

# A comparative study of food labels in the United States and India: Adherence to Codex Alimentarius guidelines

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## SUMMARY

This study presented a comparative analysis of the adherence to Codex Alimentarius guidelines by packaged food industries in the United States (US) and India. Nutrition labels are crucial for consumer awareness of the healthiness of these products. Acknowledging the pivotal role of packaged food labeling in enabling informed consumer choices, this research systematically scrutinized a subset of packaged food products from each country. Based on the tenets of the Codex guidelines, the primary goal of this study was to discern notable similarities and divergences in packaged food labeling practices between the two countries. We hypothesized that the US would have greater adherence to food label guidelines in comparison to India. We collected packaged food labels from the US and Indian markets and compared and tabulated the data from seven major categories of packaged foods. Notably, the investigation revealed a higher degree of compliance within the US packaged food industry with Codex Alimentarius guidelines compared to the Indian packaged food sector. This study's implications extend to raising awareness among the populace and the packaging industry about the pivotal significance of nutritional labeling on packaged food items available in the market.

## INTRODUCTION

The Codex Alimentarius is widely recognized as the global reference for food safety and quality standards (1). Established by the World Health Organization (WHO) and Food and Agriculture Organization (FAO), this collection provides comprehensive guidelines and codes of practice for food production and processing to protect consumer health and ensure fair trade regulations worldwide (1). Each country also has its own unique set of recommendations based on various factors, including lifestyle, cultural traditions, the quality of available food ingredients, and the level of scientific knowledge, which are implemented by dedicated food safety agencies (1). To ensure that the agencies' decisions are aligned with international best practices, the Food and Drug Administration (FDA) in the United States (US) and the Food Safety and Standards Authority of India (FSSAI) consult authoritative bodies like the Codex Alimentarius Commission to develop and enforce regulations to protect public health (2). By referring to these international standards, national food safety agencies are able to map their regulations with global

recommendations (2).

Food packaging is needed to safeguard products from spoilage and contamination (3). It also serves the purpose of capturing the consumer's attention and creating a memorable first impression (3). However, packaging today has evolved far beyond its initial purpose and serves to provide important information about the food's nutritional content, portion sizes, usage directions, origin, price, and shelf-life to inform the user (4). This shift reflects the trend of consumers seeking to make well-informed decisions while selecting food and the growing demand for information about the relationship between nutrients and health (4).

The importance of consumer empowerment through access to reliable nutrition information in promoting healthy dietary practices was also emphasized by the representatives from more than 170 governments during the Second International Conference on Nutrition in 2014 (5). By giving consumers access to accurate nutrition information, individuals are well-equipped to make better-informed decisions about their food choices and are more aware of the risks associated with certain ingredients or dietary habits (5). The conference highlighted that consumers are empowered not by merely being provided information, but also by being educated on how to interpret and use this information effectively (5). Governments are committed to fostering this through subsidiary bodies like Codex Committee on Food Labeling and Codex General Standard for Labeling of Prepackaged Foods, which are responsible for setting standards for food labeling and distributing food information, respectively (5). The Codex standard is used globally as guidance for food safety standards, influencing consumer decisions and contributing to product appeal and sustainability (6).

The compliance of various countries with international food guidelines can vary significantly based on factors such as the country's regulatory framework, resources available for enforcement, cultural practices, and the level of public awareness and education (7). It is important to note that food guidelines can encompass a wide range of parameters, including food safety, nutrition labeling, food additives, and pesticide residues (8). Differing compliance with food packaging guidelines across countries can cause confusion for consumers and pose risks, particularly for those with dietary restrictions or allergies (8). Standardized regulations are essential to ensure consumer safety, product quality, enhance market transparency, and allow both consumers and businesses to make informed decisions and maintain healthy choices (8).

Another study revealed that compliance with the five mandatory nutrients specified by FSSAI— energy,

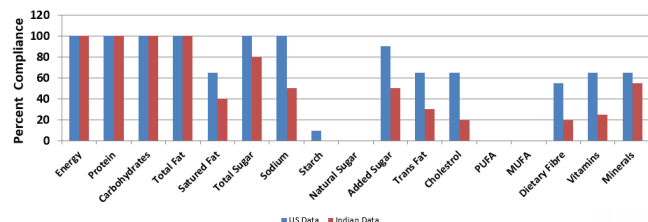
carbohydrates, sugar, protein, and fat—along with the requirement to list the ingredients, was poor across various food categories (9). This indicates gaps and emphasizes the need for improved compliance with FSSAI labeling requirements to empower consumers with the knowledge they need to make healthier dietary choices.

