How Front-of-Pack Labelling Can Drive Healthier Spending and Eating in India

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ABSTRACT

India faces a growing burden of non-communicable diseases, including type II diabetes, cardiovascular diseases, and obesity. One major contributor is the rising consumption of ultra-processed foods high in fat, sugar, and salt (HFSS) (World Health Organization, 2023). Front-of-pack labels (FoPLs) have emerged as a public health tool to promote healthier dietary choices by providing simplified, visually clear nutritional information on packaged foods (Thaler & Sunstein, 2008).

In this research paper, FoPLs are examined for their impact on both individual and systemic behaviours. At the individual level, they reduce information asymmetry and guide consumers toward healthier options, while at the systemic level, they encourage product reformulation and support long-term healthcare cost reductions. By presenting complex nutrition information in intuitive formats, FoPLs apply behavioural economics principles to nudge consumers without restricting choice. Evidence from global studies indicates their potential to improve dietary habits in urban India, especially through online food delivery and digital retail platforms.

FoPLs represent a scalable, low-cost intervention capable of improving population health, enhancing market transparency, and supporting fiscal sustainability. Widespread adoption in India could reduce the prevalence of NCDs, lower healthcare expenditures, and foster a competitive food market aligned with public health objectives, providing policymakers with a practical and effective tool for dietary improvement.

1. Background and Problem Statement

India is experiencing a rapid increase in non-communicable diseases (NCDs), including type II diabetes, cardiovascular diseases, and obesity. These conditions now account for a substantial portion of morbidity and mortality, with the World Health Organization (2023) reporting that

over 60% of deaths in the country are attributable to NCDs. The rise in these diseases represents a critical public health challenge, demanding urgent policy attention and effective interventions.

A key factor driving this trend is the growing consumption of ultra-processed foods (UPFs) that are high in fat, sugar, and salt. Between 2011 and 2021, retail sales of these products in India increased significantly, reflecting changing dietary patterns influenced by urban lifestyles, convenience, and marketing practices. Such dietary shifts are closely linked to increased risks of obesity, diabetes, and cardiovascular problems, particularly among urban populations who rely more on packaged and ready-to-eat foods.

This research paper emphasizes the need for interventions that encourage healthier dietary choices. Front-of-package labels (FoPLs) are recognized globally as a tool to provide clear and easily interpretable nutritional information, helping consumers make informed decisions at the point of purchase. By simplifying complex nutritional data into visible cues, FoPLs can reduce information asymmetry, nudge individuals toward healthier foods, and potentially influence long-term eating habits.

2. Behavioral Insights and Mechanisms

The effectiveness of front-of-pack labelling (FoPL) works not just by providing nutritional information, but by influencing consumer behavior and market incentives. Rooted in behavioral economics, marketing, and public health, FoPLs are designed to guide choices while encouraging healthier product offerings. This section explores how FoPLs reshape decision-making, engage intuitive thinking, and act as economic nudges with public health benefits (Thaler & Sunstein, 2008; World Health Organization, 2023).

2.1 Choice Architecture and Decision-Making

Modern food environments, including supermarkets, convenience stores, and digital commerce platforms, are structured to accelerate purchasing decisions. Consumers often rely on simple cues such as packaging, brand familiarity, or price, leaving nutritional panels on the back largely ignored. FoPLs intervene by reshaping this "choice architecture," a concept introduced by Thaler and Sunstein, by presenting clear nutrition indicators on the front of the package. This increases the visibility of health-related information at the moment of decision-making without limiting consumer freedom. By nudging choices toward healthier options, FoPLs can reduce information gaps, encourage product reformulation, and realign market incentives to favor better nutritional profiles.

2.2 Marketing Influence and Counter-Framing

Food marketing often emphasizes positive traits, such as "high in protein" or "organic," while downplaying harmful ingredients. This creates information asymmetry that can mislead consumers. FoPLs act as a counter-marketing tool by providing objective nutritional information that clarifies product healthfulness. For example, a snack marketed as "natural" may still receive a warning label for high sodium content. This transparency can shift consumer demand, prompting manufacturers to reformulate products to meet healthier standards. Over time, this creates a market environment where healthier products become the norm, reducing negative health outcomes and public healthcare costs.

