



Ergonomic Evaluation of Labels on Ready to Eat Meal Products and their Impact on Consumer's Perceived Visual Comfort

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Abstract

Label is defined as a display of written, printed or graphic matter on the container or the package of the container. The design of the label should be such that the consumer can read and understand the information without any visual discomfort. The aim of the study was to conduct ergonomic evaluation of labels in terms of design features, information efficacy, mandatory guidelines and find out consumers perceived level of visual comfort while reading the label. One hundred and twenty consumers who frequently purchased ready to eat meal products formed the sample for investigation. The visual comfort while reading was measured in terms of physical and psychological visual stress symptoms. The design features were evaluated in terms of size and colour of the font, placement of label, clarity of language, colour of label background, label attraction, reflective surface package, visibility of essential information. The associations and relationship between variable were analyzed by using Chi square and Anova. The consumers perceived visual discomfort while continuously reading labels. Consumers with defective eye sight perceived visual discomfort at higher level. The design of the label has not met the visual requirements of human eye. Font size and visibility of essential information were the defects in label design. Consumers who experienced visual stress did not read the label. To attract the attention of consumers the food manufacturers should adopt ergonomic principles in designing label. The study brought out recommendations on label designing as per the user requirements.

Keywords: Ergonomic evaluation, visual stress, label features.

Introduction

The design of the label on a food product is an important aspect which may influence the consumer reading habit and buying behavior¹. The information on the label of the food product should be designed in such a way that the label will have a higher probability of being read. A food label should grab the attraction of consumers². The physical characteristics of label and its context or surroundings will influence whether or not consumers to get attracted to the label. Attracting attention is essential, as consumers are on their own and usually not sure what stimuli are important. The design features of the label like font size, placement of label, clarity of language, colour of label background, visibility of essential information and font colour should be comfortable from consumer point of view. The information in the label is another important aspect. The label should consist of information about manufacturer address, manufacturing date and expiry date, price, ingredients, nutritional information and instructions for usage. In other words, label should be designed taking ergonomic principles into consideration. The design of the label should be such that the consumer can read and understand the information without any visual discomfort. The font size, colour, visibility of essential information should match the visual requirements of human eye.

Consumers protection is important in the present day market scenario as consumers dependency on information provided by

manufacturers is increasing when they have to choose from many alternatives. The consumers should be provided with accurate and essential information to make a wise choice and gain utmost consumer satisfaction³. There is a need to explore the readability of information provided through labels. The label which is comfortable for human eye to read and understand can inculcate better buying practices among consumers⁴⁻⁶. Research that can brought recommendation on ergonomic design features of label, essential information to be incorporated in a label is very much needed in present day context as more and more consumers are depending on packed food products. Only few studies attempted to study food labels^{7, 8}. Under these circumstances it is essential to understand whether the design of the label is comfortable and convenient for consumers to read? Are the food labels designed ergonomically? On the other hand do the consumers read label? Is their buying behaviour influenced by design features of label? There is a need to explore answers to these questions and draw recommendations for improving the design of food labels and inculcate better buying practices among consumers.

Methodology

The purpose of present study was to conduct ergonomic evaluation of labels in terms of design features, mandatory guidelines and find out consumers perceived level of visual comfort while reading the label. The capital city of Andhra

Pradesh i.e. Hyderabad was selected purposively as a study area as consumers with various levels of income, education and occupations reside in these metropolitan cities. Exploratory research design was followed and 120 sample of consumers were selected from the very popular supermarkets located in the study area. Keeping in mind the objective of the study an interview schedule was developed for collecting the information. The variables selected for ergonomic evaluation of labels on ready to eat meal food products were (i) mandatory guidelines, (ii) visual discomfort and (iii) design features.

Mandatory guidelines prescribed under Food safety and standards (packaging and labelling) regulations 2011 are essential features manufacturer should follow while designing food labels. The subject matter specialists from the fields of teaching, research and marketing evaluated the label features of ready to eat meal food products that were available in local market against the mandatory guidelines. Visual discomfort of consumers while purchasing ready to eat meal food products was assessed. Consumers perceived level of visual discomfort was measured. Research related to visual stress established relation between age and visual stress, eye sight and visual stress. An attempt was made to know whether the consumers perceived level of visual discomfort while reading food labels was influenced by their age and eye sight.

