The Whole Grain Initiative (WGI) - a global collaboration of research, health, and industry professionals - advocates for the importance of consuming whole grains based on the established scientific consensus of their multiple nutrition, health and associated economic benefits. WGI encourages food policies that include and promote whole grain as one of the positive components of healthier and more sustainable diets [1].

1. Suboptimal diets are the leading cause of premature (<65 years old) and general death, and major contributors to the burden of non-communicable diseases (NCDs) globally. NCDs, including cardiovascular diseases, diabetes, and cancers, account for nearly 90% of deaths and 85% of years lived with disability in the WHO European Region [2]. Among various dietary risks, **a low intake of whole grains has been identified as the second most significant contributor to the global burden of disease** *(Fig.1)***, and the first when considering the number of years lost due to disability or disease-specific mortality** [3].

2. Recent evidence indicates that the consumption of whole-grain foods, including those that some groups classify as ultra-processed (e.g. NOVA classification) such as breads and cereals, is **not associated with an increased risk of multimorbidity of cancer and cardiometabolic diseases** [4]. There is, in fact, evidence revealing that the consumption of cereals (including breakfast cereals), particularly those made from whole grains, is associated with a **significant lower risk of type 2 diabetes and all-cause mortality** [5-6] *(Fig.2).* Collectively, these findings point to an association between a higher intake of whole-grain products, including those that some groups classify as ultra-processed, and **a lower risk of morbidity and mortality from NCDs.**

3. Already a daily consumption of 50g of whole grains has been **linked to significant risk reductions**, such as about 25% for type 2 diabetes, 20% for cardiovascular mortality, 12% for cancer mortality, and 15% for total mortality; however, **this easily attainable level is not even met in 16 out of 27 EU Member States** [7]. This is despite the fact that **a relatively minor increase in whole grain intake could lead to substantial health and economic benefits**, reducing healthcare expenses and minimising lost productivity [8]. Four economic studies [9-12] have been published evaluating the healthcare cost savings impact of increasing whole grain intake. The results of savings in healthcare cost savings were similar and significant for US, Australia, and Finland for the chronic diseases studied

4. The WGI has made significant progress in driving harmonised policy by developing and publishing a global **consensus definition for whole grain as a food ingredient and labelling criteria for whole-grain foods** to contain at least 50% whole-grain ingredients based on dry weight [13-14]. Foods containing 25-50% whole-grain ingredients based on dry weight may still communicate the presence of whole grains but cannot be designated as 'whole-grain' foods/ products. These definition and labelling criteria provide a vital foundation for advancing whole grain consumption.

5. While the European Commission acknowledges the importance of whole grains as a food group [15] **and the European Food Safety Authority (EFSA) emphasises whole grains in its guidance for harmonised front-of-pack nutrition labelling** [16], most of the existing algorithms, such as the Nutri-Score, assign positive points to fibre. This approach overlooks the fact that whole grains provide a combination of fibre and other beneficial compounds, which has been associated to a larger extend than fibre as such with risk reduction of all-cause mortality and NCDs (*Fig.3*) [17-18]. Furthermore, Nutri-Score includes food groups like fruits, vegetables, and nuts but fails to recognise whole grains as a distinct food group.

6. Due to the **retention of the bran, germ, and endosperm from the grain kernel,** whole grains are **high in important nutrients, including** dietary fibre, vitamins, minerals and other beneficial bioactive compounds [19-20]. Refining whole grains significantly reduces the levels of these nutrients and bioactives Increased whole grain consumption is recommended in food-based dietary guidelines worldwide, such as the Nordic Nutrition Recommendations [21], and largely promoted by health organisations, like the World Health organization (WHO) [22], as well as the EAT-Lancet Commission on healthy diets from sustainable food systems [23].

Endorsing a legal definition, dietary intake guidelines, and clear labelling indicators for whole-grain products [24-25] **is essential to make it easier for individuals to identify and include these products into their daily diets** including through the promotion of health benefits via health claims [26]. By fostering further positive dialogues, such as the Danish Public-Private Partnership on Whole Grain [27], we can inspire individuals to embrace whole grains as a vital and enriching component of their everyday meals.

Figure 1 (adapted from [3])

A diet low in whole grains is globally the second greatest risk factor in diet-related mortality rates (just after a diet high in sodium).

