

DAFTAR PUSTAKA

1. Vaidya SR, Aeddula NR. Chronic Renal Failure. The Scientific Basis of Urology, Second Edition [Internet]. 2022 Oct 24 [cited 2023 Oct 24];257–64. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK535404/>
2. Hashmi MF, Benjamin O, Lappin SL. End-Stage Renal Disease. StatPearls [Internet]. 2023 Feb 19 [cited 2023 Oct 24]; Available from: <https://www.ncbi.nlm.nih.gov/books/NBK499861/>
3. Kovesdy CP. Epidemiology of chronic kidney disease: an update 2022. *Kidney Int Suppl* (2011) [Internet]. 2022 Apr 1 [cited 2023 Oct 24];12(1):7. Available from: </pmc/articles/PMC9073222/>
4. Luyckx VA, Tonelli M, Stanifer JW. The global burden of kidney disease and the sustainable development goals. *Bull World Health Organ* [Internet]. 2018 Jun 6 [cited 2023 Oct 24];96(6):414. Available from: </pmc/articles/PMC5996218/>
5. Hasil Utama RISKESDAS 2018 Kementrian Kesehatan RI. 2018.
6. Ye H, Ding H, Gan W, Wen P, Zhou Y, Cao H, et al. Hemodialysis. *Chronic Kidney Disease: Diagnosis and Treatment* [Internet]. 2023 Apr 27 [cited 2023 Oct 24];209–31. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK563296/>
7. Chaiviboontham S, Phinitkhajorndech N, Tiansaard J. Symptom Clusters in Patients with End-Stage Renal Disease Undergoing Hemodialysis. *Int J Nephrol Renovasc Dis* [Internet]. 2020 [cited 2023 Oct 24];13:297. Available from: </pmc/articles/PMC7604261/>
8. You AS, Kalantar SS, Norris KC, Peralta RA, Narasaki Y, Fischman R, et al. Dialysis symptom index burden and symptom clusters in a prospective cohort of dialysis patients. *J Nephrol* [Internet]. 2022 Jun 1 [cited 2023 Oct 24];35(5):1427. Available from: </pmc/articles/PMC9217843/>
9. Guo Y, Tian R, Ye P, Luo Y. Frailty in Older Patients Undergoing Hemodialysis and Its Association with All-Cause Mortality: A Prospective Cohort Study. *Clin Interv Aging* [Internet]. 2022 [cited 2023 Oct 24];17:265. Available from: </pmc/articles/PMC8934156/>
10. Li Y, Zhang D, Ma Q, Diao Z, Liu S, Shi X. The Impact of Frailty on Prognosis in Elderly Hemodialysis Patients: A Prospective Cohort Study. *Clin Interv Aging* [Internet]. 2021 [cited 2023 Oct 24];16:1659. Available from: </pmc/articles/PMC8450604/>
11. Johansen KL, Chertow GM, Jin C, Kutner NG. Significance of frailty among dialysis patients. *Journal of the American Society of Nephrology* [Internet]. 2007 Nov [cited 2023 Nov 4];18(11):2960–7. Available from: https://journals.lww.com/jasn/fulltext/2007/11000/significance_of_frailty_among_dialysis_patients.26.aspx
12. Garcia-Canton C, Rodenas A, Lopez-Aperador C, Rivero Y, Anton G, Monzon T,

- et al. Frailty in hemodialysis and prediction of poor short-term outcome: mortality, hospitalization and visits to hospital emergency services. *Ren Fail* [Internet]. 2019 Jan 1 [cited 2023 Oct 24];41(1):567. Available from: [/pmc/articles/PMC6598473/](#)
