Case study Available online www.ijsrr.org ISSN: 2279–0543

International Journal of Scientific Research and Reviews

A Study to Analyse the Impact of Food and Nutritional Labelling of Packaged Food Products on the Purchasing Behaviour of Consumers (College Goers Aged 18-22 Years) In Kolkata.

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ABSTRACT

Packaging is the science, art and technology of enclosing or protecting products to distribute, sale and use, which provides consumers with food and nutritional information by including a label to help them make self-reliant and informed food choices. Hence, a study was conducted with the view to analyse the impact of food and nutritional labelling on the purchasing behaviour of college goers aged between 18-22 years in Kolkata. The objective was to determine their awareness, usage and comprehending ability of food and nutrition labels on the basis of gender differences and educational qualification. A survey was conducted using a structured questionnaire and purposive sampling. Subjects (n=200) were divided into four groups (Under graduate and Post graduate girls and boys) where n=50 for each group. The data was collected from several colleges and universities of the city. An education program was also conducted to help them understand facts of food labelling system. The result obtained revealed all the groups are aware of label reading when purchasing food products and nutritional label significantly influenced their buying behaviour ($p<0.05$) but with poor comprehending ability. College goers are the future adults of the nation, hence should be encouraged to make use of food and nutrition labels regularly.

KEY WORDS:Age, college goers, educational qualification, Kolkata, nutrition labels.

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INTRODUCTION

Consumer is a human being and biological entity. They are of utmost importance as the success or failure of a product depends on them. The concept of consumer behaviour is an investigation of consumers' attitude towards an object. In today's times, from a marketing perspective, consumer behaviour has become a relatively new field of study. (Kumar, S., 2011)

For the purpose of communicating the information about the food product, labels are being used on the packages. Labels used on packages act as the medium of communicating information about food products. Labelling generally means stating information on packagedfood products. This information can take the form of words, letters, logos, images, figures or symbols. It may refer to the shelf-life of the merchandise, ways of preparation, consumption, nutritional value or other commercial aspects. (Wyrwa, J. et.al., 2017)

Due to the changing inter-relationship of scientific evidence and food and health, there is a trend towards voluntary and mandatory food labelling as an instrument to address nutrition related problems. Additional measures are being taken to protect consumers who may be allergic to particular foods, but unaware that the foods contain ingredients from unfamiliar food stuffs. (Albert, J., 2010)

To protect consumers from deception and businesses from unfair competition national labelling laws, international norms and guideline as well as private standards are set. Now-a-days food labelling is also becoming a policy to motivate the change in consumer behaviour and shifts in food production practices. In this procedure of developing labels, the interaction between private participants and public institutions are dynamic and complex, especially given the need to harmonize labels to felicitate trades. (Tarabella, A., et.al.,2016)

Some studies had shown that people who are aware of diet-disease relationships and guide their food choices, they do a better food choice than others. Previous studies found that belief in the importance of a low fat diet and desire to know the association between diet and cancer strongly predicted food label use, and the food use was significantly associated with lower fat intake. (Lisa, M., 2014)

Promoting a healthy diet is the major objective of public health policies around the world to fight against chronic diseases. One of the most possible strategy to promote a healthy diet is to endorse healthier food choices at the point of purchase. Recently in several countries a number of food companies have introduced regulations, standards or guideline to define if and when nutritional labels should be applied, their type and format, the nutrients required, and on what type of foods. Governments have been concerned with the nutrition fact tables, with graphical labels being established by the food industry. In a few countries, it is difficult to read and interpret the nutritional

information displayed on food packages. (Albert, J., 2010), hence efforts should be made to give simple and easily comprehensible information to help the consumers to make informed choices. The front-of-package (FOP) nutrition labelling has therefore become very important. It increases consumer awareness on the nutritional quality of food. (Tarabella, A., et.al.,2016)

Therefore, a study was conducted to ascertain the impact of food and nutritional labelling of packaged food products on the purchasing behaviour of college goers between 18-22 years of age in the city of Kolkata. The objectives were,

1. To determine the habit of reading labels among college goers when purchasing packaged food productsand identifyingthe factors that affect their purchasing behaviour.
2. To assess the awareness and comprehending ability of the respondents regarding the information provided on food labels.
3. To ascertain the influence of nutritional labels on the buying behaviour as per gender and educational differences of the respondents.
4. Conducting an education program to help subjects understand food and nutritional labels and thereafter assess their comprehending ability.

