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Knowledge, Attitude and Practice between Medical and Non-Medical Sciences Students about Food Labeling

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ABSTRACT

Background: Considering the significant role of consumers' awareness about food labels in making healthy food choices, this study was designed to assess the knowledge, attitude and practice of university students about food labeling.

Methods: In this cross-sectional study, 332 students aged 18-25 yr in five different academic majors (including Nutrition, Public Health, Health Services Administration, Paramedical and Engineering) were asked to complete an approved questionnaire contained fifteen questions. The chi-square test was applied to examine the differences across various major groups.

Results: 89.2% of the students believed that food labels had effect on nutritional awareness. 77.4% were agreed with the usefulness of the food labels and 79.2% did not feel that nutrition claims on food label were truthful. For 84% of students, the expiry date and storage conditions information were the most important informational cues to appear on the food labels. From 47.6% of students who reported the use of nutrition facts label in their often or always shopping; only 32.3% used the information on labels to fit the food into their daily diet. Surprisingly, fatty acids were the least noteworthy items (1.9%) on nutrition facts labels. Regarding students' major, there was significant difference in their knowledge, attitude and practice about truth of the nutrition claims, using food labels and importance of health claims ($P < 0.05$).

Conclusion: Food labels were more useful tools for students and had an effect on their nutritional awareness. Designing and implementation of the educational programs in order to increase the level of knowledge about food labels is suggested.

Keywords: Food labeling, Knowledge, Attitude, Practice, Iran

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Introduction

Labeling is defined as "any words, particulars, trademarks, brand names, pictorial matter or symbol relating to a food stuff and placed on any packaging, document, notice, ring or collar accompanying or referring to such foodstuff" [1]. Food labeling is a community-based approach providing information to consumers about the nutrient content of a food in order to make food selection en-

vironment more favorable to healthy choices. This information, along with a knowledge of basic nutrition principles leads to informed food purchase decisions [2]. Since consumers have as much right to know the nutrient content of the foods they choose to purchase as they do to know its country of origin and that it is safe to eat, therefore the provision of on-pack nutrition information

forms an important element of consumer protection [2]. The nutrition facts label on a food product provides information on its per-serving calories and calories from fat. The label then lists the amount (in grams) of total fat, saturated fat, cholesterol, sodium, total carbohydrate, dietary fiber, sugar, and protein. For most of these nutrients the label also shows the percentage of the daily value (DV) supplied by a serving [3]. Despite the availability of large number of data supporting the importance of food labels in health, results of previous studies reported a lack of knowledge about food labels. Forty six percent of the consumers usually or often read food labels [4], and 53% of them read nutrition facts panel in their shopping [5]. The shopping for health survey in 1997 showed that 54% of consumers almost always read the nutrition label when buying a food for the first time [6]. Moreover, 44% of the college students reported using the nutrition facts label often or always when making first-time purchases [7]. Seventy one percent of the participants studied food labels [8] and 65.6% usually or often read food labels [9]. 78.8% of female and 48.6% of male students read food labels [10].

Since college students are often away from home and making more decisions about their diets than ever before, therefore they represent an appropriate group to study. Food consumption patterns of college students are of concern because students tend to skip meals, eat diets excessively high in fat and refined sugars and also avoid certain types of nutritious foods [7].

Considering the significant role of consumers' awareness and knowledge about food labels in making healthy food choices and the limited studies available in this field in Iran, the present study examined the knowledge, attitude and practice (KAP) about food labeling of university students as an educated group of community.

