



Faculty of Resource Science and Technology

Study on knowledge of nutrition facts on food labels and their impact on food choices on consumers in Sungai Petani, Kedah.

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27/05/2022

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Acknowledgement

This project would not have been possible without Dr. Elexson Nillian's guidance, advice, and support, and I would like to express my sincere gratitude to him. Throughout the course of this project, he has served as a constant source of supervision and advice. Thank you for your generosity in sharing your knowledge and for always providing me with useful advice during my final year project, which I greatly appreciate! This final year project would have been impossible for me to complete without his guidance.

Mr. Azra Tilai, my co-supervisor, is also to be thanked for his assistance and patience as I worked on my research project. While he has a full-time job, he still finds time for me and my fellow students to walk through the SPSS software procedures step by step.

It's not complete without a shout-out to my Final Year Project team Siti Aisyah, Sherry Niquel and Nur Aqiah Syafiqah Binti Suheimy, as well as all of my fellow students for their support and cooperation. They aided me greatly in dealing with the challenges of this project. In addition, I'd like to thank my family for their constant support and encouragement. In spite of the fact that they could not be present when I started this project, their support has been crucial to my success over the years.

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27/05/2021

Abstract

Nutritional information labels help us make informed decisions about what we eat and give to others. Everyday people are empowered to make informed health decisions and tailor their options to suit personal preferences. Nutritional information helps customers make informed food purchases. Understanding and adhering to food labels will ensure a healthy body and a clear mind for a consumer. Therefore, the purpose is to study on knowledge of nutrition facts on food labels and their impact on food choices on consumers at Sungai Petani, Kedah. The data was collected using a questionnaire and a cross checklist through survey. This study involves approximately (n= 300) respondents and local foods throughout this study. Using the Food Regulation 1985 as a guide, the labels on local foods have been checked to make sure they meet the rules. Aside from that, most foods on the market meet the standards set by the Food Registration Act of 1985. IBM Statistics for Social Sciences (SPSS) software was used to figure out the frequency and percentage of the data, which shows that most people who buy food are aware of nutrient facts thanks to complete food labels.

Key words: nutritional facts, food label, Food Registration Act 1985, aware, attitude

Abstrak

Label maklumat pemakanan membantu kita membuat keputusan termaklum tentang apa yang kita makan dan berikan kepada orang lain. Setiap hari orang diberi kuasa untuk membuat keputusan kesihatan termaklum dan menyesuaikan pilihan mereka agar sesuai dengan pilihan peribadi. Maklumat pemakanan membantu pelanggan membuat pembelian makanan termaklum. Memahami dan mematuhi label makanan akan memastikan tubuh badan yang sihat dan minda yang jernih untuk pengguna. Oleh itu, tujuannya adalah untuk mengkaji pengetahuan fakta pemakanan pada label makanan dan kesannya terhadap pilihan makanan kepada pengguna di Sungai Petani, Kedah. Data dikumpul menggunakan soal selidik dan senarai semak silang melalui tinjauan. Kajian ini melibatkan lebih kurang (n= 300) responden dan makanan tempatan sepanjang kajian ini. Menggunakan Peraturan Makanan 1985 sebagai panduan, label pada makanan tempatan telah diperiksa untuk memastikan ia memenuhi peraturan. Selain itu, kebanyakan makanan di pasaran memenuhi piawaian yang ditetapkan oleh Akta Pendaftaran Makanan 1985. Perisian IBM Statistics for Social Sciences (SPSS) digunakan untuk mengetahui kekerapan dan peratusan data, yang menunjukkan bahawa kebanyakan orang yang membeli makanan mengetahui fakta nutrien berkat label makanan yang lengkap.

Kata Kunci: *fakta pemakanan, label makanan, Peraturan Makanan 1985, sedar, sikap*

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List of Abbreviations

(n=300)	Three Hundred
%	Percentage
FDA	Food and Drug Administration
SPSS	Statistical Package for the Social Sciences

1.0 Introduction

To comply with Food and Drug Administration (FDA) regulations, most packaged foods or beverages must display the Nutrition Facts label. The Nutrition Facts label provides information about a food's composition, including the amount of fat, sugar, salt, and fibre it contains. According to the new research of Center for Food Safety and Applied Nutrition (2022), The FDA released a new label in 2016 as part of its efforts to help consumers make better decisions. Food producers are expected to implement the changes by 2021.

