
Knowledge, Reading Practice and Associated Factors of Nutrition Labeling on Packaged Food Among Consumers in Addis Ababa, Ethiopia

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Abstract: Nutrition labeling is a valuable tool in learning how to apply nutrition information and help to food choices. Consumption of processed and packaged food is common in low and middle income countries like Ethiopia. But, the level of knowledge and reading practice of nutrition labeling among supermarket shoppers is not known in the study area. The objective of the study was to assess the knowledge, reading practice and factors associated to nutrition label on packaged food among consumers in Addis Ababa, Ethiopia. Cross-sectional study was conducted. A total of 398 respondents were interviewed. The source population for this study was all Addis Ababa consumers who purchase packaged food from supermarkets. The data was entered into EPI data version 3.1, and then exported to statistical package for social science (SPSS) version 22 for data management and analysis. Variable with p value <0.25 during the bivariate logistic regression analysis was entered into multivariate logistic regression analysis. All the 398 participants were responded to the interview (100% response rate). From the total respondents, 203 (51%) were males, 213 (53.5%) were first degree holders, 137 (34.4%) had own business. The mean average monthly income of the head of the house hold was 5,731 (±2,230) Ethiopian birr, greater than half of respondents was less than 5,131 Ethiopian birr earners, 211 (53%) Mean age was 36.41 (±10.7) years, 209 (47.5%) had good knowledge on nutrition labels whereas 178 (44.7%) had good reading practice of nutrition label on packed food. Sex, monthly income, occupation, family size, level of education, partner level education and health status of individual were the factors associated to knowledge on food labeling information. According to this study knowledge and reading practice of nutrition label is low, therefore government should formulate action plans to create awareness on nutrition labeling among the packaged food consumers. The knowledge level and reading practice of nutrition labeling were increased with age, education level and family income.

Keywords: Addis Ababa, Knowledge, Reading Practice, Nutrition Labeling, Packed Food, Consumers

1. Background

Food label means any material which is printed or affixed to a packing material which provides the necessary information about a food [1-2]. The type and content of food labels are nutrition information, usage guide and shelf-life of nutritionally produced food shall be stated clearly and

marked on its packaged food. The label on package food should always listed are total fat, total energy, sodium, sugars, vitamins, minerals, carbohydrates and protein [2]. Food labeling is an important tool in packaged food trade and manufacturers of packaged foods if appropriately labels nutrition information; consumers use the information in making informed food choices and improving dietary

patterns toward health diet [3]. Nutrition information on food labels could be a cost-effective method of communicating nutrition information to consumers because the information appears at the point of sale for most packaged foods [4].

Nutrition labeling is a valuable tool in learning how to apply nutrition information in a practical way and to provide information on food products to reinforce healthy eating practices and support consumers in their efforts to improve their healthier food choices [5]. Processed and packaged foods dominate diets in high-income countries, and their consumption in low- and middle-income countries is rapidly increasing. Compared to unprocessed foods, processed foods tend to be higher in unfavorable nutrients such as added sugar, sodium, saturated fat, and trans-fats. As part of comprehensive strategies to improve diets, improving the healthiness of processed foods would, therefore, be expected to make a significant contribution to reducing the burden of diet-related non-communicable diseases [6].

Refined foods are inexpensive, taste good, and are conveniently available. Further, people choose to purchase these foods more than fruits and vegetables. Inexpensive foods are sometimes more appealing to some people despite the potential for diet-related illness [7] and provide information about the number of kilocalories, the amount of proteins, carbohydrates, fat, and to avoid contents or ingredients that they are allergic to. Education on nutrition labels. Food labels information assists consumers to better understand the nutritional value of food [8].

The link between dietary habits and obesity, the Food and Drug Administration (FDA) has attempted to introduce changes to the nutrition labels on food products to make them easier to comprehend by consumers and to improve the communication of nutrition information via food labels and important future areas of research on nutrition labeling as a tool to improve diet and reduce label complexity [9]. Nutrition information in table or grid form, usually found on the back of the food package, has been supplemented by a variety of simplified nutrition labels that appear on the front of the pack (FOP) and Various formats of FOP labels have been promoted, of which the most well-known are labels based on the guideline daily amount (GDA) concepts [10].