Materials and Methods

In this cross-sectional study, conducted in 2011, 332 students aged 18-25 yr from five different academic majors (including Nutri-

tion, Public Health, Health Services Administration, Paramedical and Engineering) in Tabriz, Iran were volunteered to complete a self-administered questionnaire contained 15 questions to assess knowledge, attitude and practice about food labeling. Questions were designed so that they included different aspects of food labeling including using food labels, consumers' idea regarding their effect on nutritional awareness, agreement with their usefulness and comprehensibility for consumers, agreement with accuracy of nutrient information provided in the food label, agreement with truth of nutrition claims on food label, production & expiry date, storage conditions, price, brand name, health claims and standard emblem. Content validity of questionnaire was approved by the panel of experts. The reliability of questionnaire was tested and the generated using 15-item scale by an Alpha-Cronbach of 0.66.

All analyses were performed using SPSS 16 statistical software. For qualitative data, results were presented as frequency and percentage. The chi-square test was applied to examine the differences in KAP of the students across various major groups. *P*-values less than 0.05 considered as significant.

Results

Table 1 presents the distribution of students according to the major. As presented in Table 2, 89.2% of the students believed that food labels had an effect on nutritional awareness and 77.4% were agreed with the usefulness of the food labels.

Table 1: Distribution of students according to the major (n=332)

Major	Frequency	(%)
Nutrition	62	18.67
Public health	64	19.27
Health services administration	47	14.15
Paramedical	105	31.62
Engineering	54	16.26

Only 26.2% of the participants were agreed with the accuracy of nutrient information provided in the food labels and

49.1% agreed with the fact that food labels were easy to understand. About 79.2% did not feel that nutrition claims on food label were truthful. According to Table 3, for 84%

of students, the expiry date and storage conditions information were the most important informational cues to appear on the food labels.

Table 2: Knowledge and attitude of students regarding food labels (n=332)

Questions	Frequency of answers				
	Yes N (%)	No N (%)			
Food labels have an effect on nutritional awareness	296 (89.2)	36 (10.8)			
	Strongly disagree N (%)	Disagree N (%)	No opinion N (%)	Agree N (%)	Strongly agree N (%)
Food labels are useful tools for consumers	4 (1.2)	13 (3.9)	58 (17.5)	190 (57.2)	67 (20.2)
Nutrient information that is provided in the food label is accurate	9 (2.7)	87 (26.2)	149 (44.9)	76 (22.9)	11 (3.3)
Food label is easy to understand	10 (3.0)	67 (20.2)	92 (27.7)	152 (45.8)	11 (3.3)
Nutrition claims on food label are truthful	22 (6.6)	107 (32.2)	134 (40.4)	63 (19)	6 (1.8)

According to Fig. 1, standard emblem was the least noteworthy item (37.3%) on food labels. From total of 158 (47.6%) students who reported the use of nutrition facts label in their often or always shopping, only

32.3% often or always used the information on labels to fit the food in to their daily diet. Surprisingly, fatty acids were the least noteworthy items (1.9%) on nutrition facts labels.