In the area, there were few efforts to raise awareness about the nutritional implications of food labelling. According to a study, many people were aware of the importance of food labels, but they ranked production date, expiration date, and the contents of the package as the most important data on labels. Nutritional data, serving size, unique features, health claims, specific use, and health warnings, all of which are required by American standards, may not be found on the labels of most products made or repackaged in the area. This could be the cause.

Food labels have been shown time and time again to be an effective public health tool for promoting a healthy diet. Customers can make more informed choices about their diets thanks to nutrition labels, which provide information about a food's composition and allow for side-by-side comparisons of similar foods. Demand for nutrition information has increased due to an increase in consumer awareness of the link between food consumption and illness. Those on special diets, such as those with diabetes or high cholesterol, rely on food labels to help them choose meals that are suitable for their medical conditions.

People think they know how to read food labels and are confident in their abilities. In terms of product labels, nutritional information such as calories, sugars, sodium fibres and fats were the most frequently accessed sections of information. Consumers take into account percentage daily values, health and nutritional claims, price, and brands when making food purchase decisions. Many people choose to rely on food labels instead of their own perceptions when it comes to understanding what they are eating.

A customer's ability to comprehend nutritional information and their attitude toward eating healthfully should be taken into consideration. The purpose of this study was to investigate do people buy pre-packaged foods understand and read the food labels. Furthermore, it was found that consumers' views and knowledge were positively linked to their educational attainment. People with more education are more receptive to dietary and health advice. Recent studies suggest that as people get older, their reliance on food labels may diminish. Although some studies show the contrary, according to (Shangguan & Krumholz, 2019) research, males are less likely than females to read nutrition labels.

2.0 Literature Review

2.1 NUTRITION LABEL

In order to buy and eat nutritious food, a nutrition label provides information about a food's nutritional qualities (Azman & Sahak, 2014). The Malaysian Dietary Guidelines define a nutrient label as a list of a food's nutrients. a nutrient is a small molecule that feeds the cells in our bodies. It is impossible to list all the different kinds of nutrients that are present in the human body. Most of the nutrients come from the food people eat every day. Chronic disease can be caused by an intake of nutrients that is out of balance. If a person doesn't eat enough fibre or carbohydrates, we may experience constipation or a lack of energy, respectively, in our bodies. Nutrition labels provide a breakdown of the nutrients in each food item to make it easier for customers to choose a healthy meal (K. Grunert & Wills, 2007). Macronutrients, such as fats, carbohydrates, and proteins, are listed on the nutrition label, along with their respective daily values, as explained by Miller and Cassady (2015).

In metabolism, triglycerides, a group of macronutrients, are referred to as "fat". Proteins and carbohydrates are also macronutrients, but lipids are a distinct class unto themselves. Because fats have the highest energy storage capacity of all macronutrients, they're ideal for long-term energy storage. There's no need to worry about the size of the molecule when it comes to macronutrients. It can cause weight gain, high cholesterol, and liver damage if consumed in excess. As a source of energy, fat also serves as a shock absorber for organs, helps regulate hormone production, aids absorption of fat-soluble vitamins, and maintains the integrity of cell membranes, lubricate joints, preserve brain health, aid in hormone production, and more (Newman, 2020). Saturated and unsaturated fats are also two types of fats. Unsaturated fats outperform saturated fats in terms of health benefits in this scenario.

Glucose, the body's primary energy supply, is produced from the breakdown of all carbs. In reality, glucose is required for the correct operation of some organs, such as the brain. Gluconeogenesis is a process through which your body may produce glucose from proteins when it is lacking. Additionally, carbohydrates aid in the synthesis of particular amino acids (the building blocks of proteins) and promote regular bowel movements. There are several types of carbohydrates. Carbohydrates comprise sugars, fibre, and starches, all of which fall under this category (Slavin & Carlson 2014). Energy from it is essential for the

human body to function correctly. 135 grams of carbs is the maximum quantity of carbohydrates that a person may ingest in a day (Slavin & Carlson 2014). A person's specific needs will dictate how much carbohydrate they need. People with diabetes need to limit their carbohydrate consumption since sugar is found in carbs.