Poor diet is a leading cause of ill health. It has been estimated that 11.3 million deaths a year worldwide are attributable to dietary risk factors [11]; hypertension, cardiovascular diseases, overweight and obesity were listed as the number one public health problem and calorie, total fats, fatty acids, cholesterol and sodium content were seen as the most useful nutrition information. Information rated as very useful, it is apparent that the nutrition information seen as most useful relates to over consumed rather than under consumed nutrients [12].

The USDA's 2010 dietary guidelines advise Americans to control total caloric intake and reduce sodium, saturated fat, Trans fat, cholesterol and added sugar consumption. Recent global food policy efforts have focused on providing consumers with greater access to easy-to-understand nutrition information [9].

Globally, many studies have reported that reading nutrient information from food labels influences consumers' choice of food products, brands and encourages better food consumption. Hence, promoting greater utilization of the nutrition label to regulate food and calorie intake represents an important stride towards improving dietary choices. Food industries in more developed countries provide more detailed nutrition information in food labels since they are often used as important tools for communicating dietary information to consumers [13]. Processed packaged foods dominate diets in high-income countries, and their consumption in low- and middle-income countries is rapidly increasing [6]. Consumers who read the nutrition information on packaged food tend to have a healthier diet; however some consumers find the information difficult to understand and interpret it [11] usage level of nutritional labels is more effective; consumer who is less aware of the nutritional facts would consult and read the label more carefully [14].

Half of the world's consumers were understand the nutritional labels on food, which is in Asia 60%, Europeans (50%) and Latin Americans (45%); whereas only 40% consumers check the manufacturing and expiry date on food labels before purchasing. It was found that 52.7% consumers do not check the purity markers. In addition, 52.5% consumers do not read the ingredients on food products; while 63.2% consumers do not measure the serving choice of food products while preparation the food [4]. The prevalence of nutritional reading practice of the nutrition label in Malaysia 57.6% [15], in Iran on medical students about 89.2% were aware on nutritional labeling and 77.4% were agreed with the usefulness of the food labels. For 84% of medical students, the expiry date and storage conditions information were the most important informational cues to appear on the food labels [16].

Some African countries study show that the knowledge and reading practice nutrition information was 59.6% and 69.2% respectively in Lesotho [5], 65.4% and 86.4% respectively in Ethiopia [2], knowledge of food label information is 79.6% in Ghana [17]. For the lowest income group, food price was the major determining factor when purchasing the types of foods they buy. A positive relationship between age of participants and nutrition information knowledge was observed. It was noted that as the level of education increased, the level of knowledge about food label increased. The level and use of nutrition knowledge when purchasing foods increased with age, education level and family income and nutrition information on food labels, and why it is important to utilize that information [5].

Increased interest in nutritional issues in recent years has been fuelled by a number of factors including lifestyle, ageing population, dietary and safety concerns. As consumers have become increasingly concerned about what they eat and how it affects their health, the food industry has responded by providing more detailed nutrition information on their food labels [18].

Therefore, findings from this study will provide

information on the knowledge and utilization of nutrition information on food labeling and how to choose packaged foods among shoppers or consumers. The information will bring to the attention of policy makers on the need to have programs to improve consumers knowledge of food labeling information as well as the utilization of such nutritional information on food labeling. Furthermore, the findings will also bring to the attention of packaged food manufacturers and regulatory bodies to improve food labeling regulations and food label formats, and also in Ethiopia there is no enough such study has been reported, therefore, it is important for Ethiopian food and nutrition policy and food medicine health care administration and control authority to improve knowledge of consumers and the end result of this research will be provide initial base line information for further such like research. No previous studies on such like studies reported in the published literature on knowledge, reading practice and association factors of nutrition information on food labels among consumers in Addis Ababa.

