

DAFTAR PUSTAKA

- Abdollahi, S., Hasanpour Ardekanizadeh, N., Poorhosseini, S. M., Gholamalizadeh, M., Roumi, Z., Goodarzi, M. O., et al. (2022). Unraveling the Complex Interactions between the Fat Mass and Obesity-Associated (FTO) Gene, Lifestyle, and Cancer. *Advances in Nutrition*, 13(6), 2406–2419. <https://doi.org/10.1093/advances/nmac101>
- AbouHashem, N., Al-Shafai, K., Al-Shafai, M. (2022). The genetic elucidation of monogenic obesity in the Arab world: a systematic review. *Journal of Pediatric Endocrinology and Metabolism*, 35(6), 699–707. <https://doi.org/10.1515/jpem-2021-0710>
- AbouHashem, N., Zaied, R. E., Al-Shafai, K., Nofal, M., Syed, N., Al-Shafai, M. (2022). The Spectrum of Genetic Variants Associated with the Development of Monogenic Obesity in Qatar. *Obesity Facts*, 15(3), 357–365. <https://doi.org/10.1159/000521851>
- Adhiyanto, C., Nasir, N. M., Sari, F. R., Pamungkas, R. G. ., Azis, I. ., Harriyati, Z. ., et al. (2019). Preliminary Study : Identification of DNA Variation With SNP Numbers rs1137101 and rs8050136 In Patient's Type 2 Diabetes Mellitus at Salsabila Clinic Bogor Indonesia. *Biotech. Env. Sc*, 21(4), 112–115.
- Agagunduz, D., Gezmen-Karadag, M. (2019). Association of FTO common variant (rs9939609) with body fat in Turkish individuals. In *Lipids in Health and Disease* (Vol. 18, Issue 1). <https://doi.org/10.1186/s12944-019-1160-y>
- Agustina, R., Mufida, R., Lasepa, W., Mustika, A., Debilauralita, A., Limbong, Sepriani T., et al. (2025). Nutrient Intake Adequacy among Adults in Indonesia and Malaysia: A Systematic Review and Meta-Analysis. In *Current Developments in Nutrition* (Vol. 9, Issue 5). <https://doi.org/10.1016/j.cdnut.2025.106010>
- Akinci, A., Türkkahraman, D., Tekedereli, İ., Özer, L., Evren, B., Şahin, İ., et. (2019). Novel Mutations in Obesity-related Genes in Turkish Children with Non-syndromic Early Onset Severe Obesity: A Multicentre Study. *Journal of Clinical Research in Pediatric Endocrinology*, 11(4), 341–349. <https://doi.org/10.4274/jcrpe.galenos.2019.2019.0021>
- Al-Jawadi, A. A., Priliani, L., Oktavianthi, S., Febinia, C. A., Daya, M., Artika, I. M., Malik, S. G. (2021). Association of FTO rs1421085 single nucleotide polymorphism with fat and fatty acid intake in Indonesian adults. *BMC Research Notes*, 14(1), 411. <https://doi.org/10.1186/s13104-021-05823-1>
- Alsulami, S., Aji, A. S. ., Ariyasra, U., Sari, S. R., Tasrif, N., Yani, F. F., et al. (2020). Interaction between the genetic risk score and dietary protein intake on cardiometabolic traits in Southeast Asian. *Genes Nutrition*, 15(1), 19. <https://doi.org/10.1186/s12263-020-00678-w>

- Amegan, N. H., Amidou, A. S., Houehanou, C. Y., Robin, H., Gbaguidi, G. N., et al., Amoussou-Guenou, K. D., Preux, P.-M., Lacroix, P., Houinato, S. D. (2022). Prevalence and factors associated with hyperglycemia in a rural population of Tanvè and Dékanmey in Benin in 2019. *PLOS Global Public Health*, 2(5), e0000471. <https://doi.org/10.1371/journal.pgph.0000471>
- Andarwulan, N., Madanijah, S., Briawan, D., Anwar, K., Bararah, A., Saraswati, et al. (2021). Food consumption pattern and the intake of sugar, salt, and fat in the South Jakarta City Indonesia. In *Nutrients* (Vol. 13, Issue 4). <https://doi.org/10.3390/nu13041289>
- Anggraini, H., Setiawati, S., Rilyani, R. (2022). Faktor yang berhubungan dengan kejadian obesitas pada masa pandemi Covid-19. *Holistik Jurnal Kesehatan*, 16(3), 223–230. <https://doi.org/10.33024/hjk.v16i3.5132>
- Aurich, S., Müller, L., Kovacs, P., Keller, M. (2023). Implication of DNA methylation during lifestyle mediated weight loss. *Frontiers in Endocrinology*, 14. <https://doi.org/10.3389/fendo.2023.1181002>
- Aziz, I. (2018). Gambaran Polimorfisme Gen FTO (Fat Mass and Obesity associated) Rs8050136 pada Kejadian Diabetes Melitus Tipe 2. In *Repository.Uinjkt.Ac.Id*. <http://repository.uinjkt.ac.id/dspace/handle/123456789/47825>
- Bailey, R. L. (2021). Overview of dietary assessment methods for measuring intakes of foods, beverages, and dietary supplements in research studies. *Current Opinion in Biotechnology*, 70, 91–96. <https://doi.org/10.1016/j.copbio.2021.02.007>
- Belsky, D. W., Domingue, B. W., Wedow, R., Arseneault, L., Boardman, J. D., Caspi, Avshalom., et al. (2018). Genetic analysis of social-class mobility in five longitudinal studies. In *Proceedings of the National Academy of Sciences of the United States of America* (Vol. 115, Issue 31, pp. E7275–E7284). <https://doi.org/10.1073/pnas.1801238115>
- Bennett, J. P., Liu, Y. E., Kelly, N. N., Quon, B. K., Wong, M. C., McCarthy, C., et al. (2022). Next-generation smart watches to estimate whole-body composition using bioimpedance analysis: accuracy and precision in a diverse, multiethnic sample. *The American Journal of Clinical Nutrition*, 116(5), 1418–1429. <https://doi.org/10.1093/ajcn/nqac200>
- Bera, T. K. (2014). *Human body as a conducting cylinder and its body composition a human*. https://www.researchgate.net/figure/Human-body-as-a-conducting-cylinder-and-its-body-composition-a-human-body-assumed-as-a_fig5_270670133
- Bluher, M. (2019). Obesity: global epidemiology and pathogenesis. *Nature Reviews Endocrinology*. In *Nature Reviews Endocrinology*.