This study aimed to compare the compliance of food labeling in US and Indian packaged foods according to Codex Alimentarius. The rationale for conducting this study was to gain valuable insights into food labeling compliance in the US and India, which can lead to improvements in food safety, consumer protection, and product information globally. The choice to compare food labeling standards in the US and India was driven by the goal of analyzing the differences between a developed country (the US) and a developing country (India). Additionally, this comparison aimed to explore how regional differences, such as those between Asian and American cultures, influence labeling practices. Both the FSSAI and the FDA aim to ensure food safety and promote healthy eating habits, but they differ in their food safety standards, labeling, and packaging regulations (10). In India, FSSAI offers more flexibility in their labeling regulations as the rigor of evidence supporting health claims are not as stringent as in the US (10). In the US, the nutrition facts label must include information on serving size, calories, fats, proteins, carbohydrates, vitamins, minerals, and specific nutrients like added sugars and sodium, whereas in India, FSSAI requires that labels include only serving size, calories, fats, proteins, and carbohydrates. Inclusion of additional nutrients is not always mandatory in India unless health claims are made (11,12).

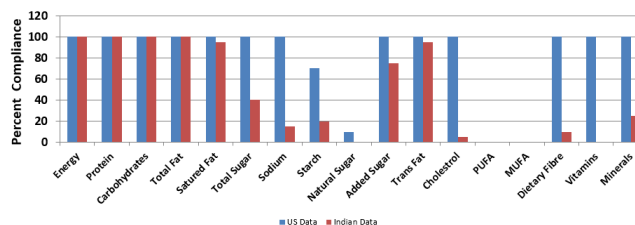
We hypothesized that the US would exhibit higher compliance with Codex Alimentarius food label guidelines than India. To conduct this comparison, we considered seven major categories of packaged food and captured the information on presence or absence of a particular nutrient on each packaged food label. The study revealed that Indian packaged food label compliance was lower compared to the US packaged foods for some nutrients. This research could shape future labeling policies regarding the alignment of food labels in the US and India with the Codex's recommendations.

## RESULTS

We assessed the nutrient labeling information on a total of 280 packaged food products across 7 different categories: beverages, ice cream and frozen desserts, soups, chocolates,



**Figure 1: Compliance in food labels for beverages available in the United States and India (n=20).** Bar graph depicting the percent compliance of beverage food labels for reporting 17 nutrients in the US and India. The percent compliance for each nutrient was calculated by dividing the number of times the nutrient was present by the total number of entries. PUFA = polyunsaturated fatty acids; MUFA = monosaturated fatty acids.



**Figure 2: Compliance in food labels for ice cream and frozen desserts available in the United States and India (n=20).** Bar graph depicting the percent compliance of ice cream and frozen desserts food labels for reporting 17 nutrients in the US and India. The percent compliance for each nutrient was calculated by dividing the number of times the nutrient was present by the total number of entries. PUFA = polyunsaturated fatty acids; MUFA = monosaturated fatty acids.

sauces and spreads, ready-to-cook foods, and protein supplements. We selected these food labels to cover a broad spectrum of food types with diverse nutritional profiles. Out of these 280 products, 140 were Indian brands and 140 were US brands. We compared the compliance of the nutrient labeling on the US and Indian packaged foods to Codex Alimentarius guidelines, which require the inclusion of key nutrients such as energy, protein, fat, carbohydrates, sugars, fiber, vitamins, and minerals, focusing on the presence or absence of each nutrient category on the food labels.

## Nutrient facts on the labels of beverages

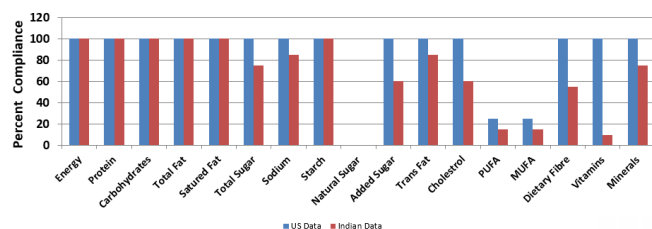
A total of 40 beverage products were examined, comprising 20 Indian and 20 US beverages (**Figure 1**). The beverage categories encompassed juices, energy drinks, sparkling drinks, soda, milk-based beverages, tonic water, and tea. Notably, there was complete compliance (100%) for energy, protein, carbohydrate, and total fat labeling in both Indian and US beverages. US beverages showed a compliance rate of 65% for saturated fat, trans fat, cholesterol, vitamins, and minerals on their labels. In contrast, Indian beverage products exhibited the following compliance rates: 40% for saturated fat, 30% for trans fat, 20% for cholesterol, 25% for vitamins, and 55% for minerals. This indicates variations in compliance between the two countries, with US products displaying higher compliance for these nutrients. In terms of total sugar (comprising all monosaccharides and disaccharides) and sodium, US packaged beverages achieved 100% compliance in displaying both of these crucial nutrients. In contrast, Indian beverages exhibited a compliance rate of 80% for total sugar and 50% for sodium. This highlighted a substantial difference in the labeling practices between the two countries. The display of natural sugar, polyunsaturated fatty acids (PUFA), and monosaturated fatty acids (MUFA) in US and Indian products was absent. Starch nutrient content was found on 10% of US beverage labels and 0% of Indian beverage labels. Finally, regarding added sugar, 90% of US beverages included this information on their labels, whereas it was found on only 50% of Indian beverage labels. Dietary fiber was the last nutrient in the analysis, with 55% of US beverage products including this information compared to 20% of Indian beverage products.