Muscle mass development necessitates adequate intakes of protein, a macronutrient. Meat and dairy products, as well as nuts and legumes, are common sources, but it can be found in other foods as well. Amino acids are the organic compounds that make up the proteins in your body. Side chains of each protein have different functions in different processes, so it's important to know what they do. Amino acids come in a variety of forms, some of which are required for life while others are optional (Watford & Wu, 2018). In contrast to non-essential amino acids, which must be obtained from our diet, essential amino acids can be synthesised by the human body. Deficiencies in protein can lead to the breakdown of cells and tissues. Speeds up the process by acting as an enzyme an important constituent of the body's tissues and hair is protein.

Aside from that, nutrition labels are required to ensure the safety of food products for consumers by protecting them from health hazards and fraud. As a result, it helps the local food industry by promoting its products to a wider audience. A person's ability to obtain nutrition label information, translate it, and use it is called using nutrition label information. However, according to Campos et al. (2011), people who are less knowledgeable about nutrition are less likely to use nutrition labels, whereas those who are more knowledgeable about nutrition are more likely to do so.

People's reliance on nutrition facts panels could increase if they had better nutrition knowledge, according to Barreiro-Hurlé, Gracia, and DeMagistris (2010). Additionally, those who have a better grasp of nutrition tend to use their knowledge more frequently when shopping for food. Despite having a high level of nutrition knowledge, Malaysian students rarely consult food labels when making food purchases (Nurliyana, Norazmir, & Anuar, 2011). Consumers who have a better understanding of nutrition are more likely to read nutrition labels when purchasing food, according to Norazlan Shah et al., (2013). Both studies found a correlation between nutrition knowledge and label use, but it was not statistically significant.

2.2 FOOD LABEL

The food label on every item of food provides additional details about what's inside. This section includes information on nutrition. Customers can use the nutritional information to make informed purchases of food products. This information should be included in the nutrition facts. The Food and Drug Administration (FDA) established package requirements in 1983, and food labels must adhere to these guidelines. An explanation in either Malay or English, along with a list of ingredients, weights, and information on the manufacturer and country of origin should be provided.

Consumers can make better decisions about the products they buy and consume as a result of this information. Assist consumers in making well-informed decisions by providing adequate information. Consumers can make an educated choice about what to buy if they look at the nutritional facts. On the packaging of food, there are also health and safety information, such as the presence of potential allergens. Finally, the use of an eye-catching image and brightly coloured packaging on food labels can attract customers to a food product.

3.0 Material and methods

3.1 Materials used

The material used in this study was a self-administered questionnaire paper with closed-ended questions, 300 supermarket customers (n=300), Statistical Package for Social Science (SPSS) software, and 300 local food labels product (n=300) to study nutrition.

3.2 Methods for data collection

3.2.1 Field Method

In order to gather feedback from the supermarket's patrons, a survey was handed out and approached. Letter of permission was given to the supermarket's manager before started handing out the surveys.

The survey method is divided into three sections. This is the first section, or demographics. In this section, demographic data such as age, gender, educational attainment, marital status, and BMI were gathered.

Consumers' perceptions of food labels were discussed in Section B. Individual preferences dictated which box consumers were required to check (√) in this section. It offers five possible responses, ranging from 1 (strongly disagree) to 5 (strongly agree). The options are strongly disagree, disagree, neutral, agree, and strongly agree. There are several choices in Section C, which allows the consumer to express their thoughts. This section had a checkbox where customers mark more than one answer as correct.

3.2.2 Cross Checking of the food labels

As part of this study, the Food Act 1983 and Food Regulation 1985 were consulted to see if food labels were in compliance with the requirements of this study. Photographing three hundred (n=300) local brand food labels at the same supermarket made the process easier.

3.2.3 Statistical Analysis

Statistical Package for the Social Sciences (SPSS) software was used to analyse the results after the survey was completed. To compare the various responses, the questionnaire's frequency and percentages were tallied. As a result of this study, people learned a lot about the consumer's awareness of food labels and of the role nutrition plays in their food choices.

