Healthy Food Selection : The Role of Nutritional Information of Packaged Foods on Consumers' Purchase Intentions

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Abstract

India is the world's second largest producer of food next to China and has the potential of being the largest food producer in the world. The food processing industry is the fifth largest industry in India in terms of production, consumption, export, and expected growth. Among the various sectors of the food-processing industry, the ready to eat food products industry is growing at the fastest pace of 30 % p.a. There are nearly 100 international, national, and local players already operating in the industry, and equal numbers of players are likely to enter in the market in the coming years due to its huge growth potential. Ready to eat food products being products of low involvement category, a little differentiation exists among the products produced by various players of the industry so as to differentiate their products. To differentiate their products, one of the most prominent tools used in the industry is packaging. The companies make use of various packaging elements to differentiate their products. This study was undertaken to analyze the influence of nutritional information provided on the packages of ready to eat food products on the product evaluation and buying behavior of consumers in Rajkot.

Keywords: nutritional information, ready to eat food products, packaged foods, food processing industry, healthy food selection

According to FAO, food processing can be defined as the process that encompasses all the steps that food goes through from the time it is harvested to the time it arrives on the consumer's plate. The size of the global processed food industry is estimated to be valued around at US $ 3.6 trillion and accounts for three-fourth of the global food sales. Despite its large size, only 6% of the processed foods are traded across borders as compared to 16% of major bulk agricultural commodities. The U.S. is the single largest consumer of processed food and accounts for 31% of the global sales. This is because as countries develop, high quality and value-added processed foods such as convenience foods are preferred over staples, which are prevalent in less-developed economies. Over 60% of the total retail processed food sales in the world are accounted for by USA, European Union, and Japan taken together. Japan is the largest food-processing market in the Asian region, though India and China are catching up fast and are likely to grow more rapidly. The share of India in the global food processed industry stood at around 1.6 %. The Ministry of Food Processing Industries has stated in its Vision 2015 that it aims to increase India's share to 3% of world's processed food trade (National Skill Development Corporation, 2010).

The Indian Processed Food Industry

India has the second largest arable land of 161 million hectares and has the highest acreage under irrigation. Next to

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Table 1. Main Sectors of the Food Processing Industry

Sectors	Products
Diary	Whole milk powder, Skimmed milk powder, Condensed milk, Ice cream, Butter, Ghee & Cheese
Fruits & Vegetables	Beverages, Juices, Concentrates, Pulps, Slices, Frozen & Dehydrated products, Potato Wafers/ Chips etc
Grains & Cereals	Flour, Bakeries, Starch Glucose, Cornflakes, Malted foods, Beer and Malt extracts, Vermicelli, Grain based alcohol
Fisheries	Frozen & Canned products mainly in fresh form
Meat & Poultry	Frozen and packed - mainly in fresh form, Egg powder
Consumer Foods	Snacks, Namkeens, Biscuits, Alcoholic and Non alcoholic beverages

Source : Ministry of Food Processing Industry (2013)

China, India is the second largest food producer in the world and has the potential to emerge as the biggest producer in the food and agriculture sector. The size of the food industry in India is estimated to be ₹ 13, 20,000 crores (US $ 220 billion) by the end of the year 2015 and that of the processed food industry is estimated to be ₹ 6, 60,000 crores (US $ 110 billion) by the end of the year 2015. The food-processing industry is the 5th largest industry in India in terms of production, consumption, export, and expected growth. The food processing industry accounts for about 14% of manufacturing GDP, nearly 13% of India's exports, 6% of the total industrial investment, and employs about 13 million people directly and 35 million people indirectly (FICCI- KPMG, 2007). The main sectors of the food processing industry are listed in the Table 1.

✤ **Food Processing Industry in Rajkot :** Since 2000s and more recently, the food processing sector has witnessed corporatization in a big way. Rajkot is the fourth-largest city in the state of Gujarat after Ahmedabad, Surat, and Vadodara. It is the world's 22nd fastest growing city. With the amalgamation of vast rural areas, Rajkot has become the 23rd largest urban agglomeration in India, with a population of more than 3 million people as in 2012. Due to this, a huge demand, especially of food products has emerged. To meet the demand supply gap, there is a big rise in private food-processing units. Some of the prominent private players of the packaged food industry operating at the national level from Rajkot include Balaji Wafers (P). Ltd, Gopal Namkeen, Radhe Namkeen, Atop Namkeen, and so forth. Besides the above-mentioned big players, there are nearly 300 small and micro units already operating at the district level. Among these, Balaji Wafers is competing with international players with a turnover of more than ₹ 500 crores p.a (Industries Commissionerate, Govt.of Gujarat, 2013).

Definition of Packaged Food and its Various Segments

Packaged foods can be defined as those foods that are wrapped or stored in containers and could be shipped to another place without any damage or destruction. They can be eaten immediately or after adding water or other products, heating, or thawing. They are usually partially prepared or completely prepared. Packaged foods are also known as convenience foods because of ease of consumption. Packaged food is the wide term that encompasses the various products across the different sectors of the food processing industry. In broader terms, the packaged foods / convenience foods could be basically classified into two categories.

(1) Ready to Cook Foods : For example, instant mixes like cake mixes, gulab-jamun mix, falooda mix, ice cream mix ; pasta products like noodles, macaroni, vermicelli, and so forth.

(2) Ready to Eat Foods : For example, breads, biscuits, buns, ice creams, chips, namkeens, and so forth.

Besides these, the other general items that come under the shelf stable convenience foods include milk, atta, corn flakes, vegetable and edible oils. Frozen convenience food include fruits & vegetables in frozen form, yogurt, and so forth.

The packaged food industry is expected to be a ₹ 91, 000 crores industry by this year (2015). The industry is largely dominated by the ready-to-eat food segment, which contributes to 90% of the total sales of the packaged food industry. Out of various segments of the packaged food industry, the ready to eat food is growing at the fastest pace of about 30 % p.a (Technopak Advisors Pvt. Ltd. and Federation of Indian Chambers of Commerce and Industries (FICCI), 2008).