### Nutrient facts on the labels of ice creams and frozen desserts

We compared the adherence of ice creams and frozen desserts in the US and India to nutrient labeling regulations (**Figure 2**). Ice cream and frozen desserts included gelato, frozen yogurt, ice cream, frozen custard, sorbet, frozen dairy desserts, and non-dairy desserts. In both countries, energy, protein, carbohydrates, and fat labeling achieved a full compliance rate of 100%. It is noteworthy that all US products displayed the presence of saturated fat, total sugar, sodium, added sugar, trans fat, cholesterol, dietary fiber, vitamins, and minerals at 100% compliance. In contrast, Indian packaged ice creams and frozen desserts exhibited varying compliance rates: 95% for saturated fat, 40% for total sugar, 15% for sodium, 75% for added sugar, 95% for trans fat, 5% for cholesterol, 10% for dietary fiber, and 25% for minerals. However, there was no compliance for the display of vitamins on Indian product labels. US products included starch information on 70% of their labels, whereas Indian products displayed starch on 20%. In the case of natural sugar, 10% of US frozen desserts and ice creams included this information, while Indian products showed no display of natural sugar. Remarkably, for both US and Indian products, there was no representation of PUFA and MUFA on the labels, indicating a lack of information regarding these nutrients on the packaging of ice creams and frozen desserts in both countries.

### Nutrient facts on the labels of soups

We examined the compliance with nutrient labeling requirements for soups in the US and India (**Figure 3**). Soup varieties included thick, thin, and cold soups such as clear soups, broth-based soups, chunky soups, cream-based soups, and puréed soups. The data revealed 100% compliance for energy, protein, carbohydrates, and total fat in both countries. In the case of US soups, there was also complete adherence (100%) to the inclusion of other essential nutrients on the nutrition label, including saturated fat, total sugar, sodium, added sugar, trans fat, cholesterol, dietary fiber, vitamins, and minerals. In contrast, Indian soup products displayed these nutrients at varying compliance rates: 100% for saturated fat, 75% for total sugar, 85% for sodium, 60% for added sugar, 85% for trans fat, 60% for cholesterol, 55% for dietary fiber, 10% for vitamins, and 75% for minerals. This illustrated differences in compliance between US and Indian soup products, with Indian products exhibiting lower compliance rates for several nutrients. Notably, both US and



**Figure 3: Compliance in food labels for soups available in the United States and India (n=20).** Bar graph depicting the percent compliance of soups food labels for reporting 17 nutrients in the US and India. The percent compliance for each nutrient was calculated by dividing the number of times the nutrient was present by the total number of entries. PUFA = polyunsaturated fatty acids; MUFA = monounsaturated fatty acids.

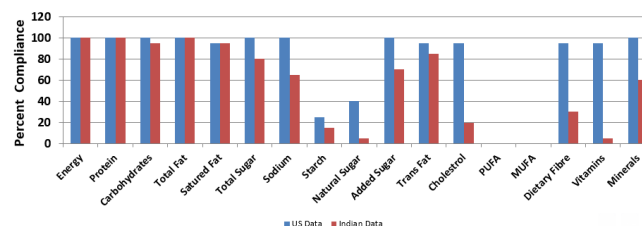
Indian products displayed natural sugar at 0% compliance indicating a lack of information about this nutrient on the labels. The representation of PUFA and MUFA on the labels was found on 25% of US soup products and 15% of Indian soup products, indicating limited inclusion of these specific nutrients in the labeling of soup products in both countries.

### Nutrient facts on the labels of chocolates

We assessed the nutrient labeling standards in chocolates from the US and India representing popular brands in both markets (**Figure 4**). Chocolate types included dark chocolate, milk chocolate, white chocolate, semi-sweet chocolate, and bittersweet chocolate. Energy and total fat displayed a 100% compliance rate on packaging labels in both US and Indian chocolates. Furthermore, US chocolates achieved full compliance (100%) for protein, carbohydrates, total sugar, and minerals. In contrast, Indian chocolates showed the following compliance rates: 100% for protein, 95% for carbohydrates, 80% for total sugar, 65% for sodium, 70% for added sugar, and 60% for minerals. This indicated a lower labeling compliance in Indian chocolates for these nutrients compared to their US counterparts. The labeling of saturated fat, trans fat, cholesterol, dietary fiber, and vitamins achieved 95% compliance on US chocolate packaging. In Indian packaged chocolates, the representation rates were as follows: 95% for saturated fat, 85% for trans fat, 20% for cholesterol, 30% for dietary fiber, and 5% for vitamins. Starch was depicted on 25% of US chocolate packets, while Indian chocolates showed 15% compliance in displaying starch content. When considering natural sugar, US chocolate labels included this information on 40% of products, whereas 5% of Indian chocolate labels displayed natural sugar content. In terms of PUFA and MUFA, both US and Indian chocolates had 0% representation on their food labels, indicating a consistent absence of information regarding these nutrients in chocolate labeling in both countries.