4.0 Results

There were 300 people who filled out the survey, with 52.7% of them being female and 47.3% being male. In total, 41.7% of the responses came from those ages 36 to 45, making them the most common age group. The second-largest group of respondents, comprising 34% of those aged 26 to 35, and 15% of those aged 46 to 55, came from this age range. 6% of respondents were between the ages of 18 and 25, while the remaining 55-65-year-olds made up the other half of the group. Only one person in the 66-75 age range completed the survey. According to the survey, degree holders in Sungai Petani, Kedah have the highest educational attainment, at 164(54.7%). 78 diploma holders (28%) and those with a high school education (25%) rounded out the top three (8.3%). In addition, nearly 18% of respondents had a master's degree or higher, according to the poll. The survey also found that vocational schools accounted for 13 (4.3%) of the total results. Neither more than one person from each educational category was included in this survey's results. In addition, the survey includes 237 married couples (79%), followed by 60 singles (20%), and 3 divorced people (1%) who completed the questionnaire. People who care about their weight and bmi are 283 (94.3%) who answered YES in the 300 questionnaires and 17 (5.7%) who answered NO.

Food labels and nutritional facts are viewed positively by the respondents, as shown in Table 1. In this particular survey, 300 people were asked about the aware of the existence of the food label on the packing. In terms of agreement and disagreement, it can be categorised that the responses into five distinct groups. One out of every three respondents strongly disagree, making up about 0.3% of the total. Another 20 people, or about 0.7%, also disagree. Additionally, there were 82 respondents who were unsure of their decision, which equates to 27% of the total. Furthermore, there were 179 people who agreed, making up a percentage of those who answered the survey that agreed of 59.7%. Last but not least, there were about 35 people who strongly agreed with the statement, making up about 11.7% of those who took the survey.

Besides that, 66.7 % of those who said they read the food label before purchasing are aware of the two types of nutrients found in food products micronutrients and macronutrients. About 45.7% of those surveyed agreed and 20.3% strongly agreed that they were aware of all of their food's nutritional information. Additionally, nearly half of those polled say they are

able to decipher the ingredients listed on food labels, and nearly half (47%) say they regularly compare the ingredients of the same product from various brands. 118 respondents, or 39.3%, stated that they believe all foods labelled "natural" are truly natural, while 129 respondents, or 43%, stated that they disagreed with that statement. 40.7% and 13.3% of those polled said they agreed or strongly agreed that the majority of their decisions about food products are influenced by the labels on those products. In the survey, 57% said they chose neutral because they are unsure whether other logos appearing on foods to demonstrate compliance with specific guidelines are also helpful in making healthy choices. The respondents were split 3% on whether it is accurate to add the total sugar and any added sugar listed on the food label in order to determine the actual sugar content of a product.

Table 1: Respondent opinion by using Likert scale question

Variable	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I am aware of the existence of the food label on the packing.	1 (0.3%)	2 (0.7%)	83 (27.7%)	179 (59.7%)	35 (11.7%)
2. I read the food label before purchasing.	1 (0.3%)	5 (1.7%)	69 (23.0%)	200 (66.7%)	25 (8.3%)
3. I always read the food label before buying.	1 (0.3%)	5 (1.7%)	69 (23.0%)	200 (66.7%)	25 (8.3%)
4. I know the complete food label information.	3 (1%)	3 (1%)	96 (32%)	137 (45.7%)	61 (20.3%)
5. I understand all the ingredients listed in the food label.	5 (1.7%)	5 (1.7%)	85 (28.3%)	150 (50%)	55 (18.3%)
6. I usually compare the ingredients of the same product with different brands.	6 (2%)	10 (3.3%)	95 (31.7%)	141 (47%)	48 (16%)
7. I think all foods labelled as “natural” are truly natural	3 (1.0%)	4 (1.3%)	118 (39.3%)	129 (43%)	46 (15.3%)
8. Food labels are the major reason for the choices of the food product.	0 (0%)	3 (1.0%)	135 (45%)	122 (40.7%)	40 (13.3%)
9. Other logos are appearing on foods to show that they meet certain guidelines. These are also useful in making healthy choices.	0 (0%)	3 (1.0%)	171 (57%)	101 (33.7%)	25 (8.3%)
10. In food products there are two types of nutrients which are micronutrients and macronutrients. (Examples of micronutrients are vitamins and minerals while macronutrients are carbohydrates, proteins and fat.)	1 (0.3%)	9 (3.0%)	47 (15.7%)	226 (75.3%)	17 (5.7%)
11. The simple way to measure the actual amount of sugar in a product is by adding the total sugar and added sugar shown in the food label.	1 (0.3%)	9 (3.0%)	226 (75.3%)	47 (15.7%)	17 (5.7%)

Nearly 23% of those surveyed agreed with the statement that people's net weight influences them to make healthy decisions, but this figure is shown in Table 2. Nearly 81.3% of respondents are influenced by the food label's calorie content because the label encourages people to make healthy food choices. 61% of respondents say that the ingredient list on the food label helps people make healthy choices, while only 38.7% say they don't use it at all. In addition, 57% of those polled, or 171 people, said that showing the serving size of a product is a bad idea for encouraging people to lead healthier lives. Last but not least, 290 (96.7%) of the respondents do not believe that the product's nutrition label can help people make healthy food choices, while 3.3% believe it can.