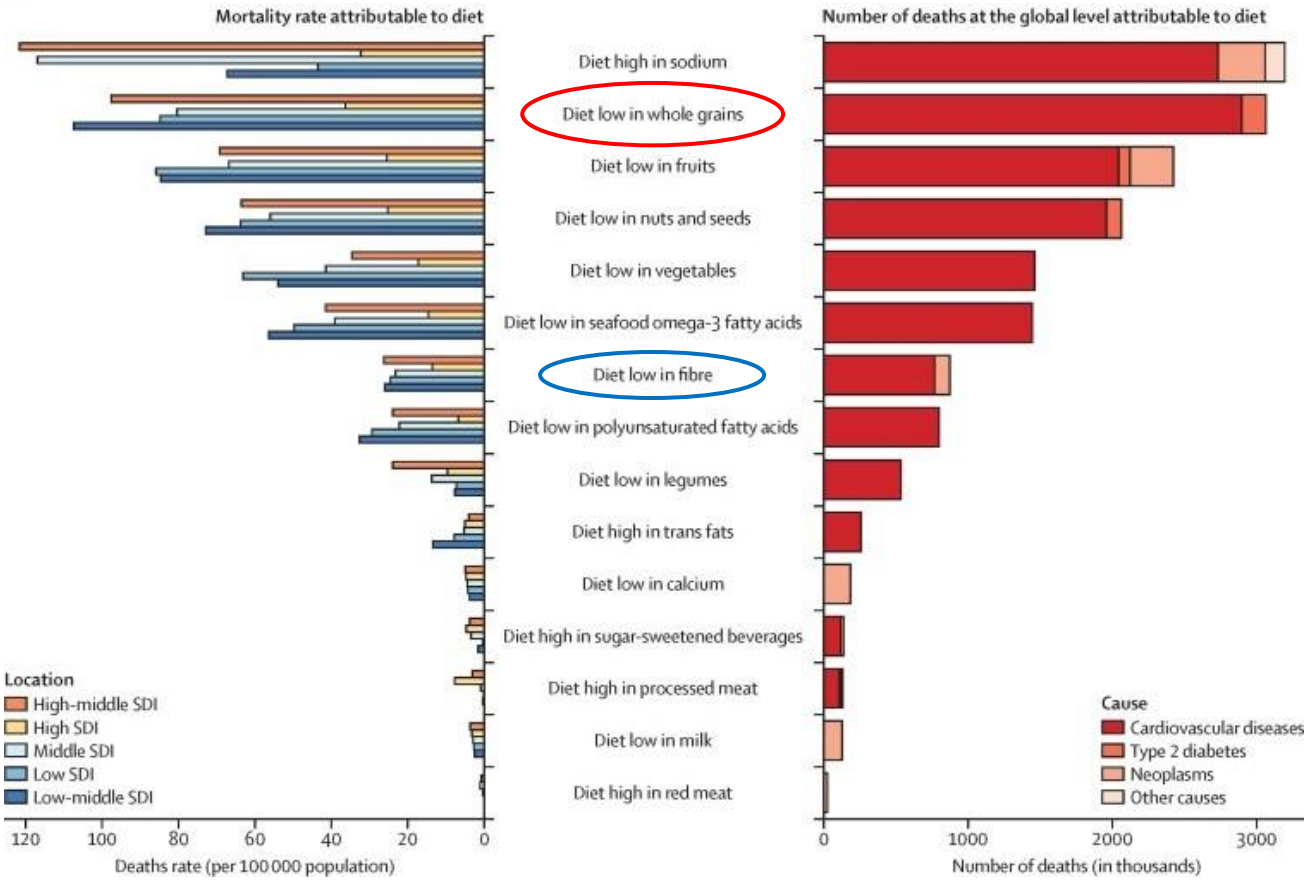


Figure 2 (adapted from [5])

Association of ultra-processed foods with all-cause mortality, multiple countries, 1984-2021.
(a) Highest vs. lowest intake, (b) Statistically significant, (c) Consumers vs. non-consumers, (d) More than 1 drink per day.