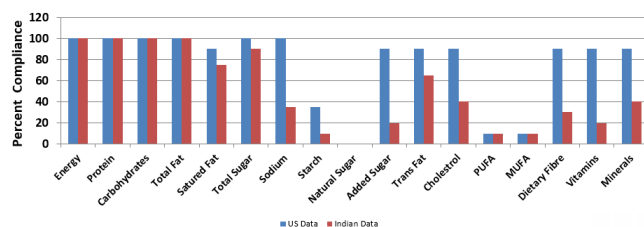
### Nutrient facts on the labels of sauces and spreads

We then compared nutrient labeling compliance in US and Indian sauces and spreads (**Figure 5**). The list of sauces and spreads consisted of hot sauce, tomato sauce, white sauce, barbecue sauce, soy sauce, taco sauce, butter, cream cheese, jam, mayonnaise, marinara sauce, and margarine. On US food labels for sauces and spreads, the representation of energy, protein, carbohydrates, total fat, total sugar, and sodium achieved a perfect 100% compliance, while on



**Figure 4: Compliance in food labels for chocolates available in the United States and India (n=20).** Bar graph depicting the percent compliance of chocolates food labels for reporting 17 nutrients in the US and India. The percent compliance for each nutrient was calculated by dividing the number of times the nutrient was present by the total number of entries. PUFA = polyunsaturated fatty acids; MUFA = monounsaturated fatty acids.



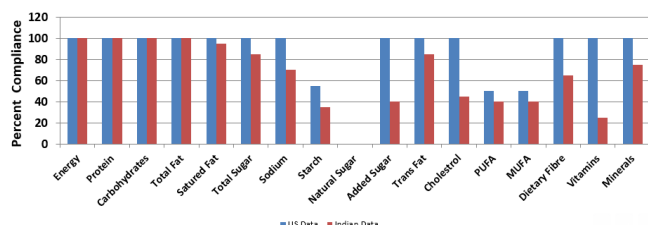


**Figure 5: Compliance in food labels for sauces and spreads available in the United States and India (n=20).** Bar graph depicting the percent compliance of sauces and spreads food labels for reporting 17 nutrients in the US and India. The percent compliance for each nutrient was calculated by dividing the number of times the nutrient was present by the total number of entries. PUFA = polyunsaturated fatty acids; MUFA = monosaturated fatty acids.

Indian food labels, the percentages were as follows: 100% for energy, protein, carbohydrates, and total fat, 90% for total sugar, and 35% for sodium. For saturated fat, added sugar, trans fat, cholesterol, dietary fiber, vitamins, and minerals, US sauces and spreads exhibited a compliance rate of 90%. In contrast, Indian products showed slightly lower compliance rates: 75% for saturated fat, 20% for added sugar, 65% for trans fat, 40% for cholesterol, 30% for dietary fiber, 20% for vitamins, and 40% for minerals. Starch was found on the labels of 35% of US sauces and spread products, while in Indian products, it was displayed on 10% of products. Natural sugar compliance was absent in both Indian and US products. In both US and Indian sauces and spreads, PUFA and MUFA were mentioned on 10% of products, showing similar levels of compliance between the two countries.

#### Nutrient facts on the labels of ready-to-cook foods

A comparative view of compliance was examined with respect to nutrient labeling requirements in the US and Indian ready-to-cook food products (**Figure 6**). Ready-to-cook foods included frozen dumplings, semi-prepared vegetables, prepared hot pot ingredients, seasoned meat, noodle bowls, and macaroni and cheese. In both countries, these food products achieved 100% compliance for energy, protein, and total fat. The nutrient table for US ready-to-cook foods showed complete compliance (100%) for energy, protein, carbohydrates, total fat, saturated fat, total sugar, sodium, added sugar, trans fat, cholesterol, dietary fiber, vitamins, and minerals. In contrast, Indian products displayed the following compliance percentages: 100% for energy, protein,



**Figure 6: Compliance in food labels for ready-to-cook foods available in the United States and India (n=20).** Bar graph depicting the percent compliance of ready-to-cook food labels for reporting 17 nutrients in the US and India. The percent compliance for each nutrient was calculated by dividing the number of times the nutrient was present by the total number of entries. PUFA = polyunsaturated fatty acids; MUFA = monosaturated fatty acids.

and carbohydrates, 95% for saturated fat, 85% for total sugar, 70% for sodium, 40% for added sugar, 85% for trans fat, 45% for cholesterol, 65% for dietary fiber, 25% for vitamins, and 75% for minerals. Starch was depicted on 55% of US ready-to-cook products and 35% of Indian products. Natural sugar was not displayed on any US or Indian products' packaging. In terms of PUFA and MUFA, Indian ready-to-cook products reported these nutrients at 40% compliance. In comparison, US products displayed these nutrients on 50% of their labels.

