

Socio-demographic Determinants of Filipino Consumers Reading Food Product Labels and Nutrition Facts: Findings from the 2018-2019 ENNS

Charina A. Javier, Mario V. Capanzana, PhD and Sarah S. Gohilde

Department of Science and Technology - Food and Nutrition Research Institute

ABSTRACT

Objectives. While food product labelling is deemed important in providing consumer information, little is known about the characteristics of those reading and not reading. This study aimed to determine the socio-demographic characteristics of Filipino adult consumers reading and not reading food product labels and nutrition facts to provide insights on their understanding and usage of food labels that may help in designing better label formats of packaged foods and related health education campaigns.

Methods. Cross-sectional design using secondary data from the Expanded National Nutrition Survey (ENNS) 2018-2019 was employed. A survey form on Reading Food Product Labels and Nutrition Facts in the ENNS 2018-2019 were collected through face-to-face interviews. Descriptive statistics, test of proportions, and logistic regression were done using Stata version 16.

Results. Always reading product labels were reported only by 19.6% of adult consumers, 18 years old and above, while 45.9% reported not reading food product labels. Among those who read food product labels, only 16.7% reported reading nutrition facts. Higher proportions of adults reading nutrition facts were found among those who attained a higher educational level, were less than 40 years old, living in urban residences, and belonging to higher wealth status. 'Not interested' was the top reason of adults who reported not reading nutrition facts.

Conclusion. Reading product labels and nutrition facts is not common among Filipino adults. Being not interested was the top reason for not reading food product labels. Older persons, adults with low educational attainment, and belonging to poor households were more likely to not read food product labels and not influenced by nutrition facts which imply the need for a food label format that would cater to those who cannot or have difficulty reading food labels and nutrition facts. An intensified campaign on the importance of reading food product labels is also needed.

Keywords: food labels, nutrition facts, consumer education, calories, nutrition education

INTRODUCTION

A country's food industry is a significant contributor to food security as it is an important supplier of food to the population.¹ The Republic Act (RA) No. 7394 or the Consumer Act of the Philippines enforces compulsory labelling, and fair packaging to enable consumers to obtain accurate information as to the nature, quality, and quantity of the contents of consumer products and facilitate comparison of the value of such products.² Moreover, the Department of Health Administrative Order No. 2014-0030 or the Revised Rules and Regulations Governing the Labelling of Pre-packaged Food Products mandates label information to include the product name or name of food, use of brand name or trademark, a complete list of ingredients, net contents



eISSN 2094-9278 (Online)
Published: May 15, 2024
<https://doi.org/10.47895/amp.vi0.7207>

Corresponding author: Charina A. Javier
Department of Science and Technology
Food and Nutrition Research Institute
DOST Complex, Gen. Santos Avenue
Bicutan, Taguig City, Philippines
Email: chajavier.fnri@gmail.com
ORCID: <https://orcid.org/0000-0001-5387-0358>

and drained weight, name, and address of the manufacturer, repacker, packer, importer, trader and distributor, lot identification, storage condition, and expiry or expiration date or use-by-date/consume before date.

Nutrition labelling, meanwhile, is a system of describing food products based on their selected nutrient content. It aims to provide accurate nutrition information about each food which is printed on food labels as nutrition facts. It is a population-level nutrition communication device at the point of purchase with the information needed to meet the nutritional guidelines of a particular population group.³ The use of nutrition labels has been associated with healthier food choices such as calorie intake, and other nutrients.³⁻⁶ Nutrition labelling is still voluntary in the Philippines. However, the Food and Drug Administration issued Circular No. 2021-015 for the voluntary declaration of front-of-pack labelling for energy or caloric content on the labels of processed food products. In 2022, Senate Bill 576 or Traffic Light Nutritional Labelling Scheme on Food Packaging Act and House Bill 1139 or An Act Mandating the Use of Health Star Rating System on the Labels of Packaged Food Products were proposed in the Philippine Congress to mandate the use of different nutrition label formats.⁷⁻⁸

The awareness in and practice of reading nutrition labels questionnaire among adult consumers is part of the government program participation survey component of the National Nutrition Survey (NNS) and Updating Surveys done by the Department of Science and Technology – Food and Nutrition Research Institute (DOST-FNRI). Although the proportion of respondents in the surveys reading food product labels is reported, little is known about the socio-demographic characteristics of those who read always, sometimes, or not at all. This affects their use of food labels as an information and communication tool on nutrition from packaged foods.

Thus, this study aimed to describe the socio-demographic characteristics of adult consumers aged 18 years old and above reading food product labels and nutrition facts based on the 2018-2019 survey data in the Philippines. It also determined the likelihood that consumers will not read food product labels and be influenced by nutrition facts when buying food. This will provide insights on consumers' understanding and usage of food labels and nutrition facts that will help in designing better label formats in packaged foods and other related consumer health education campaigns.

MATERIALS AND METHODS

Study Design

This study used a descriptive correlational design using data from the Expanded National Nutrition Survey (ENNS) 2018-2019 done by the DOST-FNRI. The ENNS utilized the 2013 Master Sample (MS) of the Philippine Statistics Authority for household-based surveys where a two-stage cluster sampling design with Enumeration Areas (EAs) or

groups of adjacent EAs as the primary sampling units (PSUs) was employed. The EAs were the barangays within the cities or provinces. This was followed by the selection of secondary sampling units composed of housing units/households.⁹ The 2013 MS has 117 sampling domains [81 provinces, 33 highly urbanized cities (HUCs) and three other areas].

