

# Challenging Titans

*proposing the triangle as a front of packaging warning nutrition labeling for Brazil<sup>1</sup>*

*Carla Galvão Spinillo*

## INTRODUCTION

I would like to begin this chapter with a provocation: to compare medicines and industrialized food/beverage products. Medicines and industrialized food/beverage products seem to share the goal of promoting the health and well-being of the population. They are both presented in packages that comply with regulations and provide information on their composition (medicine information leaflets/list of ingredients and nutritional facts). The pharmaceutical and the food/beverage industries heavily invest in marketing and advertising their products (e.g., television ads, sales/free samples) which are sold through points of sale (e.g., pharmacies / supermarkets) and virtual/online shops. And finally, in Brazil the pharmaceutical and the food/beverage industries are regulated by the same agency of the Ministry of Health: the Anvisa (National Agency of Sanitary Surveillance).

From the point of view of information design, medicines and industrialized food/beverage products also ‘share’ problems in communicating information to their users/consumers. Poor legibility and readability of informative texts, the use of technical jargons and small typographic font size are problems common to medicines inserts, nutrition facts and lists of ingredients of food/beverage products.

Thus, information design solutions are needed to overcome the deficiencies in the representation of information about medicines and food/beverage products addressed to their users/consumers. The solutions should be part of the legislations for medicines and food/beverage products to ensure the quality of information for the population. True and useful information empowers users/consumers

---

<sup>1</sup> This chapter is a transcription of my keynote speech at the 2017 Information Design International Conference in Natal, Brazil. Thus, the content presented herein reflects my personal view on the subject.

to make conscious decisions about the consumption of medicines and industrialized food/beverage products.

Despite the similarities abovementioned, in Brazil the legislation for medicine information differs from those for industrialized food/beverage products. The regulation for medicine information obliges the pharmaceutical industry to inform users/patients about the undesirable effects of medications, warning on the possible risks to their health such as over dosage, adverse reactions and side effects. Also, the Brazilian legislation determines that medicine leaflets should differentiate the content for health professionals (technical content) and for patients, acknowledging their distinct information needs (RDC No 47, of 08/09/2009). Unlike medicine information regulation, the legislation in Brazil obliges the food and beverage industries to provide information to consumers through the ingredient list and nutritional facts table only (RDC 259/03 and 360/03). In case of products with ingredients that produce allergic reactions (e.g., gluten, nuts), producers should warn consumers on the product packaging. Nevertheless, the Brazilian legislation is silent about reporting nutrients in excess in food/beverage products that are harmful to people's health. Regular consumption of products that have nutrients in excess, such as sugar and sodium, can contribute to the development of diseases such as diabetes and hypertension.

In face of the need to review the Brazilian legislation on nutrition labeling for food and beverage products, I present in this chapter the proposal of a front of packaging (FOP) warning label aimed at alerting Brazilian consumers about unhealthy products. The proposal was developed by LabDSI-Laboratory of Design of Information Systems at the UFPR-Federal University of Paraná and IDEC (Brazilian Institute for Consumer's Defense). To set the ground, I initially put forward arguments for improving the actual Brazilian nutrition labeling, and then, I present the theoretical foundations of the proposed FOP warning label.

## **NUTRITION LABELING: INFORMATION IS A CONSUMER RIGHT**

The concern about the population health and their eating habits are part of the agenda of governments and civil society worldwide. In Brazil, the overweight of the population has produced alarming data. Only in 2016, more than half of the Brazilian adult population (N=54%) were overweight, being 19% of them obese (Ministério da Saúde/Vigitel Brasil, 2016). As a possible result, from 2006 to 2016 there was an increase of 14% of cases of hypertension and 62% of cases of diabetes in Brazil. The increase of 18% in regular consumption of sweets by Brazilians in this period may be one of the factors associated with this national picture (Ministério da Saúde/Vigitel Brasil, 2016).

Despite this, the actual Brazilian legislation (RDC 259/03 and 360/03) restricts the aims of nutrition labeling to merely inform consumers about the nutritional properties of food/beverage products through list of ingredients and nutrition facts. On the other hand, the Pan American Health Organization (PAHO-WHO) advocates that adequate food labeling may lead to a decrease in the consumption of unhealthy foods, leading to improve eating habits, thus preventing diseases. In line with this, the Brazilian Consumer's Defense Code claims that people have the basic right to "adequate and clear information about different products and services, with a correct specification of quantity, characteristics, composition, quality and price, as well as the risks they may pose to consumers (Article 6 - III Código de Defesa do Consumidor). In this sense, we can assume that the information on the package of industrialized food/beverage products in Brazil does not support consumers' decision making for purchasing healthy products.

