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NUTRITION LABELING COMPLIANCE OF BRANDED PROCESSED PACKAGED FOODS WITH INDIAN FOOD LAWS (FSSAI, 2011 REGULATIONS)

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ABSTRACT

Food labels serve as the tool for making need based food choices. The aim of the study was to examine the food labels and their compliance with the Indian food regulations. The study was conducted in supermarkets (n=4) and grocery stores (n=5) of Vadodara. A total of 1,020 food products were purposively enlisted (only branded and labeled) to examine the food labels. The food products were clustered into 8 food groups and 29 food categories based on the function and ingredients. Results revealed that the most informative and easy to interpret Nutrition Facts Panel (NFP) [i.e. which gives nutrients as per 100g, per serving and percent Daily Value (%DV)] was displayed only in 8.4% of the products. Majority of the products (64.1%) displayed NFP as per 100g which does not have any reference values to compare unlike % DV NFP. Compliance for five mandatory nutrients as per FSSAI (i.e. energy, carbohydrates, sugar, protein and fat) and ingredients list was poor in products among various food categories. Vegetarian and non-vegetarian symbols were found in all the products based on the kind of ingredients. Thus, processed foods in Indian market fail to comply with the food regulations and therefore initiatives should be taken by the government and manufacturers to provide accurate and easy to understand information on food labels to enable consumers make healthy food choices.

Keywords: Nutrition labeling, food labeling laws, processed foods, packaged foods.

INTRODUCTION

Lifestyle change from hunters and fruit gatherers to agriculture and from agriculture to industrialization led to the human settlements and emergence of communities (Popkin, 2002). Lifestyle changes include both nutrition and epidemiological changes. On one hand there is shift from labor intensive jobs to less strenuous low activity jobs, while on the other there is major shift in dietary pattern (Popkin, 2004). The change in dietary pattern may be attributed to increasing number of working women and more disposable income. The modern dietary pattern include diets high in saturated fats, sugar and refined foods and low in fibre, which is sometimes termed as 'Westernized diet' (Popkin, 2003).With these transformation in dietary pattern the concept of semi-processed foods and processed foods came into being which led to advances in food production, processing, and distribution technology (Henneberry and Armbruster, 2003) . In this context the role of food labels has become increasingly important. With these advances, it has become very important for the consumers to read, understand and interpret food labels in order to make healthy food choices. Nutrition information on food labels serves as tool for informed food choices (Mhurchu and Gorton, 2007). Therefore, food labels should provide accurate nutrition information and in a form that can be easily understood by the consumers. However, nutrition labeling in India is at evolutionary stage and data on "user friendliness" of these labels are scanty. Present investigation examined 1,020 food products for the kind of nutrition information on food labels. This paper focuses on different types of information present on food labels, compliance with the Indian food laws and difficulties faced by consumers in comprehending the food labels.

METHODOLOGY

The study was conducted in Vadodara, Gujarat, India. Supermarkets (n=4) and grocery stores (n=5) were purposively selected (based on permission granted) and surveyed to enlist and examine branded-labeled food products for nutrition labeling. Unbranded and foods without nutrition labeling were excluded from the study. The food labels of 1020 food products were examined for 9 parameters given in Table 1. The foods were studied under 8 food groups and 29 product categories as given in Table 2.

Table 1: Parameters studied for Food Labels

1. Nutrition Facts Panel	2. Reported mandatory nutrients
3. Symbols and logos	4. Nutrition claims
5. Health Claims	6. Allergen information/ Claims
7. Other Claims	8. Ingredients
9. Manufacture and best before date	