✣ **Definition of Ready to Eat Food, its Segments, and Factors Responsible for its Growth :** Ready to eat food products may be defined as any product, which does not require any elaborate processing procedures on the part of the consumer before it is good enough for consumption. It is ready to eat as soon as the pack is opened in a form, which is tasty and appetizing. Main types of ready to eat food products include (a) milk based products like cheese, butter, ice-cream ; (b) bakery products like biscuits, cakes, buns, breads, and so forth ; (c) fruit based products like fruit juices, jams, and so forth ; (d) snacks, namkeens, potato chips, sauces, and so forth ; (e) confectionary items like sweets, jellies, chewing gums, and so forth (Technopak Advisors Pvt. Ltd. and Federation of Indian Chambers of Commerce and Industries (FICCI), 2008).

✣ **Packaging and its Importance for the Packaged Food Industry :** A package is defined as a container which holds, protects, and identifies the product throughout its distribution channel (Ampuero & Vila, 2006). It has been found from recent research that approximately 73% of the products are sold on the self service basis at the point of sale (Silayoi & Speece, 2007). This shows that important cues need to be provided to the consumers at the point of sale so that companies could differentiate their products from the competitors on the one hand and could attract and persuade the consumers to buy their products on the other hand. Under these circumstances, the packaging would be the most useful tool that may be available for attracting the consumers' attention. This is because unlike other forms of communication, which tend to be fleeting, packaging plays a crucial role not only at the point of sale, but also after the actual purchase of the product.

The first moment of truth is about obtaining the customers' attention and communicating the benefits of the offer. The second moment of truth is about providing the tools the customer needs to experience the benefits when using the product. The packaging is even more important for packaged and ready to eat food products. This is because they belong to a low involvement category. Low involvement products are basically low priced products with little importance. For example, impulse purchase categories like namkeens and ice-creams. In these categories, consumers tend to be driven by in-store factors and extrinsic cues (e.g. brand name, packaging, and so forth) to help them make their decisions as they have neither the desire nor the need to comprehensively investigate and assess all the offerings available to them. Hence, to take advantage of the situation, companies often make innovative use of various packaging elements like shape, size, color, labels, position of visual and verbal elements, and so forth to differentiate their products from competitors and to attract consumers to their products. Nowadays, one of the most prominent techniques used by companies to sell their products, like biscuits, wafers, ice-creams, chocolates, and so forth is the use of nutrition information. Nutrition information on the food packaging mainly includes three things (a) nutrition facts panel table, (b) the ingredient list, and (c) nutrition claims.

Nutrition claims can be broadly classified into two main categories, namely (a) nutrient content claims, (b) health claims. Nutrient content claims describe specific nutritional attributes of food products, for example, nutrition content claims include low fat, high fiber, sugar-free, and so forth. Health claims, on the other hand, describe relationships between food or food components and a person's health. Health claims can again be classified as (a) disease risk reduction and therapeutic claims (e.g. fruits and vegetables may reduce the risk of some cancers), (b) nutrient function claims (e.g. Vitamin C is important for increasing the immunity of the body), and (c) general health claims (Health Canada, 2008). By utilizing the concept of nutrition content claims and health claims, most of the food companies have developed short labels. These labels are usually printed on the front panel of packages of food products and are usually known as nutrition or health or food labels. These labels usually describe one of the following things - health benefits that the product provides, the absence of harmful ingredients and thereby preventing the disease, product recommendations by well known associations, and so forth. The size

of these labels usually varies between one to four words. The well-known examples of nutrition or health labels are "sugar free," "cholesterol free," "diabetic friendly," "least oil," "healthy choice," "nutritionist recommended," and so forth. These labels are usually printed on the front panel of packages of food products.

Literature Review

Food marketing to consumers is a wide spread phenomenon. Various research studies have been undertaken from time to time to analyze the success of various strategies that companies had already employed for selling their food products to consumers and for finding still new strategies that could be developed and employed so as to attract still more number of consumers . Some of the research studies that served as a source of inspiration for the current study are discussed below :

Kozup, Creyer, and Burton (2003) conducted three experiments to determine the impact of health claims and nutrition information provided on the packages of packaged foods and on restaurant menus. The results indicated that when the healthy heart claim (a heart shaped symbol) is provided on the packages of packaged foods and on restaurant menus, then due to this information, consumers tend to have a more favorable attitude towards the product, nutrition attitudes, and purchase intensions and tend to perceive that the risks of heart disease and stroke would be much lower.

A study was conducted by Charlton, Brewitt, and Bourne (2004) to identify the potential sources of information that could provide some background knowledge and information to consumers so as to enable them to interpret the nutrition information of food packages. The main sources of information found from the study were TV, radio, magazine articles, newspaper articles, church, health professionals, advertising, waiting room leaflets, and so forth. Out of these sources, the most trusted source was health professionals, and the least trusted source was advertising.

Fitzgerald, Kannan, Sheldon, and Eagle (2004) suggested that when health claims such as symbol of a healthy heart is provided on the restaurant menu items, then due to inclusion of such healthy heart claims, the consumers find it very easy for locating healthier options among the various menu options. Moreover, researchers found that inclusion of such healthy heart claims on restaurant menus had a positive influence on nutrition attitude and purchase intentions of consumers, and consumers tended to perceive that chances of occurrence of diseases would be much lower if items with such healthy heart claims were consumed.

Hwang and Lorenzen (2008) conducted a study to evaluate the impact of providing nutrition information on restaurant menus. It was found that those items for which precise nutrition information was provided were considered healthy and good by the consumers. Moreover, they were likely to order such items for consumption and were even willing to pay more for those items whose nutritional information was provided. Besides this, the researchers also tried to find out those components of nutrition information which were considered most important by the consumers. They found out that the most effective nutrition components that consumers considered to be important and useful for evaluating the food items were calories, macronutrients, and fats. Fiber content of menu items was not deemed to be of great importance as compared to the other components of nutritional information.