The ENNS is a three-year rolling survey that expands the data collection period from 2018 to 2020. However, because of the COVID-19 pandemic, data collection in 2020 was moved to 2021. A total of 40 provinces and HUCs were covered in 2018, and 39 provinces, HUCs, and other urban areas were covered in 2019. Thus, in this study, samples included came from the 79 provinces and HUCs in the pooled data of 2018 and 2019 ENNS. A more detailed description of the ENNS sampling design was published in the Philippines Nutrition Facts and Figures 2018-2019.¹⁰

The research protocol of the ENNS was approved by the FNRI Institutional Ethics Review Committee (FIERC) on July 21, 2017 with Protocol Code FIERC-2017-017. The respondents were given informed consent forms to confirm their voluntary participation in the survey before the conduct of the ENNS. The consent form included information on the purpose of the ENNS, type of information to be gathered, method of data collection, as well as a clause on maintaining the confidentiality of any information given. Respondent participation was strictly voluntary and subjects were allowed to withdraw from the ENNS at any given time.

Study Participants

All adult consumers aged 18 years old and above from each sampled household who responded to the ENNS Form 4.7 Knowledge and Practice of Reading Product Labels of Packaged Foods and Beverages and with complete socio-demographic information were included in the study. A total of 165,142 individuals were included in the analysis.

Data Collection Procedure

The ENNS was conducted through a face-to-face interview and measurement. The knowledge and practice of reading product labels were under the Government Program Participation survey component. The ENNS Form 4.7 Knowledge and Practice of Reading Product Labels of Packaged Foods and Beverages was used to gather data on product labels and nutrition facts. Item questions included were whether the respondents consume foods and beverages with packaging, if they read product labels, what information in product labels they look for, if they read nutrition facts, what information they read in nutrition facts, or what are the reasons for not reading nutrition facts, and whether they are influenced by nutrition facts when buying a product.

Responses were encoded through an electronic data collection system (e-DCS) from the field which was then transmitted to the DOST-FNRI for data organization, validation, and processing. To keep the anonymity of survey participants and confidentiality of the information collected,

their names and identity are not divulged or reported nor listed in the report. Codes and numbers assigned to sampled individuals were used during data processing. The collected data were also subjected to validation during consolidation and organization.

Data Analysis

There were 69 respondents (0.04%) who had missing or incomplete responses which were excluded in the analysis. Descriptive statistics such as test of proportions, standard error and 95% confidence interval were computed using Stata version 16 for the responses of adult consumers, 18 years old and above who read product labels. A chi square test was used to test the association between the socio-demographic characteristics of adults, 18 years old and above and the practice of reading product labels. Multivariate logistic regression was done to determine the likelihood of not reading product labels and being influenced by nutrition facts when buying food. Results with $p < 0.05$ were considered significant.

RESULTS

Socio-demographic characteristics of adult consumers

Only about one in every five (19.6%) adult consumers, 18 years old and above, reported reading food product labels always and 34.5% reported reading sometimes. Meanwhile, about four in every 10 (45.9%) adult consumers said they do not read food product labels (Table 1). In terms of age, the highest proportion of adult consumers reading product labels (always and sometimes) were those age 20-39 years old. There were more adult consumers reading product labels (always and sometimes) who were females, living in urban areas, higher wealth status and higher education. In terms of occupation, the majority of farmers, forestry workers, and fisherfolks (66.9%), laborers and unskilled workers (55.1%), plant and machine operators and assemblers (54.4%), and craft and trade-related workers (52.0%) reported not reading product labels (Table 1).

Information in food products labels and nutrition facts read by consumers

Among those who read product labels, date of expiration (76.7%), ingredients (26.7%), and brand name (23.7%) were the most read information. Only 17.2% reported reading nutrition facts. The net weight was the least read by adult consumers (Figure 1).

Meanwhile, among those who read nutrition facts, total fat (35.1%), calories per serving (31.6), total carbohydrates (26.3%), and cholesterol (21.7%) were the most read information. The least information read was the amount per serving (11.5%) and total protein (10.0%) (Figure 2).

The majority (59.2%) of those who do not read nutrition facts in food product labels said they were not interested as the main reason for not reading. Other reasons were no time

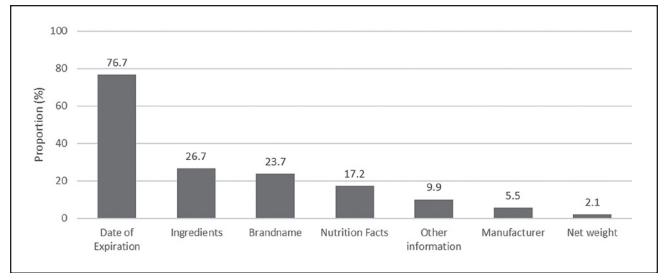


Figure 1. Proportion of adult consumers, 18 years old and above, who read the information on product labels.

