

PREVALENCE OF NON-COMMUNICABLE DISEASE AMONG ADULTS IN TONGA

Autumn Vaitohi

FOOTNOTES

1. "Defining Adult Overweight & Obesity | Overweight & Obesity," *Centers for Disease Control and Prevention*, accessed November 25, 2022, <https://www.cdc.gov/obesity/adult/defining.html>.
2. "Healthy Diet," *World Health Organization*, April 29, 2020, <https://www.who.int/news-room/fact-sheets/detail/healthy-diet>.
3. "Health Promotion," *World Health Organization*, accessed March 28, 2022, <https://www.who.int/westernpacific/health-topics/health-promotion>.
4. "What is Chiropractic?" *Logan Chiropractic*, accessed November 25, 2022, <https://www.premierchiropracticclinic.com/what-is-chiropractic/>.
5. "Ischemic Heart Disease," in *Cardiovascular Disability: Updating the Social Security Listings* (Washington, DC: National Academies Press, 2010), <https://www.ncbi.nlm.nih.gov/books/NBK209964/>.
6. "How Mutton Flaps are Killing Tonga," *BBC*, accessed January 18, 2016, <https://www.bbc.com/news/magazine-35346493>.
7. "Noncommunicable Diseases," *World Health Organization*, September 16, 2022, <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>.
8. "Triglycerides," *MedlinePlus*, National Library of Medicine, accessed November 25, 2022, <https://medlineplus.gov/triglycerides.html>.
9. "Type 2 Diabetes - Symptoms and Causes," *Mayo Clinic*, accessed November 25, 2022, <https://www.mayoclinic.org/diseases-conditions/type-2-diabetes/symptoms-causes/syc-20351193>.
10. "Noncommunicable Diseases," World Health Organization.
11. *Kingdom of Tonga NCD Risk Factors Steps Report (2014)* (Suva, Fiji: World Health Organization, October 2014), <https://cdn.who.int/media/docs/default-source/ncds/ncd-surveillance/data-reporting/tonga/steps/2012-tonga-steps-report.pdf>.
12. V. Matoto et al., "Burden and Spectrum of Disease in People with Diabetes in Tonga," *Public Health Action* 4, no. 1 (June): s44–s49, <https://doi.org/10.5588/pha.13.0080>.
13. "Kingdom of Tonga NCD Risk Factors Steps Report (2014)," World Health Organization.
14. "The Kingdom of Tonga Health System Review," *Health Systems in Transition* 5, no. 6 (2015), https://apps.who.int/iris/bitstream/handle/10665/208225/9789290617198_eng.pdf?sequence=1&isAllowed=y.
15. "Obesity and Overweight," *World Health Organization*, June 9, 2021, <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>.
16. *Tonga Risk Factors Steps Report 2017 in Collaboration with World Health Organization (WHO)* (Suva, Fiji: World Health Organization, 2017), http://www.health.gov.to/drupal/sites/default/files//public_docs/Tonga%20STEPS%202017.pdf.
17. Mike Evans et al., "Globalization, Diet, and Health: An Example from Tonga," *Bulletin of the World Health Organization* 79, no. 9 (2001): 856–862, <https://pubmed.ncbi.nlm.nih.gov/11584734/>.