2. Methods and Materials

2.1. Study Area and Period

The study was conducted in Addis Ababa city Administration which is the capital city of Ethiopia. Administratively, the city is divided in to 10 sub cities and 116 Woredas. The total area of the city is 54,000 hectares. According to the 2013 population estimation, the total population of Addis Ababa is more than 4 million. According to the recent food medicine healthcare administration and control authority (FMHACA) report there are 38 supermarkets in 10 sub cities of Addis Ababa. The study was conducted from March 1, 2018 to March 30, 2018.

2.2. Study Design

Institutional based cross-sectional study was employed.

2.3. Source and Study Population

The source population for this study was all consumers who use processed packed food in Addis Ababa, and the study population was all Addis Ababa consumers of packaged food shoppers from selected supermarkets available during study period.

2.4. Inclusion Criteria

All consumers available during shopping packaged foods from selected supermarkets in Addis Ababa city and age greater than 18 years and above are participated in a study.

2.5. Exclusion Criteria

The study was excluded non-Ethiopian citizens since they may have different knowledge regards to reading and using nutrition labels on food labels and shoppers who purchase other materials was excluded.

2.6. Sample Size

The sample size was calculated by using the single population formula:-

$$n = \frac{(Z_{\alpha/2})^2 * p(1-p)}{d}$$

Where,

n= total sample size before adding 10% of non-response rate.

Z= correspond at 95% CI (1.96).

P= proportion of knowledge or utilization of nutrition information.

d= margin of error 5%.

2.7. Study Variables

2.7.1. Dependent Variables

Knowledge of nutrition labeling on packaged food among consumers and; reading practice of nutrition labeling on packaged food among consumers.

2.7.2. Independent Variables

Social demographic characteristics of respondents (that is sex, age, level of educational, occupation, house hold monthly income, health Status of individual).

2.8. Sampling Procedure

According to the recent FMHACA report there are 38 supermarkets in 10 sub cities of Addis Ababa, and then by using simple random sampling system (that is lottery method) 3 sub cities and 9 Super markets, 3 super market from Yeka sub city, 2 super market from Kolfe karenyo sub city and 4 supermarket from Gulale sub city, and then the number of sample size required for each super market was allocated equally 45 respondents (shoppers) were interviewed in order to attain the final working sample size of 398 respondents.

2.9. Data Collection Tools

Data was collected by using the structured questionnaire that was adapted from different literatures. The questionnaire was first prepared in English and then translated in to Amharic then back to English for data analysis.

2.10. Data Collection Procedures

Two Bachelor of Science (BSc) junior public health professionals (for data collection) and one BSc senior Environmental health professional (for supervisor) were trained for one day on data collection procedures. A structured questionnaire containing both open and close ended questions was used to collect information on the study variables. Respondents were asked how much they know, and reading practice of nutrition labeling available information on packed food. By using the flow of packed food shoppers; the total number of shoppers from selected 9 supermarkets, from each supermarket 13 respondents per day per

supermarket were needed. In one month during data collection period, daily every 5th person after shopping

packed food at the exit of the main gate was interviewed until the required sample size was reached.

