CRACKING THE CODE: EVALUATING NUTRIENT VALUES OF PROCESSED FOODS TO ENABLE INFORMED CONSUMER CHOICES

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Abstract

The food supply includes both fresh and processed foods. Both food and nutrition security, or the degree to which food supplies fulfill people's dietary requirements, may be improved through the use of processed foods. The nutritional effects of processed foods are the main topic of this ASN scientific statement. This scientific statement's three main contributions are as follows: 1) an overview of the impact of processed foods on population health, 2) a discussion of the roles that different groups can play in promoting healthier eating habits, and 3) a look at the latest developments in relevant research and technology. By sharing accurate information and working together to increase consumer awareness, professionals in the fields of nutrition and food science, the food industry, and other interested parties can help to improve people's diets and ensure a safe, tasty, inexpensive, and environmentally friendly food supply. This study looked at whether or not food labeling requires consumers to have a certain level of nutrition literacy. Consumers who already know a lot about a topic are more likely to utilize label information wisely, according to a cognitive processing model. This means they will pay greater attention to the most important details, fully comprehend them, and base their purchasing choices on this knowledge.

Keywords: processed foods, nutritional value, food labelling, packaged foods

1. Introduction

The term "food processing" refers to the practice of making changes to harvested or cultivated foods in order to extend their shelf life and make them more suitable for human consumption. Ancient people first started processing materials. Preserving foods became more important as agriculture and animal husbandry grew so that people could protect their harvests from rotting and have enough stored away in case of need. It's likely that food preparation was the first "technology" that contributed to the separation of society into distinct artisan sectors. This means that the food processing business most likely paved the way for urbanization. Although consumers should make better use of the nutrition information provided on food labels, they often don't.

Huge scope food handling has recently turned into a modern cycle over the most recent 100 years, while previously most protection and handling was finished in the home. Notwithstanding, whether food is treated at home or in an expert setting, the fundamental stages engaged with conservation and handling and their consequences for food quality, nourishment, and security are for the most part something very similar.

- **Definitions of processed foods**

Providing some basic operational criteria up front may help clear up some of the mystery around processed meals. Putting food through a series of mechanical or chemical processes to alter or preserve it is known as "food processing." As defined by a scientific review conducted by the Institute of Food Technologists, processing can involve "one or more of a range of operations, including washing, grinding, mixing, cooling, storing, heating, freezing, filtering, fermenting, extracting, extruding, centrifuging, frying, drying, concentrating, pressurizing, irradiating, microwaving, and packaging." Bread, cheese, and wine are all examples of basic foods that have been substantially processed and prepared, yet are nevertheless typically not seen of as "processed" by consumers since they no longer resemble their original commodities.

Terms like "unprocessed" or "minimally processed" foods, "processed culinary ingredients," "food industry ingredients," and "ultra processed foods" have emerged in an attempt to define foods by discriminating between various degrees of processing. A value-laden, subjective description based

on the level of processing does not accurately define foods. This is not to say that all categorization methods are arbitrary. All things considered, characterizing the qualities of the food utilizing objective, government-decided wholesome terms for dietary principles (e.g., how much fat, fiber, or sodium in correlation with dietary norms or another standard) is a reproducible and valuable plan for surveying the job of handled food varieties in the eating routine. The Worldwide Food Data Committee made these arrangements for handled food sources subsequent to reviewing shoppers.

Frequent intake of processed (PF) and ultra-processed (UPF) foods, which cause dietary changes, is a contributing reason to the worldwide rise in obesity. Specifically, they are "industrial products that are characterized by having high caloric density together with high levels of sugar, saturated fats, sodium, and deficient levels of vitamins and minerals," as described by the Pan American Health Organization (PAHO). UPFs, on the other hand, can have anywhere from five to twenty or more ingredients, including things like substances extracted from foods with unusual culinary uses, substances made from food components, and additives used to modify the final product's color, flavor, taste, and texture. Various chocolates, candies, cookies, morning cereals, jams, jellies, carbonated beverages, energy drinks, sweetened milk-based drinks, and more are all examples of packaged snacks.

2. Literature Review

(Monteiro et. al, 2011; Moubarac et. al, 2013) The mix of natural or negligibly handled food varieties and culinary fixings (like oils, flours, sugar, and salt) to make dishes and dinners is more grounded than the mix of handled or super handled items, as per concentrates on led in Brazil and Canada.