18. *Hala Fononga Ki Ha Tonga Mo'ui Lelei (Path to Good Health)* (Tonga Health, 2016), <https://www.dfat.gov.au/sites/default/files/tonga-national-non-communicable-disease-strategy-2015-20.pdf>.
19. Sophia Lin et al., "Diabetes and Obesity Trends in Tonga Over 40 years," *Asia Pacific Journal of Public Health* 28, no. 6 (2016): 475–485, <https://doi.org/10.1177/1010539516645156>.
20. Nicola L. Hawley and Stephen T. McGarvey, "Obesity and Diabetes in Pacific Islanders: The Current Burden and the Need for Urgent Action," *Current Diabetes Reports* 15, no. 5 (2015): 1–10, <https://doi.org/10.1007/s11892-015-0594-5>.
21. "The Kingdom of Tonga Health System Review," World Health Organization.
22. Evans et al., "Globalization, Diet, and Health: An Example from Tonga."
23. Ibid.
24. Shoko Konishi et al., "Energy and Nutrient Intake of Tongan Adults Estimated by 24-Hour Recall: The Importance of Local Food Items," *Ecology of Food and Nutrition* 50, no. 4 (2011): 337–350, <https://doi.org/10.1080/03670244.2011.586315>.
25. Evans et al., "Globalization, Diet, and Health: An Example from Tonga."
26. *Noncommunicable Diseases Progress Monitor 2020* (Switzerland: World Health Organization, June 12, 2020), <https://www.who.int/publications/i/item/9789240000490>.
27. "Countries Ranked by UHC Service Coverage Index," *Index Mundi*, accessed November 26, 2022, <https://www.indexmundi.com/facts/indicators/SH.UHC.SRVS.CV.XD/rankings>.
28. *Tonga Demographic and Health Survey 2012 Final Report* (Noumea, New Caledonia: Secretariat of the Pacific Community, January 2014), 155, https://spccfpstore1.blob.core.windows.net/digitalibrary-docs/files/79/79b2571ec6acc68abcd0f0c34439761b.pdf?sv=2015-12-11&sr=b&sig=q7eCIXb03CQvUtE2R29jG6%2B8Tua0it88q4kwbYucBWM%3D&se=2023-05-16T20%3A07%3A25Z&sp=r&rsc=public%2C%20max-age%3D864000%2C%20max-stale%3D86400&rsc=application%2Fpdf&rscd=inline%3B%20filename%3D%22Tonga_Demographic_and_Health_Survey_DHS_Report_2012.pdf%22.
29. Evans et al., "Globalization, Diet, and Health: An Example from Tonga."
30. "Healthy Diet," *World Health Organization*, April 29, 2020, <https://www.who.int/news-room/fact-sheets/detail/healthy-diet>.
31. "Malnutrition," *World Health Organization*, April 15, 2020, <https://www.who.int/news-room/questions-and-answers/item/malnutrition>.
32. Mandy Treagus, "Pu'aka Tonga," *M/C Journal* 13, no. 5 (2010), <https://doi.org/10.5204/mcj.287>.
33. "Triglycerides: Why Do They Matter?" *Mayo Clinic*, September 29, 2020, <https://www.mayoclinic.org/diseases-conditions/high-blood-cholesterol/in-depth/triglycerides/art-20048186>.
34. "Healthy Diet," World Health Organization.
35. Majid Ezzati and Elio Riboli, "Behavioral and Dietary Risk Factors for Noncommunicable Diseases," *New England Journal of Medicine* 369, no. 10 (2013): 954–964, <https://doi.org/10.1056/nejmra1203528>.
36. "Healthy Diet," World Health Organization.
37. Konishi et al., "Energy and Nutrient Intake of Tongan Adults Estimated by 24-Hour Recall: The Importance of Local Food Items."
38. Lori Beth Dixon and Nancy D. Ernst, "Choose a Diet That Is Low in Saturated Fat and Cholesterol and Moderate in Total Fat: Subtle Changes to a Familiar Message," *The Journal of Nutrition* 131, no. 2 (2001): 510S–526S, <https://doi.org/10.1093/jn/131.2.510s>.
39. Gaia Cottino, "Obesity 'Epidemic' in the Kingdom of Tonga," *Journal Des Anthropologues*, 138–139 (October 2014): 65–87, <https://doi.org/10.4000/jda.4416>.
40. Konishi et al., "Energy and Nutrient Intake of Tongan Adults Estimated by 24-Hour Recall: The Importance of Local Food Items."

