



# Nutrition students beliefs on the nutritional information and nutritional claims in the pre-packaged food products: an application of the Theory of Planned Behavior

## Crenças de estudantes de nutrição sobre informação e alegação nutricional em produtos alimentícios: uma aplicação da Teoria do Comportamento Planejado

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### ABSTRACT

This study identified the modal salient behavior, the normative and the control modal beliefs on the nutritional label use for the prepackaged food products among the college students. In November 2015, the exploratory qualitative research was conducted with 19 nutrition students, applying the concepts of Theory of Planned Behavior. Contents analysis of two organized focus groups and the statistical descriptive analysis of quantitative variables were performed. Both focus groups mentioned the advantages of the use of nutritional information, as the assistance for choosing the healthy food. A specific disadvantage associated with the mentioned nutritional claims was this influence on the purchase decisions (behavioral beliefs). The students mentioned their parents and siblings as the peoples who approve the use of this information, when they purchase a product (normative beliefs). Small lettering and difficulty to interpret the portions size indicated in the nutritional information on the labels were the factors, which could difficult their use. Making easy to read the nutritional claims tend to stimulate the purchasing decisions (control beliefs). Eleven salient modal beliefs were identified, which may explain participants' behavior when using information and nutrition claims.

**Keywords.** nutritional labeling, consumer behavior, student.

### RESUMO

O trabalho teve como objetivo identificar as crenças modais salientes comportamentais, normativas e de controle sobre o uso do rótulo nutricional de produtos alimentícios entre estudantes universitários. Em novembro de 2015, 19 estudantes de nutrição participaram de pesquisa qualitativa exploratória, que abordou conceitos da Teoria do Comportamento Planejado. Foram realizadas a análise de conteúdo de dois grupos focais e a análise estatística descritiva das variáveis quantitativas. Ambos os grupos focais mencionaram vantagens do uso de informações nutricionais, como auxílio na realização de escolhas de alimentos saudáveis. Uma desvantagem específica associada às alegações nutricionais mencionada, foi a influência desta na decisão de compra (crenças comportamentais). Os alunos mencionaram seus pais e irmãos como pessoas que aprovam o uso dessa informação, quando compram um produto (crenças normativas). Quanto às letras pequenas e à dificuldade de interpretar o tamanho das porções, na informação nutricional nos rótulos, foram fatores que poderiam dificultar o uso. Em relação às alegações nutricionais, por serem fáceis de ler, tenderam a estimular as decisões de compra (crenças de controle). Foram identificadas 11 crenças modais salientes, que podem explicar o comportamento dos participantes ao usar a informação e as alegações nutricionais.

**Palavras-chave.** rotulagem nutricional, comportamento do consumidor, estudantes.

## INTRODUCTION

Nutritional information presented on food product labels can influence the purchasing decisions of consumers<sup>1</sup>. Brief messages related to nutritional content printed on food product labels, known as nutritional claims are also influential<sup>2</sup>.

Since 1969, the *Codex Alimentarius* advocates that consumers have a right to clear and adequate food labels on prepackaged products. These labels must not present any misleading or false information that may create an incorrect impression about the product's characteristics that could induce consumers to poor choices<sup>3</sup>.

It is hoped that with the continuous improvement of laws and standards that involve food labeling, the population improve access and comprehension of food label and claims, thus contributing to their buying decisions. However, the way that this information is displayed on labels usually, confuses consumers and generates doubts. It can also lead to contradictions between nutritional claims and the nutritional data presented on packages<sup>2</sup>.

Beyond aspects related to legislation, consumers' beliefs about nutritional information and claims are also factors associated to their buying decisions<sup>4</sup>. Beliefs are created at different moments of an individual's life, and can be modified or forgotten over time. They indicate what people believe to be true about an object, person or behavior<sup>5</sup>.

The Theory of Planned Behavior (TPB), an extension of the Theory of Rational Action (TRA), has been used mainly to ascertain behaviors related to health, including those related to eating habits. It is based on the principle that all actions are planned before they are taken, while the cause of the behavior depends on the individual's intention to effectuate it<sup>6</sup>. Therefore, the TPB affirms that various aspects are necessary to understand the intention to realize a behavior, including personal attitudes (which are related to behavioral beliefs), subjective norm of social influence (related to normative beliefs) and events that may facilitate or impede the action of the behavior (related to control beliefs). According to the TPB, the combination of these three beliefs are fundamental to determining behavioral intentions that will concretize a certain behavior.