- Borg, C.-M., Deguara, J. (2023). Surgery for Obesity and Its Consequences. In *Intestinal Failure* (pp. 301–312). Springer International Publishing. https://doi.org/10.1007/978-3-031-22265-8_20
- Candr kov , K., Trakovick , A., Candr k, J., G bor, M., Miluchov , M. (2016). Effect of FTO rs1121980 to Body Mass Index. *Acta Fytotechnica et Zootechnica*, 19(Special issue), 114–122. <https://doi.org/10.15414/afz.2016.19.si.114-122>
- Castro, G. V., Latorre, A. F. S., Korndorfer, F. P., de Carlos Back, L. K., Lofgren, S. E. (2021). The Impact of Variants in Four Genes: MC4R, FTO, PPARG and PPARGC1A in Overweight and Obesity in a Large Sample of the Brazilian Population. *Biochemical Genetics*, 59(6), 1666–1679. <https://doi.org/10.1007/s10528-021-10079-2>
- Chang, J. Y., Park, J. H., Park, S. E., Shon, J., Park, Y. J. (2018). The Fat Mass- and Obesity-Associated (FTO) Gene to Obesity: Lessons from Mouse Models. In *Obesity* (Vol. 26, Issue 11, pp. 1674–1686). <https://doi.org/10.1002/oby.22301>
- Chen, J., Zhu, Q., Liu, G., Yang, X., Zhao, S., Chen, W., et al. (2018). Fat Mass and Obesity-Associated (FTO) Gene Polymorphisms Are Associated with Risk of Intervertebral Disc Degeneration in Chinese Han Population: A Case Control Study. *Medical Science Monitor*, 24, 5598–5609. <https://doi.org/10.12659/MSM.911101>
- Chen, S., Song, P., Wang, Y., Wang, Z., Xue, J., Jiang, Y., et al. (2023). CircMAPK9 promotes adipogenesis through modulating hsa-miR-1322/FTO axis in obesity. *IScience*, 26(10), 107756. <https://doi.org/10.1016/j.isci.2023.107756>
- Chermon, D., Birk, R. (2023). Predisposition of the Common MC4R rs17782313 Female Carriers to Elevated Obesity and Interaction with Eating Habits. *Genes*, 14(11), 1996. <https://doi.org/10.3390/genes14111996>
- Chiurazzi, M., Cozzolino, M., Orsini, R. C., Di Maro, M., Di Minno, M. N. D., Colantuoni, A. (2020). Impact of Genetic Variations and Epigenetic Mechanisms on the Risk of Obesity. *International Journal of Molecular Sciences*, 21(23), 9035. <https://doi.org/10.3390/ijms21239035>
- Czajkowski, P., Adamska-Patrano, E., Bauer, W., Fiedorczuk, J., Krasowska, U., Moroz, M., et al. (2020). The Impact of FTO Genetic Variants on Obesity and Its Metabolic Consequences is Dependent on Daily Macronutrient Intake. *Nutrients*, 12(11), 3255. <https://doi.org/10.3390/nu12113255>
- D’Silva, S., Chakraborty, S., Kahali, B. (2022). Concurrent outcomes from multiple approaches of epistasis analysis for human body mass index associated loci provide insights into obesity biology. *Scientific Reports*, 12(1), 7306. <https://doi.org/10.1038/s41598-022-11270-0>

- Dao, M. C., Subar, A. F., Warthon-Medina, M., Cade, J. E., Burrows, T., Golley, R. K., et al. (2019). Dietary assessment toolkits: an overview. *Public Health Nutrition*, 22(3), 404–418. <https://doi.org/10.1017/S1368980018002951>
- Day, K., Kwok, A., Evans, A., Mata, F., Verdejo-Garcia, A., Hart, K., et al. (2018). Comparison of a Bioelectrical Impedance Device against the Reference Method Dual Energy X-Ray Absorptiometry and Anthropometry for the Evaluation of Body Composition in Adults. *Nutrients*, 10(10), 1469. <https://doi.org/10.3390/nu10101469>
- Daya, M., Pujiyanto, D.A., Witjaksono, F., Priliani, L., Susanto, J., et al. (2019). Obesity risk and preference for high dietary fat intake are determined by FTO rs9939609 gene polymorphism in selected Indonesian adults | *Asia Pacific Journal of Clinical Nutrition*. [https://doi.org/10.6133/apjcn.201903_28\(1\).0024](https://doi.org/10.6133/apjcn.201903_28(1).0024)
- de Luis, D. A., Izaola, O., Primo, D., Lopez, J. J. (2022). FTO variant RS 1121980 interact with metabolic response after weight loss with a meal replacement hypocaloric diet in Caucasian obese subjects. *European Review for Medical and Pharmacological Sciences*, 26(24), 9336–9344. https://doi.org/10.26355/eurev_202212_30684
- Deng, J., Liao, Y., Chen, J., Chen, A., Wu, S., Huang, Y., et al. (2023). N6-methyladenosine demethylase FTO regulates synaptic and cognitive impairment by destabilizing PTEN mRNA in hypoxic-ischemic neonatal rats. *Cell Death Disease*, 14(12), 820. <https://doi.org/10.1038/s41419-023-06343-5>
- Devito, F. C., Patricio, G. C. F., Flôr, P. B., Vendramini, T. H. A., Amaral, A. R., Pfrimer, K., et al. (2020). Comparative study of anaesthesia induction in obese dogs using propofol dosages based on lean body weight or total body weight. *Veterinary and Animal Science*, 10, 100131. <https://doi.org/10.1016/j.vas.2020.100131>
- Dubern, B. (2019). Genetics and epigenetics of obesity: keys to understand. In *La Revue du praticien* (Vol. 69, Issue 9, pp. 1016–1019). <http://www.ncbi.nlm.nih.gov/pubmed/32237628>
- Duis, J., Butler, M. G. (2022). Syndromic and Nonsyndromic Obesity: Underlying Genetic Causes in Humans. *Advanced Biology*, 6(10). <https://doi.org/10.1002/adbi.202101154>
- Eltyeb, E. E., Alhazmi, S. A., Maafa, S. H. I., Mobarki, S. J., Sobaikhi, N. H., Sumayli, Rimas A., et al. (2024). Public's perception and attitude toward genetic testing in Jazan region. *Journal of Family Medicine and Primary Care*, 13(10), 4715–4720. https://doi.org/10.4103/jfmpc.jfmpc_872_24
- Faridi, A., Trisutrisno, I., Irawan, A. M. A., Lusiana, S. A., Alfiah, E., Rahmawati, L. A., et al. (2022). *Survey Konsumsi Gizi* (R. Watrianthos (ed.); 1st ed.).

