

Assessment of KAP on Food Labelling among the Public and Experiment of Food Labelling Particular in Ingredient list (*Monosodium glutamate*)

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ABSTRACT

Background: Food labelling is used as a tool to safeguard and promote public health by giving consumers accurate nutritional information to help them make informed dietary choices.

Methods: This study was limited to the town panchayat and the village of Avinashi in the district Tirupur. A Questionnaire was used to collect data from 500 adult participants, on their knowledge, attitudes, and their sociodemographic profile.

Results: Based on this study maximum number of subjects prefer monthly purchases in town 50% and in the village 46.66% of subjects and branded too. 410 subjects (82%) out of 500 were aware of manufacture and expiry. 100% were noted cost. Ingredients list was noted by 22% of respondents. About 12% did not check any other mandatory information while purchasing. 62% & 76.6% were aware of green and red symbols, while 16% of subjects were not aware. 22% of the subjects were not seen or aware of the nutritional values of the product. After the testing, the sample of masala showed the presence of monosodium glutamate in 11 samples which were unmentioned in the ingredients list. Hence it shows the food package label did not mention the ingredient added in the food masala.

Conclusions: It is concluded that nutrition labelling is a useful tool for guiding people toward consuming wholesome foods. Encouraging the potential of nutrition labelling and health claims to promote health. Truthful and complete information allows value comparisons to be made among competing products. Ingredient labelling also helps people avoid foods to which they may be allergic.

Key-words: Allergic, Food labelling, Health, Knowledge, attitude and practices (KAP), Monosodium Glutamate

INTRODUCTION

After China, India is the world's second-largest producer of food, but it has the potential to overtake China in both the agricultural and food sectors. ^[1] Food is an important resource that is required to lead a healthy life, contains carbohydrates, proteins, fats, vitamins and minerals that

provide nutrition to the body, helps in the growth of the body, and build a strong defense system to fight diseases. It is not only the quantity of food but the quality of food that is important to a healthy life ^[2].

Food labelling encompasses any information available on packaged foods, be it in written, printed, lithographed, embossed, impressed, or attached form. The nutrition information on food labels gives us information so that we can make informed food choices and assist consumers in making food selections ^[3].

Each country has the autonomy to establish its labelling regulations, defining what type of information is mandatory and how it should be presented. International standards recommend the adoption of the list of ingredients as a mandatory item on food labels ^[4].

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The food industry is advised by the World Health Organization's Global Strategy on Diet, Physical Activity, and Health to provide consumers with evidence-based nutrition information and straightforward, consistent food labels so they can make educated decisions and healthy choices [5]. Foods serve two primary purposes: they supply nourishment and serve as a venue for enjoyable social gatherings.

Both roles are only satisfied when food is ingested [6]. Substances added to food to preserve or enhance its freshness, flavour, texture, appearance, or safety are known as food additives. Humans are routinely exposed to these chemicals in their food without a clear safe limit, and their use has reached frightening proportions [7]. Ajinomoto, also known as monosodium glutamate (MSG), is the sodium salt of glutamic acid and one of the most often utilized food additives [8]. Proteins are thought to include glutamate as one of their most essential constituents. When glutamate is present in its free form rather than when it is coupled to other amino acids in proteins, it plays a crucial role in improving the flavour of food [9].

MSG has been used as a flavor-enhancing chemical and an umami tastant. It might have a pathophysiological and toxicological impact on human health. Umami's taste intensifies the meaty, savory flavor of food, just like glutamate does in foods. MSG's ability to enhance flavour was initially identified in 1908 by Professor Kikunae Ikeda, a Japanese chemist at Tokyo Imperial University. Ikeda had been attempting to separate the component of Kombu *Laminaria japonica* (a Japanese seaweed) that imparted a distinct flavor [10].

As an excitatory neurotransmitter, glutamate stimulates nerve cells to convey a signal. MSG increases the activation of nerve cells by causing an overabundance of glutamate to accumulate in the brain. Excessive neurotransmitter activation results in excitotoxicity, a pathological process that damages or kills neuronal cells [11].