Table 2: Food Groups and Products Examined for Nutrition Labeling

S.No.	Food groups	Food categories	Number of products
1	Cereal based products	a. Cornflakes, oats and muesli	46
		b. Noodles, pasta and macaroni	66
		c. Salty Biscuits	18
		d. Sweet biscuits	88
		e. Sweet cream wafers	31
2	Fruit based products	a. Canned fruits	6
		b. Jam, marmalades and jellies	38
3	Milk Based	a. Butter and cheese	18
		b. Spreads and dips	17
4	Drinks	a. Malted beverages	27
		b. Soft drinks	13
		c. Energy drinks	27
		d. Juices	37
		e. Squashes	15
5	Ready to cook/eat products	a. Ready to cook foods	95
		b. Ready to mix spice mixes	99
		c. Ready to make cake and ice cream mixes	16
		d. Ready to eat sweets	27
6	Food adjuncts	a. Pickles	18
		b. Papads	14
		c. Chutneys	6
		d. Ketchups and sauces	49
7	Snacks	a. Namkeens & savories	107
		b. Chips	32
		c. Cakes	6
8	Others	a. Chocolates	39
		b. Soups	41
		c. Popcorn	10
		d. Baby Foods	14
		Total	1020

RESULTS AND DISCUSSION

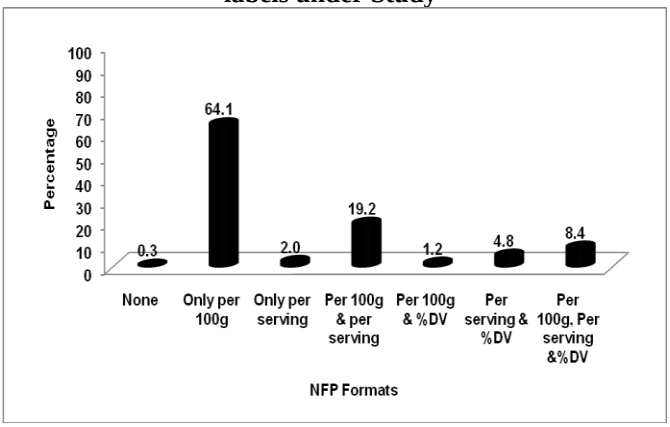
NUTRITION FACTS PANEL (NFP)

The Nutrition Facts Panel provides "comprehensible quantitative nutrition information" which enables consumers to make informed food choices and may result in significant long-term health benefits (Burton et.al., 1997).

According to Food Safety and Standards Authority of India (FSSAI), 2011, nutrition information on NFP shall be given as "per 100 gm" or "100ml" or "per serving" of the product on the label (Food Safety and Standards regulations, 2011). On the other hand US Food and Drugs Administration (USFDA) mandates that NFP should report nutrients in "Amount Per Serving" and "% Daily Value", with footnote and caloric conversion information (United States Food and Drug Administration, 2013).

Data presented in Figure 1 show that majority (64.1%) of the food products had NFP as per 100g. The "per 100g" NFP has a major drawback namely; it does not provide reference values for nutrients unlike "%DV NFP" that enables the consumers to compare intake with recommended values and make food choices. Nineteen percent of the products declared NFP as "per serving" only. Most of the processed foods under study did not have realistic and standardized serving size for foods and inter brand variations were large. Only 8.4% of the products reported NFP as "per 100g, per serving and % DV" that provides complete information and reference values for comparison between brands. As compared to NFP in metric units, NFP which declare nutrients in percentage based on reference daily values or %DV is easier to interpret and comprehend (Levy et.al., 1996 and Panagiotis Lazaridis and Rodolfo, 2006).

Figure 1- Various Nutrition Facts Panel Formats on Food labels under Study



PREFERRED FOOD LABEL FORMATS

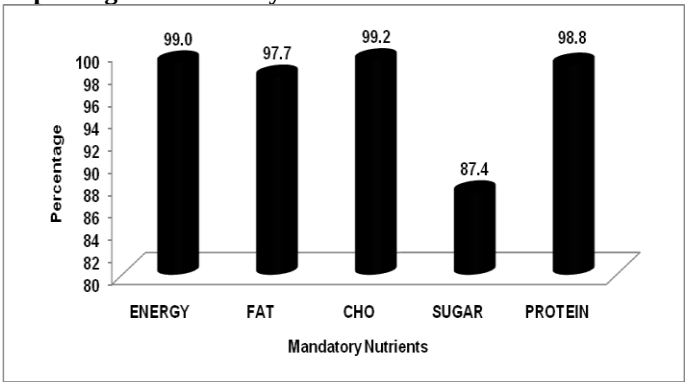
Simple, easy to comprehend and understand food labels are preferred by consumers. European countries introduced "Multiple Traffic light label" signposting for 4

major nutrients (fat, saturated fat, sugar and salt) on Front of Pack (FOP) after rigorous testing among various population groups. It was found that the presence of "Multiple Traffic light label" on FOP made interpretation for nutrients easy and resulted into healthy food choices by the consumers (Borgmeier I. and Westenhoefer, 2009). However such attempts have not been made yet in India.