Penerbit Yayasan Kita Menulis.
<http://repository.uhamka.ac.id/id/eprint/14474/1/FullBook> Survei Konsumsi
Gizi _April 2022.pdf

Fauziyah, N. (2018). *Analisis Data menggunakan chi square test di bidang kesehatan masyarakat dan klinis* (G. P. E. Mulyo (ed.)). Politeknik Kesehatan Kemenkes Bandung.

Fenton, A. (2021). Weight, Shape, and Body Composition Changes at Menopause. *Journal of Mid-Life Health*, 12(3), 187–192. https://doi.org/10.4103/jmh.jmh_123_21

Ferreira, A. S., Mentiplay, B. F., Taborda, B., Pazzinatto, M. F., de Azevedo, F. M., De Oliveira Silva, D. (2023). Exploring overweight and obesity beyond body mass index: A body composition analysis in people with and without patellofemoral pain. *Journal of Sport and Health Science*, 12(5), 630–638. <https://doi.org/10.1016/j.jshs.2021.06.003>

Frank, A. P., de Souza Santos, R., Palmer, B. F., Clegg, D. J. (2019). Determinants of body fat distribution in humans may provide insight about obesity-related health risks. *Journal of Lipid Research*, 60(10), 1710–1719. <https://doi.org/10.1194/jlr.R086975>

Gjermeni, E., Kirstein, A. S., Kolbig, F., Kirchhof, M., Bundalian, Linnaeus., et al. (2021). Obesity—an update on the basic pathophysiology and review of recent therapeutic advances. In *Biomolecules* (Vol. 11, Issue 10). <https://doi.org/10.3390/biom11101426>

Goh, Y., Choi, J. H. (2022). Genetic variation rs1121980 in the fat mass and obesity-associated gene (FTO) is associated with dietary intake in Koreans. In *Food and Nutrition Research* (Vol. 66). <https://doi.org/10.29219/fnr.v66.8059>

Gram, M. A., Therkildsen, C., Clarke, R. B., Andersen, K. K., Mørch, L. S., Tybjaerg, A. J. (2021). The influence of marital status and partner concordance on participation in colorectal cancer screening. *European Journal of Public Health*, 31(2), 340–346. <https://doi.org/10.1093/eurpub/ckaa206>

Güney, E., Aydemir, A. F., Iyit, N., Alkan, Ö. (2024). Gender differences in psychological help-seeking attitudes: a case in Türkiye. *Frontiers in Psychology*, 15. <https://doi.org/10.3389/fpsyg.2024.1289435>

Gutierrez, Maria. A. Fermin., Daley, Sharon. F., Mendez, M. D. (2023). *Prader Willi Syndrome*. StatPearls [Internet]. <https://pubmed.ncbi.nlm.nih.gov/31985954/>

Hajishizari, S., Imani, H., Mehranfar, S., Saeed Yekaninejad, M., Mirzababaei, A., Clark, C. C. T., et al. (2022). The association of appetite and hormones (leptin, ghrelin, and Insulin) with resting metabolic rate in overweight/ obese women: a case–control study. *BMC Nutrition*, 8(1), 37.

<https://doi.org/10.1186/s40795-022-00531-w>

- Hastuti, P. (2022). Obesity and the role of genetic polymorphism: A review of genes as the risk of obesity. *Journal of the Medical Sciences (Berkala Ilmu Kedokteran)*, 54(2), 181–201. <https://doi.org/10.19106/JMedSci005402202209>
- Holmes, C. J., Racette, S. B. (2021). The Utility of Body Composition Assessment in Nutrition and Clinical Practice: An Overview of Current Methodology. *Nutrients*, 13(8), 2493. <https://doi.org/10.3390/nu13082493>
- Horwitz, A., Birk, R. (2023). Adipose Tissue Hyperplasia and Hypertrophy in Common and Syndromic Obesity—The Case of BBS Obesity. *Nutrients*, 15(15). <https://doi.org/10.3390/nu15153445>
- Hruby, A., Hu, F. B. (2015). The Epidemiology of Obesity: A Big Picture. *Pharmacoeconomics*, 33(7), 673–689. <https://doi.org/10.1007/s40273-014-0243-x>
- Huang, C., Chen, W., Wang, X. (2023). Studies on the fat mass and obesity-associated (FTO) gene and its impact on obesity-associated diseases. *Genes & Diseases*, 10(6), 2351–2365. <https://doi.org/10.1016/j.gendis.2022.04.014>
- Hüls, A., Wright, M. N., Bogl, L. H., Kaprio, J., Lissner, L., Molnár, D., et al. (2021). Polygenic risk for obesity and its interaction with lifestyle and sociodemographic factors in European children and adolescents. *International Journal of Obesity*, 45(6), 1321–1330. <https://doi.org/10.1038/s41366-021-00795-5>
- Isungset, M. A., Conley, D., Zachrisson, H. D., Ystrom, E., Havdahl, A., Njølstad, Pal R., et al. (2022). Social and genetic associations with educational performance in a Scandinavian welfare state. *Proceedings of the National Academy of Sciences*, 119(25). <https://doi.org/10.1073/pnas.2201869119>
- Jeong, J., Lee, Y., Kwon, S. H., Myong, J.-P. (2019). Factors Associated with General Health Screening Participation among Married Immigrant Women in Korea. *International Journal of Environmental Research and Public Health*, 16(20), 3971. <https://doi.org/10.3390/ijerph16203971>
- Jia, Weiping., Liu, F. (2021). Obesity: causes, consequences, treatments, and challenges. *Journal of Molecular Cell Biology*, 13(7), 463–465. <https://doi.org/10.1093/jmcb/mjab056>
- Katus, U., Villa, I., Ringmets, I., Veidebaum, T., Harro, J. (2021). Neuropeptide Y gene variants in obesity, dietary intake, blood pressure, lipid and glucose metabolism: A longitudinal birth cohort study. *Peptides*, 139, 170524. <https://doi.org/10.1016/j.peptides.2021.170524>
- Kemenkes RI. (2013). Riset Kesehatan Dasar (RISKESDAS) 2013. In *Laporan Nasional 2013*. Lembaga Penerbit Penelitian dan Pengembangan Kesehatan

