*Comment*

# Comment on Muzzioli et al. Are Front-of-Pack Labels a Health Policy Tool? *Nutrients* 2022, *14*, 771

Hassan Aguenaou [1], Nancy Babio [2,3], Mélanie Deschasaux-Tanguy [4], Pilar Galan [4], Serge Hercberg [4,5], Chantal Julia [4,5,*], Alexandra Jones [6], Georgios Karpetas [7], Bridget Kelly [8], Emmanuelle Kesse-Guyot [4], Lamprini Kontopoulou [9], Marie-Eve Labonté [10,11], Cliona Ni Mhurchu [12], Igor Pravst [13], Simone Pettigrew [6], Elio Riboli [14], Jordi Salas-Salvadó [2,3], Bernard Srour [4], Mathilde Touvier [4] and Stefanie Vandevijvere [15]

1 Joint Research Unit in Nutrition and Food, RDC-Nutrition AFRA/IAEA, Ibn Tofail University-CNESTEN, Rabat, Kenitra 14000, Morocco; aguenaou.hassan@uit.ac.ma
2 Departament de Bioquimica i Biotecnologia, Unitat de Nutrició Humana. (IISPV), Universitat Rovira i Virgili, 43201 Reus, Spain; nancy.babio@urv.cat (N.B.); jordi.salas@urv.cat (J.S.-S.)
3 Consorcio CIBER, M.P. Fisiopatología de la Obesidad y Nutrición (CIBERObn), Instituto de Salud Carlos III (ISCIII), 28014 Madrid, Spain
4 Sorbonne Paris Nord University, Inserm U1153, Inrae U1125, Cnam, Nutritional Epidemiology Research Team (EREN), Epidemiology and Statistics Research Center—University of Paris (CRESS), 93017 Bobigny, France; m.deschasaux@eren.smbh.univ-paris13.fr (M.D.-T.); p.galan@eren.smbh.univ-paris13.fr (P.G.); s.hercberg@eren.smbh.univ-paris13.fr (S.H.); e.kesse@eren.smbh.univ-paris13.fr (E.K.-G.); b.srour@eren.smbh.univ-paris13.fr (B.S.); m.touvier@eren.smbh.univ-paris13.fr (M.T.)
5 Public Health Department, Avicenne Hospital, Assistance Publique des Hôpitaux de Paris (AP-HP), 93000 Bobigny, France
6 The George Institute for Global Health, University of New South Wales, Sydney, NSW 2052, Australia; ajones@georgeinstitute.org.au (A.J.); spettigrew@georgeinstitute.org.au (S.P.)
7 Laboratory Teaching Staff, Faculty of Medicine, School of Health Sciences, University of Thessaly, 41500 Larissa, Greece; gkarpetas@uth.gr
8 Early Start, School of Health & Society, University of Wollongong, Wollongong, NSW 2522, Australia; bkelly@uow.edu.au
9 Laboratory Teaching Staff, Nursing Department, University of Thessaly, 41500 Larissa, Greece; lamprini2@yahoo.gr
10 Centre Nutrition, Santé et Société (NUTRISS), Institute of Nutrition and Functional Foods (INAF), Université Laval, Québec City, QC G1V 0A6, Canada; marie-eve.labonte@fsaa.ulaval.ca
11 School of Nutrition, Université Laval, Québec City, QC G1V 0A6, Canada
12 National Institute for Health Innovation, The University of Auckland, Auckland 1142, New Zealand; c.nimhurchu@auckland.ac.nz
13 Nutrition and Public Health Research Group, Nutrition Institute, Trzaska Cesta 40, 1000 Ljubljana, Slovenia; igor.pravst@nutris.org
14 Department of Epidemiology and Biostatistics, Imperial College London, London W2 1PG, UK; e.riboli@imperial.ac.uk
15 Department of Epidemiology and Public Health, Service of Lifestyle and Chronic Diseases, 1050 Brussels, Belgium; stefanie.vandevijvere@sciensano.be
* Correspondence: c.julia@eren.smbh.univ-paris13.fr

As scientists working and publishing in the field of front-of-pack nutrition labelling (FOPNL) for many years, we have read with interest and concern the narrative review regarding their effectiveness by Muzzioli et al. [1].