MATERIALS AND METHODS

Population and Sample- The study was limited to the town panchayat and village of Avinashi in the district Tirupur. In this study, 500 people both male and female were selected by random sampling method. The age groups 30-50 years were selected for study. 300 subjects

were selected from the villages and 200 subjects were selected from the town area.

Designing of Questionnaire- The questionnaires were framed to evaluate the knowledge, attitude and practice for food labeling. A questionnaire was prepared to collect demographic profiles related to age, education, occupational and economic mainly to food adulteration and food labeling. To assess the awareness of food labelling among the public a framed 33 questionnaires were given to them and after filling them based on the score gained to know the selected subjects' view of labelling during the purchase of food. The questionnaire was developed on the objectives type. Tamil and English versions of the questionnaire were prepared among 500 participants.

Data Collection Procedure- The data were collected from the public through questionnaires and information based on objectives.

Data Assessment and Analysis of knowledge, attitude and practices (KAP)- The filled questionnaire was rechecked and verified manually to reduce errors. After that, the data was analyzed and interpreted by using mathematical numerals like numbers, percentage, with tables, diagrams and figures used in this research.

Experiment analysis of Food Labeling (Monosodium Glutamate)- The ingredient list on food labeling in which the mentioned monosodium glutamate food materials were collected and the non-mentioned monosodium glutamate labeling of food materials was collected. Totally 15 samples based on fried rice masala, noodles masala and fried masala were collected from the grocery shops. The collected samples were analyzed for the presence or absence of Monosodium glutamate.

Statistical analysis- IBM SPSS Statistics software was used for the statistical analysis. Statistical analysis for Windows was based on statistics. For categorized variables, percentage and frequency were employed. For continuous data, the mean and standard deviation were employed.

RESULTS

To assess the knowledge of subjects in food labelling the questionnaire was framed. The random subjects were selected and a questionnaire was given to them to mark the answer. The subjects were from the town and village

people. The questions were based on the purchasing of food materials, mandatory information, and nutritional labelling. A total 33 questions were framed and given to the subjects. Buying of food substances on daily, weekly and monthly were asked to the subjects (Table 1).

Table 1: Purchasing the Branded and Unbranded food material by subjects on weekly, monthly and daily basis

Purchasing of food material	Town			Village		
	(n=200)	Brand/Unbrand	%	(n=300)	Brand/Unbrand	%
Weekly Purchase	70	55/ 15	35	140	100/ 40	46.66
Monthly Purchase	100	76/24	50	140	110/30	46.66
Daily Purchase	30	24/6	15	20	18/12	6.66

%= percentage

The maximum number of people was selected monthly purchased in town 50% of subjects and in village 46.66% of subjects. Some of the subjects chose the weekly purchase in town 35% and in village 46.66%. The less marked of daily purchase which means that the percentage was low in the village and town subjects. On the other side, the maximum number of the subjects were purchasing branded products in town compared to villages in all the area.

To assess how many subjects were noted mandatory information on food labelling while purchasing the food

materials. On the mandatory information list, which parts are noted maximum by the subjects?. Manufacture and expiry date in that out of 500 subjects 410 were noted in that 82%. Cost on food labels in that 100% of respondents were noted while in purchasing. The ingredients list on the food label was noted by subjects which is 22% of respondents. The remaining energy value is about 35%, and instructions for use are about 12% of respondents. Some of the subjects about 12% did not check any other mandatory information on food labelling while purchasing food materials (Table 2).

Table 2: Mandatory Information Checked by Subjects

Mandatory Information	Town (n=200)	Village (n=300)	Total (n=500)	Percentage
Manufacture and Expiry Date	150	260	410	82
Cost	200	300	500	100
Ingredients	70	40	110	22
Energy value	50	20	70	14
Instructions for use	100	75	175	35
Did Not Check	30	30	60	12

%= percentage

Table 3 shows the awareness against the symbol of veg and non-veg colors indicated on food labels. About 62% of the subjects were aware of the green symbol which indicates vegetarianism and about 76.6% of the subjects were aware of the red symbol which indicates non-vegetarianism. Only 16% of subjects were not aware of the symbol and colour of the food labelling.

