5
- Mosterd, A., Hoes, A. W. 2007. Clinical epidemiology of heart failure. *Heart*. 2007; 93:1137–1146. doi: 10.1136/hrt.2003.025270
- Moursy, E. Y., Megallaa, M. H., Mouftah, R. F., Ahmed, S. M. 2015 ‘Relationship between neutrophil-lymphocyte ratio and microvascular

- complications in Egyptian patients with type 2 diabetes'. *Am J Intern Med*. 2015;3(6):250–5. doi: 10.11648/j.ajim.20150306.16
- Mullens, W., Damman, K., Testani, J. M., Martens, P., Mueller, C., Lassus, J., *et al.* 2020. Evaluation of kidney function throughout the heart failure trajectory—a position statement from the Heart Failure Association of the European Society of Cardiology. *European Journal of Heart Failure*, 22(4), 584–603. doi: 10.1002/ejhf.1697
- Nauta, J. F., Hummel, Y. M., Tromp, J., Ouwerkerk, W., van der Meer, P., Jin, X., *et al.* 2020. Concentric vs. Eccentric remodelling in heart failure with reduced ejection fraction: Clinical characteristics, pathophysiology and response to treatment. *European Journal of Heart Failure*, 22(7), 1147–1155. doi: 10.1002/ejhf.1632
- Nichols, G. A., Hillier, T. A., Erbey, J. R., Brown, J. B. 2001. Congestive heart failure in type 2 diabetes: prevalence, incidence, and risk factors. *Diabetes Care* 2001;24:1614–1619. DOI: 10.2337/diacare.24.9.1614
- Ohkuma, T., Komorita, Y., Peters, S. A., Woodward, M. 2019. Diabetes as a risk factor for heart failure in women and men: A systematic review and meta-analysis of 47 cohorts including 12 million individuals. *Diabetologia*, 62(9), 1550–1560. doi: 10.1007/s00125-019-4926-x
- Osmancik, P., Louckova, A. 2017. Biomarkers of apoptosis, inflammation, and cardiac extracellular matrix remodelling in the prognosis of heart failure. *Kardiologia Polska (Polish Heart Journal)*, 75(4), 295–305. doi: 10.5603/KP.a2016.0154
- Owan, T. E., Hodge, D. O., Herges, R. M., Jacobsen, S. J., Roger, V. L., Redfield, M. M. 2006. 'Trends in prevalence and outcome of heart failure with preserved ejection fraction'. *The new England journal of medicine* 2006;355:251-9. doi: 10.1056/NEJMoa052256
- Packer, M. 2018. Do DPP-4 inhibitors cause heart failure events by promoting adrenergically mediated cardiotoxicity? Clues from laboratory models and clinical trials. *Circulation Research*, 122(7), 928–932. doi: 10.1161/CIRCRESAHA.118.312673

- Packer, M. 2018. Is metformin beneficial for heart failure in patients with type 2 diabetes? *Diabetes Research and Clinical Practice*, 136, 168–170. doi: 10.1016/j.diabres.2017.12.011
- Palmer, S. C., Mavridis, D., Nicolucci, A., Johnson, D. W., Tonelli, M., Craig, J. C., *et al.* 2016. Comparison of clinical outcomes and adverse events associated with glucose-lowering drugs in patients with type 2 diabetes: A meta-analysis. *Jama*, 316(3), 313–324. doi: 10.1001/jama.2016.9400
- Pancholia, A. 2018. Sodium-glucose cotransporter-2 inhibition for the reduction of cardiovascular events in high-risk patients with diabetes mellitus. *Indian Heart Journal*, 70(6), 915–921. doi: 10.1016/j.ihj.2018.08.022
- Park, J. J. 2021. Epidemiology, pathophysiology, diagnosis and treatment of heart failure in diabetes. *Diabetes & Metabolism Journal*, 45(2), 146–157. doi: 10.4093/dmj.2020.0282
- Paulus, C. Tschope, 2013, ‘A novel paradigm for heart failure with preserved ejection fraction: comorbidities drive myocardial dysfunction and remodeling through coronary microvascular endothelial inflammation’, *J. Am. Coll. Cardiol.* 62 (2013) 263–271. doi: 10.1016/j.jacc.2013.02.092
- Perkumpulan Endokrinologi Indonesia. (2019). *Konsensus Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 Dewasa di Indonesia*. (2019). Jakarta: PB PERKENI
- Perry, J. R., Voight, B. F., Yengo, L., Amin, N., Dupuis, J., Ganser, M., *et al.* 2012. Stratifying type 2 diabetes cases by BMI identifies genetic risk variants in LAMA1 and enrichment for risk variants in lean compared to obese cases. *PLoS Genetics*, 8(5), e1002741. DOI: 10.1371/journal.pgen.1002741
- Petar, M., Walter, J. P. 2014. ‘Clinical diabetic cardiomyopathy: a two-faced disease with restrictive and dilated phenotypes’, *European Heart Journal*, doi:10.1093/eurheartj/ehv134
- Pirola, L., Ferraz, J. C. 2017. Role of pro-and anti-inflammatory phenomena in the physiopathology of type 2 diabetes and obesity. *World Journal of Biological Chemistry*, 8(2), 120. doi: 10.4331/wjbc.v8.i2.120

