

Food labels: An analysis of the consumers' reasons for non-use

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ABSTRACT

Food labeling is found to be a very important public health tool aimed at providing consumers with information which may influence their purchasing decisions. This study has aimed to assess the consumers' behaviors about the important information on the labels and their reasons for use or non-use. This descriptive cross-sectional study was conducted as point of purchase survey among 2123 shoppers in chain stores in Tehran, Iran, during 2008-2009. Data was collected using a structured questionnaire which contained 4 sections measuring respondents' background, knowledge, perception, and behaviors about information on food labels. Results showed that 82.8 % of consumers look at food label information when purchasing food products. Younger adults (aged 20-40 years), female, married, employees and holders of a diploma and higher, individuals with higher level of knowledge, and those in the group categories of monthly income higher 6 million rials were significantly more likely to use food labels. Most of the respondents (29.3%) found small print on food labels to be the main reason for not reading food labels information, followed by no interest (26.3%), do not believe (12.6%), do not understand (7.1%). Our study suggests that increasing nutrition knowledge and understandable and legible food labeling can increase the likelihood of food label usage.

Keywords: Food labeling; Consumer behavior; Nutrition information

INTRODUCTION

Consumers increasingly repeat that they need information in order to make rational choices in the food market [1]. Creating supportive environments that help people to make healthy choices is an important underlying principle in promoting health [2]. Food labeling is found to be a very important public health tool aimed at providing consumers with information which may influence their purchasing decisions [3-5]. For example, consumers may want to know what ingredients are in a food product, how to cook it, how it should be stored, its best-before or use-by date, and its fat content or other nutritional properties. Detailed, honest and accurate labeling is essential to inform the consumer as to the exact nature and characteristics of the food product, enabling them to make a more informed choice.

Nutrition-related health problems, such as obesity, high blood pressure, diabetes, cancers, osteoporosis and cardiovascular

diseases, have a marked impact in developed and developing societies [6]. As consumers are becoming increasingly aware of the relationship between diet and disease; their demand for nutrition information increases [7].

Review of consumer research studies on food labeling [2, 8-9] showed that a range of them have been focused on these question whether consumers notice to such labels, whether they read and understand them, whether they use them when shopping for food. According to Drichoutis and colleagues [9], various factors, ranging from demographic to attitudinal and product related, affect food label use. Some studies have indicated that food label use decreases with age [10-11]; however, some other researchers have demonstrated the reverse [12-15]. Furthermore, nutritional information search is positively associated with education, so that individuals with higher education are more likely to read food labels than those with lower education [14-

17]. Evidence suggests that males are less likely to use nutritional labels than females [18-22]. This may result from the fact that many males do not agree that nutritional information is useful, that the information can help in food choice, or that health is a matter of importance to them [23].

In addition to demographic factors, nutritional knowledge plays a key role in the food label use. Previous studies have reported a positive relationship between knowledge and label use [18, 24-25], even though Nayga [10] found no evidence supporting this relationship. It may facilitate label use by increasing its perceived benefits [9] or by increasing motivation to seek more health information [26]. Other possible barriers to the effective use of food label include a negative attitude toward food labels [27], a lack of trust and growing skepticism about food label information [28], and a low perception of importance of this information [29].

It is, therefore, important to know the factors affecting consumers' use of food labels. By identifying these factors, it is possible to outline the profile of the consumers who use or do not use food labels. Understanding consumer behavior regarding labeling is a prerequisite to designing food labeling regulations, improving public health, and enhancing the profitability of the food industry. No previous studies on knowledge, perception and consumers' behavior on food labels in Iran are reported in the literature. So, this study has aimed to assess the consumers' behaviors about the important information on the labels and their reasons for use or non-use.

METHODS

This descriptive cross-sectional study was conducted as point of purchase survey among 2123 shoppers in chain stores in Teharn, Iran, during 2008-2009. Geographically, Tehran was divided into 4 regions: north, south, west and east. Then, chain stores' names were written and numbered. Finally, thirteen chain stores, out of 50, were randomly selected for study. Convenience sampling was used to collect data from all respondents who agreed to participate.