METHODOLOGY

Nutritional labels play an important role in providing the relevant information to consumers. Therefore, the present study was conducted to determine the relation between consumers' purchasing aspect determined by the food labels provided. The purpose was to understand how nutritional labelling can ultimately affect the dietary choice of consumers.

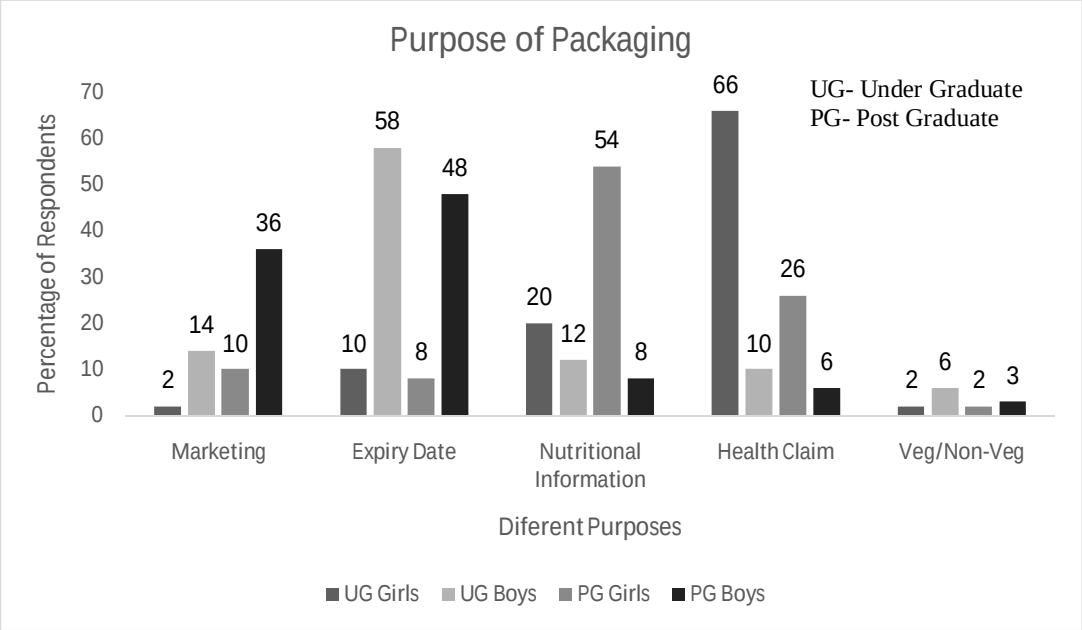
A Non Random Purposive Sampling Method was used to select samples, with a sample size of 200 under graduate and post graduate students, consisting of both boys and girls (n=50 per group). Subjects belonging to the field of nutrition or home science were excluded since such students were considered to have a better knowledge of label reading.

The data was collected using a structured questionnaire having two sections. The questionnaire so designed was prepared keeping in mind the objectives of the study and was explained to the subjects before conducting the survey. The consumers were explained how to answer and asked to discuss the reasons to the answers for the open ended questions.

The data obtained was analysed and the results were tabulated into graphs. Statistical tools such as percentage, mean, standard deviation, coefficient of variance, correlation coefficient and ANOVA analysis was used to interpret the results and was plotted on graphs or represented in tabular forms.

RESULTS & DISCUSSION

Food may be packaged and labelled before they are available in the market for several reasons. The respondents were asked according to them what could be the reason for packaging a food product, which was to understand the attributes that they would generally prefer reading on a food label when buying a product.