- (LPB). <https://repository.badankebijakan.kemkes.go.id/id/eprint/4428>
- Kemenkes RI. (2014). Peraturan Menteri Kesehatan Nomor 41 Tahun 2014 tentang Pedoman Gizi Seimbang. Kemenkes RI. <https://peraturan.bpk.go.id/Details/119080/permenkes-no-41-tahun-2014>
- Kemenkes RI. (2018). *Laporan Provinsi Sumatera Barat Riskesdas 2018* -. Lembaga Penerbit Penelitian dan Pengembangan Kesehatan (LPB). <https://repository.badankebijakan.kemkes.go.id/id/eprint/3906/>
- Kemenkes RI. (2019a). Laporan Riskesdas 2018 Nasional. In *Lembaga Penerbit Penelitian dan Pengembangan Kesehatan (LPB)*. Lembaga Penerbit Penelitian dan Pengembangan Kesehatan (LPB). <https://repository.badankebijakan.kemkes.go.id/id/eprint/3514>
- Kemenkes RI. (2019b). Peraturan Menteri Kesehatan Nomor 28 Tahun 2019 tentang Angka Kecukupan Gizi yang Dianjurkan untuk Masyarakat Indonesia. In *Kemenkes RI*. <https://peraturan.bpk.go.id/Details/138621/permenkes-no-28-tahun-2019>
- Kemenkes RI. (2019c). *Kategori Usia*. Kementrian Kesehatan RI. <https://ayosehat.kemkes.go.id/kategori-usia>
- Kesari, A., Noel, J. Y. (2022). *Nutritional Assessment - StatPearls - NCBI Bookshelf*. StatPearls [Internet]. <https://www.ncbi.nlm.nih.gov/books/NBK580496/>
- Khairunnisa, A., Almurdi., lipoeto, Nur, I., Fasrini, U. U., Lestari, Y., Manela, C. (2024). *Hubungan Konsumsi Makronutrien dengan Kadar Gula Darah Puasa pada Penderita Obesitas Tahun 2022*. 1–84. <https://scholar.unand.ac.id/id/eprint/460997>
- Khairunnisa, N. M. (2024). *Gambaran Perilaku Makan Berdasarkan Polimorfisme Gen FTO rs9939609 pada Karyawan Obesitas di Universitas Jenderal Soedirman - Repository Universitas Jenderal Soedirman*. Repository Universitas Jenderal Soedirman. <https://repository.unsoed.ac.id/28866/>
- Khatiwada, B., Nguyen, T. T., Purslow, J. A., Venditti, V. (2022). Solution structure ensemble of human obesity-associated protein FTO reveals druggable surface pockets at the interface between the N- and C-terminal domain. *Journal of Biological Chemistry*, 298(5), 101907. <https://doi.org/10.1016/j.jbc.2022.101907>
- Kim, J. E., O'Connor, L. E., Sands, L. P., Slebodnik, M. B., Campbell, W. W. (2016). Effects of dietary protein intake on body composition changes after weight loss in older adults: a systematic review and meta-analysis. *Nutrition Reviews*, 74(3), 210–224. <https://doi.org/10.1093/nutrit/nuv065>
- Kosiorz, S. G., Lejawa, M., Goławski, M., Tomaszewska, A., Fronczek, M., Maksym, B., et al. (2024). The Impact of Haplotypes of the FTO Gene,

- Lifestyle, and Dietary Patterns on BMI and Metabolic Syndrome in Polish Young Adult Men. *Nutrients*, 16(11), 1615. <https://doi.org/10.3390/nu16111615>
- Krapohl, E., Plomin, R. (2016). Genetic link between family socioeconomic status and children's educational achievement estimated from genome-wide SNPs. *Molecular Psychiatry*, 21(3), 437–443. <https://doi.org/10.1038/mp.2015.2>
- Kucher, A. N. (2020). The FTO Gene and Diseases: The Role of Genetic Polymorphism, Epigenetic Modifications, and Environmental Factors. *Russian Journal of Genetics*, 56(9), 1025–1043. <https://doi.org/10.1134/S1022795420090136>
- Lan, N., Lu, Y., Zhang, Y., Pu, S., Xi, H., Nie, X., et al. (2020). FTO A Common Genetic Basis for Obesity and Cancer. *Frontiers in Genetics*, 11(November), 1–12. <https://doi.org/10.3389/fgene.2020.559138>
- Landgraf, K., Scholz, M., Kovacs, P., Kiess, W., Körner, A. (2016). FTO Obesity Risk Variants Are Linked to Adipocyte IRX3 Expression and BMI of Children - Relevance of FTO Variants to Defend Body Weight in Lean Children? *PLOS ONE*, 11(8), e0161739. <https://doi.org/10.1371/journal.pone.0161739>
- Li, X., Qi, L. (2019). Gene–Environment Interactions on Body Fat Distribution. *International Journal of Molecular Sciences*, 20(15), 3690. <https://doi.org/10.3390/ijms20153690>
- Lier, L. M., Breuer, C., Dallmeyer, S. (2019). Organizational-level determinants of participation in workplace health promotion programs: A cross-company study. In *BMC Public Health* (Vol. 19, Issue 1). <https://doi.org/10.1186/s12889-019-6578-7>
- Lin, X., Li, H. (2021). Obesity: Epidemiology, Pathophysiology, and Therapeutics. *Frontiers in Endocrinology*, 12(September), 1–9. <https://doi.org/10.3389/fendo.2021.706978>
- Ling, C., Rönn, T. (2019). Epigenetics in Human Obesity and Type 2 Diabetes. In *Cell Metabolism* (Vol. 29, Issue 5, pp. 1028–1044). <https://doi.org/10.1016/j.cmet.2019.03.009>
- LIPI. (2018). *Buku Panduan Widyakarya Nasional Pangan dan Gizi (WNPG) XI* (N. P. Pratami, Nikita Daning., Indrasari (ed.); 1st ed., Issue 112). [LIPI] Lembaga Ilmu Pengetahuan Indonesia.
- Liu, S., Song, S., Wang, S., Cai, T., Qin, L., et al. (2024). Hypothalamic FTO promotes high-fat diet-induced leptin resistance in mice through increasing CX3CL1 expression. *The Journal of Nutritional Biochemistry*, 123, 109512. <https://doi.org/https://doi.org/10.1016/j.jnutbio.2023.109512>
- Lohman, Nagamin, Rahman. (2019). Review Timbangan Omron HBF-214 Alat Ukur Komposisi Tubuh. *Galeri Medika*.