The current nutritional labeling in Brazil have deficiencies in typography and in graphic presentation of information. In a survey conducted by IDEC with 2,651 Internet users (IDEC, 2016), 40% considered the nutrition facts' table difficult to understand. Participants highlighted problems such as reduced font size (61% of responses), use of technical terms and numbers (51% of responses) and visual pollution (46.4% of responses). Another factor mentioned was that consumers have to perform calculations (e.g., percentage of nutrients in the portion) out of the nutrition facts' table to make sense of the data provided in the packages (41.6% of responses). The survey also pointed out that the majority of participants (93%) felt that front of packaging labeling would help understanding nutritional information and making healthier choices of consumption.

It is important to highlight that the mere inclusion of front of packaging nutrition labeling does not guarantee adequate information about the nutrients of processed food and beverage products. The front of packaging labels adopted in the USA (GDA: Guide Daily Amount system) and UK (Traffic Light system) are example of this. Both labels present nutrients (fat, saturate fat, sugar and salt) and calories (energy) displayed in numbers (e.g., Energy 1601 kJ, 383 kcal; Fat 22g, 31%). The Traffic Light system allude to traffic signs by employing the colors red, yellow and green to the nutrient information. They indicate the nutrient in excess (red), 'almost' in excess (yellow), and not in excess (green), in relation to a person's reference intake. Figure 1 shows examples of the GDA and Traffic Light systems.

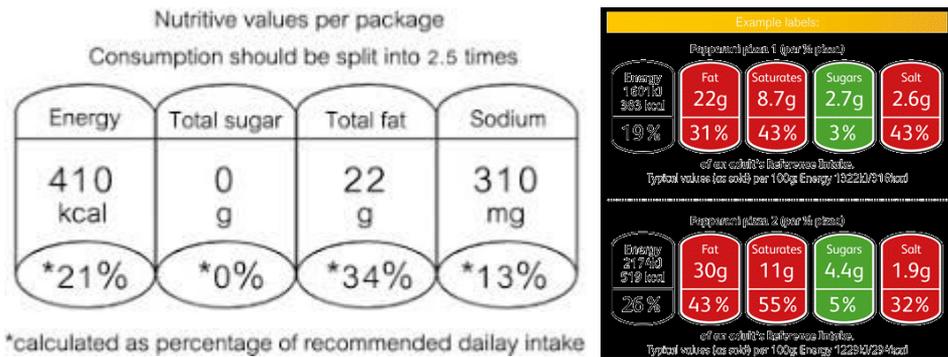


Figure 1: Examples of the GDA and Traffic Light systems of front of packaging nutrition labels.

The Traffic Light System seems to be a simple, informative and easy to understand system. However, it leads to doubts and confusion in the choice of healthy food/beverage products. For example, what would be the healthiest choice between products of the same category (e.g., bread, tomato sauce): the product with two ‘greens’ and two ‘yellows’, or the product with three ‘greens’ and one ‘red’?

Thus, to be helpful, front of packaging labels should objectively alert consumers about nutrients present in excess that can harm their health. To this end, the Pan American Health Organization (PAHO/WHO) recommends the inclusion of warnings as front of packaging labels of food and beverage industrialized products.

### FRONT OF PACKAGING NUTRITION WARNING LABELS

The use of warnings aims to effectively communicate information about potential risks and to reduce/avoid behaviors that compromise the safety of individuals (Wogalter, 1999, 2006). In the context of health and food safety, warnings are employed to alert consumers to the presence of high content of critical nutrients that may negatively affect their health.

In order to reduce the amount and extent of the risks to which the individual or population is exposed, warning messages concerning food/beverage products should therefore: attract the person’s attention; be visible at a glance; and provide understandable and useful nutritional information about the product to be purchased. In addition to providing an awareness of the risks of excess critical nutrients at the time of purchase of the food/beverage product, the use of warning on the packaging also serves to enhance memory. It reminds the individual of

these risks at the time of use/consumption of the product. This may lead to a shift from a risk-eating behavior to a healthy-eating behavior in the future purchase of food products (INTA, 2012).

Alerting consumers about the excess of critical nutrients may lead them to prefer healthier or less harmful products to their health. Thus, the consumption of unhealthy products is discouraged. Considering that individuals are more motivated to avoid losses than to achieve gains (Levin et al, 1998), the warning approach to nutrition labeling becomes more convincing than a purely informative approach. Evidence shows that warnings with simple messages and symbols complement the nutritional information in packages and are observed more promptly. Also, when located on the front of packaging the warnings influence, and even change, the intent to purchase (Visschers, 2010; Chen et al, 2012).