Thus, knowing and understanding beliefs related to nutritional information and claims on

prepackage food products that lead individuals to make purchasing decisions are an important factor in the construction of nutritional education strategies, at both the individual and collective levels. Therefore, the objective of this study is to evaluate consumers' beliefs about the nutrition label use among college students on prepackage food products.

## METHODS

Drawing on the TPB, the research used a qualitative, exploratory approach to determine consumers' beliefs about the use and importance of nutritional information and claims found on nutrition labelling when purchasing food products.

In this research were included nutrition students who are 18 or older that purchase at least one prepackage food product per month. Participants were invited personally in classrooms and by email. Two focus groups were constituted to identify consumers' salient beliefs (behavioral, normative and control beliefs). One with students who had already taken the course that addresses the theme "nutrition labeling", and another with those that hadn't.

A preliminary test was conducted at the same location where the focus groups would be held, to adjust the data collection instrument, equipment and environment. This preliminary focus group session lasted approximately forty minutes and was composed with six students, one moderator and one assistant to observe and take notes. Suggestions were made during pre-testing, resulting in alterations to the collection instrument, seeking better comprehension.

The focus groups were carried out in November 2015, in the laboratory of Nutrition Education located at the Department of Nutrition of the Federal University at Parana (UFPR). The first focus group was composed of thirteen female college students who had already studied the theme "nutrition labeling". The second focus group included six female college students who had not yet studied this theme. Both focus groups lasted about 40 minutes. The size of the groups and the time allowed the effective participation of the students and an adequate discussion<sup>7</sup>.

Prior to the realization of each focus group, participants were informed about how the session would be, clarifying all the questions that would be asked. They read and completed the Free and Informed

Consent Agreement and then completed a semi-structured questionnaire prepared specifically for the study about sociodemographic data (sex, age, marital status, monthly family income) and prepackage food product buying habits (frequency of supermarket shopping and reading habits of nutritional information and claims). The economic extract of participants was evaluated with the instrument of the Brazilian Association of Population Studies<sup>8</sup>.

The focus group began after the participants completed this semi-structured questionnaire. The focus groups were conducted by a moderator who was assisted by two observers. To identify salient beliefs, the participants were questioned about: advantages and disadvantages in using nutritional information and claims at the time of food purchases (behavioral beliefs); factors that could facilitate and impede using nutritional information and claims at the time of food purchasing (control beliefs); and about people who would like to participate use (or not) the nutritional information and claims when purchasing food (normative beliefs). Participants were instructed to first answer the questions about nutritional information and then about nutritional claims.

Before the questions were presented, the definitions of nutritional information and claims that should be considered during the discussion were clarified. "Nutritional information" was defined as the declaration of the caloric value and nutrient quantities from the standard list or statement of nutrient contents found on food packaging, with the sole function to provide an understanding of the quantity of nutrients in the product. Yet, "nutritional claims" were considered as any representation that affirms, suggests or implies that a food has certain nutritional proprieties, including, but not limited to, caloric value and amounts of proteins, fats and carbohydrates, as well as specific vitamin and mineral contents<sup>1</sup>. It was also explained that the term nutritional labeling comprises both nutritional information and claims, for it is defined as a description that informs consumers' about the nutritional proprieties of food, considering complementary nutritional proprieties, in addition to the declaration of caloric value and the quantities of nutrients<sup>1</sup>.

The discussions were recorded with two recorders and data transcription was then conducted to allow content analysis of the focus groups, according to recommendations from Gagné and Godin<sup>9</sup>.

Data analyses began with a "floating reading" of interviews faithfully transcribed, which allowed a first contact with the document and a systematization of ideas. The material was then explored to define categories according to similarities found in the transcribed verbatim analysis. Finally, the results were properly treated and interpreted for qualitative evaluation. To ensure the reliability of each category, two independent evaluators conducted data analyses. After this stage, evaluators reviewed and reached an agreement about the categories identified. This allowed identifying modal salient behavioral, normative and control beliefs.

To determine salient beliefs, the categories identified were placed in groups of behavioral, normative and control beliefs. Next, the frequency they were mentioned was verified for each category. Then, the final frequencies were calculated and the beliefs were ordered according to decreasing frequency. Modal salient beliefs were considered those mentioned most frequently, reaching, at least, 75% of the total number of citations<sup>9</sup>.