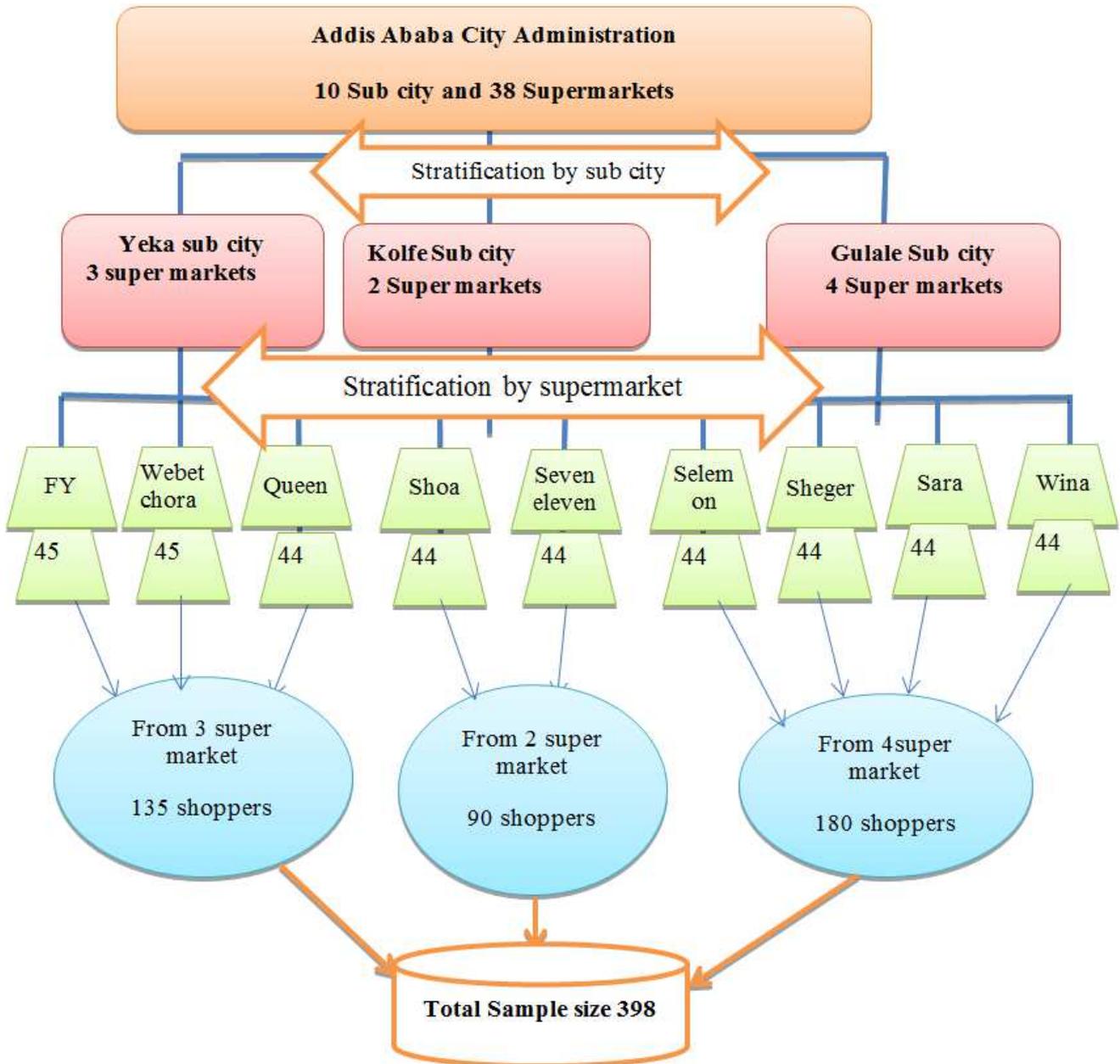


Figure 1. Schematic presentation of sampling procedure to select the study population.

2.11. Operational Definition

1. Food labeling: - Includes any written, printed or graphic matter that is present on the label and exactly explain the food.
2. Good knowledge: - refers to consumers who scored the mean and above the mean value of the total knowledge questions value.
3. Low knowledge: - refers to consumers who scored below the mean of the total knowledge questions value.
4. Good reading practice of nutrition label information: - refers to consumers who scored the mean and above the mean value of the total reading practice of nutrition

label question value.

5. Low Reading practice of nutrition label information: - Refers to consumers who scored below the mean of the total reading practice questions value.
6. Food additive: - means any substance added to food to improve its taste, color, preservation or appearance and which is considered to become a component of food.
7. Adulteration: - means adding any foreign substance or ingredient to a food for commercial purpose or to be served for the public in any way or medicine other than its content or by substituting its content in whole or in part by such other substance or by storing or manufacturing it under unsanitary conditions whereby it

may have been contaminated.

2.12. Data Quality Assurance

For data quality control purpose, the data collectors were trained for one day before the data collection and supervised during the data collection period. Pretest and demonstration of instrument were performed on 5% of the sample respondents at Queen Super market. Each questionnaire was checked for completeness, missed values and unlikely responses; those incomplete questionnaires were checked and completed. Principal investigator and supervisors were made spot-checking and reviewing the completed questionnaires by the data collectors ensures completeness and consistency of the information collected.