41. Ibid.
42. Mandy Treagus, "Pu'aka Tonga."
43. Sarah Klemm, "How Many Calories Do Adults Need?" *Eat Right*, July 30, 2019, <https://www.eatright.org/food/nutrition/dietary-guidelines-and-myplate/how-many-calories-do-adults-need#:~:text=Go%20with%20an%20Estimate%20Calorie%20needs%20for%20adult.>
44. "Triglycerides," MedlinePlus.
45. "Noncommunicable Diseases," World Health Organisation.
46. *WHO Report on the Global Tobacco Epidemic, 2021 Country Profile Tonga* (World Health Organization, 2021), https://cdn.who.int/media/docs/default-source/country-profiles/tobacco/who_rgte_2021_tonga.pdf.
47. "How Smoking Affects Heart Health," *FDA*, accessed December 2, 2022, <https://www.fda.gov/tobacco-products/health-effects-tobacco-use/how-smoking-affects-heart-health>.
48. "Harms of Cigarette Smoking and Health Benefits of Quitting," *National Cancer Institute*, accessed November 26, 2022, <https://www.cancer.gov/about-cancer/causes-prevention/risk/tobacco/cessation-fact-sheet>.
49. "WHO EMRO | Tobacco Use | Causes | NCDs," *World Health Organization*, accessed November 26, 2022, <http://www.emro.who.int/noncommunicable-diseases/causes/tobacco-use.html>.
50. "Tobacco," *World Health Organization*, May 24, 2022, <https://www.who.int/news-room/fact-sheets/detail/tobacco#:~:text=Overview%20The%20tobacco%20epidemic%20is%20one%20of%20the.>
51. "WHO Report on the Global Tobacco Epidemic, 2021 Country Profile Tonga," World Health Organization.
52. "Tonga Demographic and Health Survey 2012 Final Report," Secretariat of the Pacific Community.
53. Ibid.
54. "Low Birth Weight," *World Health Organization*, accessed November 27, 2022, <https://www.who.int/data/nutrition/nlis/info/low-birth-weight>.
55. Charles D. Parry, Jayadeep Patra, and Jürgen Rehm, "Alcohol Consumption and Non-Communicable Diseases: Epidemiology and Policy Implications," *Addiction* 106, no. 10 (2011): 1718–1724, <https://doi.org/10.1111/j.1360-0443.2011.03605.x>.
56. "Alcohol's Effects on the Body," *National Institute on Alcohol Abuse and Alcoholism*, accessed November 27, 2022, <https://www.niaaa.nih.gov/alcohols-effects-health/alcohols-effects-body#:~:text=Alcohol%20causes%20the%20pancreas%20to%20produce%20toxic%20substances.>
57. "Tonga Risk Factors Steps Report 2017 in Collaboration with World Health Organization (WHO)," World Health Organization.
58. Ibid.
59. "Alcohol's Effects on the Body," National Institute on Alcohol Abuse and Alcoholism.
60. "WHO EMRO | Harmful Use of Alcohol | Causes | NCDs," *World Health Organization*, accessed November 27, 2022, <http://www.emro.who.int/noncommunicable-diseases/causes/harmful-use-of-alcohol.html>.
61. "Homeostasis," *Dictionary.com*, accessed November 27, 2022, <https://www.dictionary.com/browse/homeostasis>.
62. J. Alfredo Martinez, "Body-Weight Regulation: Causes of Obesity," *Proceedings of the Nutrition Society* 59, no. 3 (2000): 337–345, <https://doi.org/10.1017/s0029665100000380.1>
63. Soana Muimuiheata, *Nutrient Intake in the Kingdom of Tonga* (University of New South Wales, March 2007), <http://dx.doi.org/https://doi.org/10.26190/unsworks/23354>.