13. Perkumpulan Nefrologi Indonesia (PERNEFRI). 10th Report of Indonesian Renal Registry. 2017.
 14. Hustrini NM, Susalit E, Rotmans JI. Prevalence and risk factors for chronic kidney disease in Indonesia: An analysis of the National Basic Health Survey 2018. *J Glob Health* [Internet]. 2022 [cited 2023 Oct 24];12:4074. Available from: [/pmc/articles/PMC9559178/](#)
 15. Plantinga LC. Socio-economic impact in CKD. *Nephrol Ther* [Internet]. 2013 [cited 2023 Nov 1];9(1):1–7. Available from: <https://pubmed.ncbi.nlm.nih.gov/23318113/>
 16. Kazancioğlu R. Risk factors for chronic kidney disease: an update. *Kidney Int Suppl* (2011) [Internet]. 2013 Dec 1 [cited 2023 Oct 30];3(4):368. Available from: [/pmc/articles/PMC4089662/](#)
 17. Bargman JM, Skorecki K. Chronic Kidney Disease | Harrison's Principles of Internal Medicine, 21e | AccessMedicine | McGraw Hill Medical [Internet]. 2022 [cited 2023 Oct 24]. Available from: <https://accessmedicine.mhmedical.com/content.aspx?sectionid=265425997&bookid=3095&Resultclick=2#1198710408>
 18. Chen TK, Knicely DH, Grams ME. Chronic Kidney Disease Diagnosis and Management: A Review. *JAMA* [Internet]. 2019 Oct 10 [cited 2023 Oct 24];322(13):1294. Available from: [/pmc/articles/PMC7015670/](#)
 19. Eknoyan G, Lamiere N, Eckardt KU, Kasiske BL, Wheeler DC. KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. 2013 Jan;3(1):6.
 20. Eknoyan G, Lamiere N, Eckardt KU, Kasiske BL, Wheeler DC. KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. 2013 Jan;3(1):6.
 21. Chronic Kidney Disease Tests & Diagnosis - NIDDK [Internet]. [cited 2023 Oct 24]. Available from: <https://www.niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease-ckd/tests-diagnosis>
 22. Ren F, Li M, Xu H, Qin X, Teng Y. Urine albumin-to-creatinine ratio within the normal range and risk of hypertension in the general population: A meta-analysis. *The Journal of Clinical Hypertension* [Internet]. 2021 Jul 1 [cited 2023 Oct 24];23(7):1284. Available from: [/pmc/articles/PMC8678728/](#)
 23. Park JI, Baek H, Kim BR, Jung HH. Comparison of urine dipstick and albumin:creatinine ratio for chronic kidney disease screening: A population-based study. *PLoS One* [Internet]. 2017 Feb 1 [cited 2023 Oct 24];12(2). Available

from: /pmc/articles/PMC5289498/

24. Pugh D, Gallacher PJ, Dhaun N. Management of Hypertension in Chronic Kidney Disease. *Drugs* [Internet]. 2019 Mar 1 [cited 2023 Oct 25];79(4):365. Available from: /pmc/articles/PMC6422950/
25. Alkhatib L, Diaz LAV, Varma S, Chowdhary A, Bapat P, Pan H, et al. Lifestyle Modifications and Nutritional and Therapeutic Interventions in Delaying the Progression of Chronic Kidney Disease: A Review. *Cureus* [Internet]. 2023 Feb 3 [cited 2023 Oct 26];15(2). Available from: /pmc/articles/PMC9981552/
26. Coyne DW, Goldsmith D, Macdougall IC. New options for the anemia of chronic kidney disease. *Kidney Int Suppl* (2011) [Internet]. 2017 Dec 1 [cited 2023 Oct 26];7(3):157. Available from: /pmc/articles/PMC6341017/
27. Gupta N, Wish JB. Hypoxia-Inducible Factor Prolyl Hydroxylase Inhibitors: A Potential New Treatment for Anemia in Patients With CKD. *American Journal of Kidney Diseases* [Internet]. 2017 Jun 1 [cited 2023 Oct 26];69(6):815–26. Available from: <http://www.ajkd.org/article/S0272638617301105/fulltext>
28. Haase VH. Hypoxia-inducible factor–prolyl hydroxylase inhibitors in the treatment of anemia of chronic kidney disease. *Kidney Int Suppl* (2011) [Internet]. 2021 Apr 1 [cited 2023 Oct 26];11(1):8. Available from: /pmc/articles/PMC7983025/
29. Robinson-Cohen C, Littman AJ, Duncan GE, Weiss NS, Sachs MC, Ruzinski J, et al. Physical activity and change in estimated GFR among persons with CKD. *Journal of the American Society of Nephrology* [Internet]. 2014 Feb [cited 2023 Oct 26];25(2):399–406. Available from: /pmc/articles/PMC3904564/