The research was approved by the Committee of Research Ethics, of the Federal University of Paraná (Number: 1.294.619).

## RESULTS

### Characteristics of the participants

All participants were single and female with an average age of  $20.2 \pm 1.2$  years. Participants belonged to economic classes A, B1 and B2 and their average family income was of  $4.42 \pm 0.96$  minimum salaries (1 minimum salary = \$ 205.03 dollars). Most participants (84%) made 1 to 6 food purchases per week, 11% made 2 to 3 purchases per month and 5% made daily purchases.

All nutrition students had the habit of reading the nutritional information at the time of purchasing. In relation to reading nutritional claims, only 1 student mentioned she did not read them when making a purchase.

### Modal salient beliefs

The modal salient beliefs about nutritional information and claims that emerged in the focus groups are presented in [Tables 1](#) and [2](#), respectively.

**Table 1.** Modal salient beliefs about nutritional information according of the focus groups. Curitiba, Brazil, 2015

Categories	Focal Group 1 (N=13)*		Focal Group 2 (N=6)†	
	Nº	Speeches	Nº*	Speeches
<b>Behavioral Beliefs</b>				
<i>Make contradictions explicit (advantage)</i>	5	“[...] I have nutritional information to base myself on, so I can say that this is not as magical and healthy as they say in advertisements, that’s why it is an advantage.”	-	-
<i>Know about a products’ composition (advantage)</i>	4	“[...] if you want a product with more or less fat, you can go by that information.”	6	“[...] you look at the nutritional information and no longer buy it, just because you know what that product contains.”
<i>Make healthy choices (advantage)</i>	-	-	5	“[...] when you have the habit of looking, you begin to consume things that are probably healthier[...].”
<b>Control Beliefs</b>				
<i>Being nutrition academic (facility)</i>	3	“[...] for those of us who took the course in nutrition, most would facilitate purchases [...]”	-	-
<i>Daily reference value (%VD) (difficulty)</i>	1	“[...] this part, mainly the % of daily needs, is very vague, because there the daily reference is a 2,000 kilocalorie diet‡ and very few people eat exactly 2,000 kilocalories [...]”	-	-
<i>Difficulty in interpreting portion size (difficulty)</i>	1	“[...] creates confusion [...] I still don’t notice that it is the same portion stated there, I eat it all and regret it later.”	4	“[...] because it is there in grams and you have to divide the thing to know the quantity [...]”
<i>Small letter and table (difficulty)</i>	-	-	3	“[...] the letters are too small, so any blur is sufficient to make it hard to see[...]”/“[...] and the nutritional table is that tiny little table behind like this [...]”
<b>Normative Beliefs</b>				
<i>Father and Mother (like and dislike)</i>	5	“My mother [...] doesn’t like it because I spend hours at the supermarket[...] but she also likes it because it is a way for her to learn and eat better, right?![...]”/ “[...] there, the better products are generally more expensive, and my father takes them out of the grocery cart, and I put them back [...]”	2	“[...] My mother and father get really happy when I give tips, so back home they like it when I read the information.”
<i>Sister/Brother (like)</i>	4	“[One] of the people who like me to look, is my sister, she always asks me everything, she likes that I know.”	-	-
<i>Health professionals (like)</i>	-	-	5	“I think that in the case of information, it is interesting [...] to doctors and nutritionists [...]”
<i>Family§ (like)</i>	-	-	4	“I think that in the case of nutritional information, it is interest [...] to our families [...]”

Subtitle: Nº = number of citations; \*Focus Group 1 = had already taken the theme “Nutritional labeling” in college; †Focus Group 2 = had not taken the theme “Nutritional labeling” in college; ‡In Brazilian legislation, daily values (%) are based on a 2,000 kilocalorie diet; §Excluding parents and siblings