A study was conducted by Jacobs (2009) to investigate the adult consumers' understanding of the information provided on the packages of food products and to determine whether they used the information on food labels in making their food choices or not. The study was conducted in the North West province of South Africa. The results of the study indicated that the food choices of the majority of the respondents (who read the food labels) were influenced by the information of the food labels. The main information that the consumers often looked for on food packages were expiry dates, ingredient list, fat and cholesterol contents. The study also identified the various reasons for which the consumers did not read the food labels. Some of the reasons which the consumers provided for not reading the food labels were limited amount of time, lack of education and nutritional knowledge, selection of products on the basis of taste and price rather than nutritional content of the item.

Sabbe, Verbeke, Deliza, Matta, and Van Damme (2009) conducted a study to evaluate the impact of health

claims on product evaluation and purchase intension of consumers. The study was done for fruit juices. The results of the study revealed that health claims on juice packs had a significant impact on the overall liking and perceived healthiness of juices as well as on the purchase intention of the consumers. Moreover, the socio-demographic characteristics like age and gender had an influence on the acceptance of health claims on fruit juices. Health oriented consumers were more likely to compromise on taste for an eventual health benefit as prescribed by health claims. Older respondents and women were more likely to get influenced by health claims and were even likely to purchase fruit juices with health claims.

Lalor, Kennedy, and Wall (2011) conducted a study to investigate the impact of various claims on purchase behavior of food stuffs. The study was conducted in Ireland. The study evaluated the impact of four health claims namely "strengthens bones & teeth," "improves digestion," "reduces cholesterol levels," and "reduces feelings of hunger". The products for which the health claim impact were analyzed were yogurts, yogurt drinks, cereals, and chocolates. The results of the study revealed that out of four claims, consumers considered "reduces cholesterol levels" as the most credible one and agreed that it had an impact on their perceptions and purchase decisions. The results also revealed that a person with more knowledge and education, especially nutritional knowledge, was likely to rely more on the health claim. Moreover, old age consumers were more likely to purchase products with the cholesterol claim than those in the younger age groups.

Previous studies in this area have shown that nutritional labels on the front panel of the packages of food products like cereals, snacks, and so forth can be successful in grabbing the consumers' attention, recognition, and liking for these food products as well as in stimulating thoughts like chances of heart attack and other related diseases would be much lower if products with these labels are consumed. However, not many research studies have evaluated the impact of using nutritional labels on the packages of ready to eat food products like biscuits, ice creams, and so forth on the overall perception of the consumers about the products' healthiness. Moreover, in all the research studies undertaken till date, the impact of nutritional information and labels was analyzed using three-dimensional artificial product packages that mock up the real world product packages. However, in the present study, we evaluated the nutritional label impact using real world product examples. Furthermore, in previous studies conducted by other prominent researchers, the participants were required to rate two items simultaneously (1 with nutritional label / symbol packaging and 1 without nutritional label / symbol packaging) and select the one with better health benefits. However, in our study, the respondents were exposed to one item only at a time and as a result of this experimental condition, the results obtained from the study were far more accurate and would add confidence to the general conclusion that consumers prefer products with nutritional labels/symbols even in the absence of a forced choice situation between the products with and without nutritional labels / symbols. Besides this, as per our knowledge, various previous studies in this area have been undertaken in the foreign context. This study is likely to be the first one to evaluate the impact of nutritional labels in the Indian, and especially, in the context of Gujarat.

Objectives of the Study

The main objectives of the research study are :

(1) To investigate whether consumers use any of the information provided on the packages of ready to eat food products like ice creams, biscuits, and so forth while purchasing those food products.

(2) To investigate : (a) how the disclosure of nutritional information and nutrient content claims on the packages of ready to eat food products like ice creams, biscuits, and so forth influence the consumers' overall evaluation of selected ready to eat food products ; (b) consumers' perception about the overall nutritional healthiness, and disease risk reduction power of the product and consumers' purchase intentions & overall attitude towards the product.

(3) To explore various reasons (expressed by the consumers) for not using the food labels or nutritional information provided on the packages of ready to eat food products.

(4) To identify various demographic characteristics of respondents influencing the use of nutritional information provided on the packages of ready to eat food products.

Research Methodology

✤ **Target Population:** Adult consumers of Rajkot, Gujarat.

✤ **Design and Setting:** The study was undertaken in the months of November and December 2014 in the city of Rajkot.

✤ **Type of Research:** Descriptive research. The aim of the study is to examine and analyze the perceptions, preferences, and buying behavior of consumers of Rajkot with reference to ready to eat food products.

✤ **Research Hypotheses :** The hypothesis tested using the study are :

(1) Consumers rated biscuits with cholesterol free label on the package as nutritionally healthier and more powerful in reducing disease risks as compared to biscuits without such cholesterol free label on the package.

(2) Consumers rated the ice creams with sugar free label on the package as nutritionally healthier and more powerful in reducing disease risks as compared to ice creams without such sugar free label on the package.

(3) Premium amount spent by the consumers for buying the food products with nutrient content claims like sugar free / cholesterol free labels on the package is independent of the age of the consumer.

✤ **Sampling Plan**

(1) Consumers : 200 adult consumers residing in Rajkot.

(2) Products Selected for the Study : Biscuits with and without nutritional labels/symbols on the package ; ice creams with and without nutritional symbols/ labels on the package.

(3) Sampling Method: Convenience sampling method was used for the study.

✤ **Sources of Data:** The research study employed both secondary and primary sources of data. The details are as under :

(1) Primary Sources of Data: Personal interviews, mall intercept, observations.

(2) Secondary sources of Data: Leading magazines and newspapers, company reports, research papers, books.

✤ **Experiment / Study Procedure:** For conducting the study, mainly two products were selected. They were biscuits and ice creams. The main reason for selecting these products was that the packages with nutrition content claims (like the sugar-free label / cholesterol-free label) and without nutrition content claims were readily available in the market. Both biscuits and ice creams selected for the study were of very superior quality and are being manufactured by giant and leading FMCG companies of India. Before the experiment took place, participants' oral consent was taken. During the introduction, the interviewer emphasized that there were no right or wrong answers and that their own opinion was valued the most. Once it was apparent that the respondents had understood the objective of the experiment, then the experiment was conducted formally for both the products as follows :

(1) Biscuits: For biscuits, consumers' perceptions of nutritional quality (healthiness) and perceived health benefits were analyzed ; 100 adult consumers were considered for the study. Out of this, 50 were asked to rate the biscuits whose package had no nutrient content claims (like cholesterol free label) on it. The responses were noted using a 5-point likert scale. Another 50 consumers were asked to rate the biscuits whose package had nutrient content claims (like cholesterol free label) on it. Again, the responses were noted down using a 5- point likert scale and results were analyzed using appropriate statistical tests.