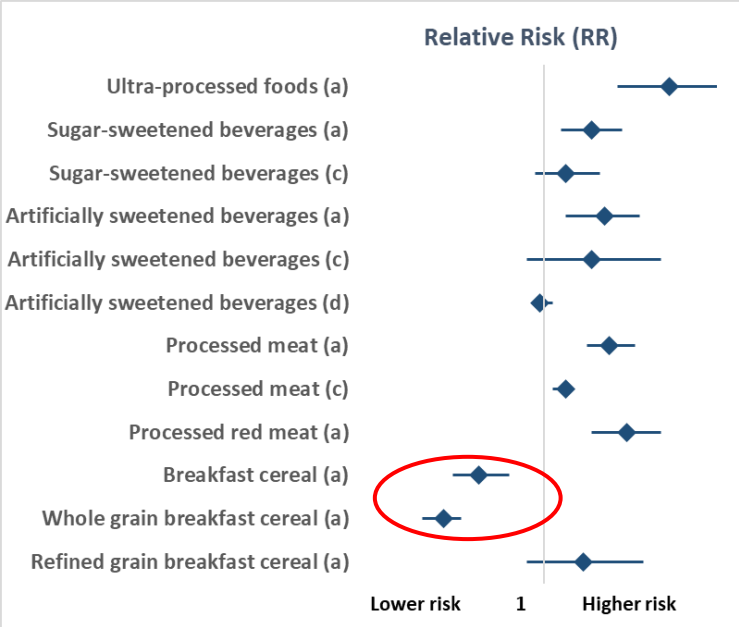
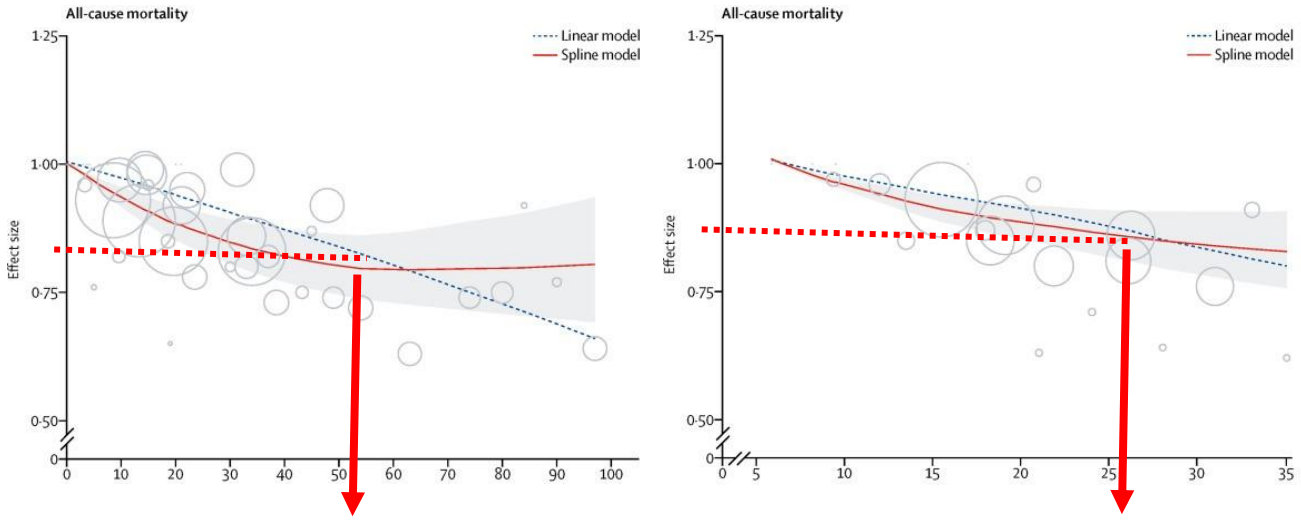


Figure 3 (adapted from [13])

50g whole grain consumption brings various nutrients, fibre, and an equivalent all-cause mortality reduction to intake of 25g of fibre.

Associated with 15% risk reduction in all-cause mortality, consume either:



<u>±50g Whole Grain</u>

(approximately 4-6g fibre depending on the grain)

<u>±25g Fibre</u>

References

(1) Food and Agriculture Organization of the United Nations and World Health Organization (2019). Sustainable healthy diets: guiding principles. https://www.who.int/publications/i/item/9789241516648

(2) World Health Organisation Europe. (2022). Reducing noncommunicable diseases: a signature roadmap for the WHO European Region. https://www.who.int/europe/publications/i/item/WHO-EURO-2022-6620-46386-67147

(3) Afshin A et al. (2019). Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet 393:1958-1972. https://doi.org/10.1016/S0140-6736(19)30041-8

(4) Cordova R et al. (2023). Consumption of ultra-processed foods and risk of multimorbidity of cancer and cardiometabolic diseases: a multinational cohort study. Lancet Reg Health Eur. 35:100771. https://doi.org/10.1016/j.lanepe.2023.100771

(5) Taneri PE et al. (2022). Association between ultra-processed food intake and all-cause mortality: a systematic review and meta-analysis. Am J Epidemiol. 191(7): 1323-1335. https://doi.org/10.1093/aje/kwac039

(6) Chen GC et al. (2016). Whole-grain intake and total, cardiovascular, and cancer mortality: a systematic review and meta-analysis of prospective studies. Am J Clin Nutr. 104(1):164-172. https://doi.org/10.3945/ajcn.115.122432

(7) European Commission (2021). Supporting Policy with scientific evidence, Whole grain intake across European countries. https://knowledge4policy.ec.europa.eu/health-promotion-knowledge-gateway/whole-grain-5_en

(8) Miller K et al. (2022). Nutrition economics: Four analyses supporting the case for whole grain consumption. Journal of Cereal Science. 105(103455). https://doi.org/10.1016/j.jcs.2022.103455

(9) Abdullah, M. M. H., Hughes, J., & Grafenauer, S. (2021). Healthcare Cost Savings Associated with Increased Whole Grain Consumption among Australian Adults. *Nutrients*, *13*(6), 1855. https://doi.org/10.3390/nu13061855