First, the authors appear to consider that the premises underlying FOPNL—to inform consumers on the nutritional composition of foods from a health perspective and orient them towards healthier purchases—are not the object of consensus in the scientific community, despite them being clearly stated by the WHO [2]. In addition, they appear to place purely informative labels (such as the NutrInform Battery) and interpretive labels (Nutri-Score, Warning labels, Multiple Traffic Light) at the same level, while there is a clear scientific consensus that interpretive front-of-pack labels are more effective and equitable,

and should be promoted (WHO principle n°7) [2]. Finally, FOPNL have been shown to act as drivers for reformulation, improving the overall nutritional environment [3].

Second, while FOPNL research usually relies on a clear theoretical framework [4], and grades the evidence provided by each type of study, the review conflates results from experimental studies, consumer surveys, cohort studies, and even studies not conducted with consumers at all to present a perspective that lacks a clear objective.

Finally, multiple studies investigating the performance of labels, including a very important network meta-analysis [5] and studies conducted in multiple countries comparing the effects of various types of labels, were entirely omitted from the review [6–22]. These studies provide outstanding information as to the comparative effects of FOPNLs to help consumers identify healthier foods and make healthier purchases, and contribute to reduce the burden of nutrition-related disease [23,24]. Of great concern is that when studies on performance are referenced, they are misrepresented, instead reporting the results of preference elements within those same studies. For example, the study by Hagmann et al., which found a clear higher performance of Nutri-Score over all other labels, is relayed as finding that 'most of the participants [ … ] considered the Nutri-Score the least useful' [25], which clearly misrepresents the results of the study.

These elements lead to an overall biased and misleading view of the literature, diminishing the value of multiple studies consistently showing that interpretive labels (Nutri-Score and Warning labels, in particular) lead to healthier food choices, as well as overstating the merits of non-interpretive labels, which have consistently been shown to be unable to produce significant modifications in dietary choices.

That FOPNL are only one of the many policies necessary to tackle the obesity epidemic has never been in doubt. However, it is also clear that FOPNLs are a useful health policy tool and, more importantly, *interpretive labels* such as the Nutri-Score constitute an evidence-based health policy tool [26], as reflected in the multiple studies that were apparently overlooked or misrepresented in this study.

## References

1. Muzzioli, L.; Penzavecchia, C.; Donini, L.M.; Pinto, A. Are Front-of-Pack Labels a Health Policy Tool? *Nutrients* **2022**, *14*, 771. [CrossRef] [PubMed]
2. World Health Organization. *Guiding Principles and Framework Manual for Front-of-Pack Labelling for Promoting Healthy Diet*; WHO: Geneva, Switzerland, 2019.
3. Bablani, L.; Mhurchu, C.N.; Neal, B.; Skeels, C.L.; Staub, K.E.; Blakely, T. The Impact of Voluntary Front-of-Pack Nutrition Labelling on Packaged Food Reformulation: A Difference-in-Differences Analysis of the Australasian Health Star Rating Scheme. *PLoS Med.* **2020**, *17*, e1003427. [CrossRef] [PubMed]
4. Grunert, K.G.; Wills, J.M. A Review of European Research on Consumer Response to Nutrition Information on Food Labels. *J. Public Health* **2007**, *15*, 385–399. [CrossRef]
5. Song, J.; Brown, M.K.; Tan, M.; MacGregor, G.A.; Webster, J.; Campbell, N.R.C.; Trieu, K.; Ni Mhurchu, C.; Cobb, L.K.; He, F.J. Impact of Color-Coded and Warning Nutrition Labelling Schemes: A Systematic Review and Network Meta-Analysis. *PLoS Med.* **2021**, *18*, e1003765. [CrossRef]
6. Talati, Z.; Egnell, M.; Hercberg, S.; Julia, C.; Pettigrew, S. Food Choice Under Five Front-of-Package Nutrition Label Conditions: An Experimental Study Across 12 Countries. *Am. J. Public Health* **2019**, *109*, 1770–1775. [CrossRef]
7. Talati, Z.; Egnell, M.; Hercberg, S.; Julia, C.; Pettigrew, S. Consumers' Perceptions of Five Front-of-Package Nutrition Labels: An Experimental Study Across 12 Countries. *Nutrients* **2019**, *11*, 1934. [CrossRef] [PubMed]
8. Egnell, M.; Talati, Z.; Hercberg, S.; Pettigrew, S.; Julia, C. Objective Understanding of Front-of-Package Nutrition Labels: An International Comparative Experimental Study across 12 Countries. *Nutrients* **2018**, *10*, 1542. [CrossRef]
9. Egnell, M.; Kesse-Guyot, E.; Galan, P.; Touvier, M.; Rayner, M.; Jewell, J.; Breda, J.; Hercberg, S.; Julia, C. Impact of Front-of-Pack Nutrition Labels on Portion Size Selection: An Experimental Study in a French Cohort. *Nutrients* **2018**, *10*, 1268. [CrossRef]