<https://www.galerimedika.com/blog/Review-Timbangan-Omorn-HBF-214-Alat-Ukur-Komposisi-Tubuh>

- Loliana, N., Nadhiroh, S. R. (2015). Asupan dan Kecukupan Gizi antara Remaja Obesitas dengan Non Obesitas. *Media Gizi Indonesia*, 10(2), 141–145. <https://doi.org/10.20473/mgi.v10i2.141-145>
- Loos, R. J. F., Yeo, G. S. H. (2022). The genetics of obesity: from discovery to biology. *Nature Reviews Genetics*, 23(2), 120–133. <https://doi.org/10.1038/s41576-021-00414-z>
- Maharani, Citra., Hastuti, Pramudji., S. (2019). Hubungan Variasi Genetik RS1421085 pada Gen Fat Mass and Obesity-Associated (FTO) dengan Profil lemak Tubuh pada Penderita Obesitas Populasi Etnis Jawa. In *Universitas Gajah Mada* (p. 5). <https://etd.repository.ugm.ac.id/penelitian/detail/174034>
- Maharani, C., Puspasari, A. (2019). Peran Variasi Gen Fto Pada Obesitas. *Jambi Medical Journal*, 7(2), 122–257. <https://core.ac.uk/download/pdf/296946406.pdf>
- Mahmoud, A. M. (2022). An Overview of Epigenetics in Obesity: The Role of Lifestyle and Therapeutic Interventions. *International Journal of Molecular Sciences*, 23(3), 1341. <https://doi.org/10.3390/ijms23031341>
- Mahmoud, R., Kimonis, V., Butler, M. G. (2022). Genetics of Obesity in Humans: A Clinical Review. *International Journal of Molecular Sciences*, 23(19), 11005. <https://doi.org/10.3390/ijms231911005>
- Mainieri, F., La Bella, S., Rinaldi, M., Chiarelli, F. (2023). Rare genetic forms of obesity in childhood and adolescence, a comprehensive review of their molecular mechanisms and diagnostic approach. *European Journal of Pediatrics*, 182(11), 4781–4793. <https://doi.org/10.1007/s00431-023-05159-x>
- Mair, K. M., Gaw, R., MacLean, M. R. (2020). Obesity, estrogens and adipose tissue dysfunction – implications for pulmonary arterial hypertension. *Pulmonary Circulation*, 10(3). <https://doi.org/10.1177/2045894020952023>
- Manore, M., Larson-Meyer, D., Lindsay, A., Hongu, N., Houtkooper, L. (2017). Dynamic Energy Balance: An Integrated Framework for Discussing Diet and Physical Activity in Obesity Prevention—Is it More than Eating Less and Exercising More? *Nutrients*, 9(8), 905. <https://doi.org/10.3390/nu9080905>
- Marks, G. N. (2017). The Contribution of Genes and the Environment to Educational and Socioeconomic Attainments in Australia. *Twin Research and Human Genetics*, 20(4), 281–289. <https://doi.org/10.1017/thg.2017.32>
- Martins, P. C., Alves Junior, C. A. S., Silva, A. M., Silva, D. A. S. (2023). Phase angle and body composition: A scoping review. *Clinical Nutrition ESPEN*, 56, 237–250. <https://doi.org/10.1016/j.clnesp.2023.05.015>