(2) Ice Creams: For ice creams, consumers' perceptions of nutritional quality (healthiness) and perceived health benefits were analyzed. Again, 100 adult consumers were considered for the study. Out of 100, 50 consumers were asked to rate the ice cream (in terms of nutritional healthiness) whose package had nutrient content claim like sugar free label on it. The responses were noted down using a 5 - point likert rating scale. Another 50 respondents were asked to rate the same flavored ice cream but having no nutrient content claim like sugar free label on its package. Again, the responses were noted down and the results were analyzed using appropriate statistical tests in SPSS 17.0.

Analysis and Results

The study mainly comprises of two experiments. In Experiment 1, the product selected was biscuit and the nutrient content claim whose impact was analyzed was "cholesterol free" label. In Experiment 2, the product selected was ice cream and the nutrient content claim whose impact was analyzed was the "sugar free" label. Each experiment comprises of three phases or sections. In the 1st phase of each experiment, the impact of nutrient content claims on consumers' general perception, product evaluation, disease risk perception, and purchase intention was analyzed. In the 2nd phase of each experiment, the demographic characteristics of the respondents were analyzed. Besides this, the relationship between the various demographic factors of respondents and use of nutritional information was also investigated. In the 3rd and final phase of each experiment, the various sources of information which could provide the basic knowledge for interpreting the nutritional information were found out and the trust priority index was developed for the same. All the three phases of each experiment have been discussed as under:

Phase 1

In this phase of the study, we analyze how nutrient content claims like sugar free label and cholesterol free label provided on the packages of ready to eat food products influenced the consumers' general perception, disease risk perception, product evaluation, and purchase intention.

   For carrying out the above analysis, a sample of 200 consumers was considered ; 100 consumers were selected for Experiment 1 and other 100 consumers were selected for Experiment 2. The products selected for Experiment 1 were biscuits with and without the cholesterol free label on their packages. The products selected for Experiment 2 were ice creams with and without the sugar free labels on their packages.

   Before starting the experiments formally, a screening question was posed to all the respondents in each experiment. The respondents were asked whether they or their spouses or any other family member worked in the health or health related field. Only those respondents who replied negatively to this question were considered for the study, while the rest were eliminated from the study.

   The first thing that was asked from the consumers was that besides company and brand name, whether they noticed/looked out for any other additional information provided on the packages of the food products like ice creams and biscuits ? In case of Experiment 1, 61% ($n = 61$) of the respondents replied that they noticed/looked for other information provided on the packages of biscuits, while 39% ($n =39$) of the respondents replied that they did not for any other information except company and product name.

   In case of Experiment 2, 52% ($n = 52$) of the respondents replied that they checked out other information besides

Table 2. Priority Index of Nutrition Facts Panel Component for Experiment 1 (Biscuits)

Name of Nutrition Facts Panel Component	Rank Allocated
Total Cholesterol Content	1
Total Fat Content	2
Total Carbohydrate Content	3
Protein Content (including vitamins)	4
Total Sodium Content	5

company and product name while purchasing the ice creams, while 48% ($n = 48$) of the respondents replied that they did not look out for any other information besides company and product name. Thus, out of 200 respondents of both the experiments, 57% ($n =113$) of the respondents replied that besides checking out the company and product name, they also looked for or checked out other information provided on the packages of the food products while purchasing those products. However, 47% ($n = 87$) of the respondents replied that they only checked out the company and product name for assisting their product purchases.

Next, the respondents - who replied positively to the question that besides company and product name, they checked out other information on the product packages - were probed further. Ninety five percent (95%) of the respondents from both the experiments replied that they checked out the expiry date and related information while purchasing the food products from the market; 82% of the respondents replied that they looked out for the expiry date as well as the nutrition facts panel (NFP) information while purchasing the food products; 56% of the respondents replied that they checked out the expiry date, NFP information, and ingredients list also for assisting their purchase of food products like ice creams and biscuits. Thus, besides company and product name, expiry date of the product was the most important information that consumers looked at/looked for while purchasing the ready-to-eat food products from the markets.

In the next step of the study, priority index of NFP components was developed for both the Experiment 1 (biscuits) and Experiment 2 (ice creams). Again, only those respondents who replied positively to the above questions were asked to rank the following items whose content information they perceived to be more important. Rank 1 here stands for the most important item, and Rank 5 here stands for the least important item. Here, the total calorie content, that is, energy values were not considered, as often, these tend to be the default most important component for a majority of the consumers purchasing the food products. The items were :

(1) Total fat content,
(2) Total cholesterol content,
(3) Total sodium content,
(4) Total carbohydrates content,
(5) Protein content (including vitamins).

The responses were noted down, and the results revealed that in case of the biscuit experiment, 75 % of the respondents felt that among the various NFP components, the cholesterol content was the most important item for them while purchasing the biscuits; 60% of the respondents allocated the 2nd rank to the total fat content. In case of the ice cream experiment, 70% of the respondents felt that among the various NFP components, the total fat content was the most important item for them while purchasing the ice creams ; while 59 % of the respondents allocated the rank 2 to the total carbohydrate content. The priority index of the nutrition facts panel (NFP) components for each of the experiments is depicted in the Tables 2 and 3. The Table 2 is for the biscuit experiment, and the Table 3 is for ice cream experiment.

The next thing that was analyzed in both the experiments was the impact of nutrient content claims like cholesterol-free label and sugar-free label on the consumers' perception about the healthiness of the food product.