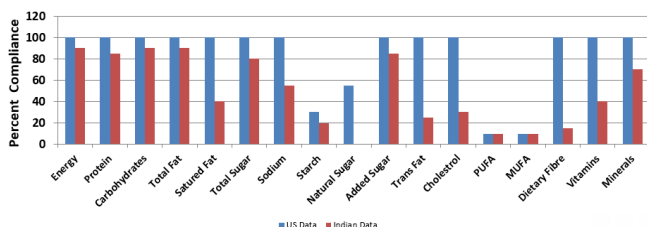
#### Nutrient facts on the labels of protein supplements

We then examined the compliance with nutrient labeling requirements in US and Indian protein supplements (**Figure 7**). Protein supplements consisted of various types of protein shakes, protein powders, and protein bars. For US protein supplements, all 20 selected products (100%) displayed information for energy, protein, carbohydrates, total fat, saturated fat, total sugar, sodium, added sugar, trans fat, cholesterol, dietary fiber, vitamins, and minerals. In contrast, the labeling compliance for Indian protein supplements varied as follows: 90% for energy, carbohydrates, and total fat, 85% for protein, 40% for saturated fat, 80% for total sugar, 55% for sodium, 25% for trans fat, 30% for cholesterol, 15% for dietary fiber, 40% for vitamins, and 70% for minerals. These figures demonstrated a discrepancy between US and Indian protein supplement labels, with the Indian products showing lower compliance rates for several nutrients, particularly saturated fat, trans fat, cholesterol, dietary fiber, vitamins, and minerals. Regarding specific nutrients, US protein supplements had a 30% compliance of starch on their labels, while Indian protein supplements had a lower compliance at 20%. However, there was a substantial difference in the labeling of natural sugar, with US products displaying it on 55% of labels, while none of the selected Indian products included this information. Furthermore, it was observed that 10% of both US and Indian protein supplement products indicated the presence of PUFA and MUFA on their food labels.

#### DISCUSSION

In this study, we aimed to conduct a comprehensive comparison of the nutritional labeling of packaged foods in the US and India across seven different categories: beverages, ice cream and frozen desserts, soups, sauces and spreads, chocolates, ready-to-cook foods, and protein supplements. According to Codex guidelines, certain nutrients, such as energy, protein, carbohydrates, total fat, saturated fat, total sugar, and sodium, are mandatory for inclusion on packaged food labels (10). There are also additional nutrients that may be included based on the country's food laws and regulations, which can vary in stringency from one nutrient to another. By systematically exploring a diverse range of packaged food items, we sought to identify patterns, inconsistencies, and areas of improvement in the labeling practices employed by the manufacturers.

Our study revealed that US packaged foods consistently included all mandatory nutrients, including energy, protein, carbohydrates, total fat, saturated fat, total sugar, and sodium on the labels of all selected products (n=140). In contrast, when we examined Indian packaged food labels data, compliance with some mandatory nutrients was lower compared to US packaged foods. Excessive sodium and sugar consumption is linked to chronic diseases like high blood pressure, heart



**Figure 7: Compliance in food labels for protein supplements available in the United States and India (n=20).** Bar graph depicting the percent compliance of protein supplements food labels for reporting 17 nutrients in the US and India. The percent compliance for each nutrient was calculated by dividing the number of times the nutrient was present by the total number of entries. PUFA = polyunsaturated fatty acids; MUFA = monosaturated fatty acids.

disease, diabetes, and stroke, so providing this information enables consumers to better manage their nutrient intake. It also supports public health initiatives aimed at reducing the risk of chronic diseases by promoting healthier eating habits. When we assessed the presence of sodium on US and Indian product labels, we found that all selected US products included sodium information on their labels, compared with 53.5% of Indian products. On average, starch was listed on 46.5% of US product labels, compared with 28.5% of Indian products. Natural sugar content was indicated on an average of 15% of the US product labels, whereas Indian packaged foods showed compliance at only 1%. However, added sugar was prominently featured, with 97.1% of US products and 57.1% of Indian products including this information. Other nutrients such as trans fat, cholesterol, PUFA, and MUFA were also marked on the labels of both US and Indian products with varying levels of compliance. The most visible differences in compliance were observed in the representation of vitamins and minerals. In US packaged foods, 92.85% of products included information about the presence of vitamins, while 93.5% included details about minerals. In contrast, the Indian packaged foods industry displayed vitamins on only 17.85% of products and minerals on 57.14% of products. Overall, when comparing the seven categories of nutrient labels on food groups, they all showed a consistent trend for presence of macronutrients like energy, carbohydrate, fat and protein across the US and India. However, sodium, dietary fiber and added sugar nutrient labeling across these seven food categories showed the most inconsistent trends.

Results from another study conducted in Hyderabad, India, revealed that while 52% of the packaged food products in India, which included beverages, ready to cook foods, ready to eat foods, chocolates, soups, and desserts, met the minimum requirements set by the FSSAI—showcasing nutrient information on energy, protein, carbohydrate, sugar, and total fat—only 27% adhered to the more stringent criteria defined by the Codex Alimentarius (13). Such findings of nutrition labeling of micronutrients like vitamins and minerals indicated that over half of Indian packaged foods fail to comply with both national and international nutrient labeling guidelines.

As the population continues to grow and more people consume packaged foods, the importance of comprehensive food labeling becomes increasingly critical. Furthermore, adhering to international standards like the Codex Alimentarius can foster consumer trust both domestically and internationally,

as it reflects commitment to transparency and quality, which may help promote public health (13). It is imperative for both the government and the food manufacturers to take proactive measures so that food labels provide accurate and easy-to-understand information to contribute to the broader goal of public health promotion. Informative nutritional labels are key to ensuring food safety and for facilitating fair food trade (14). These labels are helpful for consumers to promote healthy diets that are adequate in nutrients and reduce the risk of diet-related chronic diseases (14).