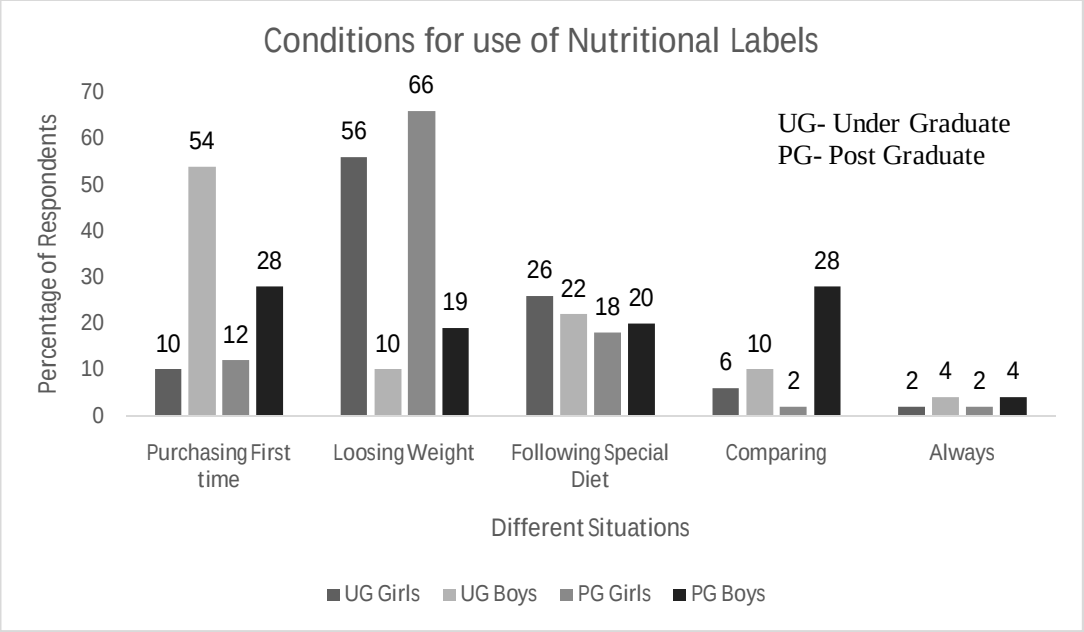


Graph 1: Purpose of packaging according to consumers

The above mentioned graph shows that a higher percentage of respondents i.e. 58% of under graduate boys and 54% of post graduate boys were of the opinion that the purpose of packaging is to inform consumers about the expiry date, which guides them to check that attribute more often than others. Both under graduate and post graduate girls, 20% and 54% respectively, believe in the importance of nutritional information and prefer reading the same. Others think that the purpose of packaging and labelling is only for marketing strategies whereas 66% of undergraduate girls would rather check health claims when buying the food product and least response was obtained for a product being vegetarian or non-vegetarian.

Public interest in healthy eating has increased over the years. Increased interest in nutritional issues in recent years has been fuelled by a number of factors including lifestyle, ageing population, dietary and safety concerns. From all the four groups, majority of under graduate and post graduate girls though that food labels are important when buying a food product. It also reveals that females in general are more concerned about nutritional information than males. Earlier studies conducted in Srilanka, UK, US and Australia have also shown a trend in females checking nutrition facts on labels which could be attributed to the fact that females might be more health conscious than males.

It has already been discussed that some consumers believe that checking the nutritional label before buying a product is important, but checking it could depend on various situations such as when buying a product for the first time or when following a special diet and so on.



Graph 2: Conditions when consumers use labels

The above graph shows that a maximum number of respondents are reading nutritional labels when losing weight, 56% and 66% of under and post graduate girls respectively give more importance to labelling when they are trying to lose weight and maintain a healthy diet. Purchasing a product for the first time (54% under graduate boys) or when following a special diet (26% of under graduate girls) appear to be the important factors for checking nutritional labels. Following a special diet can be considered for reading nutritional labelsduring an illness when a person may be restricted to consume certain foods or nutrients or it may be due to religious concerns. Both graphs 1 and 2 indicate that college goers check or read labels when purchasing food products with a higher percentage of girls making use of nutritional labelling.

Although reading labels before making a purchase of food product is considered under several circumstances comprehending the nutritional label might be difficult.

Table 1: Coefficient of Variance of the respondents regarding overall awareness and understanding ability of nutrition label as per educational qualification and gender

Respondents	Coefficient of variance
Educational Qualification:	
UG Girls	33.929
UG Boys	39.135
PG Girls	32.557
PG Boys	39.135
Gender:	
Females	33.196
Males	37.091

The above table shows the coefficient of variance of overall awareness regarding label reading and comprehending ability of the respondents on the basis of group and gender. The coefficient of variance is the ratio of the standard deviation to the mean. It tells us about the consistency of the data. The higher the value, the greater the level of dispersion around mean. The lesser the coefficient of variation, the higher will be the consistency in the data.