(10) Murphy, M. M., & Schmier, J. K. (2020). Cardiovascular Healthcare Cost Savings Associated with Increased Whole Grains Consumption among Adults in the United States. *Nutrients*, *12*(8), 2323. https://doi.org/10.3390/nu12082323

(11) Fayet-Moore, F., George, A., Cassettari, T., Yulin, L., Tuck, K., & Pezzullo, L. (2018). Healthcare Expenditure and Productivity Cost Savings from Reductions in Cardiovascular Disease and Type 2 Diabetes Associated with Increased Intake of Cereal Fibre among Australian Adults: A Cost of Illness Analysis. *Nutrients*, *10*(1), 34. https://doi.org/10.3390/nu10010034

(12) Martikainen, J., Jalkanen, K., Heiskanen, J., Lavikainen, P., Peltonen, M., Laatikainen, T., & Lindström, J. (2021). Type 2 Diabetes-Related Health Economic Impact Associated with Increased Whole Grains Consumption among Adults in Finland. *Nutrients*, *13*(10), 3583. https://doi.org/10.3390/nu13103583

(13) Van der Kamp J-W et al. (2022). Consensus, Global Definitions of Whole Grain as a Food Ingredient and of Whole-Grain Foods Presented on Behalf of the Whole Grain Initiative. Nutrients. 14(1). https://doi.org/10.3390/nu14010138

(14) Ross AB et al. (2023). Whole grain definitions do not need to be complicated. Am J Clin Nutr. 117(5):1043-1044. https://doi.org/10.1016/j.ajcnut.2023.02.027

(15) European Commission (2023). Health Promotion and Disease Prevention Knowledge Gateway: Whole Grain. https://knowledge4policy.ec.europa.eu/health-promotion-knowledge-gateway/whole-grain_en

(16) EFSA NDA Panel (2022). Scientific Opinion on the scientific advice related to nutrient profiling for the development of harmonised mandatory front-of-pack nutrition labelling and the setting of nutrient profiles for restricting nutrition and health claims on foods. EFSA Journal. 20(4):7259. https://efsa.onlinelibrary.wiley.com/doi/full/10.2903/j.efsa.2022.7259

(17) Reynolds A et al. (2019). Carbohydrate quality and human health: a series of systematic reviews and meta-analyses. The Lancet Commissions. 393(10170). Pp. 434-45. https://doi.org/10.1016/S0140-6736(18)31809-9

(18) Fardet A (2010). New hypotheses for the health-protective mechanisms of whole-grain cereals: What is beyond fibre? Nutrition Research Reviews. 23(1). Pp. 65-134. https://doi.org/10.1017/s0954422410000041

(19) Fardet A (2013). Whole grains from a mechanistic view. Whole Grains Summit 2012 Proceedings. https://www.cerealsgrains.org/publications/plexus/cfwplexus/library/books/Documents/WholeGrainsSummit2012/CPLEX-2013-1001-01B.pdf

(20) Blomhoff R et al. (2023). Nordic Nutrition Recommandations. Copenhagen: Nordic Council of Ministers. https://pub.norden.org/nord2023-003/nord2023-003.pdf

(21) World Health Organization. Health topics: Healthy diet. https://www.who.int/health-topics/healthy-diet

(22) Willet W et al. (2019). Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. The Lancet Commissions. 393(10170). Pp. 447-492. https://doi.org/10.1016/S0140-6736(18)31788-4

(23) Drewnowski A et al. (2021). Perspective: Why Whole Grains Should Be Incorporated into Nutrient-Profile Models to Better Capture Nutrient Density. Advances in Nutrition. 12(3). Pp. 600-608. https://doi.org/10.1093/advances/nmaa172

(24) Kissock KR et al (2021). Aligning nutrient profiling with dietary guidelines: modifying the Nutri-Score algorithm to include whole grains. Eur J Nutr.;61(1):541-553. https://doi.org/10.1007/s00394-021-02718-6

(25) Byron C et al. (2024). Aligning front-of-pack labelling with dietary guidelines: including whole grains in the health star rating. Eur J Nutr. https://doi.org/10.1007/s00394-024-03404-z

(26) EFSA NDA Panel (2010). Scientific Opinion on the substantiation of a health claim related to whole grain pursuant to Article 13(1) of Regulation (EC) No 1924/2006. EFSA Journal 2010;8(10):1766. https://doi.org/10.2903/j.efsa.2010.1766

(27) Lourenço S et al. (2019). The Whole Grain Partnership Helped Increase Whole Grain Intake in Denmark. Cereal Foods World. 64(3). https://www.researchgate.net/publication/333641500_The_Whole_Grain_Partnership-How_a_Public-Private_Partnership_Helped_Increase_Whole_Grain_Intake_in_Denmark