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Knowledge and Practices of Using Food Label Information Among Adolescents in Kolkata, India

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INTRODUCTION

India has the largest adolescent population (20%) in the world and these 10 to 19 year olds constitute 243 million of India's 1.2 billion population.[1] About 10% to 15% of adolescents in urban areas in India are overweight or obese.[2-4] Although there are many reasons for an increase in the prevalence of obesity, frequent consumption of unhealthy processed foods is an important risk factor. Consumption of nontraditional fast foods, processed foods, and packaged foods has been increasing in India at a rapid pace, and more so among adolescents and children in urban areas.[5,6] Over the past 20 years, there has been an almost 300% rise in consumption of packaged foods in developing countries such as India.[7,8] In the current scenario, when there are shifts from homemade to prepackaged foods, food labeling could serve as a population-based approach to help consumers make healthy choices.[9,10]

The Elaboration Likelihood Model (ELM) states that information can persuade via 2 different routes: central and peripheral. With the central route, the person draws on experience and knowledge to scrutinize information and generate favorable and/or unfavorable responses. Central route processing occurs when an individual has high involvement with the topic (ie, the topic is personally relevant) and has an ability to evaluate the information. Because, food labels can display nutrition information and symbols, which serve as central and peripheral cues respectively, labels can be potentially powerful tools of communication to persuade consumers to make healthy food choices.

Considering that regulations in India make it mandatory for food labels to display nutrition information along with the manufacturing, expiration, and 'best before' dates, as well as ingredients,[11,12] creating awareness about the use of label information among young consumers can enhance their skills in choosing healthy foods.[13,16] Schools not only provide viable platforms to reach a large segment of children, but also offer the advantage of carrying out education interventions within the context of the child's natural environment.[14,15] This study was conducted to gather information about the packaged foods that adolescents usually purchase, and to assess their current knowledge and practice of reading food labels as well as the extent to which they use this information in choosing foods.

METHODS

A cross-sectional study was conducted among adolescents attending schools in Kolkata, a metropolitan city in the West Bengal State of India. Two schools from each of the 3 natural zones (South, Central, and North) of Kolkata city were randomly selected using cluster sampling. In each zone, 1 government and 1 private school were selected, for a total of 6 schools. The government and private schools were selected to represent different economic strata. All children in eighth grade (N=316) were selected from each school.

Survey Instruments

A pre-coded, closed-ended questionnaire was used to assess the knowledge and practices of adolescents. The questionnaire was pre-tested among 17 children. Based on the pre-test, minor modifications were carried out in certain questions. Because the students were not able to respond to the questions about quality symbols, the authors decided to show pictures of these logos along with the corresponding questions while administering the questionnaire. The final questionnaire had 23

questions spread across 5 major sections: (i) socio-demographic details of the participants (10 questions), (ii) the purchase of packaged foods and frequently purchased or consumed packaged foods (2 questions) (iii) how food label information was read (3 questions), (iv) knowledge about symbols on food labels (3 questions), and (v) opinions on the usefulness of food labels (5 questions).

Data Collection and Analyses

Each question was read out to participants by the investigator, who also showed the relevant pictures when dealing with questions related to symbols on food labels. The authors checked the data for consistency before entering them for analysis. Descriptive statistics, frequency distributions, and cross tabulations were performed, and chi-square test was used to assess the significance of associations between variables at 95% confidence interval ($P \leq .05$).

RESULTS

Of the 316 respondents, 148 were boys and 168 were girls. Most respondents were from Government schools; the rest were from private schools. The students were in the age group of 13-16 years. Approximately 9% of participants were from a lower socioeconomic group (as per National Sample Survey Organization categorization); while others were either from middle or higher socioeconomic groups. Most respondents (297 of 316) reported that they purchase and/or consume packaged foods. Therefore, the results presented below are based on responses from these 297 subjects only.

Packed Foods Purchased and/or Consumed by Adolescents

Among those who purchased packaged foods, a majority reported that they consume almost all foods listed in the questionnaire. Among the ready-to-cook and ready-to-use foods, biscuits (94.6%), beverages (89.9%), snacks (88.6%), instant noodles (87%) and health drinks (86.7%) were most commonly purchased.