**Table 2.** . Modal salient beliefs about nutritional claims according of the focus groups. Curitiba, Brazil, 2015

Categories	Focal Group 1 (N=13)*		Focal Group 2 (N=6)†	
	Nº	Speeches	Nº*	Speeches
<b>Behavioral Beliefs</b>				
<i>Product more expensive (disadvantage)</i>	6	“[...] light food that has less fat or sugar, it’s written on the package you know this, but this product is more expensive just due to this change.”	4	“[...] people will want to buy that gojiberry more because it’s written that it has antioxidants [...]”
<i>Not specific about content (disadvantage)</i>	6	“[...] so it doesn’t have trans-fat, but go there and see if there isn’t hydrogenated fat. It’s something that makes it difficult, isn’t it?! So for having traces, I think it should be specified that it has.”	-	-
<i>Encourages purchase (disadvantage)</i>	-	-	5	“[...] the guy puts that information to grab the consumer’s attention and buy it [...]”
<b>Control Beliefs</b>				
<i>Do not feel it is easy or difficult</i>	6	“[...] if it is written there it doesn’t make any difference to me, because I will see the label anyway [...]”	-	-
<i>Distrust nutritional claims (difficulty)</i>	1	“[...] it says it’s rich, fortified and such, but I’m not sure when reading the label, I don’t know if that quantity is right [...] or if it is just for saying it has a quantity i to sell.”	-	-
<i>Facility in accessing the claim (facility)</i>	1	“[...] it needs to be, I don’t know, without lactose, just by seeing the claim, she goes right to it, so it is a facility [...]”	-	-
<i>More visible/larger letters (facility)</i>	-	-	3	“For claims to be more visible on the package [...] It’s already there on front [...]”
<i>Not specific about the content (difficulty)</i>	-	-	4	“I sometimes get curious, it says there it is rich in amino acids or essential fatty acids. Ah, but which one? [...]”
<b>Normative Beliefs</b>				
<i>Food product producers (like)</i>	7	“[...] I think that people who would most like me to be taken by nutritional claims are those who make those products, because they print that precisely for you to just look and buy.”	4	“[...] but in the case of claims it is the company itself, because this shows what it wants you to see, what’s she wants to call your attention.”

Subtitle: Nº = number of citations; \*Focus Group 1 = had already studied the theme “Nutritional labeling” in college; †Focus Group 2 = had still not studied the theme “Nutritional labeling” in college

## **Nutritional information**

### **Behavioral beliefs**

Two modal salient behavioral beliefs were identified in each focus group, one of which was common to the groups: “know the product’s composition”. The groups did not identify any disadvantages of using nutritional information about food.

### **Control beliefs**

In relation to control beliefs, participants’ in both focus groups reported encountering various difficulties when analyzing nutritional information when purchasing prepackage food products. In total, three modal salient control beliefs were identified in the first group and two in the second.

### **Normative beliefs**

Modal salient normative beliefs were identified in both groups. However, three beliefs were identified in group 2 and two in group 1.

Participants in both groups mentioned that their parents would like them to use nutritional information when buying a product. People in group 2 also mentioned that health professionals would most approve the use of this information.

## **Nutritional claims**

### **Behavioral beliefs**

Two modal salient behavioral beliefs were identified in each group, and one was common to both groups: “product more expensive”. Both focus groups reported that nutritional claims made prepackage food products more expensive, which was considered a disadvantage.

### **Control beliefs**

In relation to nutritional claims, many participants of the first focus group did not mention factors that facilitate or impede them at the purchasing moment. Participants from the second focus group evidenced as factor to facilitate the larger and more visible letters used in nutritional claims, which are different from the lettering used in nutritional information, that they judged to be too small.

### **Normative beliefs**

Only one modal salient normative belief was identified: “food product producers”. Prepackage food

product producers were mentioned in both groups as people who would approve of the use of nutritional claims on packaging.

## **DISCUSSION**

Reading of nutritional information and claims at the time of purchasing is a habit reported by all the students, with the exception of one who did not read nutritional claims. Considering that in this study the participants in the focus groups were students of nutrition, it was expected that they would read nutritional information and claims, since this course addresses, among other subjects, the importance of healthy eating and reading food labels. This behavior also seems to occur among other populations. Turkish consumers showed interest and considered reading of nutritional information to be important<sup>10</sup>.

In relation to behavioral beliefs, participants from both groups reported as an advantage the use of nutritional information, the possibility to know more about a food’s composition, since it allows them to choose a product that has nutrients that best provide what they want. It should be emphasized that nutritional information has been considered a valuable tool in the nutritional education of consumers, since they recognize it is important and necessary to have these statements on food labels.

Nutritional information makes a product’s contents explicit and allows comparison with the nutritional claims. This allows consumers to assume that a product may not be as appropriate as advertising claims, revealing possible contradictions between nutritional claims and information. This was an advantage indicated by group 1. Another advantage presented by the majority of the second focus group was the possibility that nutritional information would lead to the selection of healthier foods. Other studies also found that nutritional information led to this<sup>11</sup>.

