# Nutrient profile models for front-of-pack nutrition labelling: a systematic review

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## Abstract

**Background** Front-of-pack nutrition labelling (FOPNL) is a key policy to tackle diet-related non-communicable diseases. All types of FOPNL require an underlying nutrient profile model (NPM). Nutrient profiling is a scientific method for classifying foods according to their nutritional composition. This review aimed to identify all NPMs developed and/or used for FOPNL, to assist with the selection of appropriate NPMs to underpin nutrition policies, namely supporting the WHO Regional Office for Europe developing template NPMs for FOPNL.

**Methods** We searched peer-reviewed databases (MEDLINE, CAB Abstracts, OvidSP, and Scopus) and grey literature (Overton and Google). Searches were limited to articles published in English, Spanish or Portuguese, and published between Jan 1, 2016, and May 4, 2023, building on a comparable review conducted by Labonté et al. in 2016. To be eligible for inclusion, NPMs developed for FOPNL had to allow for the classification or ranking of individual foods, be developed or endorsed by governmental or inter- governmental organisations and have a publicly available algorithm.

**Findings** From the 957 publications retrieved in the searches, 39 NPMs were included: 13 for warning labels, 12 for nutrient-specific systems (including 'traffic-light' labelling), 10 for health endorsements and four for graded summary indicators. Of these, 26 NPMs have been developed and four models updated since 2016. The WHO Region with highest number of models was the Americas (n=13, 33%), followed by the European Region (n=9, 23%) and the Western-Pacific Region (n=7, 18%).

**Interpretation** There has been a proliferation of new NPMs for FOPNL posing a potential challenge for policymakers in the selection of appropriate models for FOPNL policies. This systematic review facilitates the comparison of these models, demonstrating considerable heterogeneity in the NPMs underlying FOPNL, indicating there is little consensus in what constitutes the most appropriate model and reinforcing the need for more guidance and regional alignment.

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**Contributors**

All authors contributed to study protocol development, discussed and reviewed the data extraction process, as well as revised and provided comments to the abstract. MSB developed the search strategy, together with JAR and AK. MSB conducted the peer-reviewed and grey literature searches. MSB, JAR and AK screened the publications. MSB conducted the data extraction and developed the first draft of the abstract.

**Declaration of interests**

We declare that we have no conflicts of interest.