30. Lee S, Kang S, Joo YS, Lee C, Nam KH, Yun HR, et al. Smoking, Smoking Cessation, and Progression of Chronic Kidney Disease: Results From KNOW-CKD Study. *Nicotine & Tobacco Research* [Internet]. 2021 Jan 7 [cited 2023 Oct 26];23(1):92–8. Available from: <https://dx.doi.org/10.1093/ntr/ntaa071>
31. Bruce MA, Griffith DM, Thorpe RJ. Stress and the Kidney. *Adv Chronic Kidney Dis* [Internet]. 2015 Jan 1 [cited 2023 Oct 26];22(1):46. Available from: /pmc/articles/PMC4871619/
32. Bello AK, Alrukhaimi M, Ashuntantang GE, Basnet S, Rotter RC, Douthat WG, et al. Complications of chronic kidney disease: current state, knowledge gaps, and strategy for action. *Kidney Int Suppl* (2011) [Internet]. 2017 Oct 1 [cited 2023 Oct 24];7(2):122. Available from: /pmc/articles/PMC6341007/
33. Dialysis in chronic kidney disease. 2018 Mar 8 [cited 2023 Oct 26]; Available from: <https://www.ncbi.nlm.nih.gov/books/NBK492979/>
34. Hemodialysis - NIDDK [Internet]. [cited 2023 Oct 29]. Available from: <https://www.niddk.nih.gov/health-information/kidney-disease/kidney-failure/hemodialysis>

35. Vadakedath S, Kandi V. Dialysis: A Review of the Mechanisms Underlying Complications in the Management of Chronic Renal Failure. *Cureus* [Internet]. 2017 Aug 24 [cited 2023 Oct 29];9(8). Available from: [/pmc/articles/PMC5654453/](https://pmc/articles/PMC5654453/)
36. Saha M, Allon M. Diagnosis, treatment, and prevention of hemodialysis emergencies. *Clinical Journal of the American Society of Nephrology* [Internet]. 2017 Feb 2 [cited 2023 Oct 29];12(2):357–69. Available from: [/pmc/articles/PMC5293333/](https://pmc/articles/PMC5293333/)
37. Karunaratne K, Taube D, Khalil N, Perry R, Malhotra PA. Neurological complications of renal dialysis and transplantation. *Pract Neurol* [Internet]. 2018 Apr 1 [cited 2023 Oct 29];18(2):115–25. Available from: <https://pubmed.ncbi.nlm.nih.gov/29288211/>
38. Gozubatik-Celik G, Uluduz D, Goksan B, Akkaya N, Sohtaoglu M, Uygunoglu U, et al. Hemodialysis-related headache and how to prevent it. *Eur J Neurol* [Internet]. 2019 Jan 1 [cited 2023 Oct 29];26(1):100–5. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/ene.13777>
39. Nakhoul GN, Huang H, Arrigain S, Jolly SE, Schold JD, Nally J V., et al. Serum potassium, end stage renal disease and mortality in chronic kidney disease. *Am J Nephrol* [Internet]. 2015 Aug 25 [cited 2023 Oct 29];41(6):456. Available from: [/pmc/articles/PMC4686260/](https://pmc/articles/PMC4686260/)
40. Masud A, Costanzo EJ, Zuckerman R, Asif A. The Complications of Vascular Access in Hemodialysis. *Semin Thromb Hemost* [Internet]. 2018 Feb 1 [cited 2023 Oct 29];44(1):57–9. Available from: <http://www.thieme-connect.com/products/ejournals/html/10.1055/s-0037-1606180>
41. Ye H, Ding H, Gan W, Wen P, Zhou Y, Cao H, et al. Hemodialysis. *Chronic Kidney Disease: Diagnosis and Treatment* [Internet]. 2023 Apr 27 [cited 2023 Oct 29];209–31. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK563296/>
42. Zamanian H, Kharameh ZT. Translation and Psychometric Properties of the Persian Version of the Dialysis Symptom Index in Hemodialysis Patients. *Nephrourol Mon* [Internet]. 2015 [cited 2023 Oct 30];7(1):23152. Available from: [/pmc/articles/PMC4330695/](https://pmc/articles/PMC4330695/)
43. Zhu L, Li XL, Shi R, Wang DG. Dialysis vintage is associated with a high prevalence and severity of unpleasant symptoms in patients on hemodialysis. *Ren Fail* [Internet]. 2023 [cited 2023 Nov 10];45(1):2201361. Available from: <https://www.tandfonline.com/action/journalInformation?journalCode=irnf20>
44. Chen X, Mao G, Leng SX. Frailty syndrome: an overview. *Clin Interv Aging* [Internet]. 2014 Mar [cited 2023 Oct 26];9:433. Available from: [/pmc/articles/PMC3964027/](https://pmc/articles/PMC3964027/)
45. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in Older People.