One disadvantage of nutritional claims raised by both focus groups is that prepackage food products that have them are normally more expensive. Participants believed that these claims are a tool that companies use to attract consumers and present their product as better because it has a particular property, for which reason the price is higher. Another study among 25 UK-based female nutrition information users aged 23-35 years found

that nutritional claims were considered to be marketing strategies<sup>12</sup>.

When asked about control beliefs, the interpretation of portion sizes was mentioned as a difficulty by both groups. In focus group 1, this difficulty was determined by the inability to perceive that the portion sizes presented in the tables on food packaging are relative to a specific quantity, and not to the whole package. Yet, members of group 2 considered it difficult to use the tables to calculate the quantity they wanted to consume. Miller and Cassady<sup>13</sup>, recognizing the difficulty in interpreting these portions, discussed and identified opportunities to improve this aspect of nutritional information on food labels. Among these improvements would be markings on the package indicating portion size and how much that would represent in comparison to the whole package, thereby how many portions there are in the package.

Other aspect emerged from the second focus group related to the printing of nutritional information, because they found the tables and letters to be too small and, sometimes, even blurred, making reading difficult. This shows the need to change the presentation of nutritional information on food labels, requiring bigger tables and letters with less complex data.

Among the participants from group 1 who mentioned having a facility in using health claims, fast access to information was cited. This was classified as important, because this facilitates purchasing decisions. Focus group 2 identified the use of larger and more visible letters to present health claims as facilitating a decision. It was suggested that any structured and legible presentation of key nutrient and energy information on the front-of-pack label is sufficient to enable consumers to detect a healthier alternative within a food category when provided with foods<sup>14</sup>.

In relation to normative beliefs, parents were mentioned as people who would like participants to use nutritional information at the time of purchase. However, the first group mentioned this is not always positive, because some parents considered that this makes shopping more time consuming and normally leads to choosing more expensive products. The groups also mentioned that siblings would also approve using the information, because they see the participants as reference in the family because they are nutrition students, so they can thus teach the family members

some nutrition concepts. All these aspects were also observed by Lim et al<sup>15</sup> that studied the mainly beliefs explaining nutrition label use of 275 female college students from a university in Seoul, Korea. This shows that people who have closer ties and who have lived together with participants can have a greater influence on the use of nutritional information and claims.

Other family members, beyond parents and siblings, also approved that participants from the second focus group paid attention to nutritional information when buying food. Moreover, in this group health professionals were mentioned as those who would most approve of the use of this information, since they help to choose foods more appropriate for consumers' health.

Both focus groups in this study identified prepackage food product manufactures as those who would certainly approve of the use of health claims on packages, since they may influence consumers to buy their products. This aspect was also revealed in the study of Wahlich et al<sup>12</sup>, since the participants of the focus group believed that food producers used nutritional claims as a strategy to disclose particular information that they believed important when influencing consumers to acquire their product.

Based on these findings, some limitations were observed in this study, and are related to that only two focus groups were conducted with college students studying nutrition. Therefore, the results may not reflect modal salient beliefs of other students or consumers. Thus, generalizations must be made cautiously. Nevertheless, considering that beliefs change over time, future focus groups and monitoring could be done with participants from focus group 2 to identify possible changes in modal salient beliefs after they attend the course that involves "food labeling".

## CONCLUSION

Modal salient behavioral, normative and control beliefs in this study are related to participants' behavior in relation to the use of nutritional information and claims at the time of purchase. Eleven modal salient beliefs were identified that relate to the use of nutritional information when buying prepackage food products and nine modal salient beliefs related to health claims. When considering the two focus groups, some differences and similarities

were observed between the beliefs identified, mainly between behavioral and control beliefs, demonstrating the importance of considering different consumer groups to better understand this subject.

Results from this study can contribute to a reflection by responsible authorities, and professionals in the field and by the food industry about how nutritional information and nutritional claims are presented to consumers. It is believed that the use of these elements can be improved by standardizing formats and greater coherence of labels contents. Furthermore, better legibility of nutritional information is essential at the time of purchase.