The percentage of interviewees per store was similar among the thirteen stores.

Data collection began after obtaining necessary permissions from store managers. Five trained research assistants solicited general shoppers to participate in the 15-20 minute survey, when the shoppers agreed to participate, described the study objective to them. Only participants aged 18 years or older were included. The consumers participated willingly in the study without the influence of any incentives.

Data was collected using a structured questionnaire which contained 4 sections measuring respondents' background, knowledge, perception, and behaviors about information on food labels.

The respondents' background included socio-demographic characteristics such as gender, age, household size, marital status, education level, occupation, and monthly income.

The knowledge section contained three multiple-choice questions that tested the respondents' knowledge of basic concepts important for utilizing food labels.

The perception scale was comprised seven questions that assessed perceptions of usefulness, truthfulness, visibility, legibility, understandability of food labels on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Three-item behavior scale assessed the degree of checking and utilizing food labels when purchasing food products, and the reasons for checking/ not checking food labeling.

The questionnaires were completed in the presence of the researcher who provided assistance when needed. The questionnaire was piloted to identify and eliminate potential problems. All questionnaires were coded and entered into the computer for analysis using SPSS statistical software (version 16, SPSS Inc, Chicago, IL, 2008). Data analysis was carried out in three stages. In the first stage data cleaning was performed using SPSS in order to rid the data of spurious responses. Secondly, data was analyzed using descriptive statistics to reveal underlying patterns. Thirdly chi-square analyses were carried out to investigate relationships amongst the variables.

RESULTS

Sample Description

Results in Table 1 indicate that the majority of respondents were female (59.2%), the youth (56.8%), married (83.2%), and holders of a diploma & higher (81.4%), and 2-4 person household (78.4%). A large percentage of subjects (40.8%) had a monthly income between 3 to 6 million Rials.

Knowledge of information on food labels

Most of the respondents were in the lowest quartile of knowledge score about information on food labels (44.2%) (Figure 1). The majority of those in the highest quartile of knowledge score were young (aged 20-40 years) and most consumers aged 50 and older were in the lowest quartile of knowledge score ($P < 0.001$). The number of women in higher classification knowledge score was significantly higher compared to those in men ($P < 0.02$). The majority of those in the highest quartile of knowledge score were employee and had higher education (university graduate), whilst majority of those in the lowest quartile of knowledge score were illiterate, manual worker, retired or housewife ($P < 0.001$) (Table 2).

Table 1. General characteristics of the subjects

Variable	Categories	N (%)
Gender (n=2123)	Male	866 (40.8)
	Female	1257 (59.2)
Age (n=2123)	<20	68 (3.2)
	20-29	615 (29.0)
	30-39	590 (27.8)
	40-49	463 (21.8)
	50+	387 (18.2)
Marital status (n=2123)	Married	1767 (83.2)
	Unmarried	356 (16.8)
Household size (n=2123)	1	35 (1.6)
	2-4	1665 (78.4)
	5-7	413 (19.5)
	8+	10 (0.5)
Education level (n=2123)	Illiterate	22 (1.0)
	Under diploma	373 (17.6)
	diploma	865 (40.7)
	University	863 (40.7)
Occupation (n=2109)	Unemployed	153 (7.3)
	Worker	53 (2.5)
	Employee	627 (29.7)
	Self-employed	380 (18.0)
	Retired	171 (8.1)
Monthly income (Rials) (n=2103)	Housewife	725 (34.4)
	< 3 million	293 (13.9)
	3-6 million	857 (40.8)
	6-10 million	511 (24.3)
	10-15 million	218 (10.4)
	≥ 15 million	224 (10.6)