- Lancet [Internet]. 2013 Mar 3 [cited 2023 Oct 26];381(9868):752. Available from: [/pmc/articles/PMC4098658/](#)
46. Statistik Penduduk Lanjut Usia 2022 Badan Pusat Statistik. 2022. 4–5 p.
 47. Robert Allison I, Assadzandi S, Adelman M. Frailty: Evaluation and Management. *Am Fam Physician* [Internet]. 2021 Feb 15 [cited 2023 Oct 26];103(4):219–26. Available from: <https://www.aafp.org/pubs/afp/issues/2021/0215/p219.html>
 48. Setiati S, Laksmi PW, Aryana IGPS, Sunarti S, Widajanti N, Dwipa L, et al. Frailty state among Indonesian elderly: prevalence, associated factors, and frailty state transition. *BMC Geriatr* [Internet]. 2019 Jul 3 [cited 2023 Oct 26];19(1). Available from: [/pmc/articles/PMC6609407/](#)
 49. Wang X, Hu J, Wu D. Risk factors for frailty in older adults. *Medicine* [Internet]. 2022 Aug 8 [cited 2023 Oct 26];101(34):E30169. Available from: [/pmc/articles/PMC9410572/](#)
 50. Malnutrition [Internet]. [cited 2023 Dec 3]. Available from: https://www.who.int/health-topics/malnutrition#tab=tab_1
 51. Rambod M, Bross R, Zitterkoph J, Benner D, Pithia J, Colman S, et al. Association of Malnutrition-Inflammation Score with Quality of Life and Mortality in Maintenance Hemodialysis Patients: a 5-Year Prospective Cohort Study. *Am J Kidney Dis* [Internet]. 2009 Feb [cited 2023 Dec 1];53(2):298. Available from: [/pmc/articles/PMC5500250/](#)
 52. Karavetian M, Salhab N, Rizk R, Poulia KA. Malnutrition-Inflammation Score VS Phase Angle in the Era of GLIM Criteria: A Cross-Sectional Study among Hemodialysis Patients in UAE. *Nutrients* [Internet]. 2019 Nov 1 [cited 2023 Dec 1];11(11). Available from: [/pmc/articles/PMC6893836/](#)
 53. Clegg A, Young J. The Frailty Syndrome. *Clinical Medicine* [Internet]. 2011 [cited 2023 Oct 27];11(1):72. Available from: [/pmc/articles/PMC5873811/](#)
 54. Won CW. Diagnosis and Management of Frailty in Primary Health Care. *Korean J Fam Med* [Internet]. 2020 [cited 2023 Oct 26];41(4):207. Available from: [/pmc/articles/PMC7385295/](#)
 55. Gleason LJ, Benton EA, Alvarez-Nebreda ML, Weaver MJ, Harris MB, Javedan H. FRAIL Questionnaire Screening Tool and Short-Term Outcomes in Geriatric Fracture Patients. *J Am Med Dir Assoc* [Internet]. 2017 Dec 12 [cited 2023 Oct 26];18(12):1082. Available from: [/pmc/articles/PMC6611671/](#)
 56. Pollack LR, Litwack-Harrison S, Cawthon PM, Ensrud K, Lane NE, Barrett-Connor E, et al. Patterns and Predictors of Frailty Transitions in Older Men: the Osteoporotic Fractures in Men Study. *J Am Geriatr Soc* [Internet]. 2017 Nov 1 [cited 2023 Oct 27];65(11):2473. Available from: [/pmc/articles/PMC5681371/](#)
 57. Dent E, Morley JE, Cruz-Jentoft AJ, Woodhouse L, Rodríguez-Mañas L, Fried

- LP, et al. Physical Frailty: ICFSR International Clinical Practice Guidelines for Identification and Management. *J Nutr Health Aging* [Internet]. 2019 Nov 1 [cited 2023 Oct 27];23(9):771. Available from: [/pmc/articles/PMC6800406/](https://pubmed.ncbi.nlm.nih.gov/32144441/)
58. Physical activity [Internet]. [cited 2023 Nov 10]. Available from: <https://www.who.int/news-room/fact-sheets/detail/physical-activity>
59. De Labra C, Guimaraes-Pinheiro C, Maseda A, Lorenzo T, Millán-Calenti JC. Effects of physical exercise interventions in frail older adults: a systematic review of randomized controlled trials. *BMC Geriatr* [Internet]. 2015 Dec 2 [cited 2023 Oct 27];15(1). Available from: [/pmc/articles/PMC4667405/](https://pubmed.ncbi.nlm.nih.gov/26144441/)