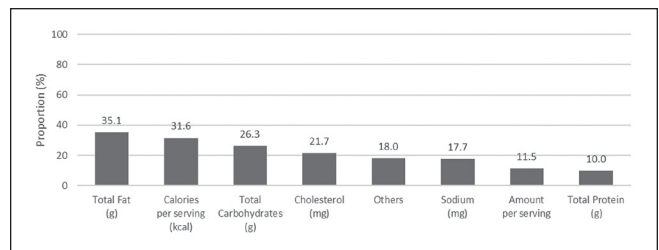


Figure 2. Information read by adult consumers, 18 years old and above, who reported reading nutrition facts.

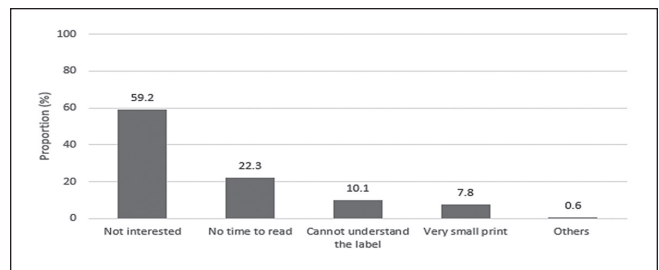


Figure 3. Reasons of adult consumers, 18 years old and above, for not reading the nutrition facts.

to read (22.3%), cannot understand the label (10.1%), and very small print (7.8%) (Figure 3).

Characteristics of consumers reading nutrition facts

Among those who read food product labels and with data on energy adequacy, only 16.7% read nutrition facts. Meanwhile, among those who read nutrition facts, only 1.8% read calories. Reading nutrition facts was significantly higher among 18-19 years old (28.5%; CI: 24.8-32.4%) compared to older consumers. It is also significantly higher among females (18.4%; CI: 16.3-20.7%) and those living in urban residences (19.6%; CI: 17.0-22.6%). As education and wealth increase, the proportion of consumers reading nutrition facts also increases. Professionals, technicians and associates, clerks and officials of government and special interest organizations, executives and managers had the highest proportion of reading nutrition facts in terms of profession (Table 2). There

were also no significant difference in energy adequacy among those reading nutrition facts and reading calories (Table 2).

Socio-demographic determinants of consumers not reading food product labels and not influenced by nutrition facts

Table 3 shows the adjusted odds ratio of not reading food product labels and not influenced by nutrition facts. The table highlights that senior citizens (60 years old and above) and those belonging to poorer households were more likely

to not read food product labels compared to their counterparts. Noteworthy is that those who have no grade completed were 15.8 times more likely not to read food product labels compared to those who have vocational and college level attainment. Moreover, those who reached only elementary and high school level of education and those whose occupations include farming and agriculture, laborers and unskilled work, craft and related trade, plant and machine operators, clerks, no occupation, and students were also more likely to not read food product labels compared to government officials/

Table 1. Socio-demographic Characteristics of Adult Consumers, 18 Years Old and above who Read Product Labels 2018-2019 (n=164,785)

	No				Yes Always				Yes Sometimes				p-value
	%	SE	95% CI		%	SE	95% CI		%	SE	95% CI		
			LL	UL			LL	UL			LL	UL	
Philippines	45.9	1.0	43.7	48.2	19.6	0.6	18.2	21.0	34.5	0.9	33.1	36.5	
Age group													
18-19 years old	42.8	1.0	40.7	45.0	15.1	0.5	13.0	17.3	42.0	1.3	39.9	44.2	0.000
20-39 years old	39.4	1.1	37.1	41.7	21.7	0.7	19.4	24.1	38.9	1.0	36.5	41.2	
40-59 years old	47.9	1.1	45.6	50.2	19.7	0.8	17.4	22.0	32.4	0.9	30.1	34.7	
60 years old and above	61.5	1.3	58.6	64.4	14.7	0.8	11.9	17.6	23.7	0.9	20.8	26.6	
Sex													
Male	56.7	1.1	54.3	59.1	13.9	0.5	12.8	15.0	29.4	0.9	28.3	31.3	0.000
Female	37.8	1.0	35.7	39.9	23.9	0.7	22.3	25.5	38.3	1.0	36.7	40.5	
Place of residence													
Rural	50.0	1.0	47.8	52.2	17.3	0.7	15.8	18.9	32.6	0.8	31.1	34.3	0.000
Urban	41.1	1.3	38.3	44.0	22.3	0.9	20.3	24.3	36.5	1.2	34.5	39.1	
Wealth Quintile													
Poorest	61.6	1.4	58.5	64.7	11.0	0.6	9.8	12.2	27.4	1.2	26.1	30.0	0.000
Poor	50.9	1.0	48.7	53.1	15.5	0.5	14.5	16.5	33.6	1.2	32.6	36.1	
Middle	45.0	1.2	42.5	47.6	19.1	0.5	18.0	20.1	35.9	1.2	34.9	38.4	
Rich	38.9	1.2	36.4	41.4	24.4	0.9	22.5	26.2	36.7	1.2	34.9	39.2	
Richest	32.7	1.6	29.2	36.1	28.7	0.7	27.2	30.2	38.6	1.2	37.1	41.1	
Education													
No Grade Completed	92.9	1.0	90.7	95.0	1.8	0.4	-0.4	3.9	5.4	0.8	3.2	7.5	0.000
Elementary	66.6	1.1	64.3	69.0	10.3	0.5	8.0	12.6	23.1	1.0	20.7	25.4	
High school	42.5	0.8	40.8	44.2	20.1	0.6	18.4	21.7	37.4	1.0	35.7	39.1	
Vocational and college	28.9	1.1	26.5	31.2	28.7	0.5	26.4	31.1	42.4	1.0	40.0	44.8	
Occupation													
Officials of Government and Special Interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors	34.7	2.0	30.5	39.1	29.5	1.3	26.8	32.5	35.8	1.7	32.3	39.4	0.000
Professional	21.7	1.2	19.2	24.3	36.0	1.3	33.4	38.7	42.3	1.4	39.3	45.4	
Technicians and Associate Professionals	29.6	1.7	26.1	33.3	27.4	1.3	24.7	30.2	43.0	1.5	39.8	46.3	
Clerks	31.6	1.6	28.4	35.0	26.1	1.2	23.7	28.8	42.3	1.7	38.7	45.9	
Service Workers and Shop and Market Sales Workers	35.9	1.0	33.9	38.0	26.2	0.6	24.9	27.5	37.9	0.9	36.0	39.9	
Farmers, Forestry Workers and Fishermen	66.9	1.5	63.7	70.0	9.3	0.6	8.0	10.7	23.8	1.2	21.3	26.5	
Craft and Related Trades Workers	52.0	2.1	47.5	56.5	16.6	0.9	14.7	18.6	31.4	1.9	27.5	35.6	
Plant and Machine Operators and Assemblers	54.4	1.4	51.5	57.3	15.3	0.5	14.2	16.5	30.3	1.2	27.9	32.8	
Elementary Occupation: Laborers and Unskilled workers	55.1	1.6	51.7	58.4	15.7	0.9	13.9	17.7	29.2	1.2	26.8	31.8	
Student	36.8	0.9	35.0	38.7	17.0	0.5	16.0	18.1	46.1	0.9	44.1	48.1	
No Occupation and Pensioner	44.1	1.0	42.1	46.2	20.4	0.7	18.9	22.0	35.5	1.1	33.2	37.8	