- Ponikowski, P. 2016. '2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC) Developed with the special contribution'. *European Heart Journal*, 37, pp.2129–2200. <https://doi.org/10.1093/eurheartj/ehw128>
- Redfield, M. M. 2008. 'Heart Failure with Normal Ejection Fraction. In: Peter Libby ROB, Douglas P Zipes, Eugene Braunwald, ed. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine. 8th ed'. Philadelphia: Saunders Elsevier; 2008:641-57. doi: 10.1007/s11936-010-0103-8
- Richardson Jr, T. L., Hackstadt, A. J., Hung, A. M., Greevy, R. A., Grijalva, C. G., Griffin, M. R., E., *et al.* 2021. Hospitalization for heart failure among patients with diabetes mellitus and reduced kidney function treated with metformin versus sulfonylureas: A retrospective cohort study. *Journal of the American Heart Association*, 10(8), e019211. <https://doi.org/10.1161/JAHA.120.019211>
- Rijzewijk, L. J., van der Meer, R. W., Smit, J. W., Diamant, M., Bax, J. J., Hammer, S., *et al.* 2008. 'Myocardial steatosis is an independent predictor of diastolic dysfunction in type 2 diabetes mellitus'. *J Am Coll Cardiol* 2008;52:1793 –1799. doi: 10.1016/j.jacc.2008.07.062
- Riset Kesehatan Dasar (RISKESDAS). 2018. Jakarta: Kementrian Kesehatan Republik Indonesia. 2018. <https://www.litbang.kemkes.go.id/laporan-riset-kesehatan-dasar-riskesdas/>
- Rosano, G., Seferovic, P. Vitale, C. 2017. 'Comorbidities Heart Failure in Patients with Diabetes Mellitus Heart Failure in Diabetes Mellitus', *Cardiac Failure Review*, pp. 52–55. doi: 10.15420/cfr.2016.
- Rosengren, A., Åberg, M., Robertson, J., Waern, M., Schaufelberger, M., Kuhn, G., *et al.* 2017. Body weight in adolescence and long-term risk of early heart failure in adulthood among men in Sweden. *European Heart Journal*, 38(24), 1926–1933. doi: 10.1093/eurheartj/ehw221
- Roth, G., 2018. 'Global , regional , and national age-sex-specific mortality for 282 causes of death in 195 countries and territories , 1980 – 2017 : a systematic

- analysis for the Global Burden of Disease Study 2017'. *Lancet*, 392, pp.1980–2017. doi:[https://doi.org/10.1016/S0140-6736\(18\)32203-7](https://doi.org/10.1016/S0140-6736(18)32203-7)
- Roumie, C. L., Min, J. Y., D'Agostino McGowan, L., Presley, C., Grijalva, C. G., Hackstadt, A. J., *et al.* 2017. Comparative safety of sulfonylurea and metformin monotherapy on the risk of heart failure: A cohort study. *Journal of the American Heart Association*, 6(4), e005379. doi: 10.1161/JAHA.116.005379
- Sánchez-Trujillo, L., Vázquez-Garza, E., Castillo, E. C., García-Rivas, G., Torre-Amione, G. 2017. Role of adaptive immunity in the development and progression of heart failure: New evidence. *Archives of Medical Research*, 48(1), 1–11. doi: 10.1016/j.arcmed.2016.12.008
- Sattar, N., Rawshani, A., Franzén, S., Rawshani, A., Svensson, A.-M., Rosengren, A., *et al.* 2019. Age at diagnosis of type 2 diabetes mellitus and associations with cardiovascular and mortality risks: Findings from the Swedish National Diabetes Registry. *Circulation*, 139(19), 2228–2237. doi: 10.1161/CIRCULATIONAHA.118.037885
- Seferović, P. M., Petrie, M. C., Filippatos, G. S., Anker, S. D., Rosano, G., Bauersachs, J., *et al.* 2018. Type 2 diabetes mellitus and heart failure: A position statement from the Heart Failure Association of the European Society of Cardiology. *European Journal of Heart Failure*, 20(5), 853–872. doi: 10.1002/ehf.1170
- Seidemann, S. B., Claggett, B., Bravo, P. E., Gupta, A., Farhad, H., Klein, B. E., *et al.* 2016. Retinal vessel calibers in predicting long-term cardiovascular outcomes: The atherosclerosis risk in communities study. *Circulation*, 134(18), 1328–1338. doi: 10.1161/CIRCULATIONAHA.116.023425
- Seo, M., Yamada, T., Morita, T., Furukawa, Y., Tamaki, S., Iwasaki, Y., *et al.* 2018. P589 Prognostic value of systemic immune-inflammation index in patients with chronic heart failure. *European Heart Journal*, 39(suppl_1), ehy564-P589. <https://doi.org/10.1093/eurheartj/ehy564.P589>
- Shen, L., Rørth, R., Cosmi, D., Kristensen, S. L., Petrie, M. C., Cosmi, F., *et al.* 2019. Insulin treatment and clinical outcomes in patients with diabetes and