- Mayoral, L. P. C., Andrade, G. M., Mayoral, E. . P. C., Huerta, Teresa Hernandez; Canseco, Socorro Pina., Canales Francisco.J.Rodal., et al. (2020). Obesity subtypes, related biomarkers & heterogeneity. *Indian J Med Res* 151, January 2020, Pp 11-21. <https://doi.org/10.4103/ijmr.IJMR>
- McHugh, M. L. (2013). The Chi-square test of independence. *Biochemia Medica*, 143–149. <https://doi.org/10.11613/BM.2013.018>
- Merra, G., Gualtieri, P., Cioccoloni, G., Falco, S., Bigioni, G., Tarsitano, M.G., et al. (2020). FTO rs9939609 influence on adipose tissue localization in the Italian population. In *European Review for Medical and Pharmacological Sciences* (Vol. 24, Issue 6, pp. 3223–3235). https://doi.org/https://doi.org/10.26355/eurev_202003_20689
- Mohammed, I., Haris, B., Barazengi, T. A., Vasudeva, D., Tomei, Sara., et al. (2023). Understanding the Genetics of Early-Onset Obesity in a Cohort of Children From Qatar. In *The Journal of Clinical Endocrinology Metabolism* (Vol. 108, Issue 12, pp. 3201–3213). <https://doi.org/10.1210/clinem/dgad366>
- Monteiro, T. M., Katz, L., Bento, S. F., Amorim, M. M., Moriel, P. C., Pacagnella, R. C. (2019). Reasons given by pregnant women for participating in a clinical trial aimed at preventing premature delivery: a qualitative analysis. *BMC Pregnancy and Childbirth*, 19(1), 97. <https://doi.org/10.1186/s12884-019-2240-8>
- Nagrani, R., Foraita, R., Gianfagna, F., Iacoviello, L., Marild, S., Michels, N., et al. (2020). Common genetic variation in obesity, lipid transfer genes and risk of Metabolic Syndrome: Results from IDEFICS/I.Family study and meta-analysis. *Scientific Reports*, 10(1), 7189. <https://doi.org/10.1038/s41598-020-64031-2>
- Nasir, A., Bullo, M. M. H., Ahmed, Z., Imtiaz, A., Yaqoob, E., Safdar, M., et al. (2020). Nutrigenomics: Epigenetics and cancer prevention: A comprehensive review. *Critical Reviews in Food Science and Nutrition*, 60(8), 1375–1387. <https://doi.org/10.1080/10408398.2019.1571480>
- National Cancer Institute. (2017). *24-hour Dietary Recall (24HR) At a Glance*. <https://dietassessmentprimer.cancer.gov/profiles/recall/>
- Nicolaidis, S. (2019). Environment and obesity. *Metabolism*, 100, 153942. <https://doi.org/10.1016/j.metabol.2019.07.006>
- Novelli, G., Cassadonte, C., Sbraccia, P., Biancolella, M. (2023). Genetics: A Starting Point for the Prevention and the Treatment of Obesity. *Nutrients*, 15(12), 2782. <https://doi.org/10.3390/nu15122782>
- Nurhasanah., Pardede, I. T., Ulfah. (2022). Hubungan antara polimorfisme gen Fat Mass Obesity Associated (FTO) rs9939609 dengan persentase lemak tubuh pada dewasa muda dengan obesitas sentral. In *Jurnal Kedokteran Syiah Kuala*

(Vol. 22, Issue 4, pp. 241–248). Jurnal Kedokteran Syiah Kuala.
<https://doi.org/10.24815/jks.v22i4.23391>

Okati-Aliabad, H., Ansari-Moghaddam, A., Kargar, S., Jabbari, N. (2022). Prevalence of Obesity and Overweight among Adults in the Middle East Countries from 2000 to 2020: A Systematic Review and Meta-Analysis. *Journal of Obesity*, 2022, 1–18. <https://doi.org/10.1155/2022/8074837>

Parmar, R.M., can, A. S. (2023). *Physiology, Appetite And Weight Regulation - StatPearls - NCBI Bookshelf*. StatPearls [Internet]. <https://www.ncbi.nlm.nih.gov/books/NBK574539/>

Parveen, S., Khan, S., Ahsan, H., Manger, P. T., Gupta, B., Alam, R. (2022). Fat mass and Obesity Associated (FTO) gene and polycystic ovary syndrome: Insight into pathogenesis and association with insulin resistance. *Human Nutrition Metabolism*, 30, 200174. <https://doi.org/10.1016/j.hnm.2022.200174>

Pausova, Z., Syme, C., Abrahamowicz, M., Xiao, Y., Leonard, G. T., Perron, M., et al. (2009). A Common Variant of the FTO Gene Is Associated With Not Only Increased Adiposity but Also Elevated Blood Pressure in French Canadians. *Circulation: Cardiovascular Genetics*, 2(3), 260–269. <https://doi.org/10.1161/CIRCGENETICS.109.857359>

Penzias, A., Azziz, R., Bendikson, K., Falcone, T., Hansen, K., Hill, M., et al. (2021). Obesity and reproduction: a committee opinion. *Fertility and Sterility*, 116(5), 1266–1285. <https://doi.org/10.1016/j.fertnstert.2021.08.018>

Perdomo, C. M., Cohen, R. V., Sumithran, P., Clément, K., Frühbeck, G. (2023). Contemporary medical, device, and surgical therapies for obesity in adults. In *The Lancet* (Vol. 401, Issue 10382, pp. 1116–1130). [https://doi.org/10.1016/S0140-6736\(22\)02403-5](https://doi.org/10.1016/S0140-6736(22)02403-5)

Ponce-Gonzalez, J. G., Martínez-Ávila, Á., Velázquez-Díaz, D., Perez-Bey, A., Gómez-Gallego, F., Marín-Galindo, A., et al. (2023). Impact of the FTO Gene Variation on Appetite and Fat Oxidation in Young Adults. *Nutrients*, 15(9), 2037. <https://doi.org/10.3390/nu15092037>

Popović, A.-M., Huđek Turković, A., Žuna, K., Bačun-Družina, V., Rubelj, I., Matovinović, M. (2022). FTO Gene Polymorphisms at the Crossroads of Metabolic Pathways of Obesity and Epigenetic Influences. *Food Technology and Biotechnology*, 61(1), 14–26. <https://doi.org/10.17113/ftb.61.01.23.7594>

Pratiwi, D., Sidartha, M., Wiyarta, E., Agustinus Harimawan, I. W., Lestari, N. M. D. A., Kim, B., et. (2025). Comparison of the risk of obesity in the FTO rs9939609 genotype in a multiethnic group in Asia systematic review and meta-analysis. *Frontiers in Medicine*, 12. <https://doi.org/10.3389/fmed.2025.1522318>