Reading Food Labels and Ingredients

Of those who bought packaged foods, 88% claimed to read food labels. Only about a third of them always checked food labels, and over half sometimes checked food labels. However, about three quarters of those who read labels always or sometimes read the date of manufacture and expiration dates, whereas fewer participants read the 'best before' date (Table 1). When asked about their perception regarding the safety of the foods after the 'best before' and expiration dates, over a half of respondents thought that it was safe to foods after the best used before date, and 66% knew that it would be unsafe to consume foods after the date of expiration. Among those who read labels, only half reported that they always or sometimes checked for ingredients; the rest never or rarely did so.

Table 1. School-Attending Adolescents (10–19 Years of Age) From Kolkata, India, Who Read Labels and Manufacture, Expiration, and Best Used Before Dates (n = 297)

	Frequency of Reading			
	Always, n (%)	Sometimes, n (%)	Rarely, n (%)	Never, n (%)
Aspects of Label				
Read label information	149 (50)	93 (31)	19 (7)	36 (12)
Date of manufacture	137 (46)	128 (43)	18 (6)	14 (5)
Date of expiration	178 (60)	68 (23)	24 (8)	27 (9)
Best used before date	103 (35)	92 (31)	25 (8)	77 (26)

Nutrition Facts and Allergen Information

When asked about the habit of reading nutrient information on labels, less than one fifth of adolescents who read food labels reported that they checked the fat, sugar, salt, and cholesterol content of the foods, whereas only one tenth read information about fiber content. When asked about allergens, only about 10% reported that they always read this information (Figure 1).

Knowledge of Symbols on Food Labels

A majority of the students could recognize the Indian Standard Institute (ISI) symbol (a quality symbol issued by the Bureau of Indian Standards, which can be voluntarily procured by manufacturers of certain foods and it is compulsory on labels of bottled water); however, only about one fifth of them knew on what kind of foods it could be seen. When asked whether this symbol was mandatory or voluntary for food products, only 12% of those who claimed to know the symbol answered correctly, saying that it was not a

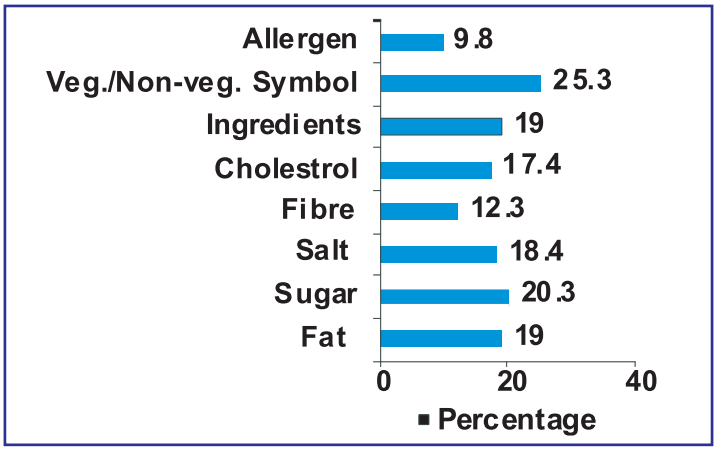

Figure 1. Percentage of school-attending adolescents (10–19 years of age) from Kolkata, India, who read nutritional content and other information on food labels.
n=297. Veg./Non-veg. indicates Vegetable/Non-vegetable.

mandatory symbol. When asked about Agricultural Produce Grading and Marking (AGMARK) (a voluntary quality symbol on agricultural products such as spices, flours, and oils), over one quarter of the total respondents recognized the symbol, whereas only 9.5% knew on which foods it could be found, and a majority (80%) did not know whether it was mandatory.

Vegetarian and Non-Vegetarian Symbols

When the researchers showed the respondents the symbol of a brown dot in a brown box, a majority (72%) claimed that they recognized the symbol; however, less than half knew that it indicated the presence of a non-vegetarian ingredient in the food. Of the 78% who claimed to recognize the green dot in a green box, only a half knew that it was a symbol indicating that the food was vegetarian. Only 40% of adolescents knew that these symbols were mandatory on labels.