## MATERIALS AND METHODS

For this study, seven major categories of packaged food were considered, including beverages, ice cream, frozen desserts, soups, chocolates, sauces, spreads, ready-to-cook foods, and protein supplements. For each of the seven categories, 20 packaged food labels were collected from the US and Indian markets, for a total of 280 packaged food labels. The selected products belonged to renowned food brands that are ubiquitously available all over both countries. Wherever possible, the same brand of packaged food was chosen between the US and India. However, for some packaged food subcategories, where the same brand was not available, the brand was selected based on it being commonly used and the closest match to its counterpart food package (Appendix).

For each of the packaged foods, there were 17 different types of mandatory nutrients that were checked for its presence or absence on the food label. The most prevalent macronutrient and micronutrient labeling on the package was used, including energy, protein, carbohydrates, total fat, saturated fat, total sugar, sodium, starch, natural sugar, added sugar, trans fat, cholesterol, PUFA, MUFA, dietary fiber, vitamins and minerals. There were visual differences in the food labels showing nutritional information between the US and India (Figure 8).

Data on Indian food labeling was gathered from Reliance fresh supermarket and departmental stores in Jaipur, located in the state of Rajasthan. Similarly, data on US food labeling



**Figure 8. Example of food labels on same brand of sauce in the US and India.** Food label on the left is from a sauce bottle in the US whereas the food label on the right is from the sauce bottle in India.

was obtained from Kroger, Target, and Indian stores in Frisco, Texas. The data for all the above nutrients across seven categories of packaged food was entered into Microsoft Excel. The presence/absence of each nutrient on each food label was assigned an integer value of 1 (reported) or 0 (not reported). The percent compliance for each nutrient was determined by dividing the number of labels where the nutrient was reported by the total number of labels (both that reported and did not report the nutrient) and then multiplying by 100. For each of the categories of packaged food, the percent compliance was tabulated for all 17 nutrients, and a comparison bar graph between US and Indian data was generated. The data was then used for comparative analysis.

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## APPENDIX

Food Type		US data (n = 20)		India data (n = 20)	
Category	Subcategories	Brand Name	Food Product Flavor	Brand Name	Food Product Flavor
Beverages	Soda	Fanta	Orange	Fanta	Orange
		Dr. Pepper	Original	Dr. Pepper	Original
		Coca Cola	Zero Sugar	Coca Cola	Zero Sugar
		Pepsi	Regular	Pepsi	Regular
	Sparkling Drink	Topo Chico	Lime	Perrier	Lime
	Energy Drink	Gatorade	Cool Blue	Gatorade	Blue Bolt
		Gatorade	Orange	Gatorade	Orange
	Milk Drink	Cadbury	Hot Chocolate	Cadbury	Hot Chocolate
		Hershey's	Strawberry	Hershey's	Strawberry
		Hershey's	Vanilla	Hershey's	Vanilla
	Coconut Milk	Silk	Coconut Milk	Urban Platter	Coconut Milk
		Goya	Coconut Milk	Coco Mama	Coconut Milk
	Tonic Water	Schweppes	Tonic Water	Schweppes	Tonic Water
		Regatta	Citrus	Sepoy & Co.	Citrus
	Tea	Lipton	Green Tea	Lipton	Green Tea
	Juice	Welch	Grape	Real	Grape
		Simply Apple	Apple	B Natural	Apple
		Simply Orange	Orange	B Natural	Orange
		Minute Maid	Apple	Minute Maid	Apple
		Minute Maid	Orange	Minute Maid	Orange

**Appendix 1: Beverages from the US and India used in the study to compare food labels.**

Subcategories, manufacturing brand name, and flavor of all 20 beverages whose labels were compared between US and India.



Food Type		US data (n = 20)		India data (n = 20)	
Categories	Subcategories	Brand Name	Food Product Flavor	Brand Name	Food Product Flavor
Ice Cream and Frozen Desserts	Ice Cream	Kwality	Chocolate	Kwality	Chocolate
		Kwality	Vanilla	Kwality	Vanilla
		Kwality	Strawberry	Kwality	Strawberry
		Amul	Strawberry	Amul	Strawberry
		Amul	Vanilla	Amul	Vanilla
		Amul	Chocolate	Amul	Chocolate
		Vadilal	Chocolate	Vadilal	Chocolate
		Vadilal	Vanilla	Vadilal	Vanilla
		Nestle	Strawberry	Vadilal	Strawberry
		Haagen-Dazs	Vanilla	Haagen-Dazs	Vanilla
		Haagen-Dazs	Chocolate	Haagen-Dazs	Chocolate
		Haagen-Dazs	Chocolate Chip	Haagen-Dazs	Chocolate Chip
	Frozen Dairy Dessert	Oreo	Cookie	Kwality Wall's Oreo	Oreo Cookie
		Edwards	Chocolate	Kwality Wall's	Cadbury Crackle
		Ben & Jerry	Cookie Dough	Ben & Jerry	Cookie Dough
	Gelato	Talenti	Caramel	Gelato	Caramel
	Frozen Yogurt	Amul	Strawberry	Amul	Strawberry
	Sorbet	Frozen Farmer	Strawberry	Sorbet	Strawberry
	Frozen Custard	Turkey Hill	Vanilla	WeiKFiELD	Vanilla
	Non-dairy Frozen Dessert	SO	Coconut	Kwality Wall's	Coconut

**Appendix 2: Ice cream and frozen desserts from the US and India used in the study to compare food labels.** Subcategories, manufacturing brand name, and flavor of all 20 ice cream and frozen desserts whose labels were compared between US and India.