significant at $p < 0.05$

Table 2. Proportion of Adult Consumers, 18 Years Old and above, who Read Nutrition Facts and Calories by Socio Demographic Characteristics

Socio-demographic characteristics	Read Nutrition Facts (n=43,506)				Read Calories (n=43,506)			
	%	SE	95% CI		%	SE	95% CI	
			LL	UL			LL	UL
Philippines	16.7	1.0	14.7	18.9	1.8	0.3	1.2	2.5
Age group								
18-19 years old	28.5	1.8	24.8	32.4	2.5	0.7	1.4	4.5
20-39 years old	19.2	1.1	17.0	21.6	2.1	0.4	1.4	3.1
40-59 years old	12.8	0.9	11.0	14.7	1.4	0.2	1.0	2.1
60 years old and above	11.2	1.6	8.2	15.1	0.8	0.3	0.4	1.8
Sex								
Male	13.3	1.0	11.3	15.6	1.5	0.3	1.1	2.2
Female	18.4	1.0	16.3	20.7	1.9	0.3	1.3	2.7
Place of residence								
Rural	14.1	0.7	12.7	15.7	1.2	0.1	0.9	1.5
Urban	19.6	1.3	17.0	22.6	2.4	0.5	1.5	3.9
Wealth Quintile								
Poorest	7.7	0.6	6.6	9.0	0.5	0.1	0.3	0.9
Poor	10.3	0.6	9.0	11.7	0.7	0.1	0.5	1.0
Middle	14.1	0.8	12.5	15.8	1.3	0.3	0.8	2.2
Rich	18.8	1.0	16.7	21.1	2.0	0.3	1.4	2.8
Richest	28.0	1.5	24.9	31.4	3.6	0.7	2.4	5.5
Education								
No Grade Completed	6.8	5.9	1.0	34.6	2.2	2.2	0.3	15.9
Elementary	3.5	0.5	2.6	4.7	0.4	0.1	0.2	0.8
High school	12.8	0.6	11.6	14.2	1.2	0.2	0.7	1.8
Vocational and college	27.9	1.4	25.0	31.0	3.2	0.5	2.3	4.4
Occupation								
Officials of Government and Special Interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors	24.0	2.3	19.4	29.2	3.1	1.2	1.4	6.8
Professional	42.2	2.0	38.0	46.5	5.1	0.9	3.5	7.5
Technicians and Associate Professionals	24.2	1.4	21.4	27.2	2.9	1.0	1.4	5.8
Clerks	29.1	2.5	24.1	34.6	3.0	0.7	1.8	5.0
Service Workers and Shop and Market Salesperson	15.5	0.8	13.8	17.3	1.5	0.3	0.9	2.3
Farmers, Forestry Workers and Fisherfolks	5.7	0.7	4.5	7.3	0.6	0.1	0.3	1.0
Craft and Related Trades Workers	11.6	1.2	9.3	14.4	1.8	0.9	0.6	4.9
Plant and Machine Operators and Assembly	8.1	1.1	6.0	10.9	1.2	0.4	0.6	2.6
Elementary Occupation: Laborers and Unskilled workers	10.0	1.2	7.8	12.8	0.7	0.2	0.4	1.3
Student	30.4	2.0	26.3	34.9	2.9	0.7	1.6	4.9
No Occupation and Pensioner	14.7	0.9	12.9	16.7	1.5	0.3	1.0	2.2
Energy Adequacy								
Inadequate	16.5	1.0	14.5	18.7	1.7	0.3	1.2	2.3
Adequate	17.6	1.3	15.0	20.5	2.1	0.6	1.2	3.8

managers/entrepreneurs. This may imply the need for a label format that would cater to those who cannot or have difficulty reading and understanding food product labels.