10. Egnell, M.; Talati, Z.; Galan, P.; Andreeva, V.; Vandevijvere, S.; Gombaud, M.; Dréano-Trécant, L.; Hercberg, S.; Pettigrew, S.; Julia, C. Objective Understanding of the Nutri-Score Front-of-Pack Label by European Consumers and Its Effect on Food Choices: An Online Experimental Study. *Int. J. Behav. Nutr. Phys. Act.* **2020**, *17*, 146. [CrossRef]

11. Acton, R.B.; Jones, A.C.; Kirkpatrick, S.I.; Roberto, C.A.; Hammond, D. Taxes and Front-of-Package Labels Improve the Healthiness of Beverage and Snack Purchases: A Randomized Experimental Marketplace. *Int. J. Behav. Nutr. Phys. Act.* **2019**, *16*, 46. [CrossRef]

12. Crosetto, P.; Lacroix, A.; Muller, L.; Ruffieux, B. Nutritional and Economic Impact of Five Alternative Front-of-Pack Nutritional Labels: Experimental Evidence. *Eur. Rev. Agric. Econ.* **2020**, *47*, 785–818. [CrossRef]

13. Dubois, P.; Albuquerque, P.; Allais, O.; Bonnet, C.; Bertail, P.; Combris, P.; Lahlou, S.; Rigal, N.; Ruffieux, B.; Chandon, P. Effects of Front-of-Pack Labels on the Nutritional Quality of Supermarket Food Purchases: Evidence from a Large-Scale Randomized Controlled Trial. *J. Acad. Mark. Sci.* **2021**, *49*, 119–138. [CrossRef]

14. Julia, C.; Méjean, C.; Péneau, S.; Buscail, C.; Alles, B.; Fézeu, L.; Touvier, M.; Hercberg, S.; Kesse-Guyot, E. The 5-CNL Front-of-Pack Nutrition Label Appears an Effective Tool to Achieve Food Substitutions towards Healthier Diets across Dietary Profiles. *PLoS ONE* **2016**, *11*, e0157545. [CrossRef] [PubMed]

15. Van den Akker, K.; Bartelet, D.; Brouwer, L.; Luijpers, S.; Nap, T.; Havermans, R. The Impact of the Nutri-Score on Food Choice: A Choice Experiment in a Dutch Supermarket. *Appetite* **2022**, *168*, 105664. [CrossRef] [PubMed]

16. Aguenaou, H.; El Ammari, L.; Bigdeli, M.; El Hajjab, A.; Lahmam, H.; Labzizi, S.; Gamih, H.; Talouizte, A.; Serbouti, C.; El Kari, K.; et al. Comparison of Appropriateness of Nutri-Score and Other Front-of-Pack Nutrition Labels across a Group of Moroccan Consumers: Awareness, Understanding and Food Choices. *Arch. Public Health Arch. Belg. Sante Publique* **2021**, *79*, 71. [CrossRef]