2.13. Data Analysis Procedures

The data was entered into EPI data, and then exported to SPSS version 22 for data management and analysis. Descriptive statistics of percentages mean and frequency distribution using tables and figures were carried out. In addition, data were analyzed to identify significant variables and then the significant variables will be taken to Odds ratio with 95% confidence intervals and significance level of 5% was used to see the knowledge and use of nutritional information on food labeling. Multivariate logistic regression analysis was carried out to identify statistically significant variables.

2.14. Ethical Considerations

Before conducting the study ethical clearance was obtained from Bahirdar University, school of research and graduate studies and research and ethics committee (REC) to Addis Ababa city Administration Health Bureau and after getting permission from Addis Ababa city Administration Health Bureau to participate in the study, and then final letter was written to Gulale, Kolfekeranio and Yeka Sub City Food Medicine and Health care Administration and Control Office. Participant's right to self-determination and autonomy was respected, study participants were given any information they need, verbally and in written prior to a self-administration; the right of respondent to refuse; answer for few or all questions were respected. Omitting names of the participant from the questionnaire and as no personal details were recorded or produced on any documentation related to the study that help to assure confidentiality of the information and respondents. Participation was voluntarily and participant can withdraw from the study at any time without explanation and without penalty or loss of benefit.

3. Result

3.1. Socio Demographic and Economic Characteristics of Respondents

A total of 398 respondents were participated and with response rate of 100%. The results of the study indicated that male 203 (51%), and female 195 (49%). A mean age of respondents was 36.41 (± 10.7) years. With regard to

education level, most of the respondents were 213 (53.5%) had first degree education. About one third of participants had own business 137 (34.4%). The mean average monthly income of the head of the household earns 5,731 ($\pm 2,230$) ETB, greater than half of respondents 211 (53%) were earned <5,731 ETB and 187 (47%) of them earned $\geq 5,731$ ETB. Family size <5 were 306 (76.9%) and ≥ 5 were 92 (23.1%). Partner education level of respondents was first degree holders 233 (58.5%) [Table 1].

Table 1. Demographic and economic characteristics of participants (N=398).

Variables	Frequency	%	
Sex	Male	203	51.0
	Female	195	49.0
Age Category	15-19	3	.8
	20-24	35	8.8
	25-29	75	18.8
	30-34	86	21.6
	35-39	65	16.3
	40-44	55	13.8
	45-49	20	5.0
	50-54	31	7.8
Education level	55-59	11	2.8
	>60	17	4.3
	Elementary (grade 1-8)	6	1.5
	Secondary (grade 9-12)	28	7.0
	Diploma	113	28.4
	Degree	213	53.5
Occupation	masters and above	38	9.5
	Government Employed	103	25.9
	Private Employed	105	26.4
	own Business	137	34.4
	House wife	30	7.5
	Student	20	5.0
Income category by quartile	Others	3	0.8
	First quartile	4,000	25%
	Second quartile	5,500	50%
	Third quartile	8,000	75%
Family size	1	85	21.4
	2	82	20.6
	3	68	17.1
	4	71	17.8
	5	51	12.8
	6	31	7.8
	7	8	2.0
	8	2	.5
Partner Education level	Elementary (grade 1-8)	5	1.3
	Secondary (grade 9-12)	17	4.3
	Diploma	88	22.1
	Degree	233	58.5
	Masters and above	55	13.8

3.2. Knowledge of Nutrition Labeling on Packed Food

Sampled respondents were requested to respond to a series of questions in order to assess their knowledge of nutrition labeling on packaged food. With regard to nutrition label around 209 (52.5%) of participants had good knowledgeable on nutrition labels and 189 (47.5%) had low knowledge [Table 2].

Table 2. Knowledge of nutrition labeling on packed food.