64. "Most Overweight or Obese Countries Worldwide," *Statista*, accessed June 8, 2022, <https://www.statista.com/statistics/308558/percentage-of-overweight-or-obese-in-selected-countries/>.
65. Toakase Fakakovikaetau et al., *Obesity, Healthy Eating and Physical Activity Health Trends in Tonga and the Implications for the Prevention and Control of NCDs* (TongaHealth), accessed May 18, 2022, https://www.tongahealth.org/_files/ugd/5ce0eb_897bdfbb23314be0be745683b5c65ce5.pdf.
66. Hala Fononga End-of-Term Review of Tonga National Strategy to Prevent and Control NCDs 2010–2015 (Tonga Health, August 2015), https://www.tongahealth.org/_files/ugd/5ce0eb_edfe731b64624baf994eee0b9d53338d.pdf.
67. Michelle Kermode et al., *Public Health Evidence Related to Obesity in Tonga a Literature Review* (Tonga Health, April 2015), https://www.tongahealth.org/_files/ugd/5ce0eb_b5d5faed8bd14675bbcaa0eec64ba9ce.pdf.
68. Toakase Fakakovikaetau et al., "Obesity, Healthy Eating and Physical Activity Health Trends in Tonga and the Implications for the Prevention and Control of NCDs."
69. "Countries Ranked by Diabetes Prevalence (% of Population Ages 20 to 79)," *Index Mundi*, accessed November 27, 2022, <https://www.indexmundi.com/facts/indicators/sh.sta.diab.zs/rankings>.
70. Kerin O'Dea, "Overview of the Thrifty Genotype Hypothesis," *Asia Pacific Journal of Clinical Nutrition* 4 (1995): 339–340, <https://apjcn.nhri.org.tw/server/apjcn/4/4/339.htm>.
71. Sean Myles et al., "Testing the Thrifty Gene Hypothesis: The Gly482Ser Variant in PPARGC1A is Associated with BMI in Tongans," *BMC Medical Genetics* 12, no. 1 (2011): 1–7, <https://doi.org/10.1186/1471-2350-12-10>.
72. Ibid.
73. Toakase Fakakovikaetau et al., "Obesity, Healthy Eating and Physical Activity Health Trends in Tonga and the Implications for the Prevention and Control of NCDs."
74. Juliana C. N. Chan et al., "Diabetes in the Western Pacific Region--Past, Present and Future," *Diabetes Research and Clinical Practice* 103, no. 2 (2014): 244–255, <https://doi.org/10.1016/j.diabres.2013.11.012>.
75. Sean Myles et al., "Testing the Thrifty Gene Hypothesis: The Gly482Ser Variant in PPARGC1A is Associated with BMI in Tongans."
76. "Genetics of Diabetes | ADA," *Diabetes*, accessed August 30, 2022, <https://diabetes.org/diabetes/genetics-diabetes#:~:text=Your%20child%27s%20risk>.
77. "Family History and Inherited Cancer Genes," *Cancer Research UK*, September 3, 2018, www.cancerresearchuk.org/about-cancer/causes-of-cancer/inherited-cancer-genes-and-increase-d-cancer-risk/family-history-and-inherited-cancer-genes.
78. *Situation Analysis of Children in Tonga* (Suva, Fiji: UNICEF, Pacific Office, December 2017), <https://www.unicef.org/pacificislands/media/1251/file/Situation-Analysis-of-Children-Tonga.pdf>.
79. Loma Veatupu et al., "Me'akai in Tonga: Exploring the Nature and Context of the Food Tongan Children Eat in Ha'apai Using Wearable Cameras," *International Journal of Environmental Research and Public Health* 16, no. 10 (2019): 1681, <https://doi.org/10.3390/ijerph16101681>.
80. *Tonga - Global School-Based Student Health Survey 2017* (Tonga: Ministry of Health, November 2017), <https://extranet.who.int/ncdsmicrodata/index.php/catalog/653/related-materials>.
81. Ibid.
82. Ibid.
83. Soana Muimuiheata, "Nutrient Intake in the Kingdom of Tonga."
84. "Avoiding Amputation: Jump Feet First into Diabetes Foot Care," *Mayo Clinic*, accessed August 10, 2022.