3. International Implementation of Front-of-Pack Labelling

Front-of-pack labelling (FoPL) has been successfully implemented in several countries, demonstrating its potential to influence consumer choices and guide industry practices. These international experiences offer insights for India, highlighting the role of visual cues, regulatory support, and consumer-friendly design in improving dietary behaviour. Adopting a well-designed FoPL system in India could similarly enhance public health outcomes while fostering greater accountability within the food industry.

Figure 1. Mock product packaging for "Crispy" chips illustrating high, medium, and low nutritional quality levels

3.1. Chile: Mandatory Warning Labels

In 2016, Chile became the first country to introduce mandatory front-of-pack warning labels. Packaged foods exceeding limits for sugar, salt, saturated fat, or calories display clear black stop signs on the front, such as "High in Sugar" or "High in Salt" (Taillie et al., 2020). These labels are designed for immediate recognition at the point of purchase, helping consumers make healthier choices without reading detailed nutrition panels.

Chile's policy also restricts marketing of labelled products to children, bans their sale in schools, and prevents child-targeted packaging. Studies show that after implementation, purchases of sugary drinks and high-salt snacks declined, and many manufacturers reformulated products to meet the thresholds. Economically, this system shifts part of the long-term cost of unhealthy diets from the public health system to producers, reducing healthcare burdens and promoting healthier product portfolios.

3.2. France: Nutri-Score System

France introduced the Nutri-Score label in 2017, a voluntary system grading foods from A (green) to E (red) based on positive and negative nutrients (Steenbergen et al., 2024). The simple colour-coded system allows consumers, including those with low nutrition literacy, to quickly compare products and make healthier choices without intensive calculation.

Nutri-Score has encouraged widespread reformulation as companies compete to improve their ratings, particularly in categories like cereals, frozen foods, and beverages. Economically, it provides a non-price signal to consumers, helping them select higher-quality products. By enhancing transparency and reputational incentives, Nutri-Score promotes better dietary decisions and supports long-term reductions in healthcare costs.

3.3 United Kingdom: Nutrient Transparency Through Multiple Traffic Lights

The United Kingdom introduced the Multiple Traffic Light (MTL) system in 2004 as a voluntary front-of-pack label designed to show the levels of fat, saturated fat, sugar, and salt in foods. Each nutrient is colour-coded as red (high), amber (medium), or green (low), giving consumers an immediate visual cue about the healthiness of a product. Unlike composite scores, the MTL system allows individuals to focus on the nutrients most relevant to their dietary needs.

Research shows that the colour-coded system is easy to interpret for a wide range of consumers, including those with low health literacy (Ni Mhurchu et al., 2018). By presenting key nutritional information visually and prominently, MTL labels help consumers make faster, more informed

choices at the point of purchase. This approach works as a nudge, encouraging healthier selections without restricting freedom of choice.

Economically, MTL also affects the market. Red labels signal risk, motivating manufacturers to reformulate products to achieve better nutritional ratings. Over time, this has contributed to a gradual improvement in the nutritional quality of packaged foods in high-visibility retail categories. The system demonstrates that accessible nutrition information can guide both consumer behaviour and industry practices, supporting public health objectives while maintaining voluntary compliance.

4. Implementation in India: Research Design and Methodology

This study will evaluate the effectiveness of front-of-pack labels (FoPLs) in influencing consumer food choices in urban India. The research focuses on three major cities which are Delhi, Mumbai, and Bengaluru, representing diverse urban populations, varying dietary habits, and high exposure to packaged foods. Participants will be recruited through a combination of online platforms and field outreach to ensure a balanced demographic mix of age, gender, income, and educational background. Random assignment to study groups will help isolate the effects of different labelling formats on consumer decision-making.