Table 3. Priority Index of Nutrition Facts Panel Component for Experiment 2 (Ice Creams)

Name of Nutrition Facts Panel Component	Rank Allocated
Total Fat content	1
Total Carbohydrate content	2
Total Cholesterol content	3
Protein Content (including vitamins)	4
Total Sodium Content	5

Figure 1. Packets of Biscuits with and Without Cholesterol Free Label

Source: http://britannia.co.in/products/marie-gold/marie-gold

In case of Experiment 1, that is, in case of the biscuit experiment, the impact of cholesterol free label was analyzed. Out of 100 consumers, 50 consumers were shown the biscuits without the cholesterol free label on the package. While the other 50 respondents were exposed to the biscuits with the cholesterol free label on the package. Each consumer was asked to rate the biscuits in terms of nutritional healthiness and their disease risk reduction power. The rating was done simply on the basis of the package of the biscuits. None of the consumers were allowed to taste the biscuits. The responses were noted down using a 5-point likert scale. The pictures of the biscuits are depicted in the Figure 1.

With reference to the impact of the cholesterol free labels on the consumers' perception about the healthiness of the products and their disease risk reduction power, the following hypotheses were developed and tested:

➔ **H01 :** Consumers did not rate the biscuits with the cholesterol free label on the package as nutritionally healthier and more powerful in reducing disease risk as compared to the biscuits without such cholesterol free label on the package.

➔ **Ha1 :** Consumers rated the biscuits with the cholesterol free label on the package as nutritionally healthier and more powerful in reducing disease risk as compared to the biscuits without such cholesterol free label on the package.

The responses of the consumers of the biscuit experiment served as data for testing the above-mentioned hypotheses. The resultant data was analyzed using t - test of independent samples in SPSS 17.0. A 95 % confidence interval is considered for the study, and hence, the value of alpha is 0.05. The output of the analysis is shown in the Table 4 and Table 5, respectively.

From the Table 5 of the independent sample t - test, one can see that Levene's test significant value is 0.71. Now,

Table 4. Group Statistics for Hypotheses 1

Cholesterol	N	Mean	Std. Deviation	Std. Error Mean
BISCUITS Cholesterol free label	50	3.5200	1.12920	.15969
No Label	50	1.9000	.83910	.11867

Table 5. Independent Samples *t* - Test for Hypotheses 1

	Levene's Test for Equality of Variances		*t*-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	T	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
BISCUITS Equal variances assumed	3.338	.071	8.142	98	.000	1.62000	.19896	1.22518	2.01482
Equal variances not assumed			8.142	90.469	.000	1.62000	.19896	1.22477	2.01523

Figure 2. Packets of Ice Creams with and Without the Sugar Free Label
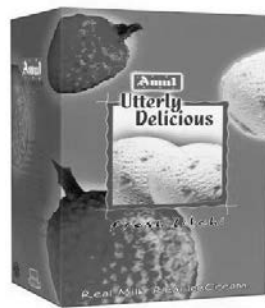
Fresh Litchi Ice cream
without Sugar Free label

Fresh Litchi Ice cream with
Sugar Free label

Source: http://www.amul.com/products/amul-icecream-info.php

this calculated significant value of 0.71 is greater than the assumed significant value of 0.05 (95 % confidence interval considered). So, Sig (2-tailed) value of the first row of the Table 5 was considered for reaching the conclusion. The Sig (2-tailed) value of the first row of Table 5 is 0.000, which is less than the assumed value of 0.05 (95% confidence interval considered). This implies that there is a statistically significant difference between the two conditions considered in the Experiment 1, that is, biscuits with the cholesterol free label and biscuits without the cholesterol free label. Moreover, the Table 4 shows the mean of the cholesterol free label condition (Mean = 3.52), which is higher than the mean of the no cholesterol free label condition (Mean =1.9). Thus, for the Experiment 1, the alternative hypothesis (Ha1) is accepted. Hence, one can conclude that consumers rated the biscuits with the cholesterol-free label (3.52 ± 1.12) as nutritionally healthier and more powerful in reducing the disease risk as compared to the biscuits without such label $[(1.90 \pm 0.83), t(98) = 8.142, p = 0.000]$.

In case of Experiment 2, that is, the ice cream experiment, the impact of the sugar-free label was analyzed. Now, out of 100 consumers, again, 50 consumers were exposed to the ice creams with the sugar free label. Again,

Table 6. Group Statistics for Hypotheses 2

Sugar levels		N	Mean	Std. Deviation	Std. Error Mean
Ice Cream	Sugar Free label	50	3.9000	.83910	.11867
	No label	50	2.0000	.90351	.12778

Table 7. Independent Samples *t*-Test for Hypotheses 2

		Levene's Test for Equality of Variances		*t*-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
ICE	Equal variances assumed	.946	.333	10.896	98	.000	1.90000	.17438	1.55395	2.24605
CREAM	Equal variances not assumed			10.896	97.469	.000	1.90000	.17438	1.55393	2.24607

the consumers were asked to rate the ice creams in terms of nutritional healthiness and disease risk reduction power. The responses were recorded using the 5 - point likert scale. The pictures of the ice creams are depicted in the Figure 2.

With reference to the impact of the sugar free label on the consumers' perception about the healthiness of the ice creams and their disease risk reduction power, the following hypotheses were developed and tested :

➔ **H02 :** Consumers did not rate the ice cream with the sugar free label on the package as nutritionally healthier and more powerful in reducing disease risk as compared to the ice cream without such sugar free label on the package.

➔ **Ha2 :** Consumers rated the ice cream with the sugar free label on the package as nutritionally healthier and more powerful in reducing disease risk as compared to the ice cream without such sugar free label on the package.

The responses of the consumers of the ice cream experiment served as data for testing the above- mentioned hypotheses. The resultant data was analyzed using *t* - test of independent samples in SPSS 17.0. The 95 % confidence interval is considered for the study, and hence, the value of alpha is 0.05. The output of the analysis is shown in the Table 6 and Table 7, respectively.