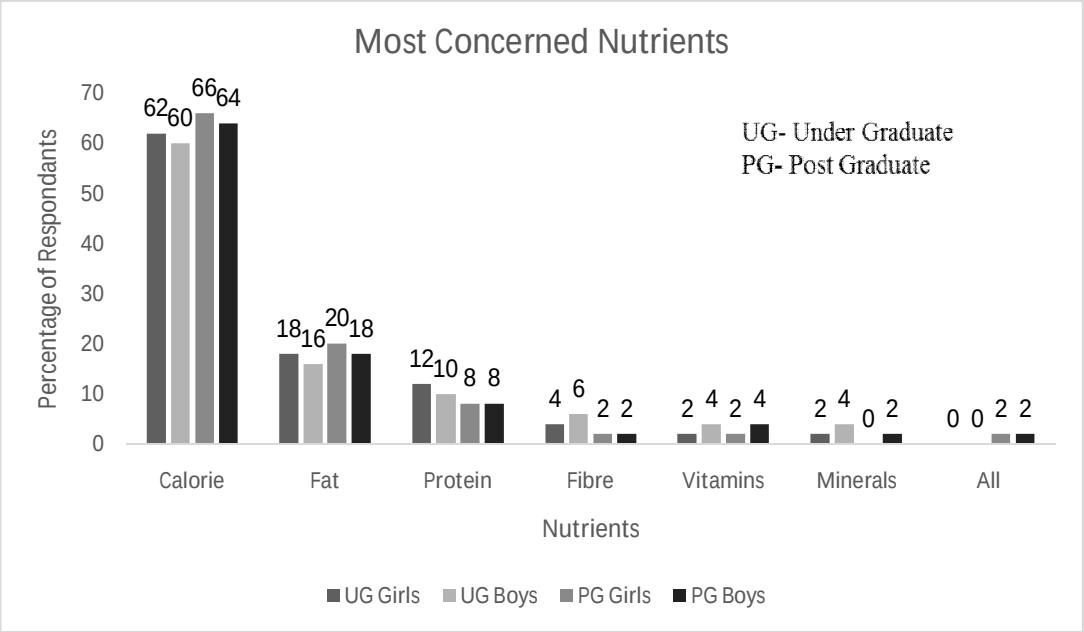
Here, the data depicts the four groups as per their educational qualification and age, post graduate girls are more aware and they have a more understanding ability than the other three groups as the coefficient of variance is 32.557, indicating minimum level of dispersion from the mean. 58% of post graduate girls considered nutrition information to be an important aspect that should be used when purchasing a food product. Previous studies revealed female members taking more interest in health related aspects hence would try to absorb and make an effort in understanding the information provided on the nutrition facts of a food label.

The data also shows that on the basis of gender, females are more aware about label reading than males (Table 1). This could be due to respondents' attitude towards health which is seen in graph 2. Females have been seen to be more concerned about health and nutritionat most times they play an active role in menu planning and the food choices of the family. (Battalwar, R., et.al., 2015)[2] On asking the respondents about the factors that affects their buying behaviour, the results showed that 42% of under graduate boys were influenced by taste and although less but other groups also didgive importance to taste of a product.

Television advertisements seemed to have governed their purchasing behaviour as stated by several respondents. It helped them to select products and also the attractiveness of the product mattered a lot. Higher percentage of post graduate girls i.e. 18% believed that attractiveness of a product made them select packaged food stuffs.

Brand value had also become an important feature of buying a packaged good product. Maximum percentage of undergraduate boys, which is22% prefer buying of a product of well-known brandswhen compared tothe other groups.

On asking them about the nutrients they would mostly be concerned about, all the four groups unanimouslyconsidered calories as the nutrient.



Graph3: Most concerned nutrients according to consumers on a packaged product

The above graph shows that, 66% of post graduate girls gave most importance to calorie, which could be related to the fact that this group also makes use of nutritional labels as seen in the previous graph no 1. About 18% and 20% of Undergraduate and postgraduate girls respectively check the fat content of a food product before buying it. Protein was on average interest but fibre, vitamins and minerals were of very less importance when selecting food products, indicating the lack of knowledge regarding the presence of these nutrients in the diet of individuals. Television advertisements that promote weight maintenance could be one of the determining factors leading to one taking interest in watching the amount of calories provided by a product.

Statistical Interpretation of the Survey

The survey conducted to assess the awareness and comprehending ability of the target groups in relation to the use of nutritional label when purchasing a food product.