Table 3: Awareness of Colour Indicates in Food Labelling

Colours	Town (n=200)	Village (n=300)	Total N=500	%
Green	170	240	310	62
Red	150	233	383	76.6
Not Aware	30	50	80	16

%= percentage

To assess the nutritional information on food labelling the subjects are aware of that information and it was described in Fig. 1. In nutritional information like calories, amount of nutrients, and amount of fat in that which part was noted by subjects were assessed. Based on the figure 1 calories 35% of the subjects were respondents, 12% of the subjects noted the amount of

nutrients on food labels, the 15% of the subjects were aware of the amount of fat. It is shown that in table additives, types of sugar, and preservatives which are noted on the label in the ingredient list are about 6%, 4% and 6% of subjects have viewed this on the food label. 22% of the subjects were not seen or aware of the nutritional values of the product.

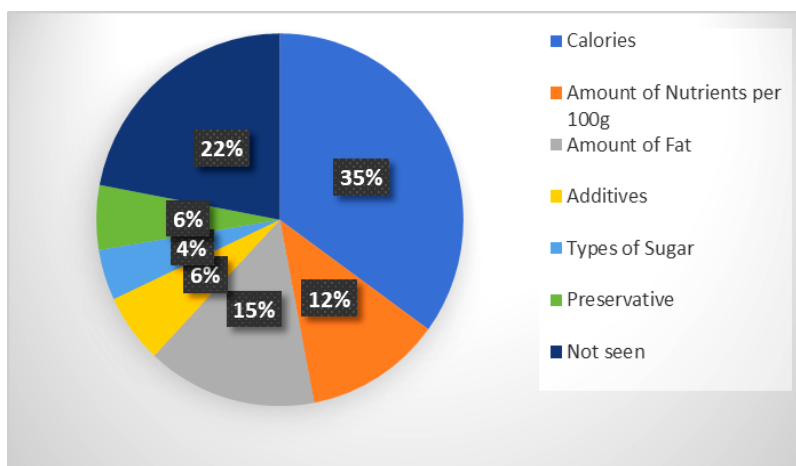


Fig. 1: Awareness of 500 Subjects against information in Food Labelling

The marks scored by the subject in the chosen answers from the questionnaire and according to respondents of the right answer and gained total mark they were under 6 categories it shows in the first one that is above 29 mark the was 115 subjects out of 500 subjects the mean was 73 and standard deviation is 42. In the above 24 mark the 120 subjects were scored in that mean was 73 and 47 standard deviations. In the above 19-mark categories, the 115 subjects scored a mean was 68 and 47 was the standard deviation. Above 14-mark

categories, 75 subjects were scored and the mean was 45.5 and 29.5 was the standard deviation. Above 9 mark it was 45 and below 9 mark it was 30 then the mean was 28, 17.5 and the standard deviation 17, 12.5. Hence it states that the subjects must develop knowledge in food labelling which includes concentrating on mandatory information reading and an ingredients list which is printed on the label to go through while purchasing food material (Table 4).

Table 4: Questionnaire marks with Number of Right Answers by Subjects

Mark (33)	Number of subjects chosen rights answer				
	Town (200)	Village (300)	Total (500)	Mean	Standard deviation
>29 mark	55	60	115	73	42
>24 mark	40	80	120	73	47
>19 mark	45	70	115	68	47
>14 mark	30	45	75	45.5	29.5
>9 mark	20	25	45	28	17
<9 mark	10	20	30	17.25	12.75

Total of 15 samples were collected and analyzed for the presence and absence of monosodium glutamate. The results are explained in Table 5, the unmentioned monosodium glutamate in the ingredients list of food packaging while after testing the sample of masala it shows the presence of monosodium glutamate in 11 samples. Hence it shows the food package label did not

mention the ingredients added to the food masala. It is important to mention the level of monosodium glutamate added to food has to be viewed on the ingredient list of food labelling. So that only the customers while buying the product were aware of the added ingredients in foods.