(He and MacGregor, 2010) Children in wealthy nations eat more processed foods than ever before, which accounts for around 80% of their salt intake. Many popular processed, restaurant, fast food, and snack options include excessive amounts of salt, fat, and sugar. From the ages of three to four, children may consume as much salt as adults.

(Mathios, Ippolito, 1999, Williams, 2005) Great wellspring of fiber, fat free, low calorie are instances of supplement content cases that attempt to pass on data about the worth or relative amount of a specific supplement inside a food item. It has been proven that claims on food labels affect consumers' processing of the labels and lead to changes in their eating habits.

(Axelson, Brinberg, 1992, McKinnon et al, 2014, Moorman, 1996, Parmenter, Wardle, 1999) Understanding the relationship between food and health, the effects of food on illness, the foods that provide the majority of essential nutrients, and dietary guidelines and recommendations are all examples of the types of information that fall under the umbrella term "nutrition knowledge."

3. Methodology

In the first three months of 2020, researchers in New Delhi, India used a standardized and organized questionnaire to collect data from customers. Cronbach's alpha was used to determine the reliability of the questionnaire, and the resulting value of.89 is higher than the minimum acceptable value of.70. Content validity was checked by consulting with domain experts and academics to ensure the questionnaire's accuracy. Through a mall intercept survey, in which every 10th individual leaving the mall was asked to voluntarily take part in the research, 303 valid answers were obtained. The questionnaire was mostly split into three sections and was intended to capture multiple replies on specific issues. The first section of the survey asked participants about their backgrounds and demographics. Part two of the questionnaire aimed to gauge shoppers' familiarity with nutrition labels, their motivations for utilizing or ignoring them, and the challenges they confront while doing so. The final section of the questionnaire is designed to find out how well respondents comprehend the information provided on nutrition labels and what information they search for when buying ultra-processed food items. SPSS v22 was used for the data analysis process. Descriptive statistics were used to analyze the distribution of answers, and statistical tests, including the Chi-squared equality of proportions and the Fisher exact test, were used to determine whether or not male and female consumers of ultra-processed food products differed at the 95% confidence level.

4. Result and Discussion

The demographic information for the whole sample size of 303 is shown in Table 1. There were 56.4% males and 43.6% females in the overall sample size. Students and working professionals made up the bulk of this survey's respondents, and they were found to be regular shoppers of ultra-processed foods at supermarkets and shopping centers.

Table 1: Consumer's sociodemographic profile

Characteristics	n	%
Gender		
Male	162	46.8
Female	156	44.3
Age group (in Yrs.)		
<24	63	52.8
25-29	95	28.6
30-34	52	41.3
35–40	38	54.5
>40	29	
Education level		
Up to primary/secondary school	34	11.2
Intermediate	42	15.8
Graduate	118	42.4
Postgraduate	71	28.1
Doctorate	35	8.3
Family annual income (INR)		
<2 lacs	46	45.6
2–5 lac	84	55.7
5–10 lacs	52	48.4