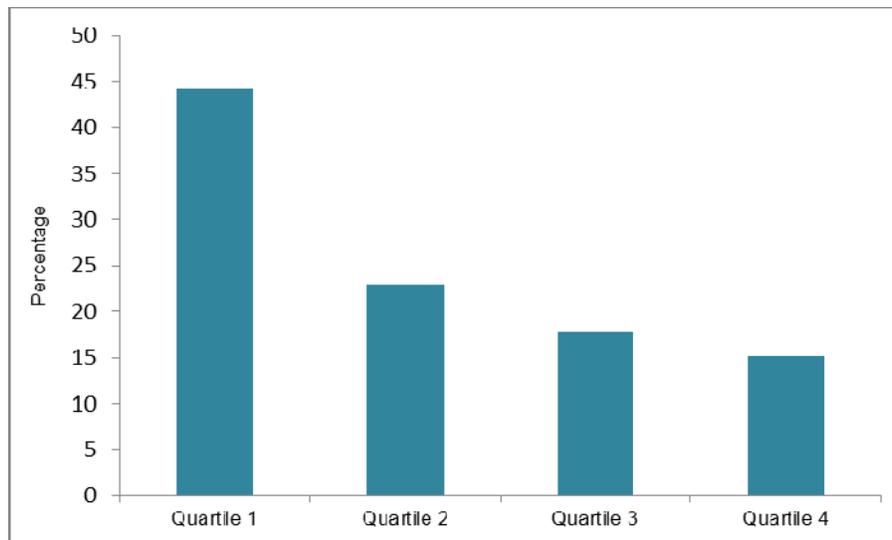


Figure 1. Distribution of subjects according to quartile of knowledge score about information on food labels

Table 2. Distribution of knowledge quartiles according to socio- demographic characteristics of the study population

Variable		Quartiles of knowledge score N (%)				P-value ¹
		1	2	3	4	
Gender (n=2123)	Male	380 (43.9)	197 (22.7)	136 (15.7)	153 (17.7)	P< 0.02
	Female	558 (44.4)	290 (23.1)	242 (19.3)	167 (13.2)	
	Total	938 (44.2)	487 (22.9)	378 (17.8)	320 (15.1)	
Age (n=2123)	<20	33 (48.5)	11 (16.2)	11 (16.2)	13 (19.1)	P< 0.001
	20-29	253 (41.4)	137 (22.3)	121 (19.7)	104 (16.9)	
	30-39	235 (39.8)	139 (23.6)	121 (20.5)	95 (16.1)	
	40-49	210 (45.4)	109 (23.5)	69 (14.9)	75 (16.2)	
	50+	207 (53.5)	91 (23.5)	56 (14.5)	33 (8.5)	
	Total	938 (44.2)	487 (22.9)	378 (17.8)	320 (15.1)	
Marriage (n=2123)	Married	775(43.9)	420(23.8)	314(17.7)	258(14.6)	NS
	Unmarried	163(45.8)	67(18.8)	64(18.0)	62(17.4)	
	Total	938 (44.2)	487 (22.9)	378 (17.8)	320 (15.1)	
Education (n=2123)	Illiterate	18 (81.8)	3 (13.6)	0 (0)	1 (4.6)	P< 0.001
	Under diploma	253 (67.8)	64 (17.2)	38 (10.2)	18 (4.8)	
	Diploma	383 (44.3)	223 (25.7)	145 (16.8)	114 (13.2)	
	University	284 (32.9)	197 (22.8)	195 (22.6)	187 (21.7)	
	Total	938 (44.2)	487 (22.9)	378 (17.8)	320 (15.1)	
Occupation (n=2109)	Unemployed	64(41.8)	31 (20.3)	27 (17.6)	31(20.3)	P< 0.001
	Worker	31(58.5)	7 (13.2)	5 (9.4)	10(18.9)	
	Employee	219(34.9)	132(21.1)	137(21.9)	139(22.2)	
	Self-employed	156(41.1)	108(28.4)	59(15.5)	57(15.0)	
	Retired	89 (52.0)	38 (22.2)	28(16.4)	16(9.4)	
	Housewife	373(51.5)	168(23.2)	117(16.1)	67(9.2)	
	Total	932(44.2)	484(22.9)	373(17.8)	320(15.1)	