From the Table 7, we can see that the Levene's test significant value is 0.33. Now, this calculated significant value of 0.33 is greater than the assumed significant value of 0.05 (95 % confidence interval considered). So, the Sig (2-tailed) value of the first row of the Table 7 is considered for reaching the conclusion. Now, the Sig (2-tailed) value of the first row of Table 7 is 0.000, which is less than the assumed value of 0.05 (95 % confidence interval considered) . This implies that there is a statistically significant difference between the two conditions considered in the Experiment 2, that is, the ice cream with the sugar-free label and the ice cream without the sugar-free label. Moreover, the group statistics (Table 6) show that the mean of the sugar-free label condition (Mean = 3.9) is higher than the mean of the no sugar-free label condition (Mean = 2.0). Thus, for the Experiment 2, the alternative hypothesis (Ha2) is accepted. Hence, one can conclude that consumers rated the ice cream with the sugar-free label (3.90 ± 0.83) as nutritionally healthier and more powerful in reducing the disease risk as compared to the ice cream without such a label $[(2.00 \pm 0.90), t(98) = 10.896, p = 0.000]$.

Next, we asked the respondents, whether they agreed with the opinion that the assessment of the overall healthiness of the food product would become much easier and simpler if the nutrient content claims or health

claims were directly provided on the front of the package by way of a symbol - like a healthy heart symbol or by way of labels like sugar free or cholesterol free label or not. To this, 57% of the respondents from both the experiments replied that they strongly agreed with such a suggestion or opinion; 20% of the respondents from both the experiments replied that agreed with this suggestion to some extent ; 12 % had a neutral stance ; 8% of the respondents from both the experiments disagreed with this opinion ; while 5% of the respondents from both the experiments replied that they totally disagreed with this suggestion or opinion.

In the next step of Phase 1 of both the experiments, the respondents were asked how much premium price they would be willing to pay if the same product was available in the sugar free and cholesterol-free versions. Out of 200 respondents of both the experiments, 39($n = 39$) respondents agreed to buy the item which was sugar free or cholesterol free if and only if the premium price was in the range of ₹5 more than the non-sugar free or non-cholesterol free version of the product. A total of 36 respondents agreed to buy the items with such features even if the premium price came within the range of ₹6- ₹10 ; 38 respondents agreed to buy the food items with sugar - free or cholesterol-free label even if the premium price lay in the range of ₹11- ₹15 ; 36 respondents agreed to purchase the food items with the sugar - free or cholesterol-free label even if the premium price fell within the range of ₹16- ₹20. The remaining 51 respondents were such who agreed to buy the food items even if the premium price was above ₹ 20 for the same.

Lastly, in Phase 1 of the study, the respondents were asked to provide an appropriate reason for not reading/not checking out the nutritional information given on the food packages. This question was posed only to those respondents who did not look out for the nutritional information given on food products while purchasing the same. Among these respondents, 31% replied that they did not read the nutritional information given on the food packages as this was a very time-consuming task 24% of the respondents revealed that for them, the price of the food product was more important than the nutritional information, and hence, they did not pay any attention to the nutritional information ; 16% of the respondents revealed that for them, taste was more important than price and nutritional information, and so, if an item pleased their taste buds, they readily purchased the item without reading the nutritional information; 11 % said that they did not read the nutritional information as they lacked sufficient knowledge; 10% of the respondents revealed that they did not read the nutritional information as they lacked interest in such things. They considered reading the nutritional information as a completely useless task ; 8 % of the respondents revealed that they did not read the nutritional information of food packages as they found the size of the fonts of nutritional information to be too small to read, and hence, they avoided reading this information.

Phase 2

In this phase of the study, we analyze the relationship between the various demographic characteristics of the respondents and the use of nutritional information given on the product packages.

The various demographic characteristics of the respondents that were analyzed were age, gender, highest education attained, primary grocer status, no. of household members, and health condition of the respondents.

The relationship between the various demographic characteristics of the respondents and the use of nutritional information of product packages for both the experiments is shown in the Table 8. We can draw the following inferences from the Table 8 :

✥   Out of 200 respondents , the total no. of female respondents who utilized the nutritional information for assisting their purchases was 71, while the total no. of male respondents was 42. Thus, the female respondents were more likely to use the nutritional information as compared to the male respondents.

✥   **Age Variable:** Out of 200 respondents, 36 respondents who used the nutritional information fell in the age group of 18-40 years ; 46 respondents who utilized the nutritional information were in the age group of 41-62 years ; while 31 respondents who used the nutritional information were in the age group of above 62 years. Thus, majority of the respondents who used the nutritional information while purchasing the food products were in the age range of 41- 62 years.

Table 8. Cross Tabulation of Use of Nutritional Information of the Product Packages Versus Demographic Profile of the Respondents

Demographic Factor		Sugar Free label / Ice- cream Experiment			Cholesterol free label /Biscuits experiment			Total		
		S_Y	S_N	S	C_Y	C_N	C	T_Y	T_N	T
Gender	Male	22(38%)	36(62%)	58	20(57%)	15(43%)	35	42(45%)	51(55%)	93
	Female	30 (71%)	12 (29%)	42	41(63%)	24(37%)	65	71(60%)	36(34%)	107
	Total			100			100			200
Age	18-40 Yrs	17(36%)	31(64%)	48	19(44%)	24(56%)	43	36(40%)	55(60%)	91
	41-92 Yrs	18(60%)	12(40%)	30	28(74%)	10(26%)	38	46(68%)	22(32%)	68
	> 62 Yrs	17(77%)	5(23%)	22	14(74%)	5(26%)	19	31(76%)	10(24%)	41
	Total			100			100			200
Highest Education level	10[th]grade	2(20%)	8(80%)	10	3(19%)	13(8%)	16	5(19%)	21(81%)	26
	12[th]grade	4(29%)	10(71%)	14	3(28%)	8(72%)	11	7(28%)	18(72%)	25
	Graduate	36(58%)	26(42%)	62	45(75%)	15(25%)	60	81(66%)	41(34%)	122
	PG	9(70%)	4(30%)	13	8(80%)	2(20%)	10	17(74%)	6(26%)	23
	Other	1(100%)	----	1	2(67%)	1(33%)	3	3(75%)	1(25%)	4
	Total			100			100			200
Primary Grocer	Yes	35(53%)	31(47%)	66	44(62%)	27(28%)	71	79(58%)	58(42%)	137
	No	17(50%)	17(50%)	34	17(59%)	12(41%)	29	34(54%)	29(46%)	63
	Total			100			100			200
Number of members in household	One	4(33%)	8(66%)	12	2(23%)	7(77%)	9	6(29%)	15(71%)	21
	Two	4(57%)	3(43%)	7	5(50%)	5(50%)	10	9(53%)	8(47%)	17
	Three	12(50%)	12(50%)	24	12(66%)	6(34%)	18	24(58%)	18(42%)	42
	Four	17(55%)	14(45%)	31	27(71%)	11(29%)	38	44(64%)	25(36%)	69
	Five	8(53%)	7(47%)	15	7(58%)	5(42%)	12	15(56%)	12(44%)	27
	Six or >	7(64%)	4(36%)	11	8(62%)	5(38%)	13	15(63%)	9(37%)	24
	Total			100			100			200
Disease Condition of Consumers	Diabetes	8(80%)	2(20%)	10	9(75%)	3(25%)	12	17(77%)	5(23%)	22
	BP	3(50%)	3(50%)	6	8(88%)	1(22%)	9	11(73%)	4(27%)	15
	Obesity	9(69%)	4(31%)	13	11(78%)	3(22%)	14	20(74%)	7(26%)	27
	Other	4(50%)	4(50%)	8	3(60%)	2(40%)	5	7(54%)	6(46%)	13
	No Disease	28(45%)	35(55%)	63	30(50%)	30(50%)	60	58(47%)	65(53%)	123
				100			100			200