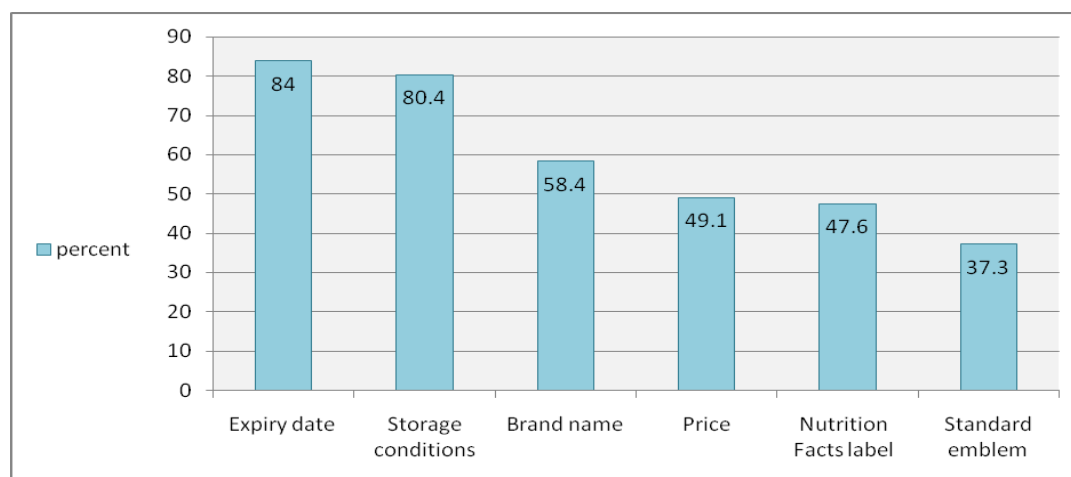


Fig.1: Distribution of attention to the items on food labels (n=332)

Regarding students' major, there was significant difference in their KAP about truth of the nutrition claims, using food labels and importance of health claims

($P < 0.05$) (Table 4). In this regard, based on further evaluation, there was significant difference between health services administration and engineering ($P = 0.003$), engineering

and paramedical ($P=0.013$) students about using food labels; In addition, there was significant difference between nutrition and engineering ($P= 0.003$), public health and

engineering ($P= 0.037$), public health and health services administration ($P= 0.038$) students about truth of the nutrition claims.

Table 3: Practice of students regarding food labels (n=332)

Questions	Frequency of answers				
	Never N (%)	Rarely N (%)	Sometimes N (%)	Often N (%)	Always N (%)
Using food labels	24 (7.2)	48 (14.5)	102 (30.7)	100 (30.1)	58 (17.5)
Reading production & expiry date	2 (0.6)	14 (4.2)	37 (11.1)	106 (31.9)	173 (52.1)
Looking at standard emblem	40 (12.0)	82 (24.7)	86 (25.9)	84 (25.3)	40 (12.0)
Looking at price	20 (6.0)	41 (12.3)	108 (32.5)	116 (34.9)	47 (14.2)
Looking at brand name	7 (8.1)	40 (12.0)	71 (21.4)	116 (34.9)	78 (23.5)
Importance of quality	2 (0.6)	5 (1.5)	48 (14.5)	124 (37.3)	153 (46.1)
Importance of health claims	30 (9.0)	72 (21.7)	127 (38.3)	80 (24.1)	23 (6.9)
Reading alarms about forbidden foods or ingredients for certain patients	27 (8.1)	60 (18.1)	87 (26.2)	93 (28.0)	65 (19.6)
Reading storage conditions	1 (0.3)	10 (3.0)	54 (16.3)	204 (61.4)	63 (19.0)

Table 4: Differences in knowledge, attitude and practice of students based on their majors (n=332)

Questions	Majors					PV *
	Nutrition N (%)	Health N (%)	Health services administration N (%)	Paramedical N (%)	Engineering N (%)	
Nutrition claims on food labels are truthful						0.021
Strongly disagree	3 (4.8)	0 (0.0)	3 (6.4)	13 (12.4)	3 (5.6)	
Disagree	30 (48.4)	24 (37.5)	13 (27.7)	31 (29.5)	9 (16.7)	
No opinion	17 (27.4)	25 (39.1)	20 (42.6)	44 (41.9)	28 (51.9)	
Agree	10 (16.1)	14 (21.9)	10 (21.3)	15 (14.3)	14 (25.9)	
Strongly agree	2 (3.2)	1 (1.6)	1 (2.1)	2 (1.9)	0 (0.0)	
Using food labels						0.030
Never	4 (6.5)	8 (12.5)	3 (6.4)	4 (3.8)	5 (9.3)	
Rarely	10 (16.1)	7 (10.9)	4 (8.5)	12 (11.4)	15 (27.8)	
Sometimes	19 (30.6)	19 (29.7)	9 (19.1)	36 (34.3)	19 (35.2)	
Often	22 (35.5)	20 (31.3)	18 (38.3)	33 (31.4)	7 (13.0)	
Importance of health claims						0.001
Never	3 (4.8)	11 (17.2)	1 (2.1)	8 (7.6)	7 (13.0)	
Rarely	15 (24.2)	11 (17.2)	17 (36.2)	21 (20.0)	8 (14.8)	
Sometimes	22 (35.5)	18 (28.1)	19 (40.4)	40 (38.1)	28 (51.9)	
Often	13 (21.0)	20 (31.3)	5 (10.6)	34 (32.4)	8 (14.8)	
Always	9 (14.5)	4 (6.3)	5 (10.6)	2 (1.9)	3 (5.6)	