- <https://www.mayoclinic.org/diseases-conditions/diabetes/in-depth/amputation-and-diabetes/ART-20048262#:~:text=A%20nonhealing%20ulcer%20that%20causes%20severe%20damage%20to.>
85. Matoto et al., "Burden and Spectrum of Disease in People with Diabetes in Tonga."
 86. Brit Larsen, "Tonga - The Diabetes Heavy Weight of the Pacific," *World Diabetes Foundation*, May 8, 2012, <https://www.worlddiabetesfoundation.org/news/tonga-diabetes-heavy-weight-pacific>.
 87. Cesar S. Molina and JimBob Faulk, "Lower Extremity Amputation," Treasure Island (FL), StatPearls Publishing, January 2022, <https://www.ncbi.nlm.nih.gov/books/NBK546594/>.
 88. "Noncommunicable Diseases Progress Monitor 2020," World Health Organization.
 89. "Health Profile Tonga," *World Life Expectancy*, accessed November 27, 2022, www.worldlifeexpectancy.com/country-health-profile/tonga.
 90. Matoto et al., "Burden and Spectrum of Disease in People with Diabetes in Tonga."
 91. Ammar Rashid, Johanna Ralston, and Saba Amjad Kassim Nishtar, *Financing of NCD Prevention in LMICs: Tonga Case Study*, <http://www.heartfile.org/wp-content/uploads/2022/05/TONGA.pdf>.
 92. Ibid.
 93. Ibid.
 94. Ibid.
 95. "Noncommunicable Diseases Progress Monitor 2020," World Health Organization.
 96. "Employment Rate by Age Group," *OECD Data*, accessed November 27, 2022, <https://data.oecd.org/emp/employment-rate-by-age-group.htm>.
 97. Ian Anderson, *The Economic Costs of Noncommunicable Diseases in the Pacific Islands: A Rapid Stocktake of the Situation in Samoa, Tonga, and Vanuatu* (Washington, DC: World Bank, 2013), <http://hdl.handle.net/10986/17851>.
 98. Robert J. Gordon, "A New Method of Estimating Potential Real GDP Growth: Implications for the Labor Market and the Debt/GDP Ratio," *National Bureau of Economic Research* 20423 (August 2014), <https://doi.org/10.3386/w20423>.
 99. Ammar Rashid, Johanna Ralston, and Saba Amjad Kassim Nishtar, "Financing of NCD Prevention in LMICs: Tonga Case Study."
 100. Ibid.
 101. Ibid.
 102. Ibid.
 103. "Management of Noncommunicable Diseases," *World Health Organization*, accessed November 27, 2022, www.who.int/activities/management-of-noncommunicable-diseases.
 104. *Pacific Legislative Framework for Non-Communicable Diseases Future Vision* (Tuvalu: Pacific Heads of Health), https://phd.spc.int/sites/default/files/eventfiles/2021-09/2021%20PHoH%20Oct%20Item%202.3%20Pacific%20Legislative%20Framework%20for%20Non-Communicable%20Diseases%2021Sep2021_0.pdf.
 105. "Pacific Legislative Framework for Non-Communicable Diseases Future Vision," Pacific Heads of Health.
 106. Ibid.
 107. Ibid.
 108. Ibid.
 109. Ibid.
 110. Ibid.
 111. Ibid.
 112. Ibid.
 113. Ibid.

114. "Noncommunicable Diseases," *World Health Organization*, September 16, 2022, www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases.
115. Kate Frazer et al., "Legislative Smoking Bans for Reducing Harms from Secondhand Smoke Exposure, Smoking Prevalence and Tobacco Consumption," *The Cochrane Database of Systematic Reviews* 2, no. 2 (2016): CD005992, <https://doi.org/10.1002/14651858.CD005992.pub3>.
116. "Using Taxation to Address Noncommunicable Diseases," *World Bank*, June 1, 2019, <https://openknowledge.worldbank.org/handle/10986/32063>.
117. *Ibid.*
118. "Pacific Legislative Framework for Non-Communicable Diseases Future Vision," Pacific Heads of Health.
119. Ammar Rashid, Johanna Ralston, and Saba Amjad Kassim Nishtar, "Financing of NCD prevention in LMICs: Tonga Case Study."