| 10–15 lacs	42	39.3
>15 lacs	54	49.9
Occupation		
Student	114	42.8
Employed	84	41
Business	47	17.4
Homemaker	23	7.5
Retired/unemployed	10	4.8
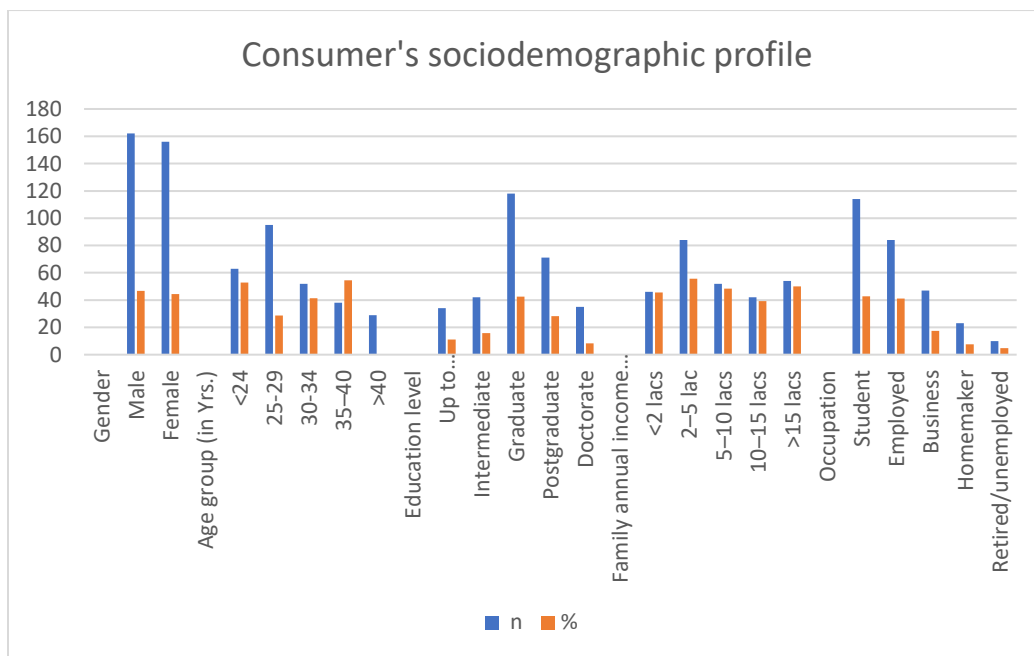
Figure 1: Consumer's sociodemographic profile

Consumer's use of nutritional labels

Only 31% of respondents acknowledged reading nutrition labels "always" when asked whether they do so before making a purchase of ultra-processed foods, and the majority of these customers were women. While over 40% of respondents said they "sometimes" check nutrition labels, nearly

30% said they never do. The Chi-square test revealed a statistically significant (p .05) gender gap in the use of and understanding of nutrition labels on highly processed foods (Table 2).

TABLE 2 Use/read nutrition labels at the point of purchasing ultra processed food

	Male (%)	Female (%)	Total (%)	x^2	p-Value
Always/most of the times	32 (14.7)	43 (30.2)	75 (25)	10.6	.005
Sometimes	46 (56.1)	24 (50.4)	70 (60.5)		
Never	37 (29.2)	56 (19.4)	93 (14.5)		
Total	115 (100)	123 (100)	238 (100)		
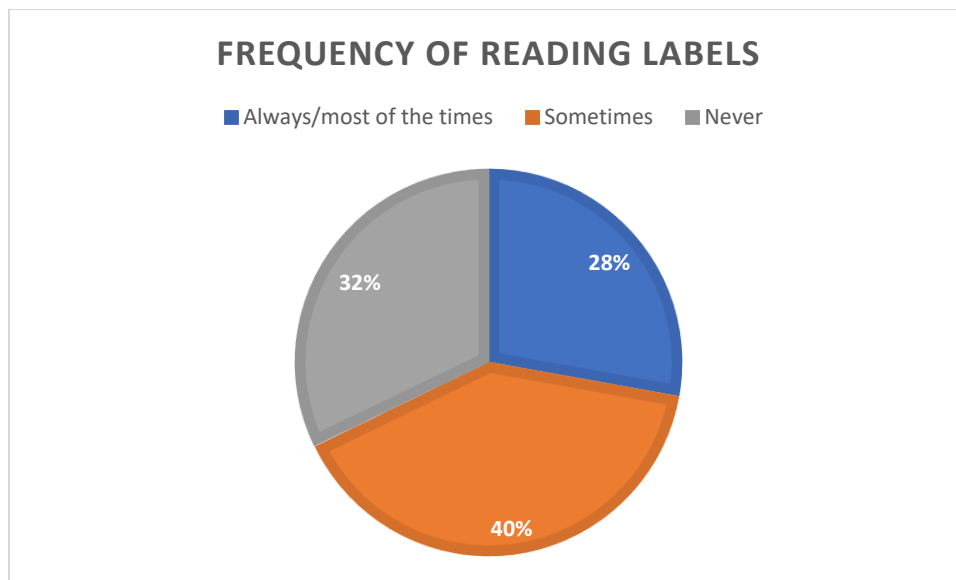
Figure 2: Frequency of reading labels

Discussion

There were 303 participants in this analysis. The majority of responders (70.62%) say they read nutrition labels, although their use frequency is low. It is predictable with the exploration of Cowburn and Stockley (2005) that just 31% of respondents read nourishment names

"continuously," recommending that genuine use of sustenance marks during the acquisition of super handled food items is a lot of lower; besides, most of respondents who read names "forever" were "female," showing that "female" customers are more successive in utilizing the data given by sustenance marks.