Design features of label were analyzed in terms of font size, placement of label, clarity of language, colour of label background, visibility of essential information and colour of the font. With an assumption that the respondents evaluation about the design features will have an impact on their label reading habit, statistical analysis of Chi square was done to find out the association between independent and dependent variables of the study i.e. respondents evaluation of label features and their label reading habits. Further to know the significant difference between visual discomfort and age, eye sight the Anova test was carried out. Frequencies and percentages were also calculated for the profile of the respondents on the variables.

Results and Discussion

An attempt was made in the present investigation to find out whether the labels on ready to eat meal food products fulfill the mandatory guidelines prescribed under Food safety and standards (packaging and labelling) regulation 2011. Ten subject matter experts were chosen as judges to evaluate the label features of ready to eat meal food products against mandatory guidelines. According to the results of the study, it can be said that the manufacturers by and large are following mandatory guidelines while designing the labels on ready to eat meal food products. The results of the study are in line with the study conducted by Rao and Rao⁹ wherein it was revealed that there was a good compliance of food labeling with mandatory food labeling regulations in India among both Indian and imported pre packaged foods.

Visual discomfort: Visual discomfort experiencing by the respondents while reading labels on ready to eat meal food products was measured using visual comfort scale developed for the study. The possible score on the scale ranged between 17 and 51. Higher the score higher the perceived level of visual discomfort experienced by the subjects. Respondents who scored 32 were categorized as consumers who experienced high level of discomfort while reading labels on ready to eat meal food products. Respondents who scored below 24 were the consumers who experienced low level of discomfort and respondents whose scores fell between 33 and 25 were considered as consumers who perceived medium level of discomfort while reading labels on ready to eat meal food products. Only one fifth of the respondents were not experiencing visual discomfort while reading labels on ready to eat meal food products. The remaining majority of the sample (80%) was experiencing visual discomfort at different levels. It may be said that the consumers were experiencing visual discomfort while reading labels on ready to eat meal food products and the design of the label was not as per the requirements of human vision.

Relationship between visual discomfort and age, eye sight: Further an attempt was made to find out whether age and eye sight of the respondents had any relation with the respondents perceived level of visual discomfort.

Table-1
Relationship between visual discomfort and age, eye sight N=120

Independent variable	Visual discomfort	
	F value	Prob
Age	1.43	0.2569 NS
Eye sight	-2.61	0.0143*

NS=Not Significant, * - Significant difference at 5 percent level

According to the result the age of the respondent had no influence on perceived level of visual discomfort while reading labels on ready to eat meal food products and the eye sight of the respondent had influence on respondents perceived level of visual discomfort. The food labels need to be designed to suit the needs of all consumers. As consumers with defective eye sight perceived visual stress, the design of label on ready to eat meal food products were not ergonomically fit.

Design features of the label: The design features of the label were analyzed in terms of font size, placement of label, clarity of language, colour of label background, visibility of essential information and colour of the font. Slightly more than half of the sample (53.33%) was not comfortable with colour of label background. Majority of the sample (82.5%) were not comfortable with font size and visibility of essential information on a label. Sixty five percent respondents expressed discomfort with the colour of the font size. The factors that caused discomfort for consumers, while reading ready to eat meal food products were Font size, visibility of essential information, colour of font, and colour of label background.