REPORTING OF MANDATORY NUTRIENTS

Figure 2 presents data on compliance of food labels with the FSSAI regulations for reporting of mandatory nutrients. According to FSSAI, it is mandatory to report the "Basic Five Nutrients" namely, energy value (kcal), protein (g), carbohydrates (g), sugar (of the total carbohydrates) (g), fat (g or ml) on NFP. However, when a nutrition or health claim is made the specific nutrient has to be reported on the NFP **(**Food Safety and Standards regulations, 2011**)**. However, products examined *(*Table 1*)* in the present study failed to comply with the same. It was found that the information on carbohydrates was reported on 99.2% of the NFPs followed by energy (99%), protein (98.8%), fat (97.7%) and the least reported nutrient was sugar (87.4%) (Figure 2). USFDA mandates reporting of 13 nutrients unlike basic five by FSSAI.

Figure 2 - Compliance with FSSAI Regulations for Reporting of Mandatory Nutrients



Compliance towards reporting of "Basic Five" on labels was examined by food groups and the data are presented in Table 3. Out of the eight food groups under study, only three namely, cereals products, milk based products and ready to cook/ eat products reported energy and fat , for all the food categories while universal reporting of carbohydrates was observed only in cereal, milk based products and drinks. Protein was reported in all the products in food categories like cereal products and ready to cook/eat products only. It is worth noticing that lowest compliance was observed for reporting of sugar (61-95%) across food groups. Thus it is evident that though, it is mandatory to declare the five basic nutrients on NFP as per the Indian food labeling regulations, yet a majority of the products do not adhere to the same.

SYMBOLS AND LOGOS

Symbols and logos are a quick guide or provide information at a glance about the vegetarian/ non-vegetarian ingredients in the food product and provide quality assurance as well.

According to FSSAI, it is mandatory to indicate that the product contains vegetarian ingredient or non-vegetarian ingredient by means of symbols. Green colour filled circle in a square should indicate vegetarian and brown colored filled circle in a brown color square indicate non-vegetarian food. "Non- Vegetarian" food means "an article of food which contains whole or part of any animal including birds, fresh water or marine animals or eggs or products of any animal origin, but excluding milk or milk products, as an ingredient". All the food products complied with respect to display of these two symbols.

Various other symbols used by manufacturers on the products which are not mandatory but helps in selecting a quality product are Agricultural Marketing symbol (AGMARK), Fruit Product Order symbol (FPO), Hazard analysis Critical Control Point symbol (HACCP), Indian Standards Organization symbol (ISO) and Healthy Choice logo. These symbols and logos help the consumers identify a quality product. However, these symbols/ logos were not displayed in more than 30% in the food products examined (Figure 3).

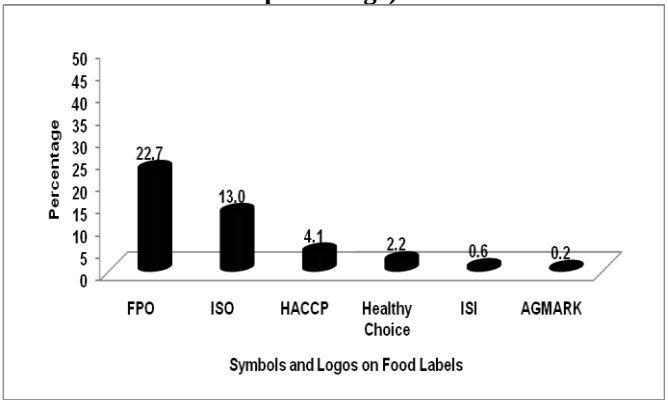
Table 3: Percent Compliance with FSSAI Regulations for Reporting of "Basic Five" Nutrients across Food Groups