60. Apóstolo J, Cooke R, Bobrowicz-Campos E, Santana S, Marcucci M, Cano A, et al. Effectiveness of interventions to prevent pre-frailty and frailty progression in older adults: a systematic review. *JBIC Database System Rev Implement Rep* [Internet]. 2018 Jan 1 [cited 2023 Oct 27];16(1):140. Available from: [/pmc/articles/PMC5771690/](https://pubmed.ncbi.nlm.nih.gov/30144441/)
61. Travers J, Romero-Ortuno R, Bailey J, Cooney MT. Delaying and reversing frailty: a systematic review of primary care interventions. *The British Journal of General Practice* [Internet]. 2019 Jan 1 [cited 2023 Oct 27];69(678):e61. Available from: [/pmc/articles/PMC6301364/](https://pubmed.ncbi.nlm.nih.gov/31144441/)
62. Muscedere J, Andrew MK, Bagshaw SM, Estabrooks C, Hogan D, Holroyd-Leduc J, et al. Screening for Frailty in Canada's Health Care System: A Time for Action. *Can J Aging* [Internet]. 2016 Sep 1 [cited 2023 Oct 27];35(3):281–97. Available from: <https://www.cambridge.org/core/journals/canadian-journal-on-aging-la-revue-canadienne-du-vieillessement/article/screening-for-frailty-in-canadas-health-care-system-a-time-for-action/80D1AAA266264556C27CCAC991C41220>
63. Chon D, Lee Y, Kim J, Lee K eun. The Association between Frequency of Social Contact and Frailty in Older People: Korean Frailty and Aging Cohort Study (KFACS). *J Korean Med Sci* [Internet]. 2018 Dec 12 [cited 2023 Oct 27];33(51). Available from: [/pmc/articles/PMC6291405/](https://pubmed.ncbi.nlm.nih.gov/32144441/)
64. Nixon AC, Wilkinson TJ, Young HML, Taal MW, Pendleton N, Mitra S, et al. Symptom-burden in people living with frailty and chronic kidney disease. *BMC Nephrology* [Internet]. 2020 Sep 23 [cited 2023 Nov 9];21(1). Available from: [/pmc/articles/PMC7513484/](https://pubmed.ncbi.nlm.nih.gov/34144441/)
65. Yoshikoshi S, Yamamoto S, Suzuki Y, Imamura K, Harada M, Yamabe S, et al. Association between Physical Frailty and Sleep Disturbances among Patients on Hemodialysis: A Cross-Sectional Study. *Nephron* [Internet]. 2024 Mar 1 [cited 2024 May 26];148(3):152–9. Available from: <https://dx.doi.org/10.1159/000533418>
66. Pereira M, Tocino MLS, Mas-Fontao S, Manso P, Burgos M, Carneiro D, et al. Dependency and frailty in the older haemodialysis patient. *BMC Geriatr* [Internet]. 2024 Dec 1 [cited 2024 May 26];24(1):416. Available from: <https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-024-04973-8>

67. Fleishman TT, Dreiherr J, Shvartzman P. Patient-reported outcomes in maintenance hemodialysis: a cross-sectional, multicenter study. *Quality of Life Research* [Internet]. 2020 Sep 1 [cited 2024 May 26];29(9):2345–54. Available from: <https://link.springer.com/article/10.1007/s11136-020-02508-3>
68. You AS, Kalantar SS, Norris KC, Peralta RA, Narasaki Y, Fischman R, et al. Dialysis symptom index burden and symptom clusters in a prospective cohort of dialysis patients. *J Nephrol* [Internet]. 2022 Jun 1 [cited 2024 May 26];35(5):1427. Available from: [/pmc/articles/PMC9217843/](https://pubmed.ncbi.nlm.nih.gov/35017843/)
69. Zhou M, Gu X, Cheng K, Wang Y, Zhang N. Exploration of symptom clusters during hemodialysis and symptom network analysis of older maintenance hemodialysis patients: a cross-sectional study. *BMC Nephrol* [Internet]. 2023 Dec 1 [cited 2024 May 26];24(1):1–14. Available from: <https://bmcnephrol.biomedcentral.com/articles/10.1186/s12882-023-03176-4>
70. Szepietowski JC, Reich A, Schwartz RA. Uraemic xerosis. *Nephrology Dialysis Transplantation* [Internet]. 2004 Nov 1 [cited 2024 Jun 3];19(11):2709–12. Available from: <https://dx.doi.org/10.1093/ndt/gfh480>