In terms of being not influenced by nutrition facts, only sex, education, and wealth status have a significant association with females being 47% less likely to be not influenced by nutrition facts while belonging to poorer households and having lower education being more likely to be not influenced by nutrition facts.

DISCUSSION

This study looked at the socio-demographic characteristics of Filipino adult consumers and the practice of reading food product labels and nutrition facts and found that almost half do not read food labels and less than a fifth read nutrition facts.

Food product labels protect consumers from possible harm through the information on its place of origin and ingredients that should be avoided by people with food restrictions

Table 3. Final Model for the Determinants of not Reading Food Product Labels and not Influenced by Nutrition Facts

	Not reading food product labels				Not influenced by nutrition facts			
	AOR	95% CI		p-value	AOR	95% CI		p-value
		LL	UL			LL	UL	
Age group								
20-39 years old	0.79	0.70	0.89	0.001	0.81	0.68	0.97	0.024
40-59 years old	1.00	0.92	1.10	0.964	0.79	0.65	0.97	0.029
60 years old and above	1.48	1.30	1.68	0.000	0.65	0.46	0.92	0.019
Sex								
Female	0.49	0.46	0.52	0.000	0.63	0.55	0.72	0.000
Wealth Quintile								
Poorest	1.73	1.39	2.15	0.000	1.42	1.05	1.92	0.026
Poor	1.41	1.21	1.65	0.000	1.31	1.03	1.66	0.032
Middle	1.22	1.06	1.40	0.008	1.15	0.88	1.50	0.271
Rich	1.09	0.95	1.24	0.197	1.44	1.14	1.81	0.004
Education								
No Grade Completed	15.84	11.01	22.77	0.000	2.14	0.16	28.83	0.542
Elementary	2.92	2.64	3.24	0.000	1.60	1.11	2.31	0.014
High school	1.45	1.36	1.54	0.000	1.47	1.24	1.73	0.000
Occupation								
Professional	0.85	0.66	1.09	0.188				
Technicians and Associate Professionals	0.94	0.70	1.25	0.629				
Clerks	1.37	1.08	1.74	0.012				
Service Workers and Shop and Market Salesperson	1.10	0.89	1.36	0.343				
Farmers, Forestry Workers and Fisherfolks	1.60	1.30	1.98	0.000				
Craft and Related Trades Workers	1.38	1.12	1.70	0.005				
Plant and Machine Operators and Assemblers	1.53	1.22	1.92	0.001				
Elementary Occupation: Laborers and Unskilled workers	1.58	1.30	1.92	0.000				
Student	1.27	1.02	1.58	0.035				
No Occupation and Pensioner	1.39	1.15	1.69	0.002				

Reference categories: age: 18-19 years old; sex: male; wealth: richest quintile; education: vocational and college level; Occupation: government officials, managers, entrepreneurs.

or allergies as well as nutrients the products contain.^{3,5,6,11} However, based on the results, almost half of Filipino adult consumers do not read food product labels which may make them miss out on information that could be harmful to them especially if they have underlying health conditions.

The proportion of adults as well as adult consumers who reported reading nutrition facts in the Philippines was low compared to other countries such as in New Zealand, the USA, or Canada where the percentage of self-reported nutrition label use was high.¹² There was no existing law yet in the Philippines requiring manufacturers, packagers, or distributors to indicate the nutrition information of food products on the labels except the FDA Circular 2021-015 that set guidelines for the voluntary declaration of front-of-pack labelling for energy or calorie content of processed foods. Although, house and senate bills in the Philippine Congress have been submitted to make nutrition labelling mandatory.¹³⁻¹⁵ Moreover, the Philippines is currently experiencing a stagnation in its efforts to implement a more comprehensive front-of-pack labelling.¹⁶

Similar to the results of this study, it was found that there were more consumers in Madrid, Spain reported reading

nutrition labels occasionally than regularly before purchasing a product,¹⁷ while it was found in another study that 70% of Chinese participants claimed to rarely or never read nutrition labels when shopping for food.¹⁸

According to a study conducted among selected adults in the Philippines, the utilization of nutrition labels was found to be associated with certain factors such as having an intention to use them, perceiving sufficient time for shopping, and seeking out specific information.¹⁹ In contrast, a systematic study revealed that individuals refrain from reading product labels due to lack of time, small size of print on packages, difficulty in comprehending technical terms, and concerns about the accuracy of the information provided.²⁰ These reasons for not reading product labels were also noted in this study.