- Przybyłowska, A. J., Plaksej, J. K., Kolačkov, K., Zembska, A., Halupczok-Żyła, J., Rolla, M., Et. (2023). FTO Gene Polymorphisms and Their Roles in Acromegaly. *International Journal of Molecular Sciences*, 24(13), 10974. <https://doi.org/10.3390/ijms241310974>
- Purnell, J. Q. (2023). *Definitions, Classification, and Epidemiology of Obesity - Endotext - NCBI Bookshelf*. Endotext [Internet]. <https://www.ncbi.nlm.nih.gov/books/NBK279167/>
- Qi, Q., Downer, M. K., Kilpeläinen, T. O., Taal, H. R., Barton, S. J., Ntalla, I., et al. (2015). Dietary Intake, FTO Genetic Variants, and Adiposity: A Combined Analysis of Over 16,000 Children and Adolescents. *Diabetes*, 64(7), 2467–2476. <https://doi.org/10.2337/db14-1629>
- Rachma, R. A., Mahmudiono, T. (2023). Hubungan Faktor Genetik dan Asupan Energi dengan Kejadian Obesitas. *Media Gizi Kesmas*, 12, 1002–1006. <https://doi.org/10.20473/mgk.v12i2.2023.1002-1006>
- Ranzenhofer, L. M., Mayer, L. E. S., Davis, H. A., Maday, H. K. M., McInerney, H., Al, E. (2019). The FTO Gene and Measured Food Intake in 5- to 10-Year-Old Children Without Obesity. In *Obesity* (Vol. 27, Issue 6, pp. 1023–1029). <https://doi.org/10.1002/oby.22464>
- Rohde, K., Keller, M., la Cour Poulsen, L., Blüher, M., Kovacs, P., Böttcher, Y. (2019). Genetics and epigenetics in obesity. *Metabolism*, 92, 37–50. <https://doi.org/10.1016/j.metabol.2018.10.007>
- Roy, B., Ghosh, S., Sathain, B., Banerjee, I. (2018). Genetic basis of obesity: a review. *Journal of Biomedical Sciences*, 3(2), 24–28. <https://doi.org/10.3126/jbs.v3i2.18921>
- Sabah, Sabah.Al., Haddad, Eliana Al., Jumaa, Taleb., Abbad, Jasim. Al., Salam, Fareed., et al. (2020). Results from the first Kuwait National Bariatric Surgery Report. In *BMC Surgery* (Vol. 20, Issue 1), <https://doi.org/10.1186/s12893-020-00946-x>
- Saber-Ayad, M., Manzoor, S., Radwan, H., Hammoudeh, S., Wardeh, R., Ashraf, A., et al. (2019). The FTO genetic variants are associated with dietary intake and body mass index amongst Emirati population. *PLOS ONE*, 14(10), e0223808. <https://doi.org/10.1371/journal.pone.0223808>
- Samadhi, N., Wijaya, A. (2016). *Less Beef is Better for Us*. The Jakarta Post. <https://www.thejakartapost.com/academia/2016/06/22/less-beef-is-better-for-us.html>
- Sanghavi, K., Feero, W. G., Mathews, D. J. H., Prince, A. E. R., Price, L. L., Liu, E. T., et al. (2021). Employees' Views and Ethical, Legal, and Social Implications Assessment of Voluntary Workplace Genomic Testing. *Frontiers in Genetics*, 12. <https://doi.org/10.3389/fgene.2021.643304>

- Santos, J. L., Cortés, V. (2020). Genetics of Body Composition. In *Principles of Nutrigenetics and Nutrigenomics* (pp. 167–173). Elsevier. <https://doi.org/10.1016/B978-0-12-804572-5.00021-5>
- Saraswati, B. D., Yunaini, L., Suryandari, D. A. (2024). Association of fat mass and obesity associate (FTO) single nucleotide polymorphisms in the first intron and obesity risk among Indonesians. *Indonesian Journal of Biomedicine and Clinical Sciences*, 56(01), 82–96. <https://doi.org/10.22146/inajbcs.v56i01.11771>
- Sastroasmoro, S., Ismael, S. (2011). *Dasar–dasar Metodologi Penelitian Klinis* (4th ed., Vol. 4). Sagung Seto.
- Schnabl, K., Li, Y., U-Din, M., Klingenspor, M. (2021). Secretin as a Satiation Whisperer with the Potential to Turn into an Obesity-curbing Knight. In *Endocrinology (United States)* (Vol. 162, Issue 9). <https://doi.org/10.1210/endocr/bqab113>
- Shaker, A., Shekari, S., Zeinalabedini, M., Salimi, Z., Roumi, Z., Mobarakeh, K. A., et al. (2023). Role of rs9939506 polymorphism of FTO gene in resistance to eating in male adolescents. *BMC Pediatrics*, 23(1), 486. <https://doi.org/10.1186/s12887-023-04310-9>
- Singh, R., Maurya, G. K. (2022). Heterozygote Superiority. In *Encyclopedia of Animal Cognition and Behavior* (pp. 3108–3112). Springer International Publishing. https://doi.org/10.1007/978-3-319-55065-7_63
- Sombra, L.R.S., Anastasopoulouaopoulou, C. (2022). *Pharmacologic Therapy For Obesity* - StatPearls - NCBI Bookshelf. <https://www.ncbi.nlm.nih.gov/books/NBK562269/>
- Soysa, A. K. H. d., Martins, C., Langaas, M., Grill, V., Mostad, I. L. (2023). Exploring Dietary Intake in Adults with Severe Obesity and Associations with the FTO rs9939609 Genotypes. *Current Developments in Nutrition*, 7(2), 100032. <https://doi.org/https://doi.org/10.1016/j.cdnut.2023.100032>
- Stahl, J.M., Sandeep, M. (2023). *Obesity Surgery Indications And Contraindications* - StatPearls - NCBI Bookshelf. <https://www.ncbi.nlm.nih.gov/books/NBK513285/>
- Susmiati. (2017). *Hubungan Antara Polimorfisme Gen Fat Mass Obesity Associated (Fto) Rs 9939609, Asupan Makanan, Aktifitas Fisik Dan Mikrobiota Usus Dengan Obesitas Pada Remaja*. 4, 9–15.
- Susmiati, Lipoeto, N. I., Surono, I. S., Jamsari, J. (2018). Association of fat mass and obesity-associated rs9939609 polymorphisms and eating behaviour and food preferences in adolescent minangkabau girls. *Pakistan Journal of Nutrition*, 17(10), 471–479. <https://doi.org/10.3923/pjn.2018.471.479>
- Swinburn, B. A., Kraak, V. I., Allender, S., Atkins, V. J., Baker, P. I., Bogard, J.