71. Agarwal P, Garg V, Karagaiah P, Szepietowski JC, Grabbe S, Goldust M. Chronic Kidney Disease-Associated Pruritus. *Toxins (Basel)* [Internet]. 2021 Aug 1 [cited 2024 Jun 3];13(8). Available from: [/pmc/articles/PMC8402524/](https://pubmed.ncbi.nlm.nih.gov/35017843/)
72. Rezaiee O, Shahgholian N, Shahidi S. Assessment of hemodialysis adequacy and its relationship with individual and personal factors. *Iran J Nurs Midwifery Res* [Internet]. 2016 Nov 1 [cited 2024 Jun 3];21(6):577. Available from: [/pmc/articles/PMC5301063/](https://pubmed.ncbi.nlm.nih.gov/35017843/)
73. Mourad B, Hegab D, Okasha K, Rizk S. Prospective study on prevalence of dermatological changes in patients under hemodialysis in hemodialysis units in Tanta University hospitals, Egypt. *Clin Cosmet Investig Dermatol* [Internet]. 2014 Nov 11 [cited 2024 Jun 3];7:313. Available from: [/pmc/articles/PMC4235205/](https://pubmed.ncbi.nlm.nih.gov/35017843/)
74. Maskey A, Kumar A, Shrestha R. Study of Cutaneous Manifestations in End Stage Kidney Disease Undergoing Hemodialysis. *Nepal Journal of Dermatology, Venereology & Leprology* [Internet]. 2020 Oct 8 [cited 2024 Jun 3];18(1):37–43. Available from: <https://www.nepjol.info/index.php/NJDVL/article/view/29568>
75. Pagels A, Heiwe S, Hylander B. [Nutritional status of pre-dialysis patients]. *J Ren Care* [Internet]. 2006 Jul 9 [cited 2024 Jun 9];32(3):151–5. Available from: <https://pubmed.ncbi.nlm.nih.gov/17393812/>
76. Tsirigotis S, Polikandrioti M, Alikari V, Dousis E, Koutelekos I, Toulia G, et al. Factors Associated With Fatigue in Patients Undergoing Hemodialysis. *Cureus* [Internet]. 2022 Mar 9 [cited 2024 May 26];14(3). Available from: [/pmc/articles/PMC8992877/](https://pubmed.ncbi.nlm.nih.gov/35017843/)
77. Kodama H, Togari T, Konno Y, Tsuji A, Fujinoki A, Kuwabara S, et al. A new

- assessment scale for post-dialysis fatigue in hemodialysis patients. *Ren Replace Ther* [Internet]. 2020 Jan 2 [cited 2024 May 26];6(1):1–8. Available from: <https://rrtjournal.biomedcentral.com/articles/10.1186/s41100-019-0252-5>
78. Jhamb M, Weisbord SD, Steel JL, Unruh M. Fatigue in Patients Receiving Maintenance Dialysis: A Review of Definitions, Measures, and Contributing Factors. *Am J Kidney Dis* [Internet]. 2008 Aug [cited 2024 May 26];52(2):353. Available from: [/pmc/articles/PMC2582327/](https://pubmed.ncbi.nlm.nih.gov/16404733/)
 79. Liu HE. Fatigue and associated factors in hemodialysis patients in Taiwan. *Res Nurs Health* [Internet]. 2006 Feb [cited 2024 Jun 9];29(1):40–50. Available from: <https://pubmed.ncbi.nlm.nih.gov/16404733/>
 80. Unruh M, Miskulin D, Yan G, Hays RD, Benz R, Kusek JW, et al. Racial differences in health-related quality of life among hemodialysis patients. *Kidney Int* [Internet]. 2004 Apr 1 [cited 2024 Jun 9];65(4):1482–91. Available from: <http://www.kidney-international.org/article/S0085253815498618/fulltext>
 81. Rimsevicius L, Gincaite A, Vicka V, Sukackiene D, Pavinic J, Miglinas M. Malnutrition Assessment in Hemodialysis Patients: Role of Bioelectrical Impedance Analysis Phase Angle. *J Ren Nutr* [Internet]. 2016 Nov 1 [cited 2024 May 26];26(6):391–5. Available from: <https://pubmed.ncbi.nlm.nih.gov/27450205/>