A total of 193 (64.3% of the respondents) believe that people who don't understand the ingredient list aren't making a mistake when they look at food labels. As a general rule, most people don't pay attention to nutrition and calories on food labels, and this is a common mistake. According to the survey results, 78.7% and 62% of those polled agreed with the statement above. In addition, 177(59%) and 292(97.3%) of respondents stated that they don't pay attention to food labels at all and choose the cheapest product over the most nutritious one.

The Table 2 below conclude about what are the important information you always read before buying the products. The total respondent of this survey is 300 in total. About 220 respondents which is 77.3% have mentioned that they do not choose to know the importance of total calories meanwhile 80 respondents which is about 26.7% choose to know the information. Next, 184 respondents (61.3%) choose to know the importance of nutrition table, but 116 respondents (38.7%) did not. Besides, 73% of respondents from 300 respondents do not choose serving size meanwhile 27% of respondents choose to know it. Furthermore, 147 of respondents which is 49% choose to know the importance of ingredients list but 51% of respondents do not choose too. Next, 235 of respondents (78.3%) do not

choose to know the important of net weight whereby 65 respondents (21.7%) choose to know it. Moreover, only 59 respondents which is 19.7% do not choose to know the important of natural or organic labels before buying the products and the rest 241 respondents (80.3%) wants to know. A total of 200 respondents (66.7%) would like to the importance of allergy alert before buying the products where 100 respondents (33.3%) did not choose to. Lastly, only 4 respondents (1.3%) choose 'doesn't read the food labels at all' meanwhile 296 respondents (98.7%) did not choose.

Table 2: Multiple answer question

SECTION C	YES	NO
1. How can food labels help guide people toward healthy choices?		
The present of net weight	69 (23%)	231 (77%)
The amounts of calories on the food label	244 (81.3%)	56 (18.7%)
The ingredient list in the food label	184 (61.3%)	116 (38.7%)
By showing the serving size for the product	129 (43%)	171 (57%)
The nutrition list for the product	10 (3.3%)	290 (96.7%)
2. What mistakes do people make when looking at food labels?		
Does not understand the ingredient list	107 (35.7%)	193 (64.3%)
Does not check the total calories	236 (78.7%)	64 (21.3%)
Does not check the amount of nutrition	186 (62%)	114 (38%)
Does not care about the food labels at all	123 (41%)	177 (59%)
Choose the cheaper product over the nutritious product	8 (2.7%)	292 (97.3%)
3. What is/are the important information you always read before buying the product?		
Total calories	80 (26.7%)	220 (73.3%)
Nutrition table	184 (61.3%)	116 (38.7%)
Serving size	81 (27%)	219 (73%)
Ingredient list	147 (49%)	153 (51%)
Net weight	65 (21.7%)	235 (78.3%)
Natural or organic labels	241 (80.3%)	59 (19.7%)
Allergy alert	200 (66.7%)	100 (33.3%)
Does not read the food labels at all	4 (1.3%)	296 (98.7%)

A review of 300 locally produced foodstuffs and their food labels is presented here. Table 3 provides the basis for the specifications of each product. To begin, each of the 300 products had its own unique name, giving us complete ownership of the entire pool. There were two requirements pertaining to the product's language. On 296 products, 98.7% of the labels were in Malay; on 294 products, 98.8% of the labels were in English; on 6 products, none of the labels were in English (1.3%). That's in addition to the fact that, in terms of weight, 274 products (91.3%), and 292 products (97.3%), made up 97.3% of the ingredients in the final product list. There were 59 products that stated that the food contained ingredients known to cause hypersensitivity, but 80.3% of the 300 products had no such declaration, and 258 (86%) showed that there was no mention of food additives in the food. More than 99% of all products meet or exceed the minimum net weight and volume requirements, while just three products do not meet or exceed these requirements. There were 89 (29.7%) products that did not have the name of the importer listed on them; this gives a total of 211 (70.3%) products that did not have the name of the importer listed. 100% of the products have the name of the country where they were made. Since the label must clearly and prominently display required information, 290 food products (96.7%) meet this requirement, while 10 products (0.1%) do not. 97.3% of the products have the required label in legible and durable form, while only 2.7% do not. Only one of the local food products does not require an expiration date, while the remaining 299 (99.7%) require an expiration date for any food in uppercase form. Of the food products studied, 96.7% contained the amount of energy (kcal or KJ) in a 100-gram (or 100-ml) portion of the package, while only 10 (3.3%) did not. As a final point, 285 (95%) of these products state that the amount of protein, carbohydrate and fat expressed in g per 100g or per 100 ml per package is stated, while only 15 (5%) don't.