¹ X² test

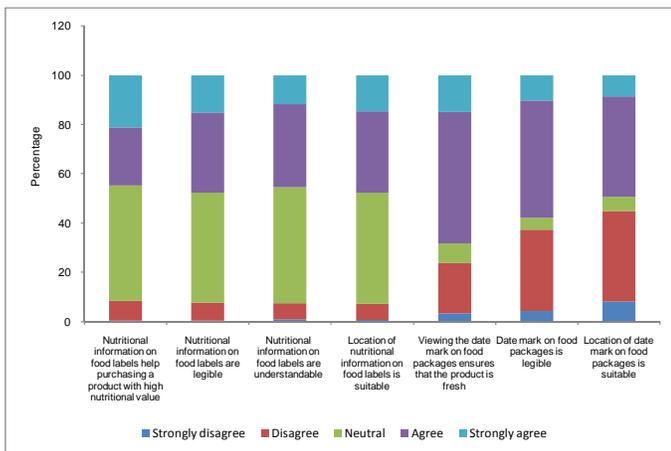


Figure 2. Perception of information on food labels (n=2123)

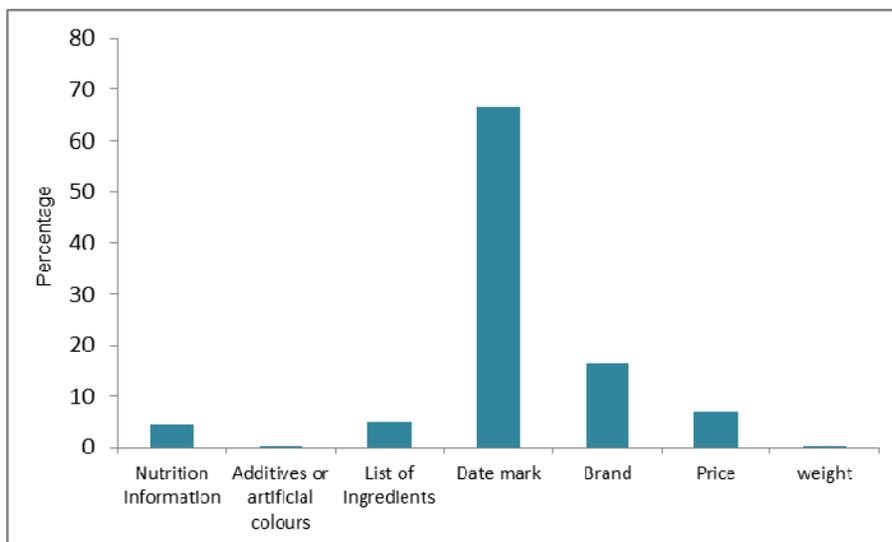


Figure 3. Information sought from food labels (n=1758)

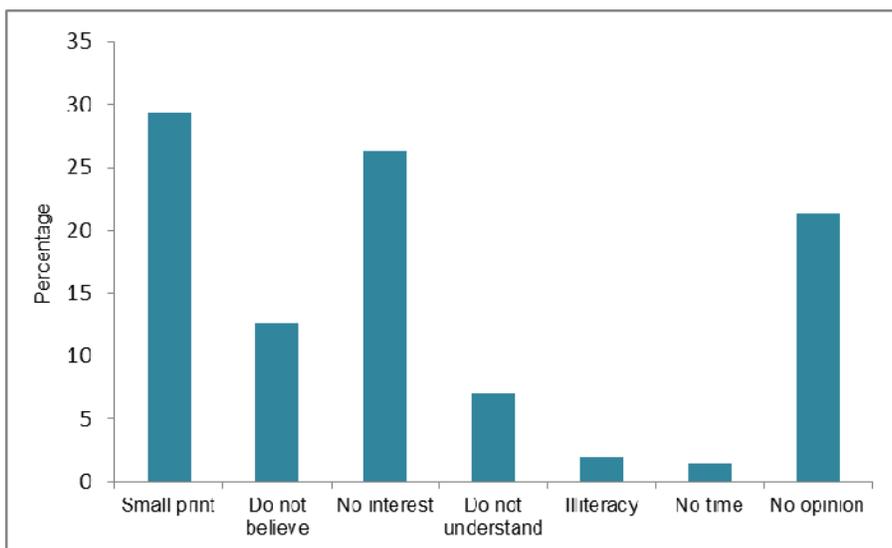


Figure 4. Reasons for not reading information on food labels (N=365)