- heart failure with preserved ejection fraction. *European Journal of Heart Failure*, 21(8), 974–984. doi: 10.1002/ejhf.1535
- Smith, D. L., Orlandella, R. M., Allison, D. B., Norian, L. A. 2021. Diabetes medications as potential calorie restriction mimetics—A focus on the alpha-glucosidase inhibitor acarbose. *Geroscience*, 43(3), 1123–1133. DOI: 10.1007/s11357-020-00278-x
- Sorrentino, M. J. 2019. The evolution from hypertension to heart failure. *Heart Failure Clinics*, 15(4), 447–453. doi: 10.1016/j.hfc.2019.06.005
- Srivastava, P. K., Pradhan, A. D., Cook, N. R., Ridker, P. M., Everett, B. M. 2017. Randomized trial of the effects of insulin and metformin on myocardial injury and stress in diabetes mellitus: A post hoc exploratory analysis. *Journal of the American Heart Association*, 6(12), e007268. doi: 10.1161/JAHA.117.007268
- Suthahar, N., Meijers, W. C., Silljé, H. H., de Boer, R. A. 2017. From inflammation to fibrosis—Molecular and cellular mechanisms of myocardial tissue remodelling and perspectives on differential treatment opportunities. *Current Heart Failure Reports*, 14(4), 235–250. doi: 10.1007/s11897-017-0343-y
- Tang, Y., Zeng, X., Feng, Y., Chen, Q., Liu, Z., Luo, H., *et al.* 2021. Association of Systemic immune-inflammation index With Short-Term Mortality of Congestive Heart Failure: A Retrospective Cohort Study. *Frontiers in Cardiovascular Medicine*, 8. <https://doi.org/10.3389/fcvm.2021.753133>
- Thrainsdottir, I. S., Aspelund, T., Thorgeirsson, G., Gudnason, V., Hardarson, T., Malmberg, K., *et al.* 2005. The association between glucose abnormalities and heart failure in the population-based Reykjavik study. *Diabetes Care* 2005;28:612–616. DOI: 10.2337/diacare.28.3.612
- Toh, S., Hampp, C., Reichman, M. E., Graham, D. J., Balakrishnan, S., Pucino, F., *et al.* 2016. Risk for hospitalized heart failure among new users of saxagliptin, sitagliptin, and other antihyperglycemic drugs: A retrospective cohort study. *Annals of Internal Medicine*, 164(11), 705–714. doi: 10.7326/M15-2568

- Tseng, C. 2019. Metformin use is associated with a lower risk of hospitalization for heart failure in patients with type 2 diabetes mellitus: A retrospective cohort analysis. *Journal of the American Heart Association*, 8(21), e011640. doi: 10.1161/JAHA.118.011640
- Yan, Q. 2020 'Systemic immune-inflammation index (SII): A more promising inflammation-based prognostic marker for patients with synchronic colorectal peritoneal carcinomatosis', *Journal of Cancer*, 11(18), pp. 5264–5272. doi: 10.7150/jca.46446.
- Yang, Y., Wu, C., Hsu, P., Chen, S., Huang, S., Chan, W. L., *et al.* 2020. Systemic immune-inflammation index (SII) predicted clinical outcome in patients with coronary artery disease. *European Journal of Clinical Investigation*, 50(5), e13230. doi: 10.1111/eci.13230
- Zhang, Y., Bauersachs, J., Langer, H. F. 2017. Immune mechanisms in heart failure. *European Journal of Heart Failure*, 19(11), 1379–1389. doi: 10.1002/ejhf.942
- Zhou, T., Hu, Z., Yang, S., Sun, L., Yu, Z., Wang, G. 2018. Role of adaptive and innate immunity in type 2 diabetes mellitus. *Journal of Diabetes Research*, 2018. <https://doi.org/10.1155/2018/7457269>
- Ziaieian, B., Fonarow, G. C. 2016. 'Epidemiology and aetiology of heart failure'. *Nature Reviews Cardiology*. 13(6):368–378. doi: 10.1038/nrcardio.2016.25
- Zile, M. R., Brutsaert, D. L. 2002. 'New concepts in diastolic dysfunction and diastolic heart failure: Part I: diagnosis, prognosis, and measurements of diastolic function'. *Circulation* 2002;105:1387-93. doi: 10.1161/hc1102.105289