Although this study did not examine the comprehension or correct understanding of nutrition labels, it is important to utilize the information and influence of dietary choices. A previous study conducted in Canada highlighted that people struggle with understanding nutrition label information, including converting serving sizes.⁶ Yet another study found that higher levels of health knowledge have a positive effect

on information acquisition from media sources, including reading nutrition labels.²¹ Additionally, a review study found some evidence supporting a positive relationship between label use and knowledge,²² while some found no evidence supporting this relationship.²³

Having higher education has been reported as a significant factor in reading nutrition labels. This was also observed in the current study, where the proportion of individuals who read food product labels increases as educational attainment increases.^{3,5,6,24,25}

There has been no consensus on the effect of age, income, or working status on nutritional label use.²⁶ Meanwhile, consistent with previous similar research,^{4,5,12,16,26} this study showed that females were more likely to read product labels than males.

In a similar study, it was found that more than half of the participants did not rely on nutrition information when making their food choices while shopping. Moreover, the study revealed that only 9.3% of consumers claimed using nutrition knowledge when shopping.²⁷ In contrast to the previous study, our study found that a low proportion of adult consumers read nutrition facts. However, our findings indicate a positive correlation between reading nutrition facts and purchasing behavior. The use of nutrition labels affects purchasing behavior mainly because consumers want to avoid certain nutrients or those which they want to reduce consumption, and these effects might be even greater if labelling were combined with an information campaign to educate consumers.^{11,28,29}

A study in New Zealand found that participants who viewed the labels and subsequently purchased the products were significantly healthier than those who viewed the labels but did not purchase the products.²⁹ While label use does not guarantee healthier consumption, it has the potential to alter dietary patterns and contribute to better dietary intake by reducing the consumption of unhealthy foods. For example, using food labels to choose high-fiber foods was associated with higher consumption of fruits and vegetables or low sodium which was associated with a lower intake of salty snacks.²⁸

This study found that those who are working as professionals, technicians and associates, officials of government and special organizations, entrepreneurs and managers, and clerks were likely the ones who read product labels, in contrast with other results where retired persons were reported to read more and have a full understanding of nutrition labels.¹⁷

Even though some studies showed that the provision of nutrition information affects product attitude and purchase intention,³⁰⁻³² others found that providing information about energy density or other nutritional information did not affect overall energy and fat intake³³ or inconclusive association between label use and diet.³⁴

Several studies have established that nutrient information does indeed influence food choices.³⁵⁻³⁷ There are suggestions

that label usage is primarily practiced by individuals who are obese, rather than as a health-promoting habit.³⁷ Consumers also have difficulty handling quantitative information such as the interpretation of percentages in nutrition labels.^{36,38} As in this study, 10.1% of consumers do not read product labels because they cannot understand them.

People placing high importance on nutrition are more likely to use nutritional labels¹⁷ or to use specific nutrient information.²³ As seen in this study, those who have higher educational attainment, with occupations such as government officials, managers, entrepreneurs, professionals, technicians, and clerks, and those belonging to higher wealth status were associated with reading product labels and nutrition facts. However, even among those who reported reading food product labels and calorie information, no significant differences in energy adequacy were observed. This is similar to a study in Malaysia, which showed no association between label reading and nutritional status.³⁹

Moreover, this study showed that older persons (60 years and above), those who have no or low level of education, belonged to poorer households, and whose occupations are in agriculture, are laborers and unskilled workers, craft and related trade work, plant and machine operators, students, pensioners, and have no occupation were more likely not reading food product labels and not influenced by nutrition facts. This implies the need for food label format that would cater to those who cannot or have difficulty reading food labels and nutrition facts. There is also a need for an intensive consumer education, and nutrition and health campaign on reading food product labels.

Limitations

This study used only secondary data from the survey, thus, other factors that could affect understanding of and motivations in reading nutrition labels were not probed. It also did not ask about the frequency of buying food products with labels as well as the amount of food consumed from products with labels that could affect their dietary intakes and may be explored in further studies. However, the results of the study remain valuable in designing new food labels and nutrition facts formats as well as a consumer education campaign to promote reading and understanding food product labels.

CONCLUSION AND RECOMMENDATIONS

This study found that only a fifth of adults always read food product labels and an even lower proportion reading nutrition facts. The majority of those who do not read food product labels said they were not interested. Older persons (60 years and above), those who have no or low level of education, belonged to poorer households and whose occupations are in agriculture, laborers and unskilled workers, craft and related trade work, plant and machine operators, students, pensioners and have no occupation were more likely to not read food

product labels and not influenced by nutrition facts which imply the need for food label format that would cater to those who cannot or have difficulty reading food labels and nutrition facts.

An intensive consumer education and nutrition and health campaign on reading food product labels should be done to encourage reading food product labels using both traditional and digital technology information drives. A combination of strategies to educate Filipino consumers must be done to guide them in proper food selection, especially in packaged foods. Information campaigns may include materials that would include collaterals in *sari-sari* stores where many of low education and low wealth status consumers purchase foods as well as other mass media campaigns reminding consumers to read product labels. Likewise, improvements in product and nutrition labelling, such as a more simplified and standard format that would cater to even the low-literate consumers would contribute to making the environment more conducive to healthier food choices. Pending legislation on nutrition labelling should consider motivations in reading food product labels and the appropriate label format that would encourage consumers to read and utilize the information in selecting healthier food options.