The majority of respondents said they studied nutrition labels so they could make healthier food choices, suggesting they rely on this resource while shopping for and preparing their meals. According to Aprile and Annunziata's (2005) research, this might be because they prioritized leading a healthy lifestyle. Reasons such as "to avoid allergies or food intolerance" and "other health reasons" were also validated by prior research. Some respondents also stated factors related to food and the need to quantify nutrients. Female respondents were shown to be more reliable than male respondents in this research when it came to reading nutrition labels, with the majority of female consumers attributing their label-reading habits to "dietary purpose." This might be because in India, unlike in the West, women usually do more of the grocery shopping and cooking than males. Similar to the previous research, "lack of time" and "lack of interest" were cited as the most prevalent reasons for not utilizing nutrition labels across both the groups of respondents who read labels occasionally and those who never read it. Both "sometimes" label readers and "always" label readers cited tiny font size/difficult to detect as reasons for not reading some labels, corroborating the preceding results. Consistent with previous results, several respondents cited a lack of expertise or a difficult word as the cause. These findings highlight the need of improved nutritional labeling strategies, which aim to entice and inspire customers to read labels so that they may make more educated food choices.

Those who read labels "always" or "sometimes" said that the information influences their shopping decisions. The results of this study corroborated those of earlier research showing that female respondents were more susceptible to persuasion than male respondents when making purchases of highly processed foods. Even while some respondents said that labels don't have much of an impact on their shopping decisions, this may be due to a lack of comprehension of nutrition labels, which is consistent with past research.

Similar to previous results, more than half of the participants in this research reported only having a "somewhat" or "somewhat not at all" understanding of the nutrition label information provided. Consistent with the results of other studies, the majority of participants in this study studied nutrition labels to learn about the fat, sugar, calorie, vitamin, and carbohydrate content of the food they were going to consume. Consistent with the results of the last survey, this one finds that the majority of female respondents care more about fat and sugar content.

5. Conclusion

This study's results, however, show that the majority of shoppers really do examine nutrition labels before purchasing highly processed foods. When purchasing highly processed foods, women are more likely to study the nutrition labels than men. The consumer examines the nutrition label for nutritional and health reasons.

The majority of customers who "sometimes" or "never" utilize nutrition labels cite a lack of time, lack of interest, forgetting to read, and/or difficulty with nutrition labeling language as their primary reasons for not doing so. Men were more interested with energy content (calories) and carbs, whereas women prioritized fat and sugar content information. Consumers in underdeveloped nations need to be educated on the need of reading nutrition labels in order to adopt healthier eating habits. Those who regularly check food labels are less likely to buy ultraprocessed food items. According to the results of this research, customers are often confused by the technical jargon used on food packaging; as a result, it is recommended that nutrition labels be written in plain English. The next generation has to be educated from an early age on the necessity of maintaining a healthy diet and lifestyle. Effective policies at the enterprise level need to be formulated by regulatory authorities so that the nutritional value mentioned on the packet will be in the simplest form, and some measures need to be taken so that modern consumers are more aware of the benefits of using nutritional labeling prior to making the final purchasing decision regarding ultra-processed food products.

Based on our findings, processed foods contribute significantly to the nutritional value of diets and should not be discounted. They help guarantee not just that there will always be enough to eat, but also that the quality of that food will satisfy basic nutritional requirements.

More intensive information assortment and refinement of the different proportions of handled food sources, especially to analyze food varieties consumed at home and from home, were among the many topics for further research highlighted by this preliminary evaluation of processed foods' impact on nutrition and health. New preservation methods that boost a food's nutritional density while reducing the elements that have been recognized as dietary components to restrict are also a top goal. Finally, additional study and education is required to change consumers' definitions of processed foods.

By giving a nutritious food supply that is protected, pleasant, reasonable, and supportable; by imparting really and precisely with one another; and by cooperating to work on the general information on purchasers, the sustenance and food science local area, the food business, and different partners can support working on Americans' weight control plans.

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