Table 5: Analysis of Monosodium Glutamate

Number of the sample	Mentioned/Unmentioned on Labelling of food	Presence	Absence
Noodles masala			
Sample 1	Unmentioned	Present	-
Sample 2	Unmentioned	Present	-
Sample 3	Unmentioned	Present	-
Sample 4	Unmentioned	-	Absent
Sample5 (Seasoning Masala)	Unmentioned	Present	-
Fried Rice Masala			
Sample 1	Unmentioned	Present	-
Sample 2	Unmentioned	Present	-
Sample 3	Unmentioned	Present	-
Sample 4	Unmentioned	Present	-
Masala			
Sample 1 (Chicken Fry Masala)	Unmentioned	Present	-
Sample 2 (Gobi Chilli Masala)	Mentioned	Present	-
Sample 3 (Chicken Fry Masala)	Unmentioned	Present	-
Sample 4 (Chicken Fry Masala)	Mentioned	-	Absent
Sample 5 (Chicken Fry Masala)	Unmentioned	Present	-
Sample 6 (Fish Fry Masala)	Mentioned	Present	-
Sample A (Vegetable Soup Masala)	Unmentioned	-	Absent

DISCUSSION

The present study was carried out with 500 subjects, 200 from the town area and 300 from the village side to Assessment of KAP on Food Labelling among the Public and Experiment of Food Labelling. Nutritional information regarding pre-packaged foods is available to consumers through food labels [12]. It is an essential tool for consumer-manufacturer communication [13] and an effective way to encourage subjects to choose healthier foods [14]. Additionally, it has been demonstrated that food labels raise consumer nutritional knowledge, leading to a decrease in sugar-filled beverage consumption and an increase in fruit and vegetable

intake [15,16]. One of the most useful techniques for allowing respondents to record their opinions or assertions using organized and standardized questionnaires is a knowledge, attitude, and practice (KAP) study. After that, it is transformed into both quantitative and qualitative data [17]. Since a certain level of comprehension is necessary to understand nutritional information, education level generally has an impact on the KAP of nutrition and food labels. Bandara stated that the name of the food was rated the most important mandatory labelling information, with 85.56% scoring [18]. That clearly shows that the brand names and the product names are the most important information

when they make purchasing decisions. These ranks are followed by date of minimum durability, list of ingredients, quantity of certain ingredients, special storage information or conditions of use, instruction for use, net quantity, contact details of manufacturer, origin and alcoholic strength for beverages ^[19]. Label is not just a piece attached to a product; it is very useful for making purchasing decisions. Further, it should contain the correct and appropriate amount of information about the product. Therefore, respondents, making information easier to understand (87%), standardizing the presentation information (53%), and creating colorful and attractive labels (38%) were highlighted as the major suggestions ^[20].

CONCLUSIONS

In the cycle of food processing, labelling is a crucial step that shouldn't be disregarded. The consumer and manufacturer initially come into contact with the label. Through multiple functions like attraction, promotion, and motivation at the point of purchase, the modern package label has taken on the role of educating the buyer about the product. The Study of food labeling reports that the public was less aware of the mandatory information on labels mentioned on the package. Compared to the town the village people had low knowledge of food labeling. They were purchasing only on the price and branded name not viewing the details of the necessary information. The townspeople were educated and read the information while purchasing. Therefore, the primary goal of the study was to evaluate the adult population KAP about food labels using the KAP Questionnaire, which comprised questions about knowledge, attitudes, and practices of food labelling in addition to sociodemographic profile.

CONTRIBUTION OF AUTHORS

Research concept- Shamalabanu, Meera Raman

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