Acknowledgments

This study was successfully completed with the efforts and contribution, particularly in the data acquisition and processing, of the following: Charmaine Duante, Marvin Delos Santos, and Ma. Lynell Maniego, and manuscript formatting by Jamella Jeanne Victa.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

All authors declared no conflicts of interest.

Funding Source

The study was funded by the DOST-FNRI General Funds for 2020.

REFERENCES

1. Food and Agriculture Organization, International Food Trade: Food Quality and Safety Considerations [Internet]. [cited 2020 Dec]. Available from: <http://www.fao.org/3/w9474t/w9474t02.htm>.
2. Official Gazette, Republic Act No. 7394: Consumer Act of the Philippines [Internet]. 1992 [cited 2020 Dec]. Available from: www.gov.ph/1992/04/13/republic-act-no-7394-s-1992/.
3. Wilson MD, Ramirez AS, Arsenault JE, Miller LMS. Nutrition label use and its association with dietary quality among Latinos: The role of poverty and acculturation. *J Nutr Educ Behav*. 2018 Oct;50(9):876-87. doi: 10.1016/j.jneb.2018.05.019.
4. Cavaliere A, De Marchi E, Banterle A. Does consumer health-orientation affect the use of nutrition facts panel and claims? An empirical analysis in Italy. *Food Qual Pref*. 2016 Dec;54:110-6. doi:10.1016/j.foodqual.2016.07.008
5. Christoph MJ, Larson N, Laska MN, Neumark-Sztainer D. Nutrition facts panels: Who uses them, what do they use and how does use relate to dietary intake? *J Acad Nutr Diet*. 2018 Feb;118(2):217-28. doi: 10.1016/j.jand.2017.10.014.
6. Sinclair S, Hammond D, Goodman S. Sociodemographic differences in the comprehension of nutrition labels on food products. *J Nutr Educ Behav*. 2013 Nov-Dec;45(6):767-72. doi: 10.1016/j.jneb.2013.04.262.
7. Villanueva J. S.B. No. 576: An Act Mandating Food Manufacturers to Display Color-Coded Nutritional Information on Food Packaging and for Other Purposes. 19th Congress of the Republic of the Philippines First Regular Session [Internet]. 2022 [cited 2022 Oct]. Available from: <https://legacy.senate.gov.ph/lisdata/3835434806!.pdf>
8. Dy FA. H.B. No. 1139: A Star Rating System for Packaged Food Products [Internet]. 2022 [cited 2022 Dec]. Available from: <https://www.bworldonline.com/economy/2022/12/06/491409/health-rating-labels-for-packaged-food-proposed/>
9. Philippine Statistics Authority, 2013 Master Sample Design [Internet]. [cited 2022 Nov]. Available from: <https://psada.psa.gov.ph/index.php/2013-master-sample-design>.
10. Department of Science and Technology – Food and Nutrition Research Institute (DOST-FNRI). Philippine Nutrition Facts and Figures: 2018-2019 Expanded National Nutrition Survey (ENNS). 2022. FNRI Bldg., DOST Compound, Gen. Santos Avenue, Bicutan, Taguig City, Metro Manila, Philippines.
11. Azman N, Sahak SZ. Nutrition label and consumer buying decision: A preliminary review. *Procedia Soc Behav Sci*. 2014 May;130:490-8. doi:10.1016/j.sbspro.2014.04.057
12. Campos S, Doxey J, Hammond D. Nutrition labels in pre-packaged foods: A systematic review. *Public Health Nutr*. 2011 Aug;14(8):1496-506. doi: 10.1017/S1368980010003290.
13. Andaya RJG. HB No. 5719: An Act Mandating the Nutritional Content Labeling of Food Products, Providing Framework for its Implementation and for Other Purposes [Internet]. 2015 [cited 2022 Oct]. Available from: <https://congress.gov.ph/legisdocs/basic16/HB05719.pdf>
14. Garbin AJA, Co ES. HB No. 1511: An Act Regulating the Packaging, Use, Sale, Distribution and Advertisements of Products with High Sodium Content [Internet]. 2016 [cited 2022 Dec]. Available from: https://www.congress.gov.ph/legisdocs/basic_18/HB01511.pdf
15. Villanueva J. SB No. 1280: An Act Mandating Food Manufacturers to Display Color-Coded Nutritional Information of Food Packaging and For Other Purposes [Internet]. 2021 [cited 2022 Dec]. Available from: <http://legacy.senate.gov.ph/lisdata/3217429017!.pdf>
16. Pettigrew S, Coyle D, McKenzie B, Vu D, Lim SC, Berasi K, et al. A review of front-of-pack nutrition labelling in Southeast Asia: Industry interference, lessons learned and future directions. *The Lancet Regional Health – Southeast Asia*. 2022 Aug;3(100017):1-9. doi:10.1016/j.lansea.2022.05.006
17. Prieto-Castillo L, Royo-Bordonada MA, Moya-Geromini A. Information search behaviour, understanding and use of nutrition labelling by residents of Madrid, Spain. *Public Health*. 2015 Mar;129(3):226-36. doi: 10.1016/j.puhe.2014.12.003.
18. Liu R, Hoefkens C, Verbeke W. Chinese consumers' understanding and use of a food nutrition label and their determinants. *Food Quality and Preference*. 2015 Apr;41:103-11. doi:10.1016/j.foodqual.2014.11.007
19. Sy DC, Bullecce ER. Prevalence and factors associated with nutrition label use among selected Filipino adults. *Acta Med Philipp*. 2020;54(5):612-9. doi:10.47895/amp.v54i5.2269
20. Cowburn G, Stockley L. Consumer understanding and use of nutrition labelling: a systematic review. *Public Health Nutr*. 2005 Feb;8(1):21-8. doi: 10.1079/phn2005666.
21. Moorman C, Matulich E. A model of consumers' preventive health behaviors: the role of health motivation and health ability. *J Consum Res*. 1993 Sep;20(2):208-28. doi:10.1086/209344