Perception of information on food labels

The analysis of consumers' perception towards information on food labels were shown in figure 2. Around 70% of the respondents believed that viewing the date mark on food packages ensures that the product is fresh. Also, 57.8% declared that date mark on food packages is legible and 49.4% stated that its location on food packages is suitable. For nutritional information on food labels, less than half the consumers believed that viewing it help purchasing a product with high nutritional value. Questions on understandability, legibility, and suitability of location of nutritional information on food labels left unanswered by more than half the respondents;

this could be due to an insufficient of nutritional knowledge.

Utilization of food labels

Those who claim that they look at food label information when purchasing food products were in the majority (82.8 %). Sixty percent of these subjects said that they always read the label when purchasing a food product whilst others said that they often or sometimes do so.

Information sought from food labels

Respondents were asked to indicate the information they search out on food labels. These findings are presented in Figure 3. Date mark on food labels is given priority by respondents. Only 4.6% of them paid attention to nutritional information.

Table 3. Distribution of use of food labels according to socio-demographic characteristics of the study population

Variable	Use of food labels N (%)		P-value ¹	
	Yes	No		
Gender (n=2123)	Male	689 (79.6)	177 (20.4)	P< 0.002
	Female	1069 (85.0)	188 (15.0)	
	Total	1758 (82.8)	365 (17.2)	
Age (n=2123)	<20	51 (75.0)	17 (25.0)	P< 0.001
	20-29	523 (85.0)	92 (15.0)	
	30-39	512 (86.8)	78 (13.2)	
	40-49	379 (81.9)	84 (18.1)	
	50 ⁺	293 (75.7)	94 (24.3)	
	Total	1758 (82.8)	365 (17.2)	
Marriage (n=2123)	Married	1478 (83.6)	289 (16.4)	P<0.05
	Unmarried	280 (78.7)	76 (21.3)	
	Total	1758 (82.8)	365 (17.2)	
Education (n=2123)	Illiterate	5 (22.7)	17 (77.3)	P<0.001
	Under diploma	254 (68.1)	119 (31.9)	
	Diploma	740 (85.5)	125 (14.5)	
	University	759 (87.9)	104 (12.1)	
	Total	1758 (82.8)	365 (17.2)	
Occupation (n=2109)	Unemployed	117 (76.5)	36 (23.5)	P< 0.001
	Worker	27 (50.9)	26 (49.1)	
	Employee	557 (88.8)	70 (11.2)	
	Self-employed	311 (81.8)	69 (18.2)	
	Retired	133 (77.8)	38 (22.2)	
	Housewife	601 (82.9)	124 (17.1)	
	Total	1746 (82.8)	363 (17.2)	

¹ X² test**Table 4.** Distribution of use of food labels according to nutritional knowledge of the study population (n=2123)

Use of food labels	Quartiles of knowledge score N (%)			
	1	2	3	4
Yes	632 (35.9)	457 (26.0)	362 (20.6)	307 (17.5)
No	306 (83.8)	30 (8.2)	16 (4.4)	13 (3.6)
Total	938 (44.2)	487 (22.9)	378 (17.8)	320 (15.1)

X²=2.818, df=3, P<0.001**Reasons for non-use of information on food labels**

Reasons for non-use of information on food labels in the respondents who did not read food labels are displayed in Figure 4. According to the results of the present study, most of the respondents (29.3%) found small print on food labels to be the main reason for not reading food labels information, followed by no interest (26.3%), do not believe (12.6%), do not understand (7.1%).

Food Label users vs. non-users

Chi-square test was conducted to determine if label users differed from non-users regarding socio-demographic characteristics and knowledge about information on food label. The results showed that younger adults (aged 20-40 years), female, married, employees and holders of a diploma and higher, and those in the group categories of monthly income higher 6 million

rials were significantly more likely to use food labels when purchasing food products (Table 3). In terms of knowledge, respondents in the highest quartile of knowledge compared with those in the lowest quartile were more likely to use food labels (P<0.001) (Table 4).