17. De Temmerman, J.; Heeremans, E.; Slabbinck, H.; Vermeir, I. The Impact of the Nutri-Score Nutrition Label on Perceived Healthiness and Purchase Intentions. *Appetite* **2021**, *157*, 104995. [CrossRef]

18. Julia, C.; Arnault, N.; Agaësse, C.; Fialon, M.; Deschasaux-Tanguy, M.; Andreeva, V.A.; Fezeu, L.K.; Kesse-Guyot, E.; Touvier, M.; Galan, P.; et al. Impact of the Front-of-Pack Label Nutri-Score on the Nutritional Quality of Food Choices in a Quasi-Experimental Trial in Catering. *Nutrients* **2021**, *13*, 4530. [CrossRef]

19. Croker, H.; Packer, J.; Russell, S.J.; Stansfield, C.; Viner, R.M. Front of Pack Nutritional Labelling Schemes: A Systematic Review and Meta-Analysis of Recent Evidence Relating to Objectively Measured Consumption and Purchasing. *J. Hum. Nutr. Diet. Off. J. Br. Diet. Assoc.* **2020**, *33*, 518–537. [CrossRef]

20. Packer, J.; Russell, S.J.; Ridout, D.; Hope, S.; Conolly, A.; Jessop, C.; Robinson, O.J.; Stoffel, S.T.; Viner, R.M.; Croker, H. Assessing the Effectiveness of Front of Pack Labels: Findings from an Online Randomised-Controlled Experiment in a Representative British Sample. *Nutrients* **2021**, *13*, 900. [CrossRef]

21. Ni Mhurchu, C.; Volkova, E.; Jiang, Y.; Eyles, H.; Michie, J.; Neal, B.; Blakely, T.; Swinburn, B.; Rayner, M. Effects of Interpretive Nutrition Labels on Consumer Food Purchases: The Starlight Randomized Controlled Trial. *Am. J. Clin. Nutr.* **2017**, *105*, 695–704. [CrossRef]

22. Neal, B.; Crino, M.; Dunford, E.; Gao, A.; Greenland, R.; Li, N.; Ngai, J.; Ni Mhurchu, C.; Pettigrew, S.; Sacks, G.; et al. Effects of Different Types of Front-of-Pack Labelling Information on the Healthiness of Food Purchases-A Randomised Controlled Trial. *Nutrients* **2017**, *9*, 1284. [CrossRef] [PubMed]

23. Deschasaux, M.; Huybrechts, I.; Julia, C.; Hercberg, S.; Egnell, M.; Srour, B.; Kesse-Guyot, E.; Latino-Martel, P.; Biessy, C.; Casagrande, C.; et al. Association between Nutritional Profiles of Foods Underlying Nutri-Score Front-of-Pack Labels and Mortality: EPIC Cohort Study in 10 European Countries. *BMJ* **2020**, *370*, m3173. [CrossRef] [PubMed]

24. Julia, C.; Leroy, P.; Adjibade, M.; Assmann, K.E.; Touvier, M.; Hercberg, S.; Soler, L.-G.; Kesse-Guyot, E. Public Health Potential of Guidelines-Based Dietary Scores for Non-Communicable Diseases Mortality Prevention: Simulation Study Using the Preventable Risk Integrated ModEl (PRIME) Model. *Public Health Nutr.* **2021**, *24*, 5539–5549. [CrossRef] [PubMed]

25. Hagmann, D.; Siegrist, M. Nutri-Score, Multiple Traffic Light and Incomplete Nutrition Labelling on Food Packages: Effects on Consumers' Accuracy in Identifying Healthier Snack Options. *Food Qual. Prefer.* **2020**, *83*, 103894. [CrossRef]

26. International Agency for Research on Cancer. *The Nutri-Score: A Science-Based Front-of-Pack Nutrition Label. Helping Consumers Make Healthier Food Choices*; IARC Evidence Summary Brief; IARC-WHO: Lyon, France, 2021.