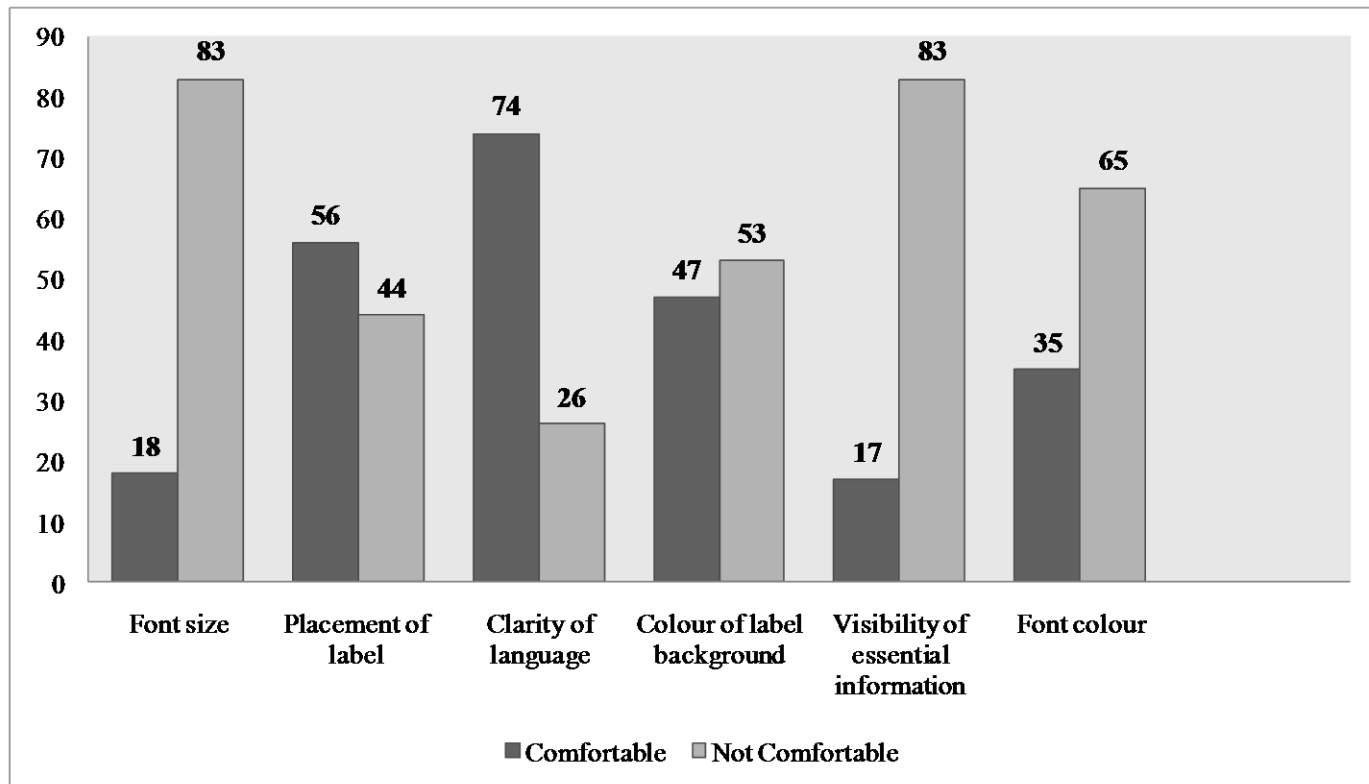


Figure-1
 Distribution of Sample by comfort with design features of label

The difficulty associated in reading the label among the adult consumers was the font size of the printed matter on the label.

Label reading habit: Consumers were asked to indicate whether they read food labels casually or read the label to understand information on label or read label to analyze the information on label. Reading the label and analyzing information while purchasing the product was considered as a most desirable practice followed by reading the label and understanding information.

Table-2

Distribution of Sample by label reading habit N=120

Label reading habit	Frequency	
	N	%
Casual reading	30	25
Understanding the information	53	44.16
Analyzing the information	37	30.83
Total	120	100

Casual reading of the label was not considered as a desirable practice as label was meant for consumers to understand and analyze the information and make use of information while purchasing the product. Similarly, slightly less than one fourth of the sample (25%) were found to be casually reading the food

labels without any effort to understand and analyze the information. 44.16 per cent were reading the label and understanding the information. So the label reading habit of consumers was inconsistent.

Association between the respondents' evaluation of design features and their label reading habits: It was hypothesized that there exist a association between respondents evaluation of design features of the label and their label reading habit. The association between respondents' evaluation of design features and their label reading habit was assessed using chi square test (table 4). Among the seven design features selected for the study font size and visibility of essential information was found to have significant association with casual reading, understanding the information on label and analyzing the information on label. The association between respondents' evaluation of design features and their label reading habit was assessed using chi square test. Among the seven design features selected for the study font size and visibility of essential information was found to have significant association with casual reading, understanding the information on label and analyzing the information on label. The null hypothesis was accepted in case of placement of label, clarity of language, colour of label background and font colour and rejected in case of font size and visibility of essential information.