 82. Zaki DSD, Mohamed RR, Mohammed NAG, Abdel-Zaher RB. Assessment of Malnutrition Status in Hemodialysis Patients. *Clinical Medicine and Diagnostics* [Internet]. 2019 [cited 2024 May 26];9(1):8–13. Available from: **Background:** Malnutrition in hemodialysis (HD) patients is prevalent worldwide. However, data regarding the nutritional status of those patients among Arab countries is insufficient. **Objectives:** The purpose of this study was to estimate the prevalence of malnutrition among adult HD patients in Cairo, Egypt and to investigate the possible factors correlating with malnutrition in those patients. **Patients and methods:** This was a prospective cross-sectional observational study that conducted at 2 dialysis units in Cairo, Egypt. Patients were evaluated for the nutritional status by using modified subjective global assessment (mSGA). Biochemical and hematological parameters were collected pre-dialysis. **Results:** A total of 100 patients with ESRD on regular HD for more than 6 months (64% males and 36% females) were included in the study. Their mean age was 50.2 ± 12.5 years and the primary cause of ESRD was hypertension in 45% and diabetes in 34%. The prevalence of malnutrition was 67% according to the reference standard mSGA; either mildly-moderately malnourished (50%) or severely malnourished (17%). The mSGA score was positively correlated to age, duration of HD, and CRP and negatively correlated with albumin in HD patients. **Conclusion:** Malnutrition was highly prevalent among HD patients in Cairo, Egypt. Therefore, there is a need for adequate nutritional assessment early in starting of hemodialysis and tailored nutritional plan to minimize the consequences of malnutrition on the patients and health care system.
 83. Segall L, Mardare NG, Ungureanu S, Busuioc M, Nistor I, Enache R, et al. Nutritional status evaluation and survival in haemodialysis patients in one centre

- from Romania. *Nephrol Dial Transplant* [Internet]. 2009 Aug [cited 2024 May 26];24(8):2536–40. Available from: <https://pubmed.ncbi.nlm.nih.gov/19297358/>
84. Rodrigues J, Cuppari L, Campbell KL, Avesani CM. Nutritional assessment of elderly patients on dialysis: pitfalls and potentials for practice. *Nephrol Dial Transplant* [Internet]. 2017 Nov 1 [cited 2024 May 26];32(11):1780–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/28371919/>
 85. Edison Vitório de Souza Júnior. Effects of sexuality on frailty and quality of life in the elderly: a cross-sectional study. *Rev Bras Enferm*. 2021;
 86. Chiang JM, Kaysen GA, Segal M, Chertow GM, Delgado C, Johansen KL. Low testosterone is associated with frailty, muscle wasting and physical dysfunction among men receiving hemodialysis: a longitudinal analysis. *Nephrology Dialysis Transplantation* [Internet]. 2019 May 1 [cited 2024 May 26];34(5):802–10. Available from: <https://dx.doi.org/10.1093/ndt/gfy252>
 87. Tsujimura A. The Relationship between Testosterone Deficiency and Men's Health. *World J Mens Health* [Internet]. 2013 [cited 2024 May 26];31(2):126. Available from: <https://pubmed.ncbi.nlm.nih.gov/243770847/>
 88. Barrera A, Rezende LFM, Sabag A, Keating CJ, Rey-Lopez JP. Understanding the Causes of Frailty Using a Life-Course Perspective: A Systematic Review. *Healthcare (Switzerland)* [Internet]. 2024 Jan 1 [cited 2024 May 26];12(1):22. Available from: <https://www.mdpi.com/2227-9032/12/1/22/html>
 89. Uslu A, Canbolat O. Relationship Between Frailty and Fatigue in Older Cancer Patients. *Semin Oncol Nurs* [Internet]. 2021 Aug 1 [cited 2024 May 26];37(4). Available from: <https://pubmed.ncbi.nlm.nih.gov/34275706/>
 90. Theou O, Jones GR, Overend TJ, Klooseck M, Vandervoort AA. An exploration of the association between frailty and muscle fatigue. <https://doi.org/10.1139/H08-058> [Internet]. 2008 Aug [cited 2024 May 26];33(4):651–65. Available from: <https://cdnsiencepub.com/doi/10.1139/H08-058>