Knowledge Of Nutrition Questions	Possible Response	Frequency	%
Do you know what a food labeling	Yes	358	89.9
	No	40	10.1
Do you know nutrition information	Yes	301	75.6
	No	97	24.4
Do you know the importance of nutrition label	Yes	364	91.5
	No	34	8.5
Nutrition information is to help to choose Healthy diet	Yes	364	91.5
	No	34	8.5
Nutrition information is to help sustain or lose or to gain weight?	Yes	297	74.6
	No	101	25.4
Nutrition information is limit to consume the amount of fat, sugar and cholesterol	Yes	337	84.7
	No	61	15.3
Do you read information on food labels before purchasing packaged foods?	Yes	335	84.2
	No	63	15.8
Do you read ingredient list on packed food	Yes	142	35.7
	No	256	64.3
Food labeling is the important tool to improve diet	Yes	184	46.2
	No	214	53.8
Do you know legal requirements concerning about food labeling	Yes	264	66.3
	No	134	33.7
Do you know the responsible body for the food labeling issues?	Yes	264	66.3
	No	134	33.7
Do you know exactly the Gregorian calendar to identify expire and manufacture date?	Yes	352	88.4
	No	46	11.6
Kilocalorie is the unit measurement of energy get from diet	Yes	325	81.7
	No	73	18.3
Fat food products is provides high energy	Yes	122	30.7
	No	276	69.3
Do you know Lack of knowledge of nutritional labels leads to potential health problem	Yes	381	95.7
	No	17	4.3
High amount of Saturated fats content foods are Cause more health problem	Yes	142	35.7
	No	256	64.3
Good Knowledge		209	52.5
Low knowledge		189	47.5

3.3. Reading Practice of Nutrition Labels on Packaged Food

The overall mean reading practice of respondents was 2.51 (± 0.89). The study revealed that around 178 (44.7%) of consumers had good reading practice and 220 (55.3%) had low reading practice. The respondents perceived different kinds of information (available on the food label) as important to read and use information, in spite of that they don't see or read that information listed while purchasing. Though, on the whole, majority of the respondents don't check available information on packaged food before buying

packed food products always that is 81.4% check the expiry date, 72.6% check net content with price, 42.7% check instruction for cooking, 40.2% use ingredient list, 38.9% total carbohydrate, 36.7% total fat content are the major focus to read always and about the rest of things they were found least bothered.

In this study, those participants who had good reading practice were answers greater than or equal to 2.51 (mean) reading practice questions, and those who had low reading practice were also answering less than 2.51 reading practice questions. Each and over all reading practice question score is shown in the tables 3 and 4 below.

Table 3. Over all reading practice of nutrition labeling on packed food.

How often you Read nutrition label	Possible Answer				
	Never Count (%)	Sometime Count (%)	Half of the time Count (%)	Most of the time Count (%)	Always Count (%)
Name & Country of the manufactured	91 (22.9)	174 (43.7)	36 (9)	69 (17.3)	28 (7)
Ingredient list	90 (22.6)	148 (37.2)	46 (11.6)	86 (21.6)	28 (7)
Manufacturing and Expiry date	40 (10.1)	34 (8.5)	12 (3)	142 (35.7)	170 (42.7)
Total carbohydrate	104 (26.1)	139 (34.9)	57 (14.3)	73 (18.3)	25 (6.3)
Total fat	110 (27.6)	142 (35.7)	59 (14.8)	62 (15.6)	25 (6.3)
Vitamins content	109 (27.4)	144 (36.2)	67 (16.8)	54 (13.6)	24 (6)
Salt, sodium content	118 (29.6)	148 (37.2)	55 (13.8)	53 (13.3)	24 (6)
Instructions for use and cooking	96 (24.1)	132 (33.2)	58 (14.6)	70 (17.6)	42 (10.6)
Net content with price	49 (12.3)	60 (15.1)	50 (12.6)	139 (34.9)	100 (25.1)

How often you Read nutrition label	Possible Answer				
	Never Count (%)	Sometime Count (%)	Half of the time Count (%)	Most of the time Count (%)	Always Count (%)
Warning (e.g. not suitable for diabetes)	137 (34.4)	124 (31.2)	58 (14.6)	47 (11.8)	32 (8)
Nutrition claims?	167 (42.0)	130 (32.7)	50 (12.6)	34 (8.5)	17 (4.3)
Daily value of nutrients needs	183 (46.0)	116 (29.1)	51 (12.8)	30 (7.5)	18 (4.5)
Compare depending on nutritional content	184 (46.2)	114 (28.6)	51 (12.8)	26 (6.5)	23 (5.8)
Good reading practice (count (%))		178 (44.7%)			
Low reading practice (count (%))		220 (55.3%)			

Measure scale: - 1-never read, 2-some times read 3-half of the time read, 4-most of the time read and 5-always read.