Food Type		US data (n = 20)		India data (n = 20)	
Categories	Subcategories	Brand Name	Food Product Flavor	Brand Name	Food Product Flavor
Soups	Pureed Soup	Chings	Tomato	Chings	Tomato
		Campbell	Tomato	Knorr	Tomato
		Maggi	Lentil	Maggi	Lentil
	Clear Soup	Chings	Manchow	Chings	Manchow
		Chings	Hot & Sour	Chings	Hot & Sour
		Chings	Sweet Corn	Chings	Sweet Corn
		Maggi	Clear Vegetable	Maggi	Clear Vegetable
	Chunky Soups	Chings	Mix Veg	Chings	Mix Veg
		Campbell	Chicken Noodle	Knorr	Chicken Noodle
		Campbell	Vegetable	Knorr	Vegetable
		Maggi	Chicken Noodle	Maggi	Chicken Noodle
		Batchelors	Chicken Noodle	Batchelors	Chicken Noodle
		Batchelors	Golden Vegetable	Batchelors	Golden Vegetable
	Broth Based	Campbell	Broth	Knorr	Broth
	Cream Based	Campbell	Cream of Asparagus	Knorr	Cream of Asparagus
		Campbell	Cream of Potato	Knorr	Cream of Potato
		Campbell	Cream of Celery	Knorr	Cream of Celery
		Maggi	Mushroom	Maggi	Mushroom
		Maggi	Cream of Chicken	Maggi	Cream of Chicken
		Batchelors	Cream of Vegetable	Batchelors	Cream of Vegetable

**Appendix 3: Soups from the US and India used in the study to compare food labels.**

Subcategories, manufacturing brand name, and flavor of all 20 soups whose labels were compared between US and India.

Food Type		US data (n = 20)		India data (n = 20)	
Categories	Subcategories	Brand Name	Food Product Flavor	Brand Name	Food Product Flavor
Chocolates	Milk Chocolate	Hershey's	Milk Chocolate	Hershey's	Milk Chocolate
		KitKat	Milk Chocolate	KitKat	Milk Chocolate
		Ferrero Rocher	Milk Chocolate	Ferrero Rocher	Milk Chocolate
		Lindor	Milk Chocolate	Lindor	Milk Chocolate
		Godiva	Milk Chocolate	Godiva	Milk Chocolate
		Ghirardelli	Milk Chocolate	Ghirardelli	Milk Chocolate
		M&M's	Milk Chocolate	M&M's	Milk Chocolate
		Snickers	Milk Chocolate	Snickers	Milk Chocolate
		Toblerone	Milk Chocolate	Toblerone	Milk Chocolate
		Nestle	Milk Chocolate	Nestle	Milk Chocolate
		Whoppers	Milk Chocolate	Whittakers	Milk Chocolate
		Dove	Milk Chocolate	Amul	Milk Chocolate
		MilkyWay	Milk Chocolate	Galaxy	Milk Chocolate
	Dark Chocolate	Toblerone	Dark Chocolate	Toblerone	Dark Chocolate
		Hershey's	Dark Chocolate	Hershey's	Dark Chocolate
		Lindor	Dark Chocolate	Lindor	Dark Chocolate
		Thrive	Dark Chocolate	Ignite	Dark Chocolate
	Semi Sweet	Hershey's	Semi Sweet	Hershey's	Semi Sweet
	Bitter Sweet	Ghirardelli	Bitter Sweet	Amul	Bitter Sweet
	White Chocolate	Lindor	White Chocolate	Lindor	White Chocolate

**Appendix 4: Chocolates from the US and India used in the study to compare food labels.**

Subcategories, manufacturing brand name, and flavor of all 20 chocolates whose labels were compared between US and India.