- R., et al. (2019). The Global Syndemic of Obesity, Undernutrition, and Climate Change: The Lancet Commission report. *The Lancet*, 393(10173), 791–846. [https://doi.org/10.1016/S0140-6736\(18\)32822-8](https://doi.org/10.1016/S0140-6736(18)32822-8)
- Tan, J. T., Dorajoo, R., Seielstad, M., Sim, X. L., Ong, Rick Twee Hee., et al. (2008). FTO variants are associated with obesity in the chinese and malay populations in Singapore. In *Diabetes* (Vol. 57, Issue 10, pp. 2851–2857). <https://doi.org/10.2337/db08-0214>
- Tirthani, Ekta., Said, Mina.S., Rehman, A. (2023). Genetics and Obesity. In *StatPearls [Internet]*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK573068/>
- Tung, Y. C. L., Yeo, G. S. H., O’Rahilly, S., Coll, A. P. (2014). Obesity and FTO: Changing focus at a complex locus. In *Cell Metabolism* (Vol. 20, Issue 5, pp. 710–718). <https://doi.org/10.1016/j.cmet.2014.09.010>
- Unicef. (2022). *Indonesia: Angka orang yang kelebihan berat badan dan obesitas naik di semua kelompok usia dan pendapatan*. Unicef Indonesia. https://www.unicef.org/indonesia/id/press-releases/indonesia-angka-orang-yang-kelebihan-berat-badan-dan-obesitas-naik-di-semua-kelompok?gclid=Cj0KCQjw4omaBhDqARIsADXULuXSUIfoaSxsAli7DDczKMNx-hXv8AsD0IjB_wP9GL3IBLal7fWoTWUaAkPYEALw_wcB
- Vick, L. V, Canter, R. J., Monjaze, A. M., Murphy, W. J. (2023). Multifaceted effects of obesity on cancer immunotherapies: Bridging preclinical models and clinical data. *Seminars in Cancer Biology*, 95, 88–102. <https://doi.org/https://doi.org/10.1016/j.semcancer.2023.07.004>
- Vimaleswaran, K. S., Li, S., Zhao, J. H., Luan, J., Bingham, S. A., Khaw, K. T., et al. (2009). Physical activity attenuates the body mass index-increasing influence of genetic variation in the FTO gene. In *American Journal of Clinical Nutrition* (Vol. 90, Issue 2, pp. 425–428). <https://doi.org/10.3945/ajcn.2009.27652>
- Vliet-Ostaptchouk, J. V. van., Snieder, H., Lagou, V. (2012). Gene Lifestyle Interactions in Obesity. *Current Nutrition Reports*, 1(3), 184–196. <https://doi.org/10.1007/s13668-012-0022-2>
- Vos, N., Oussaada, S. M., Cooman, M. I., Kleinendorst, L., ter Horst, K. W., Hazebroek, E. J., Romijn, J. A., Serlie, M. J., Mannens, M. M. A. M., van Haelst, M. M. (2020). Bariatric Surgery for Monogenic Non-syndromic and Syndromic Obesity Disorders. *Current Diabetes Reports*, 20(9), 44. <https://doi.org/10.1007/s11892-020-01327-7>
- Wondmkun, Y. T. (2020). Obesity, insulin resistance, and type 2 diabetes: Associations and therapeutic implications. In *Diabetes, Metabolic Syndrome and Obesity* (Vol. 13, pp. 3611–3616). <https://doi.org/10.2147/DMSO.S275898>

- World Health Organization. (2021). *Indonesia: Obesity rates among adults double over past two decades*. <https://www.who.int/indonesia/news/detail/04-03-2021-indonesia-obesity-rates-among-adults-double-over-past-two-decades>
- World Health Organization. (2023). *Obesity*. https://www.who.int/health-topics/obesity/#tab=tab_1
- Wulan, S. N., Westerterp, K. R., Plasqui, G. (2010). Ethnic differences in body composition and the associated metabolic profile: A comparative study between Asians and Caucasians. *Maturitas*, 65(4), 315–319. <https://doi.org/10.1016/j.maturitas.2009.12.012>
- Xiong, A., He, X., Liu, S., Ran, Q., Zhang, L., Wang, J., Jiang, M., Niu, B., Xiong, Y., Li, G. (2024). Oxidative stress-mediated activation of FTO exacerbates impairment of the epithelial barrier by up-regulating IKBKB via N6-methyladenosine-dependent mRNA stability in asthmatic mice exposed to PM2.5. *Ecotoxicology and Environmental Safety*, 272, 116067. <https://doi.org/https://doi.org/10.1016/j.ecoenv.2024.116067>
- Xu, Z.-Y., Jing, X., Xiong, X.-D. (2023). Emerging Role and Mechanism of the FTO Gene in Cardiovascular Diseases. *Biomolecules*, 13(5), 850. <https://doi.org/10.3390/biom13050850>
- Yanti, R., Nova, M., Rahmi, A. (2021). Asupan Energi, Asupan Lemak, Aktivitas Fisik Dan Pengetahuan, Berhubungan dengan Gizi Lebih pada Remaja SMA. *JURNAL KESEHATAN PERINTIS (Perintis's Health Journal)*, 8(1), 45–53. <https://doi.org/10.33653/jkp.v8i1.592>
- Yin, D., Li, Y., Liao, X., Tian, D., Xu, Y., Zhou, C., et al. (2023). FTO : a critical role in obesity and obesity-related diseases. *British Journal of Nutrition*, 130(10), 1657–1664. <https://doi.org/10.1017/S0007114523000764>
- Yu, H., Armstrong, N., Pavela, G., Kaiser, K. (2023). *Sex and Race Differences in Obesity-Related Genetic Susceptibility and Risk of Cardiometabolic Disease in Older US Adults - PMC*.
- Yulizawati, Yulika, M. (2022). Mengenal fase menopause. In *Jurnal Ilmiah Kedokteran Wijaya Kusuma*. <http://repo.unand.ac.id/47678/>
- Zhang, X., Wei, L. H., Wang, Y., Xiao, Y., Liu, Jun., et al. (2019). Structural insights into FTO's catalytic mechanism for the demethylation of multiple RNA substrates. In *Proceedings of the National Academy of Sciences of the United States of America* (Vol. 116, Issue 8, pp. 2919–2924). <https://doi.org/10.1073/pnas.1820574116>
- Ziegel, E. R., Lemeshow, S., Hosmer, D., Klar, J., Luanga, S. (1994). Adequacy of Sample Size in Health Studies. *Technometrics*, 36(2), 232. <https://doi.org/10.2307/127026>