Table 4. Mean reading practice of nutrition labeling from packed food.

Reading practice questions	Mean	%	Std. Deviation
Name and Country of the manufactured	2.42	33.4	1.214
Ingredient list	2.53	40.2	1.249
Expiry date	3.92	81.4	1.305
Total carbohydrate	2.44	38.9	1.231
Total fat	2.37	36.7	1.216
Vitamins content	2.35	36.4	1.188
Salt or sodium content	2.29	33.2	1.196
Instructions for use and cooking	2.57	42.7	1.310
Net content with price	3.45	72.6	1.340
Warning (e.g. not suitable for diabetes)	2.28	34.4	1.270
Nutrition claims?	2.01	25.4	1.129
Daily value of nutrients needs	1.95	24.9	1.139
Compare depending on nutritional content	1.97	25.1	1.172
Over all mean reading practice	2.51		

3.4. Bivariate Analysis of Association Factors on Knowledge of Nutrition Labeling

After managing for covariates only sex, educational level, monthly income and partner educational level were significantly associated with knowledge on nutrition labeling. The odds of knowledge of nutrition labeling of male respondents (AOR (95% of CI)) = 1.22 (0.79-1.88) were 1.22 times higher than female respondents and the odds of the knowledge of nutrition labeling of those diploma and above holders (AOR (95% of CI)) = 6.68 (2.39-18.64) were 6.68

times higher than those grade 1-12 complete and the odds of knowledge of nutrition labeling those \geq 5731 ETB monthly income earners (AOR (95% of CI)) = 2.06 (1.34-3.18) were 2.06 times higher than those $<$ 5731 ETB monthly income earners. This study results indicated that those who have good knowledge of nutrition labeling on packed food are more likely to be in the group categories of high income earners, own business occupation, high level of education. Therefore income, occupation, education level and health status of individual variables are more associated factors on knowledge of nutrition labeling [Table 5].

Table 5. Bivariate analysis of association factors on knowledge of nutrition labeling.

Variables	Knowledge of Nutrition labeling		COR (95% of CI)	AOR (95% of CI)
	Good knowledge count (%)	Low knowledge count (%)		
Sex of respondents (398)				
Male	109 (53.7)	94 (46.3)	1.1 (0.74-1.53)	1.22 (0.79-1.88)
Female	100 (51.3)	95 (48.7)	1	1
Age category by mean				
$<$ 36 years	118 (51.5)	111 (48.5)	1	1
\geq 36 years	91 (53.8)	78 (46.2)	1.1 (0.74-1.63)	0.86 (0.52-1.45)
Education level of respondents (398)				
Grade 1-12 complete	5 (14.3)	30 (85.7)	1	1
Diploma and above	204 (56.2)	159 (43.8)	7.7 (2.92-20.29)**	6.68 (2.39-18.6)
Occupation of respondents (398)				
Employed	188 (54.5)	157 (45.5)	1.83 (1.01-3.29)	0.82 (0.42-1.59)
Un Employed	21 (39.6)	32 (60.4)	1	1
Monthly Income of head of households of respondents (398)				
$<$ 5,731	92 (43.6)	119 (56.4)	1	1
\geq 5,731	117 (62.6)	70 (37.4)	2.16 (1.44-3.23)**	2.06 (1.34-3.18)
Family size of respondents (398)				
$<$ 5	152 (49.8)	153 (50.2)	1.64 (1.02-2.64)*	0.53 (0.29-0.97)
\geq 5	57 (62)	35 (38)	1	1
Partner education levels of respondents (398)				
Grade 1-12 complete	5 (22.7)	17 (77.3)	1	1
Diploma and above	189 (47.5)	172 (45.7)	4.01 (1.45-11.10)**	2.47 (0.81-7.50)