22. Miller LMS, Cassady DL. The effects of nutrition knowledge on food label use. A review of the literature. *Appetite*. 2015 Sep;92:207-16. doi: 10.1016/j.appet.2015.05.029.
23. Drichoutis AC, Lazaridis P, Nayga RM Jr. Consumers' use of nutritional labels: A review of research studies and issues. *Acad Mark Sci Rev*. 2006;2006(9).
24. Sharf M, Sela R, Zentner G, Shoob H, Shai I, Stein-Zamir C. Figuring out food labels. Young adults' understanding of nutritional information presented on food labels is inadequate. *Appetite*. 2012 Apr;58(2):531-4. doi: 10.1016/j.appet.2011.12.010.
25. Song J, Huang J, Chen Y, Zhu Y, Li H, Wen Y, et al. The understanding, attitude and use of nutrition label among consumers (China). *Nutr Hosp*. 2015 Jun;31(6):2703-10. doi: 10.3305/nh.2015.31.6.8791.
26. Furlow NE, Knott C. Who's reading the label? Millennials' use of environmental product labels. *The Journal of Applied Business and Economics*. 2009.
27. Goyal R, Deshmukh N. Food label reading: Read before you eat. *J Educ Health Promot*. 2018 Apr;7:56. doi: 10.4103/jehp.jehp_35_17.
28. Cannoosamy K, Pugo-Gunsam P, Jeewon R. Consumer knowledge and attitudes toward nutritional labels. *J Nutr Educ Behav*. 2014 Sep-Oct;46(5):334-40. doi: 10.1016/j.jneb.2014.03.010.
29. Mhurchu CN, Eyles H, Jiang Y, Blakely T. Do nutrition labels influence healthier food choices? Analysis of label viewing behaviour and subsequent food purchases in labelling intervention trial. *Appetite*. 2018 Feb;121:360-5. doi: 10.1016/j.appet.2017.11.105.
30. Burton S, Creyer EH. What consumers don't know can hurt them: consumer evaluations and disease risk perceptions of restaurant menu items. *J Consum Aff*. 2004;38(1):121-45. doi: 10.1111/j.1745-6606.2004.tb00468.x
31. Burton S, Creyer EH, Kees J, Huggins K. Attacking the obesity pandemic: the potential health benefits of providing information in restaurants. *Am J Public Health*. 2006 Sep;96(9):1669-75. doi: 10.2105/AJPH.2004.054973.
32. Kozup JC, Creyer EH, Burton S. Making healthful food choices: The influence of health claims and nutrition information on consumers' evaluation of packaged food products and restaurant menu items. *J Mark*. 2003 Apr;67(2):19-34. doi:10.1509/jmkg.67.2.19.18608
33. Crockett RA, Jebb SA, Hankins M, Marteau TM. The impacts of nutritional labels and socioeconomic status on energy intake. An experimental field study. *Appetite*. 2014 Oct;81:12-9. doi: 10.1016/j.appet.2014.05.024.
34. Anastasiou K, Miller M, Dickinson K. The relationship between food label use and dietary intake in adults: A systematic review. *Appetite*. 2019 Jul;138:280-91. doi: 10.1016/j.appet.2019.03.025.
35. Barreiro-Hurle J, Gracia A, de-Magistris T. Does nutrition information on food products lead to healthier food choices? *Food Policy*. 2010 Jun;35(3):221-9. doi:10.1016/j.foodpol.2009.12.006
36. Hawkes C. Marketing food to children: the global regulatory environment. *World Health Organization [Internet]*. 2004 [cited 2022 Dec]. Available from: <https://apps.who.int/iris/bitstream/handle/10665/42937/9241591579.pdf>.
37. Dumoitier A, Abbo V, Neuhofer ZT, Mcfadden BR. A review of nutrition labeling and food choice in the United States. *Obes Sci Pract*. 2019 Nov;5(6):581-91. doi: 10.1002/osp4.374.
38. Nieto C, Castillo A, Alcalde-Rabanal J, Mena C, Carriedo A, Barquera S. Perception of the use and understanding of nutrition labels among different socio-economic groups in Mexico: a qualitative study. *Salud Publica Mex*. 2020 May-Jun; 62(3):288-97. doi: 10.21149/10793.
39. Ambak R, Tupang L, Hasim MH, Salleh NC, Zulkafly N, Salleh R, et al. Who do not read and understand food label in Malaysia? Findings from a population study. *Health Science Journal*. 2018; 12(1):548. doi:10.21767/1791-809X.1000548