Table 3: Requirement of 300 local food products

No.	List	Yes	No
1.	Name of product	300(100%)	0%
2.	Language (should be in Malay or English)		
i)	Malay	296(98.7%)	4(1.3%)
ii)	English	294(98%)	6(2%)
3.	Particulars in labeling		
i)	List of ingredients		
	a. In descending order of proportion by weight	274(91.3%)	26(8.7%)
	b. Using the common name of its principal ingredients	292(97.3%)	8(2.7%)
	c. Declaration if the food contains ingredients known to cause hypersensitivity	59(19.7%)	241(80.3%)
	d. A statement of the presence of food additive in that food if use it	42(14%)	258(86%)
ii)	Minimum net weight, volume of no. of the content of the package.	297(99%)	3(1%)
iii)	Name of the manufacturer	297(99%)	3(1%)
iv)	Address of the manufacturer	297(99%)	3(1%)
v)	Name of the importer	89(29.7%)	211(70.3%)
vi)	Address of the importer	86(28.7%)	214(71.3%)
vii)	Name of the origin country of the food	300(100%)	0%
4.	Form and manner of labelling		
i)	The particulars that are required appear conspicuously and prominently in the label	290(96.7%)	10(3.3%)
ii)	Every label required legibly and durably marked	292(97.3%)	8(2.7%)
5.	Date marking		
i)	Expiry date in respect of any food in uppercase form (DD/MM/YY)	299(99.7%)	1(0.3%)
6.	Nutrition labelling		
i)	The amount of energy expressed in kilocalorie (kcal) or kilojoule (KJ) per 100 g or 100 ml per package	290(96.7%)	10(3.3%)
ii)	The amount of protein, carbohydrate and fat expressed in g per 100g or per 100 ml per package	285(95%)	15(5%)

5.0 Discussion

In Sungai Petani, Kedah, there were numerous studies on nutrition. However, there had only been a small number of investigations into the accuracy of nutrition facts on food labels. The percentage of people who answered the survey's questions was determined by analysing the survey results. Using the Nutrition Facts label is a good way to learn about the nutritional content of many foods in your diet. Finding a correlation between the variables and the people who took the survey was a success. It was the primary goal of this study to examine the level of consumer knowledge and attitudes toward nutrition facts in food labels as well as their food choices. Sungai Petani, Kedah residents were pleased with the findings of this study, which helped them form an informed opinion.

Overall, the people of Sungai Petani, Kedah, showed that they have very good fundamental knowledge. Questions on general nutrition facts, existence of food labels, ingredients, and micronutrients and macronutrients were included in the questionnaire. The Nutrition Facts label must include the total fat, saturated fat, trans fat, cholesterol, sodium, total carbohydrate, dietary fibre, total sugars, added sugars, protein, vitamin D, calcium, iron, and potassium content of a food product. Studying Malaysian communities, 52.8% of respondents were found to have an adequate understanding of the topic (Ramdan et al., 2018).

More than half of the respondents stated that they had no idea how to figure out how much sugar is in a product by adding the total sugar and the added sugar on the label. Approximately 75.3% of those polled claimed to be ignorant of this approach. Only half of those polled said they could name every ingredient on a food label by memory. Insofar as it encourages customers to make better food choices, their view of the nutrition label is positive. Consequently, the consumer must first be educated about the concept and application of nutrition labels in order to encourage them to use them. Only then can the use of nutrition labels have a significant impact on healthy food choice, and thus help the consumer exercise their rights to be informed and access safe and quality food products. According to the findings, people are aware of the importance of reading food labels and the distinction between micronutrients and macronutrients. It's clear that people use nutrition labels on food products because they understand the information on the label. However, the