Variables	Knowledge of Nutrition labeling			
	Good knowledge count (%)	Low knowledge count (%)	COR (95% of CI)	AOR (95% of CI)
Health status of individual of respondents				
Normal	200 (52.8)	179 (47.2)	1	1
Chronic diseased	9 (47.4)	10 (52.6)	1.24 (0.50-3.12)*	0.66 (0.25-1.73)

* Significant at p-value <0.05, **Significant at p-value <0.01

4. Discussion

The result of this study indicated that the overall knowledge of nutrition label on packed food among consumers in Addis Ababa was 52.5% which was lower than study done in Lesotho 59.6% (5), in Ghana 79.6%(17), and Ambo University on teaching staff 65.4% [5, 17, 2]. The possible explanation for the difference might be due to the knowledge status difference between the study countries and places. The reading practice of nutrition label on packed food among consumers in Addis Ababa was 44.7% which was higher than study done in urban consumers in India (40%) [19]. Male respondents seemed to be more aware of food labeling than female respondents. This is not similar to what was reported in United Arab Emirates [8]. The sample of respondents also composed of various education levels ranging from primary education to above masters holders, and different groups of sex, aged, occupation, family size and partner education level of respondents which influence or affect knowledge of nutrition labeling information. Similarly, study done in Lesotho and in Ghana [5, 17] results also showed that, level of education and income of respondents had statistically significant association with knowledge on nutrition labeling information.

5. Conclusion and Recommendation

5.1. Conclusion

In this study those who had good knowledge on nutrition labeling information was low and also those who had good reading practice of nutrition labeling information was low. Sex, educational level, income, family size, partner educational level, and health status of individual were determinant factors for knowledge on nutrition labeling information. From this study it was found that education level and monthly income of households were the two major associated factors of knowledge on nutrition information on packed food. The results of cross tabulation indicated that those most likely to had good knowledge on nutritional labeling information on packaged food were in the categories with high income, high education, and low family size respondents.

5.2. Recommendation

For Addis Ababa FMHACA

Addis Ababa Food, Medicine and Health Care Administration and Control Authority should formulate action plans to create awareness on food labeling information.

For researchers

Further studies should be conducted to assess knowledge

and reading practice of nutrition labeling on packaged food, health claims and nutritional information.

For supermarkets

The owners of supermarket should always check and separate those expired product from others.

List of Abbreviations

- BSc:-Bachelor of Science
- CDC:-Communicable disease control and prevention
- ETB:-Ethiopian birr
- FDA:-Food and drug administration
- FMHCACA:-Food medicine healthcare administration and control authority
- FOP:-Front of packaged
- GDA:-Guideline daily amount
- PI:-Principal investigator
- REC:-Research and ethics committee
- SM:-Super market
- SPSS:-Statistical package for social science
- SRS:-Simple random sampling
- WHO:-World health organization

Declarations

Ethics Approval and Consent to Participate

Before conducting the study ethical clearance was obtained from Bahirdar University, School of Research and Graduate Studies and Research and Ethics Committee (REC) to Addis Ababa City Administration Health Bureau, and then after getting permission from Addis Ababa City Administration Health Bureau to participate in the study, and then finally letter was written to Gulale, Kolfekeranio and Yeka Sub City Food Medicine and Health care Administration and Control Office. Participant's right to self-determination and autonomy was respected, study participants was given any information they need, verbally and in written prior to a self-administration; the right of respondent to refuse; answer for few or all questions were respected. Omitting names of the participant from the questionnaire and as no personal details was recorded or produced on any documentation related to the study that help to assure confidentiality of the information and respondents. Participation was voluntarily and participant can withdraw from the study at any time without explanation and without penalty or loss of benefit.

Availability of Data and Materials

The finding of this study was generated from the data

collected and analyzed based on the stated methods and materials. The original data supporting this finding are available from the corresponding author on reasonable request.

Competing Interests

"The authors declare that they have no competing interests"

Authors' Contributions

EF participated in the design of the study, performed the data collection and statistical analysis, and served as the corresponding author of the manuscript. RW and ZK supervised the study, ensured quality of the data, and assisted in the analysis and interpretation of the data. All authors read and approved the manuscript.

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