Proceedings of the Nutrition Society (2024), **83 (OCE4)**, E255 doi:10.1017/S0029665124004932

Nutrition Society Congress 2024, 2–5 July 2024

LIFE Climate Smart Chefs; An Analysis of the Impact of Recipe Reformulation on Environment and Nutrition to Support Sustainable Menu Design (Editions 4 to 6)

L. Geaney[1,2], H. Stack[1], A. Magnani[3], M. Antonelli[3], S. Castaldi[3,4], D. O'Kelly[2], F. Douglas[2], K. O'Brien[2] and L. B. Kirwan[2]

[1]*Munster Technological University, Bishopstown, Cork, T12 P928*

[2]*Nutritics Ltd, 22C Town centre mall, Main Street, Swords, Dublin, K67 FY88*

[3]*Barilla Foundation, via Madre Teresa di Calcutta, 3/a, Parma, Italy*

[4]*Università Degli Studi Della Campania "Luigi Vanvitelli", DISTABIF, via Vivaldi 43, 81100, Caserta, Italy*

This abstract was presented as the Food Systems Theme Highlight.

The rate of climate change has significantly increased over the last decade, with 2023 reported as the warmest year on record(1). Human activities contribute significantly to greenhouse gas emissions (GHGe) and environmental degradation(1) with food production and consumption contributing up to 37% of global emissions(2). Recognising the power of food service, and food choices, is crucial in addressing these environmental challenges(3). Data on the impact that reformulation has on reducing environmental impact is required to ensure evidence based strategy development and data based decision making. The LIFE Programme Climate Smart Chef (CSC) project aims to engage chefs to promote low-emission, nutritious diets aligned with EU Climate Policy and the Farm to Fork (F2F) Strategy. It targets improved public health, reduced environmental impact, and food waste(4). Under this project, a digital environmental impact tool 'Foodprint' was developed by Nutritics. This study aims to analyse the nutritional content and environmental impact of original and reformulated recipes entered by chefs who completed training between July and October 2023.

Chefs were required to enter their recipes, undertake training on sustainable menu design and subsequently reformulate their recipes using Foodprint as a post training exercise. 200 recipes were created by the chefs (100 original; 100 reformulated). Nutritics software was used for the analysis, with the LIFE Su-Eatable LIFE database on carbon and water selected for use in the Foodprint tool. The impact of reformulation on nutrition, carbon and water was analysed using SPSS V29.

For the environmental analysis, reformulating the recipes had significant reductions in carbon emissions ($P = 0.002$), (Average −51.18%; Range −6.66 −0.96 kg $C0_2$eq), water footprint ($P = 0.278$), (Average -46.63%; Range −17839L to 4035L). For the nutrition analysis, reductions were also observed for sugar ($P = 0.001$), (Average −9.42%; Range −16.40g to +24g), salt ($P = 0.233$), (Average −12.57%; Range −5.42g to +1.80g), and saturated fat ($P = 0.043$) (Average −39.77%; Range -34.90g to +12.20g).

Reformulation resulted in decreased environmental impact, and improved nutrition. This study gives a quantitative indication of how reformulating menus can reduce carbon, while improving the nutrient profile of food offerings. This research contributes valuable insights into the use of software to reformulate menus, the complex impact of recipe reformulation, and its potential to positively impact both health and environmental sustainability. This research indicates the potential of menu reformulation in advancing sustainability goals and promoting healthier food choices. Future analysis should analyse cost, additional environmental impacts, serving size, and demographic analysis to provide more in-depth analysis.

References

1. World Meteorological Organisation (2024) State of the Global Climate 2023. [Available at: https://wmo.int/publication-series/state-of-global-climate-2023].
2. Ritchie *et al.* (2021) Our World in Data. [Available at: https://ourworldindata.org/greenhousegas-emissions-food].
3. Rampalli *et al.* (2023) *BMJ Global Health* **8**, e010876.
4. European Commission (2023) LIFE Programme Climate Smart Chefs. [Available at: https:// climatesmartchefs.eu/theproject/].