Opinion About the Usefulness of Food Labels

About a half of the adolescents considered labels useful for making food choices, and one third of them thought that the labels were sometimes useful; 6% thought that the label information was not useful for choosing foods. When asked about their perception regarding the usefulness of the information on labels, over 44% reported that it was adequate, 15% thought that there was not enough label information, and 13% thought that there was too much. At least one fifth of all respondents thought the information was too confusing to understand.

Label Format and Effect of Gender Differences on Reading

More than one third of students responded that they would prefer images or symbols rather than the current format of a text-intensive food label (as opposed to 11%, who preferred the current form). About one third of students preferred symbol-based labels only for unhealthy foods. No significant (P> .69) differences were found in the label-reading practices of girls and boys; 87% of male respondents and 89% of female respondents claimed to read food labels.

Parents' Education and Adolescents' Label-Reading Habit

No significant (P>.05) association was found between the parents' education and the child's habit of reading food labels. Interestingly, significantly (P<.001) fewer adolescents whose parents were educated only to primary school checked labels, compared with those who had illiterate or better-educated parents.

DISCUSSION

The results of this study show that reading food labels was reported to be a common habit among most of the adolescents. However, many of them appeared to be concerned only about the shelf life or safety of the product, because they reported that they read information related to the 'date of manufacture' or 'expiration' or 'best before' date. Fewer adolescents read ingredients and nutrition information on the labels. The most frequently purchased packaged foods among school-going adolescents in Kolkata were reported to be instant foods, candy, beverages, and so forth. Similar findings were reported in an earlier study conducted in Hyderabad, a metropolitan city in South India.[16]

Earlier studies in India reported a direct association between consumers' education level and their practices of reading and understanding text-based food labels.[15,17,18] In the current study considerably higher proportion of respondents read food labels than those reported in previous studies from India[17,18,19]. This could be because all respondents in the current study were students who had a certain level of education. However, no association was found between the level of parents' education and children's habit of reading labels. This is contrary to the views that parental education could be an important mediating factor in influencing adolescents' food shopping and use of food labels.[20,21] In India, there has been a steep rise in the consumption of packaged foods only in the past few decades, with many youths and adolescents as a large proportion of consumers.[21] Because this is a recent trend, there is hardly any possibility for parents educating the current generation about these aspects. It indicates a transition among adolescents from having minimal control over food shopping and choices to being in charge of their choices.

Although Huang et. al.[22] reported that label reading does not necessarily translate into a healthier diet for adolescents, there is general concurrence that prior exposure to nutrition education, health consciousness, and a belief in the importance of a low-fat or low-calorie diet can have a major influence on label use behaviors.[22-25] In this study, less than 20% of adolescents reported that they checked nutrition information and fat, sugar, and cholesterol content; however, no attempt was made to correlate these with adolescents' nutrition knowledge or nutritional status because that was beyond the scope of this study.

A higher proportion of the respondents recognized the ISI symbol than the AGMARK symbol. The reason is that AGMARK is a quality symbol that is likely to be

present on products such as honey, ghee, spices, flour, and vegetable oil, which the adolescents seldom buy, whereas, ISI is seen on ready-to-eat foods & carbonated beverages and juices, which are consumed by a large proportion of adolescents. [4,16]

Applying the ELM model of persuasion, it can be argued that the display of ingredients or nutrition information acts as a central cue and the consumers need basic nutrition literacy to invoke reasoning and assess the health effects of the food.[26] Therefore, poor comprehension of labels could be attributed to low nutrition awareness.

Although 95% of packaged food products comply with labeling regulation in India, whether consumers understand the label information is still questionable[12]. In the current study, more than half of respondents thought that labels were confusing or had too much information. Therefore, increasing consumer education rather than just enhancing access to nutrition information on labels can assist adolescent consumers in making decisions about food purchases. This also calls for reconsideration of the text-based information display. Because about 70% of the respondents indicated a preference for changing existing informational display patterns on the labels, there may be a need to experiment with alternative methods, such as color or quality coding, traffic light systems, and so forth, and to assess their impact on the food choices of adolescent consumers.

This cross-sectional study adds to understanding of the use of label information in this important group. This study offers a unique contribution to the existing literature on consumer use of food labels, because it assessed the knowledge and use of food labels among adolescent consumers in India.

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