Null Hypothesis (H_{01}): Influence of nutrition information on labels of food products does not affect the purchasing behaviour of the college goers.

Alternative Hypothesis (H_{11}): Influence of nutrition information on labels of food products affect the purchasing behaviour of the of the college goers.

Table 2: ANOVA analysis to check the influence of nutritional information on the buying behaviour of college goers

Sample size	F Value (calculated)	Calculated F Statistics	Standard P value	Calculated P value	Accept/ Reject Null Hypothesis
200	5.5315	2.6506	p = 0.05	0.0011	Reject

The result obtained shows the calculated P value as 0.0011 which is less than the standard critical value (p = 0.05) leading to the rejection of the null hypothesis. The acceptance of the alternative hypothesis ($p<0.05$) that is nutrition information affects the purchasing behaviour of the college goers (n = 200) is also shown by the F Value>F Statistics.

As it is evident that nutrition information influences the buying behaviour of all the group of respondents, therefore Z test was performed to identify the gender which was more influenced by nutrition information. The calculated Z value 1.68 implies that females are more aware than males, as the critical value is less than the calculated value.

Previous studies conducted at various countries have found woman being more likely to consult and use nutrition labels when making a purchase of food products when compared to men. The college going boys had reported the same due to their lack of interest or not finding the same very useful. This might also be seen due to their inability to comprehend or their lack of need for a special diet as seen in the previous graph no 2. Consumers in general spend no more than 30 seconds when reading a label at the time of purchase making it difficult to comprehend and absorb the details mentioned about a product. (Battalwar, R., et.al., 2015)[2]

Null Hypothesis (H_{02}): Differences in educational qualification does not affect the label reading and consequent purchasing of food products.

Alternative Hypothesis (H_{12}): Differences in educational qualification affects the label reading and consequent purchasing of food products.

Table 3: ANOVA analysis to check the influence of educational qualification on the buying behaviour of the respondents

Sample size	F Value (calculated)	Calculated F Statistics	Standard P value	Calculated P value	Accept/ Reject Null Hypothesis
200	0.0556	3.9381	p = 0.05	0.81	Accept

The results obtained as depicted in the above table shows that differences in educational qualification does not affect the label reading and consequent purchasing of food products. As the calculated P value is more than the standard critical value i.e. 0.05, therefore the null hypothesis is accepted. The F Value<F Statistics, which indicates the acceptance of null hypothesis. Since it was only under graduate and post graduate students from colleges, therefore the differences in

educational qualification was very less and too negligible to affect the purchasing behaviour on this aspect.

Correlation coefficient of understanding ability of nutrition information with buying behaviour of the consumers was assessed to understand if comprehending of nutrition facts could determine the respondents buying of a food product.

Table 4: Correlation coefficient of the consumers' comprehending ability to their buying behaviour

Buying behaviour	Correlation coefficient of understanding ability with buying behaviour			
	Under graduate		Post graduate	
	Girls	Boys	Girls	Boys
	+0.06	-2.28	+0.09	-0.04

Table 4 shows that understanding ability to buying behaviour negatively correlates with each other in case of both the group of boys, which means they are unable to comprehend the nutritional label while buying a packaged food product and hence they rarely make use of it. The previous graphs have also shown a similar trend in the boys being least interested in reading nutritional labelling. Only a few if at all would consider the labels, provided they have a special diet to follow yet comprehension seems to be a problem.

Education program

To improve their understanding ability regarding label reading an education program was conducted in some of the colleges of Kolkata. A poster presentation was prepared with simple information and explained to the students.

Table 5: Responses of the consumers

Group	Correct answer (%)	Incorrect answer (%)
UG Girls	92	8
UG Boys	76	24
PG Girls	88	12
PG Boys	84	16

The consumers were asked to calculate total calorie of a packaged food product to check their understanding ability after the education program. It was seen that most of the respondents from the four groups had answered well indicating a positive attitude towards label reading and comprehending when consumers are educated.

CONCLUSION

Findings from the study suggest label reading is generally low among respondents. Among the boys and girls, the latter were seen to be better readers.Almost all the respondents agree with the fact that nutritional labelling is useful in better selection of food product. Yet, when purchasing

they hardly read the entire label. Therefore, it is necessary to educate the students, the future of our country so they make better food choices.

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