*P-value of chi-square test

Also, there was significant difference between nutrition and paramedical ($P=0.017$), public health and health services administration ($P= 0.002$), health services administration and engineering ($P= 0.037$), health services administration and paramedical ($P=0.002$) about importance of health claims.

Discussion

This cross-sectional study was conducted to assess the KAP of university students about food labeling. Our results indicated that 47.6% of the students reported the use of nutrition facts label in their often or always shopping with the highest use (66%) among health services administration students and the lowest use (27.8%) among engineering students. Consistent with our study, Satia et al. [4] showed that 46% of the participants usually or often read food labels. Another study indicated that 53% of the participants read nutrition facts panel and persons with higher education tend to read the food labels more than others [5] which is approximately similar to our study. Guthrie et al. [8] showed that 71% of the participants studied a food label which is inconsistent with our study. This difference is because of the differences of the communities in knowledge, culture, risk of special disease and time limits that led to more or less attention to the food labels. In comparison with other groups of people, university students presumably have less time for reading the food labels while shopping. In our study, trans fatty acids was the least noteworthy item (1.9%) on food labels which is inconsistent with other studies [11, 12]. This contradiction indicates lack of enough knowledge about fatty acids among studied students and also necessity of more education and identification regarding fatty acids. According to our results, about 49.1% of the participants reported the importance of price and 83.4% reported the importance of quality of the product in their often or always shopping which is similar to the results of the previous studies [13-15].

In the present study, only 32.3% of the students often and or always used the information on labels to fit the food into their dai-

ly diet with the maximum use among nutrition students (41.4%) and the minimum use among engineering students (13.3%) which indicates higher attention of the nutrition students to their daily diet. Similar results were found in the study conducted by Marietta et al. [7] who showed that food labels had less impact on students' daily diet. Similar to the results of the previous studies [7, 16, 17], most of the students (77.4%) agreed with the usefulness of the food labels. In our study, 20.8% of the students (16.2% of the Paramedical students, 19.3% of the Nutrition students and 25.9% of the Engineering students) agreed that nutrition claims are always true. Nutrition claims were mostly used by a consumer which is similar to our study [18]. Our study indicated that 49.1% of the participants agreed with the fact that food labels are easy to understand. Consistent with our study, Williams P. [19] showed that presenting simple formats of labeling and providing more detailed nutrition information in front of the packaging was more useful and easier to understand. Similar to the results of the previous studies [4, 20-23], most of the students (89.2%) believed that food labels had an effectiveness on nutritional awareness.

The limitations of this study included the cross-sectional nature of our study precludes inferences about causality. Second, all data are from self-report, which is subject to both random and systematic bias and also may have overestimated label use. Finally, we should note that the results do not prove that the label information actually did change consumers' choices, compared to a situation where such information is not available or is not read by the consumer. Consumers may read the label but then reject the information in a trade-off with other choice criteria, or just use the information as an assurance of a choice already made.

Conclusion

Half of the students read nutrition facts label while shopping indicating their concern about health and well-being. The most noteworthy item on the labels was ex-

piry date and the least noteworthy item was fatty acids. In addition, food labels were more useful tools for students and had effectiveness on their nutritional awareness; however there was some doubt regard the accuracy of the nutrition claims among students. Overall, designing and implementation of the educational programs in order to increase level of knowledge about food labels especially fatty acids is suggested.

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