DISCUSSION

The purpose of this study was to examine consumers' behaviors about the important information on the labels, their reasons for use or non-use, and determine if users and non-users differed in terms of knowledge of food labels and socio-demographic characteristics. The results suggest that most consumers read labels at the sales point during food purchasing. The most important reason for reading labels was mentioned viewing the date mark. This finding is consistent with earlier researches on food labels in Korea [30] and Australia [31] that reported

most shoppers read food labels, mostly date mark. In addition our results reveal that only 4.6% of respondents paid attention to nutritional information that could be due to low level of nutritional knowledge as shown in the results section. The Nielsen study (2005), conducted in 38 countries, reported that 18% of European respondents claimed that they “always” check the nutrition information on the package, with highest rate- reported for Portugal (44%) [32]. The analysis of use of nutrition labeling in Italian consumers highlighted that 86% of respondents paid attention to this labeling as regularly, occasionally or only when purchasing a new product [33]. Grunert et al (2010) also reported that 27% of shoppers in UK looked at nutrition information on food labels [34]. Results of our study showed that the main reason for low propensity to read and use food labels was small print on food labels. Other reasons were no interest, do not believe, and do not understand, respectively. Similar results were obtained in several different studies. For examples, a study of Irish people showed that no interest (22%), not having enough time to read labels (13%), do not understanding information on food labels (9%) were reasons for non-use of information on food labels. In addition, small print on labels was reported as one of the most important reasons for not reading labels in older people [35]. Similarly, no interest, not having enough time to read labels or having a prior knowledge about food items were found as reasons for lack of attention to food labels in American subjects [36]. According to Themba & Tanjo (2013), lack of nutrition knowledge, lack of interest, do not believe nutrition information on food products, small print on labels, read nutrition information only when purchasing food items for the first time and time pressures were ranked in order of priority [37].

Surveying perception of consumers about the information on food labels showed that about half of them believed that date mark on food packages is legible and also, its location on food packages is suitable. But, more than half of consumers left the questions on understandability, legibility, and suitability of location of nutritional information on food labels unanswered; this could be due to an insufficient of nutritional knowledge. These results are in sound with other studies that showed most respondents thought that is not easy to understand the information include in food label

[33, 38-40]. In addition our results reveal that less than half of consumers believed that the nutritional information on food label are truthful and help purchasing a product with high nutritional value, confirming findings of previous studies [33, 35, 41].

Our findings indicate that use of food labels during purchasing food varies according to the socio- demographic characteristics of consumers. Specifically, those in the group categories of youth, female, married, employee, high income, and high education were significantly more likely to use food labels when purchasing food products. In accordance, Kim et al [25, 42], Cole & Balasubramanian [43], and Themba & Tanjo [37] showed that as age increases, the probability of using food labels decreases while others have found the exact opposite [12, 16, 21]. Most of the studies have also found that females are, in general, more likely than men to use food labels [18, 21, 22, 25, 37, 42, 44]. This may be attributed to the fact that many males do not agree that nutritional information is useful, that the information can help in food choice, or that health is a matter of importance to them [23]. Moreover, past studies have found that more education leads to higher levels of food label usage [11, 16, 18, 19, 22, 37, 42, 45]. This result suggests that consumers with more years of education may have greater nutritional knowledge. Furthermore, in agreement with our finding, Mahgoub et al [14], Themba & Tanjo [37], and Nayga [46] found a positive effect of family income on use of food labels. But, Schupp & Reed [36] reported that respondents with higher income were less likely to read labels. However, in contrast to most studies, Shine et al [35] found that age, socio-economic status, and marital status had no effect on nutrition information use.

Consistent with previous studies [18, 24, 25, 37], our findings indicate that knowledge has a significant positive effect on using food labels. Nutritional knowledge may facilitate label use by increasing its perceived benefits and by increasing the efficiency of label use [9].

CONCLUSION

The results show that nutritional knowledge, socio-demographic characteristics, and label features have a strong effect on label use. Our study suggests that increasing nutritional knowledge and understandable and legible food labeling can increase the likelihood of food label usage.

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