Table-3
Association between respondents evaluation of design features of label and label reading habits N = 120

Design features of the label	Label reading habits					
	Casual reading		Understanding the information on label		Analyzing the information on label	
	χ^2 value	Prob	χ^2 value	Prob	χ^2 value	Prob
Font size	3.6771	0.0552*	11.0731	0.0009**	3.8253	0.0505*
Placement of label	0.0007	0.9795	0.1882	0.6644	0.1505	0.698
Clarity of language	0.0418	0.838	0.0554	0.8139	0.0989	0.7532
Colour of label back ground	0.0945	0.7585	0.5639	0.4527	0.7792	0.3774
Label attraction	4.6478	0.0311*	2.4951	0.1142	0.0128	0.9099
Visibility of essential information	3.6771	0.0552*	4.5988	0.032*	3.8253	0.0505*
Font colour	2.0944	0.1478	0.347	0.5558	0.1199	0.7292

Note: *-Significant at probability level of < .05, **-Significant at probabilitylevel of <.01.

Label attraction showed significant association with the casual reading. Label attraction showed significant association with the casual reading. The results revealed significant association between label reading habits and font size and visibility of essential information. To encourage consumers to read label it is essential to provide label with appropriate font size. Visibility of essential information enables the reader to read, understand and analyze the information on the label and also decrease the visual discomfort.

Conclusion

The results of the study states that from the ergonomic evaluation of the labels on ready to eat meal food products the following conclusions can be drawn. There was a good compliance of food labeling with mandatory food labeling regulations in India among both Indian and imported pre packaged ready to eat meal food products. Consumers perceived visual discomfort while continuously reading food labels could not meet the requirements of human vision. Consumers with defective eye sight perceived visual discomfort at higher level. The design of labels on ready to eat meal food products have not met the requirement of consumers with visual problems, font size and visibility of essential information were the defects in the label design. Results emerged out of the Anova analysis, approved that there was no significant relation between visual discomfort and age and there was a significant relation between visual discomfort and eye sight at 5 percent level of significance. From the results it can be said that the font size, visibility of essential information were the factors that caused discomfort for consumers, while reading labels on ready to eat meal food products. Consumers who purchased the products by comparing the information on label of different brand products were very few. According to the present study there existed a significant association between label reading habit and font size and visibility of essential information. Appropriate font size and

visibility of essential information are found to be the key factors that can influence the label reading habit of consumers. So the food labels need to be designed to suit the needs of all consumers.

References

1. Campos S., Doxey J and Hammond D., Labels on ‘Pre-packaged foods a systematic review’, Department of Health Studies and Gerontology, University of Waterloo, Ontario, Canada, 6–13 (2011)
2. Prathiraja P.H.K and Ariyawardana R., A Impact of Nutritional Labeling on Consumer Buying Behavior, *Sri Lankan J of Agricultural Economics.*, 5, 11-21 (2003)
3. Dubois B., *Understanding the Consumer.* Pearson. Harlow, (2000)
4. Goldberg H.J., Visual Search of Food Nutrition Labels, *J. of Human Factors.*, 41–45 (1999)
5. Rayner K., Eye movements in reading models and data, *J. of Eye Movement Research.*, 2(5), 2 (2009)
6. Wade N.J., Vision and origins of eye movement research, *Elsevier.*, 31-36 (2007)
7. Jacobs A.S., Beer D.H and Larney M., Adult consumers understanding and use of information on food labels, *Public Health Nutrition.*, 4, 1-13 (2010)
8. Ranilovic J. and Baric C.I., Differences between younger and older populations in nutrition label reading habits, *British Food J.*, 113(1), 109–121 (2011)
9. Rao S.V and Rao S.G.M., Assessment of current scenario of food labeling in India, Food labeling scenario in India, NIN Hyderabad, 12, 12–43 (2009)