Food Groups	Energy	Fat	CHO	Sugar	Protein
Cereal products	100	100	100	95	100
Fruit based	95	98	98	93	98
Milk based	100	100	100	89	97
Drinks	97	97	100	88	97
Snacks	67	67	69	61	67
Ready to cook/eat	100	100	99	86	100
Food adjuncts	99	83	98	68	98
Others	98	98	98	95	98

Table 4: Food group-wise claims on food labels (in percentage)

Food Groups	Nutrition Claims	Health Claims	Allergen Information/ Claims
Cereal products	65	9	16
Fruit based	32	5	0
Milk based	54	6	3
Drinks	69	16	2
Snacks	48	11	1
Ready cook/ eat foods	72	0	30
Food adjuncts	15	0	22
Others	61.5	11.5	63.5

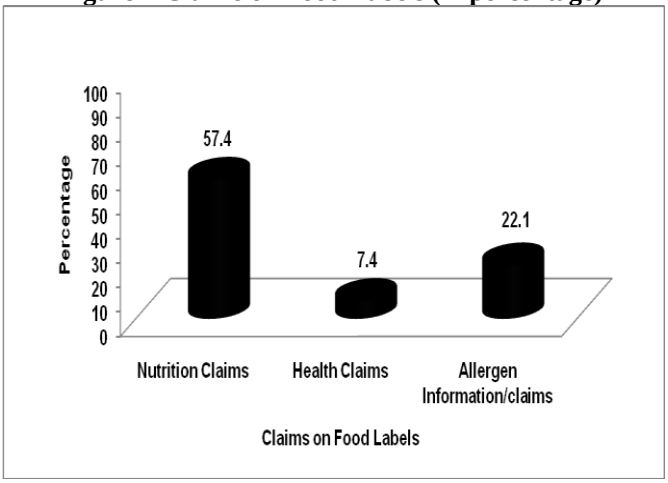
Figure 3- Symbols and Logos on Food labels (in percentage)



CLAIMS

Claims can be nutrient related, health related or allergen related. Claims help the consumers to get at a glance insight about the food products. Fifty seven percent of the food products stated nutrient claims, followed by allergen claims (22.1%) and least were health claims (7.4%) on the food labels (Figure 4**).** Ready to cook/eat products had the least percentage (0%) of health claims while nutrition claims were highest (72%) in the food group (Table 4).

Figure 4-Claims on Food Labels (in percentage)



NUTRITION CLAIMS

"Nutrition claim means any representation which states, suggests or implies that a food has particular nutritional properties which are not limited to the energy value but include protein, fat carbohydrates, vitamins and minerals". Some of the authorized nutrition claims are "free of fat/ saturated fat/cholesterol/sodium/salt/sugars and calories", "very Low in sodium", "high or good source of calcium", etc. **(**Food Safety and Standards regulations, 2011**)**. In the current study claims related to ingredients, preservatives were also taken into consideration under "nutrition claims" as these are related to nutrition.

All the products in the food groups namely, cornflakes, energy drinks and canned fruits had nutrition claims, followed by readymade spice mixes (92%), spreads and dips (88%), soups (83%), malted beverages (78%), noodles (76%) and juices (70%)

HEALTH CLAIM

According to FSSAI, "Health claims" means "any representation that states, suggests or implies that a relationship exists between a food or a constituent of that food and health and include nutrition claims which describe the physiological role of the nutrient in growth, development and normal functions of the body, other functional claims concerning specific beneficial effect of the consumption of food or its constituents, in the context of the total diet, on normal functions or biological activities of the body and such claims relate to a positive contribution to health or to the improvement of function or to modifying or preserving health, or disease, risk reduction claim relating to the consumption of a food or food constituents, in the context of the total diet, to the reduced risk of developing a disease or health related condition." Health claims in the front of the package have a positive role in selecting a healthy product (Panagiotis *et.al.,* 2006). Baby foods had the highest percentage (79%) of health claims, followed by malted beverages (48%) and cornflakes (37%). In other product categories it was less than 20%. Health claims on food labels are permitted in many countries around the world. Consumers find health claims as useful in making food

choices and consider that any product containing the same to be healthy (Williams, 2005).