Here:- No. of persons(% of total respondents)

S_Y = No. of persons who used nutrition information in sugar free label/ ice cream experiment.

S_N = No. of persons who did not use nutrition information in sugar free label / ice cream experiment.

S = $S_Y + S_N$ = Total no. of respondents of sugar free label / ice cream experiment.

C_Y = No. of persons who used nutrition information in cholesterol free label/ biscuit experiment.

C_N = No. of persons who did not use nutrition information in cholesterol free label/ biscuit experiment.

$C = C_Y + C_N$ = Total no. of respondents of cholesterol free label / biscuit experiment.

$T_Y = S_Y + C_Y$ = Total no. of respondents of both experiments who used nutrition information.

$T_N = S_N + C_N$ = Total no. of respondents of both experiments who did not use nutrition information.

$T = T_Y + T_N$ = Total no. of respondents of both the experiments.

Table 9. Contingency Table for Hypotheses Testing

		Premium amount spent by the consumers for buying the food products with nutrient content claims like sugar free label / cholesterol free label				
		₹ 0-5	₹ 6 -10	₹ 11 -15	₹ 16 -20 >	₹ 20
Age of the	18-40 years	21	18	20	14	18
respondents	41-62 years	12	13	12	14	17
(No. of persons)	Above 62 years	6	5	6	8	16

✤ **Highest Level of Education:** The educational levels of the various respondents who used the nutritional information while purchasing the food products is as follows : Out of 200 respondents, 81 respondents were graduates, 17 were post graduates, 7 were 12th pass, and 5 were 10th pass. Thus, the more educated a consumer is, the more likely he / she is to read the nutritional information given on the food packages.

✤ **Primary Grocer Status:** Out of 200 respondents, 79 consumers who utilized the nutritional information were primary grocers, while 34 were other than primary grocers. Thus, the primary grocer was more likely to pay more attention to the nutritional information of the food packages.

✤ **No. of Household Members :** In terms of no. of household members, 44 respondents who used the nutritional information had 4 members in their households ; 24 respondents had 3 members in the households ; 15 respondents had 5,6 or more members in the households ; 6 respondents lived alone ; and 9 respondents had 2 members in their households. Thus, a shopper with more members in the household is likely to pay more attention to the nutritional information given on the food packages.

In the Phase 2 of the study, the following hypotheses were developed and tested :

➔ **H03:** The premium amount spent by the consumers for buying the food products with nutrient content claims like sugar free / cholesterol free label on the package is independent of the age of the consumer.

➔ **Ha3 :** The premium amount spent by the consumers for buying the food products with nutrient content claims like sugar free / cholesterol free label on the package is not independent of the age of the consumer.

These hypotheses were tested using the chi - square goodness of fit test (Table 9). The alpha was assumed to be 0.05. The results suggest that the two variables namely, age of the respondent and the premium amount spent by the consumers for buying the food items with sugar free label /cholesterol free label are completely independent and hence, the null hypothesis (H03) is accepted.

Phase 3

In this phase of the study, we conducted an analysis of the various sources of information that could provide the basic knowledge for interpreting the nutritional information provided on the packages of the food products.

In the last phase of each experiment, the respondents were asked to rank the following sources of information which could provide the basic knowledge for interpreting the nutritional information and which they thought would be most trusted one. Here, rank 1 was provided to the most trusted source of information, and rank 5 was allocated to the least trusted source of information. The various sources of information are as follows :

(1) Newspaper articles / magazine articles,

Table 10. Sources of Information in Order of Trust

Name of source of information	Rank Allocated
Health professionals / Dietician / Family Doctor	1
Family / Friends	2
Newspaper articles / Magazine articles	3
TV advertising / Radio advertising	4
Internet	5

(2) Family members / friends,

(3) TV advertising / radio advertising,

(4) Health professional / dietician / family doctor,

(5) Internet.

The responses were recorded, and it was observed that out of 200 respondents, 81% of the respondents allocated rank 1 to health professionals while 70 % allocated rank 2 to family members / friends. The combined trust priority index table for sources of information is depicted in the Table 10.

Findings and Conclusion

The findings of the study revealed that nutrition labels like cholesterol free and sugar free label on the food products like biscuits and ice creams had a significant impact on consumers' product evaluation and purchase intensions. The products with such labels were perceived as nutritionally healthier and powerful in reducing disease risks. These findings are consistent with the results obtained by past studies undertaken by Kozup et al. (2003) and Fitzgerald et al. (2004), who evaluated the impact of healthy heart symbol and health claims in restaurant menus. They found that the healthy heart symbol and health claims in restaurant menus were able to develop favorable attitudes towards food items in consumers' mind and were even able to persuade them to order the food items. The main reason for the impact of cholesterol free and sugar free labels on consumers' perception is perhaps the significant increase in diseases like diabetes and cardiac related diseases at a very young age among the Indian consumers.

