Theoretical framework

The theoretical framework on the demand for food micronutrients incorporates various theories and principles from multiple disciplines including economics, nutrition, and health. In the context of economics, consumer demand theory is often used to understand the demand for food micronutrients. This theory, rooted in microeconomics, posits that consumers make purchasing decisions to maximize their satisfaction or utility given their income and the prices of goods (Varian, 2014). When applied to food micronutrients, this theory suggests that individuals will consume a diet that maximizes their satisfaction, subject to their nutritional needs, tastes, and financial resources. The Health Belief Model suggests that people's beliefs about health problems, perceived benefits of action and barriers to action, and self-efficacy explain engagement (or lack of engagement) in health-promoting behavior (Rosenstock, 1974). Applied to micronutrient consumption, if people understand the health risks associated with micronutrient deficiency, the benefits of adequate micronutrient intake, and believe they can successfully make dietary changes, they are likely to increase their consumption of foods rich in these nutrients.

Many studies have shown a strong correlation between SES and dietary quality, including micronutrient intake (Darmon & Drewnowski, 2008). People with higher SES often have better access to a variety of foods, including those rich in essential micronutrients. They are also more likely to have the knowledge and resources to make healthier food choices. Availability and accessibility of nutritious food is a key determinant of dietary choices and, consequently, micronutrient intake. Individuals living in areas with limited access to stores selling fresh produce (often referred to as 'food deserts') may have lower intake of key micronutrients (Walker, Keane & Burke, 2010). Research in behavioral economics has shown that small changes in the way choices are presented (nudges) can significantly influence consumer behavior (Thaler & Sunstein, 2008). Nudges, like changing the placement of healthier options in a store or serving smaller portions, can be used to encourage better dietary choices and improve micronutrient intake.

In this paper, we applied the principles developed by Lancaster (1971). In his model, it is not the goods themselves that consumers desire, but rather the attributes (characteristics or properties) those goods possess. The model allows for the analysis of how changes in these attributes affect consumer preferences and demand. While this model is usually applied in the context of economics and consumer choice, it can certainly be adapted to apply to food micronutrients. To the best of our knowledge there are not specific studies that have applied the Lancaster model directly to food micronutrients.

The Lancaster model has the advantage of enabling a more detailed analysis of consumer preferences by focusing on utility at the attribute level. It provides a flexible framework that can accommodate a wide range of attributes and combinations of attributes. The model can be used to predict changes in demand as a function of changes in attribute levels. One of its limitations is that it assumes that consumers have full knowledge and awareness of all attributes and their levels, which is not always realistic.

INSERT FULL DESCRIPTION OF THE LANCASTER MODEL

In the case of foodstuffs, the consumer is not necessarily interested in the quatity of the food itself (e.g. lemon or orange). Rather, they would be interested in characteristics such as vitamin C, folate, sweetness or tartness, carbohydrates for energy, dietary fiber, etc. The consumer could satisfy his desire for these characteristics through one or more other products. The Lancaster model therefore assumes a linear relationship (of transmission of various characteristics to which the consumer may attach importance) between characteristics and goods according to the following expression:

Where is the vector of characteristics, the matrix of consumption technology or coefficients relating goods and characteristics, the vector of goods. can be greater or less than .

Consumer preferences can be represented by a utility function, where preferences and utility levels are defined in terms of the characteristics of the goods purchased. A utility function in the Lancaster framework can be defined as follows:

Where is the amount of the characteristic contained in one unit of the  good.

Since the consumer is assumed to act in accordance with his preferences and that utility is derived indirectly from the goods purchased, he therefore faces a budget constraint and the prices of the goods in the feasible region of the characteristics combinations determined by and .

Thus, the optimal choice would be the set of goods with the combination of characteristics that provides the consumer with the highest level of utility, given the affordability constraint. The regular budget constraint has the form . The optimization problem is solved as follows:

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The utility function

is assumed to be continuous, strictly concave and strictly increasing

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Since, on the one hand, the objective function is defined in the space of characteristics and the feasible set of constraints in the space of goods, and, on the other hand, there is a link between these two spaces via , we can also express the utility function in terms of goods.

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By understanding that consumers do not simply want "food" but specific attributes like micronutrients (vitamin A, iron, iodine, etc.), health professionals and nutritionists could design diets that better meet the micronutrient requirements of different individuals. This concept can also help inform public health initiatives or campaigns, emphasizing the importance of certain micronutrients that are lacking in a typical diet.

Companies in the food and beverage industry could use this model to guide the development of new products. For instance, if consumers in a certain demographic are found to value vitamin C highly, then food manufacturers could create products rich in this micronutrient to attract these consumers. Food Fortification Programs: Governments and international health organizations could apply the Lancaster model when designing food fortification programs. By identifying the key micronutrients that a certain population lacks (and presumably desires), these authorities could fortify staple foods with those specific micronutrients to improve public health. By educating consumers that what they truly desire from their food are the micronutrients (attributes) and not the food items themselves, it might be possible to steer dietary choices towards more nutritious options.

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Regenerate response