The intervention will test multiple FoPL formats, including warning labels, Multiple Traffic Light (MTL) labels, and Nutri-Score-like summary indicators. Participants will be exposed to these labels in simulated and real-world online purchasing scenarios to assess their immediate comprehension, choice behaviour, and willingness to pay for healthier options. Baseline surveys will collect information on dietary habits, health awareness, and label familiarity, while endline surveys will measure changes in purchasing intentions, perceived healthiness of products, and actual choices (An et al., 2021).

Evaluation metrics will include the proportion of healthier items selected, reductions in HFSS (high fat, sugar, salt) food purchases, and shifts in product preference across categories such as snacks, beverages, and ready-to-eat meals. Data analysis will use both descriptive and inferential statistical methods, including regression models, to determine the causal impact of each labelling format. The study will also explore potential heterogeneity in responses based on income, education, and prior exposure to nutrition information, providing nuanced insights for policy design.

Finally, the methodology will integrate behavioural insights from choice architecture and System 1 thinking, ensuring that the study reflects realistic decision-making contexts. By combining experimental rigor with practical application, this research aims to provide actionable evidence for policymakers, demonstrating how FoPLs can nudge urban Indian consumers toward healthier

diets while incentivizing manufacturers to reformulate products (Bera et al., 2021; Roberto et al., 2021).

5. Supply-Side Responses

The introduction of front-of-pack labelling (FoPL) is expected to drive notable changes in industry practices, with reformulation being the most common response. International evidence shows that when labels expose high levels of sugar, salt, or fat, companies frequently adjust recipes to avoid negative classifications. For example, in Chile and France, producers strategically altered nutrient content to cross thresholds into more favourable categories, leading to measurable improvements in product portfolios. In India, comparable shifts are likely, especially in beverages such as soft drinks or flavoured milk, where reducing sugar content is technologically feasible. However, reformulation in categories like fried snacks or bakery items may be more difficult, as salt, sugar, and fat are central to taste, texture, and consumer acceptance. Overreliance on substitutes such as sweeteners or chemical additives also raises questions about long-term health outcomes.

Economic considerations further influence how firms adapt. Products receiving warning symbols or poor ratings often experience reduced demand, motivating firms to either reformulate or reposition products in the market. In Chile, this dynamic also produced price differences, with unlabelled products becoming relatively cheaper and attracting more consumers. For India, where consumer demand is highly price-sensitive, this could lead to sharp market shifts if healthier products are competitively priced. At the same time, there is a risk that firms may pass the cost of reformulation onto consumers, creating affordability barriers that undermine the public health objectives of FoPL.

To maximize effectiveness, policy design must account for these supply-side dynamics. Clear nutritional benchmarks, transparent monitoring, and support for innovation in food processing can encourage genuine improvements rather than superficial adjustments. Tailoring interventions to specific product categories such as sugary beverages, salty snacks, or packaged sweets will be essential to balance feasibility with impact. By doing so, India can ensure that FoPL not only informs consumers but also fosters a healthier and more competitive food industry in the long run.

6. Conclusion

Front-of-pack labelling is more than a change in how food products are packaged. It represents a step toward making food systems more transparent, accountable, and focused on public health. In India, the growing burden of lifestyle-related diseases combined with limited consumer awareness and aggressive marketing has created an urgent need for clear and easy-to-understand

labels. This paper has shown that front-of-pack labels, if well designed and properly enforced, can support healthier choices and help the government fulfil its responsibility to protect consumers.

Implementing such a system will not be easy. There will be pushback from the food industry, challenges in monitoring compliance, and the need to educate both producers and consumers. But these difficulties should not distract from the central issue. People deserve to know what they are eating and how it affects their health. While labeling alone cannot solve India's nutrition problems, it can play an important role by giving consumers the information they need to make better choices.

A strong front-of-pack labelling policy, supported by clear rules and consistent enforcement, can help shift the food environment in a healthier direction. Its success will depend not only on technical standards but on the willingness of institutions to act in the public interest.

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