The findings of the study also revealed that more educated consumers and consumers with more number of members in their families were more likely to use the nutritional information/ food label. This finding is consistent with the findings obtained by Guthrie, Fox, Cleveland, and Welch (1995). The reason could be that highly educated consumers were more conscious of the diet- disease relationship and ,therefore, were more eager to use the nutritional information on the food products. Another reason was that since the consumers were more educated, so they were able to interpret the information and food labels faster. The other variable was the number of household members living in the consumers' families. Consumers living in a family with more members were more likely to use nutritional information as compared to consumers living in a small family or living alone. The reason was that in case of more number of members in a family, the number of persons who will be benefitted from the use of nutritional information will be more, and so, spending extra amount of time and effort in reading, interpreting, and using the nutritional information would be worthwhile.

Policy Implications

The study indicated that besides company name and product name, majority of the respondents often verified the

Figure 3. Examples of Multiple Traffic Light Labels that Could be used at the Front of the Packaging of Food Products

Source: Food Standards Agency (n.d.)
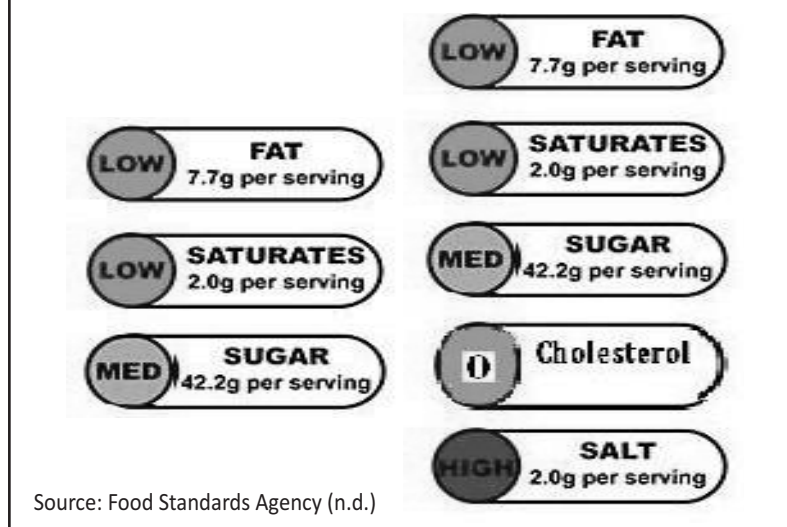
expiry date of the product. Thus, different food authorities like FSSAI (Food Safety and Standards Authority of India) and others should make it mandatory for the food manufacturers to highlight the expiry date and shelf life in form of labels like " Shelf life is for 12 months, and the product is best to be consumed before dd/mm/yyyy" both on the front and back of the food packages so that consumers' attention is easily attracted to these labels and they may be prevented from purchasing stale foods or expired food products.

The findings of the study indicate that consumers often gave much importance to cholesterol content, fat content, carbohydrate content (sugars), and saturated fat content. Hence, food authorities like FSSAI (Food Safety and Standards Authority of India) and other authorities should make it mandatory for the companies to highlight these specific components of nutrition facts panel on the front of the packages by using multiple traffic light labels as shown in the Figure 3. Such use of multiple traffic light labels would directly grab the customers' attention and would make it easy for them to decide which product has more nutrition as compared to the others.

Managerial Implications

✤ The study revealed that most people trust the information related to nutrition if it is provided by health professionals/ dieticians / family doctors. This suggests that managers of food companies should make the consumers aware about the healthy and nutritious products offered by their organizations and should urge these professionals to disseminate the same information about their companies' products to their patients or clients. Moreover, incentives should be provided to these professionals for promoting the products.

✤ The research suggests that consumers who were likely to use nutritional information for guiding their product purchases were likely to be : (a) female consumers, (b) most probably above 40 years of age, (c) highly educated, (d) tend to be the primary grocer, (e) likely to have four or more members in the household. This tentative profile of the consumer could be used in designing the TV advertisements of FMCG companies, especially companies producing ready to eat food products.

✤ The findings of the study indicate that two variables namely (a) the premium amount spent by the consumers for purchasing the food products with the nutrient content claims (like the sugar-free label / cholesterol-free label) and (b) the age of the consumer are totally independent. Hence, one cannot presume that since old people tend to be more health conscious, so they would be ready to pay a premium amount for buying the food products that are

sugar free or cholesterol free. Similarly, one cannot also presume that since young people tend to be somewhat healthier, hence they would be less lenient in spending a premium amount for buying the food items with nutrient content claims like sugar free or cholesterol free labels. The two variables are completely independent. The reasons for this could be changing lifestyles ; increasing health consciousness ; increased occurrence of diseases like obesity, blood pressure, and so forth in earlier stages of life ; availability of a wide range of products ; significant increase in per capita income of people; and so forth. Hence, the organizations need to keep these points in mind while deciding the pricing policy of the food products.

Limitations of the Study and Scope for Future Research

The study evaluated the impact of relatively well known nutrient content claims like sugar-free label and cholesterol-free label. These claims are clearly important because of their link to diet and the number of people who die each year because of diabetes and cardiac related diseases. The results would have been completely different if effects of lesser-known health claims such as "calcium reduces the risk of osteoporosis" were evaluated. The study evaluated the impact of only two types of labels or claims. The same study could be extended further for other types of labels or claims. The selected group of products and number of consumers sampled limit the degree to which these findings can be generalized. The study evaluated the impact of nutrition labels only for two products namely ice creams and biscuits. However, the same impact could be evaluated for other products like cheese, edible oils, and so forth whose packages also incorporate such nutritional labels. The product- label combination used in the study was already available in the market; hence, any previous food or label association bias might have influenced the results of the study. The study evaluated the impact of only one packaging cue, namely the use of nutritional symbols or labels, but the impact of other packaging cues like color, shape, and so forth used for selling the products targeted to general public could also be assessed. Regardless of the limitations, the study is likely to be the first one in Indian and especially in the context of Gujarat to document the findings on impact of using nutrient content claims for selling the food products targeted to the general public.

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