Based on this knowledge of consumer beliefs, it is possible to develop actions and measures aimed at health education, to increase consumer knowledge and so that nutritional information and claims are more realistic. Considering the results of this study, a point to be highlighted could be the interpretation of information present on food labels and how to use them to choose healthier or more appropriate products, according to the state of health of each individual.

Future studies with consumers with other profiles could be made, to increase understanding of beliefs about nutritional information and claims. However, the modal salient beliefs identified in this study can already be used as research tools to better understand consumer behavior about the use of nutritional information and claims when buying prepackage food products. Future studies with this focus could be conducted with consumers, to identify psychosocial predictors of the realization of this behavior.

## REFERENCES

1. World Health Organization - WHO. Food and Agriculture Organization of the United Nations - FAO. Food labelling. 5.ed, Rome: WHO/FAO; 2007. Available in: <http://www.fao.org/docrep/010/a1390e/a1390e00.htm>
2. Temple NJ, Fraser J. Food labels: a critical assessment. *Nutrition*. 2014, 30(3):257-60. <https://doi.org/10.1016/j.nut.2013.06.012>
3. Hawkes C. Nutrition labels and health claims: the global regulatory environment. Geneva: World Health Organization; 2004. Available in: <http://apps.who.int/iris/bitstream/10665/42964/1/9241591714.pdf>
4. Christoph MJ, An R, Ellison B. Correlates of nutrition label use among college students and young adults: a review. *Public Health Nutr*. 2016;19(12):2135-48. <https://doi.org/10.1017/S1368980015003183>
5. Fishbein M, Ajzen I. Predicting and changing behavior: the reasoned action approach. 1.ed New York: Psychology Press. Taylor & Francis group; 2010. <https://doi.org/10.4324/9780203838020>
6. Conner M, Sparks P. Theory of Planned Behaviour and Health Behaviour. In: Conner M, Norman P, editors. Predicting Health Behaviour. 2.ed. New York: Open University Press; 2005. p. 170-222. Available in: [https://soh.iuums.ac.ir/uploads/32\\_282\\_44\\_13.pdf](https://soh.iuums.ac.ir/uploads/32_282_44_13.pdf)
7. Kitzinger J. Focus groups with users and providers of health care. In: Pope C, Mays N, editors. Qualitative Research in Health Care. 2.ed. London: BMJ Books; 2000. p. 20-29.
8. Brazilian Market Research Association. Brazilian Economic Classification Criteria. 2015 and social class distribution update for 2016. Available in: [www.abep.org/Servicos/Download.aspx?id=13](http://www.abep.org/Servicos/Download.aspx?id=13)
9. Gagné C, Godin G. Les théories sociales cognitives: guide pour la mesure des variables et le développement de questionnaire. Québec: Bibliothèque Nationale. 1999. Available in: <https://pdfs.semanticscholar.org/0e2b/2f92f199f9f6939fb7b0bde04c80856ca90e.pdf>
10. Besler HT, Buyuktuncer Z, Uyar MF. Consumer understanding and use of food and nutrition labeling in Turkey. *J Nutr Educ Behav*. 2012;44(6):584-91. <https://doi.org/10.1016/j.jneb.2012.01.005>



11. Cooke R, Papadaki A. Nutrition label use mediates the positive relationship between nutrition knowledge and attitudes towards healthy eating with dietary quality among university students in the UK. *Appetite*. 2014;83:297-303. <https://doi.org/10.1016/j.appet.2014.08.039>
12. Wahlich C, Gardner B, McGowan L. How, when and why do young women use nutrition information on food labels? A qualitative analysis. *Psychol Health*. 2013;28(2):202-216. <https://doi.org/10.1080/08870446.2012.716439>
13. Miller LM, Cassady DL. The effects of nutrition knowledge on food label use. A review of the literature. *Appetite*. 2015;92:207-16. <https://doi.org/10.1016/j.appet.2015.05.029>
14. Hodgkins CE, Raats MM, Fife-Schaw C, Peacock M, Gröppel-Klein A, Koenigstorfer J et al. Guiding healthier food choice: systematic comparison of four front-of-pack labelling systems and their effect on judgements of product healthiness. *Br J Nutr*. 2015;113(10):1652-63. <https://doi.org/10.1017/S0007114515000264>
15. Lim HJ, Kim MJ, Kim KW. Factors associated with nutrition label use among female college students applying the theory of planned behavior. *Nutr Res Pract*. 2015;9(1):63-70. <https://doi.org/10.4162/nrp.2015.9.1.63>