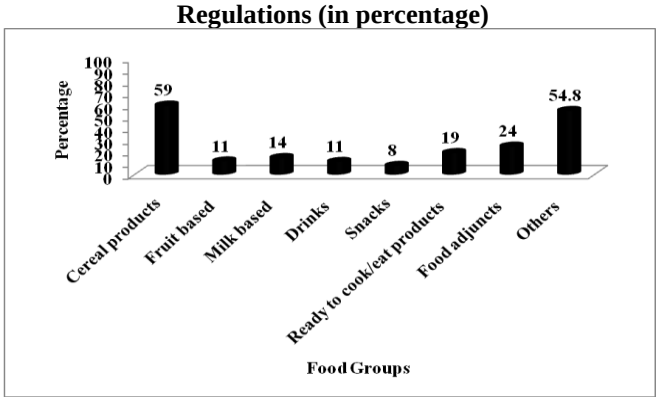
ALLERGEN CLAIMS

Allergen claims or information is useful for the consumers with allergies from a particular food or ingredient. Allergen information was found to be highest in chocolates (82%) followed by soups (76%), noodles (55%) and in rest of the food categories such claims were below 50%. Allergens claims were mostly related to gluten, milk, nuts, and sesame/mustard seeds.

INGREDIENT'S LIST

Ingredients list gives the detail of the constituents of a food product. The list of ingredients should have an appropriate title, such as the term "Ingredients". The name of ingredients used in the product shall be listed in descending order of their composition/predominance (United States Food and Drug Administration, 2009). Poor compliance was observed in the listing of ingredients list as per descending order of their weights expressed in percentages (Figure 5). Only products in food groups namely cereal products (59%) and others (54.8%) reached the compliance of above 50% and rest was below 25% (Figure 5).

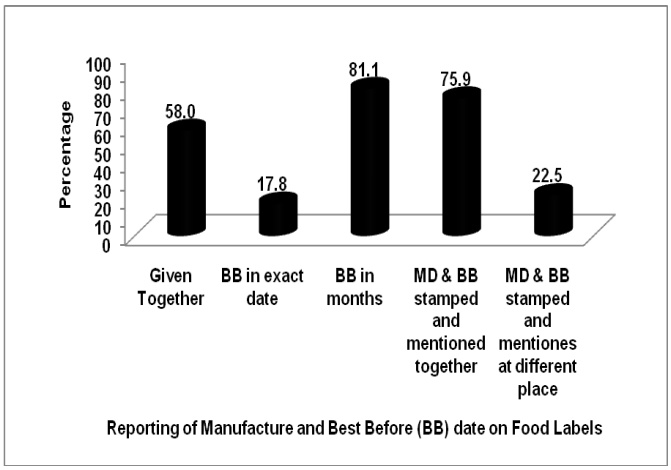
Figure 5- Ingredients List Compliance with the FSSAI Regulations (in percentage)



MANUFACTURE AND BEST BEFORE DATE

Only 58% of the products declared manufacture and best before date together at the same place. Since manufacture and best before date is not given together it makes it difficult and time consuming for the consumers to locate these dates which is the most important aspect of any processed food. Another difficulty in these dates is that most of the products (81%) declare best before date in months (i.e. best before in nine months, or best before within 12 months etc.). So it is time consuming for the consumers to calculate the best before date from the manufacture date. Twenty three percent of the products wrote the terms "manufacture date" and "best before date" at one place on the food label and stamped the actual dates somewhere else on the label (Figure 6).

Figure 6- Manufacture Date (MD) and Best Before Date (BB) Reporting on Food Labels (in percentage)



CONCLUSION

Processed foods in Indian market need to comply with the food regulations. In order to strengthen the process initiatives should be taken by the government and manufacturers to provide accurate and easy to understand information on food labels to enable consumers make healthy food choices.

ACKNOWLEDGEMENT

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ETHICAL APPROVAL

The study was approved by the Departmental Ethical Committee. Ethical clearance and Project approval no.: F.C.Sc./FND/ME/50 dated 30/09/2010.

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