Food Type		US data (n = 20)		India data (n = 20)	
Categories	Subcategories	Brand Name	Food Product Flavor	Brand Name	Food Product Flavor
Sauces and Spreads	Sauces	Tabasco	Hot Sauce	Tabasco	Hot Sauce
		Taco Bell	Hot Sauce	Taco Bell	Hot Sauce
		Chings	Red Chilli Sauce	Chings	Red Chilli Sauce
		Maggi	Hot & Sweet Tomato Chilli Sauce	Maggi	Hot & Sweet Tomato Chilli Sauce
		Simply Nature	Tomato Ketchup	Maggi	Tomato Ketchup
		Ragu	Classic Alfredo	Abbie's	Classic Alfredo
		Kraft	Barbecue Sauce	Kraft	Barbecue Sauce
		Kraft	Hickory Smoke Barbecue Sauce	Kraft	Hickory Smoke Barbecue Sauce
		Kikkoman	Soy Sauce	Kikkoman	Soy Sauce
		Ching's	Dark Soy Sauce	Ching's	Dark Soy Sauce
		Taco Bell	Mild Taco Sauce	Taco Bell	Mild Taco Sauce
		Ching's	Green Chilli Sauce	Ching's	Green Chilli Sauce
	Spreads	Amul	Butter	Amul	Butter
		Philadelphia	Cream Cheese	Philadelphia	Cream Cheese
		Kissan	Mixed Fruit Jam	Kissan	Mixed Fruit Jam
		Hellmann's	Real Mayonnaise	Hellmann's	Real Mayonnaise
		Barilla	Marinara Sauce	Barilla	Marinara Sauce
		Ragu	Marinara Sauce	Ragu	Marinara Sauce
		Land O Lakes	Margarine	Confect	Margarine
		Jif	Peanut Butter	Pintola	Peanut Butter

**Appendix 5: Sauces and spreads from the US and India used in the study to compare food labels.** Subcategories, manufacturing brand name, and flavor of all 20 sauces and spreads whose labels were compared between US and India.

Food Type		US data (n = 20)		India data (n = 20)	
Categories	Subcategories	Brand Name	Food Product Flavor	Brand Name	Food Product Flavor
Ready to Cook	Prepared Hot Pot	MTR	Paneer Tikka Masala	MTR	Paneer Tikka Masala
		MTR	Dal Makhani	MTR	Dal Makhani
		MTR	Palak Paneer	MTR	Palak Paneer
		MTR	Mixed Vegetable Curry	MTR	Mixed Vegetable Curry
		MTR	Sambar	MTR	Sambar
		MTR	Vegetable Pulao	MTR	Vegetable Pulao
		Haldiram	Paneer Tikka Masala	Haldiram	Paneer Tikka Masala
		Haldiram	Dal Makhani	Haldiram	Dal Makhani
		Haldiram	Palak Paneer	Haldiram	Palak Paneer
	Semi-Prepared Vegetables	Birds Eye	Peas	Safal	Peas
		Birds Eye	Sweet Corn	Safal	Sweet Corn
		Birds Eye	Mixed Vegetables	Safal	Mixed Vegetables
	Noodles	Ramen	Millet Noodles	Slurp Farm	Millet Noodles
		Maggi	Veg Atta Noodles	Maggi	Veg Atta Noodles
		Top Ramen	Chicken Curry Noodles	Top Ramen	Chicken Curry Noodles
		Ching's	Hakka Noodles	Ching's	Hakka Noodles
		Maggi	Instant Noodles	Maggi	Instant Noodles
	Frozen Dumplings	Bibigo	Dumplings	Prasuma	Dumplings
	Seasoned Meat	Lloyd's	Seasoned Meat	Fresh to Home	Seasoned Meat
	Macaroni & Cheese	Kraft	Macaroni & Cheese	Kraft	Macaroni & Cheese

**Appendix 6: Ready to Cook foods from the US and India used in the study to compare food labels.** Subcategories, manufacturing brand name, and flavor of all 20 ready to cook foods whose labels were compared between US and India.



Food Type		US data (n = 20)		India data (n = 20)	
Categories	Subcategories	Brand Name	Food Product Flavor	Brand Name	Food Product Flavor
Protein Supplements	Protein Bar	KIND	Chocolate	GoodDiet	Chocolate
		Kellogg's	Peanut Butter	The Whole Truth	Peanut Butter
		CLIF Bar	Chocolate Brownie	Yoga Bar	Chocolate Brownie
	Protein Shake	Fit Shake	Vanilla	Epigamia	Vanilla
		Fit Shake	Chocolate	Epigamia	Chocolate
		Owyn	Vanilla	Nestle	Vanilla
		Owyn	Cookies & Cream	Epigamia	Cookies & Cream
		Owyn	Chocolate	Herbal Life	Chocolate
		Premier Protein	Chocolate	Phab	Chocolate
		Premier Protein	Vanilla	Phab	Vanilla
		Premier Protein	Strawberry	Mypro	Strawberry
		Fairlife	Chocolate	Strive	Chocolate
		Fairlife	Vanilla	PentaSure	Vanilla
		Fairlife	Strawberry	Phab	Strawberry
	Protein Powder	Garden of Life	Vanilla	Garden of Life	Vanilla
		Garden of Life	Chocolate	Garden of Life	Chocolate
		Vega	Vanilla	Vega	Vanilla
		Vega	Chocolate	Vega	Chocolate
		Gold Standard	Whey Protein	Gold Standard	Whey Protein
		Simple Truth	Whey Protein	HealthFarm	Whey Protein

**Appendix 7: Protein supplements from the US and India used in the study to compare food labels.** Subcategories, manufacturing brand name, and flavor of all 20 protein supplements whose labels were compared between US and India.