### Communicative function of warnings

For a warning to fulfill its communicative function, it is necessary to employ graphic resources to promote attention and facilitate the understanding of the message (Wogalter, 1999, 2006; Lesch, 2003). Contrast between figure-ground of the warning elements, use of white space surrounding the warning to isolate it from the visual environment, emphasis in scale, and color are graphic resources widely employed in warning messages. Some of them follow conventions for their use in warnings, such as color and shape (e.g., ISO 3864-2: 2016, ANSI/NEMA Z535.1 Safety Colors).

Color are used to inform the degree of danger and of expected obedience to comply with the warning (Wogalter, 1999, 2006), as for example, black and red colors. Black color is used in warnings to inform about high risk to which individuals or population are exposed, and whose obedience to the warning should be observed. In Brazil, the Ministry of Health/Anvisa determines the use of black color in the packaging labels of controlled medicines, which retention of their prescriptions by pharmacies is compulsory (RDC No. 333-2003). On the other hand, the red color informs about severe risks, but without need of obedience to the warning. It is worth mentioning that, in the context of food packaging, vibrant and warm colors, such as red, are widely used for being considered to stimulate appetite (Guimarães, 2001; Pedrosa, 2003). Thus, the red color in warning labels would not stand out from food packaging, therefore, not fulfilling the attention function.

Another convention for warnings regards the use of particular shapes. The most widespread conventional shape of warning is the triangle. It is found in warnings of product and service manuals, signs of built environments, computer systems, medicine information leaflets, among others. It is worth noting that in

the context of food safety in Brazil, the triangle with the letter “T” inside was used as a front of packaging warning label to alert consumers about transgenic food products. Therefore, the triangle is a familiar warning shape in food packaging to the Brazilian population, being part of their visual repertoire.

By considering the relevance of warning approach to front of packaging labeling to promote healthy eating behavior, our proposal employed the conventions of color and shape which are known to Brazilians and are aligned to international standards for warnings.

### **THE BLACK TRIANGLE PROPOSAL FOR THE FOP (FRONT OF PACKAGING) WARNING LABEL TO BRAZIL<sup>2</sup>**

The proposal for the FOP (front of packaging) nutrition label to Brazil was developed based upon the literature on information design (Schriver, 1997; Lupton et al, 2008; Pettersson, 2010; Bringhurst, 2013), visual perception (Gordon, 2004; Kofka, 2013; Brown, 2017) and warning design (Lesch, 2003; Wogalter, 2006).

For the written information of the proposed nutrition label, we took into account aspects of legibility, readability and textual articulation (Schriver, 1997; Bringhurst, 2013), following typographic values of clarity, text-background contrast and emphasis.

As for the graphic representation of the warning symbol, the proposed label was grounded on the following principles of the Gestalt Theory of visual perception (Kofka, 2013; Gordon, 2004; Brown, 2017): the principle of contiguity (tendency to perceive elements encircled as forming a unity); the principle of continuity (tendency to perceive aligned elements as being grouped); and the principle of simplicity (facility in perceiving simple shapes than complex shapes). Moreover, the nutrition label for Brazil complied with the warning requirements of attention, visibility and indication of danger, together with the graphic requisites of:

1. Having a simple graphic shape
2. Using legible typographic font for the textual message
3. Presenting nutritional information clearly and comprehensible to the public
4. Being noticeable, standing out from the packaging visual environment
5. Belonging to the consumers’ visual repertoire.

---

<sup>2</sup> This proposal was co-designed with the information designer MA. Carlos U. Rojas.

Accordingly, we designed the warning symbol for the FOP nutrition labeling to Brazil as: a black triangle to indicate a mandatory/governmental warning, displayed within a white box to isolate the symbol from the elements of the food/beverage packages. Each warning text is presented in a single triangle to signal the nutrients in excess (sodium, sugar, total fats and saturated fats) and/or those that may harm the population health (trans fat and sweeteners). Thus, a food/beverage package may display up to six FOP warning triangles.

Regarding the warning messages, the term “HIGH IN” (ALTO EM in Portuguese language) is used to indicate the nutrients in excess on the food/beverage packages. In addition, whether there is sweeteners and/or trans-fats in a product, the triangle warning symbol presents the claim: ‘CONTAINS SWEETENERS’ (CONTÉM ADOÇANTE in Portuguese language) and/or ‘CONTAINS TRANS-FAT’ (CONTÉM GORDURAS TRANS in Portuguese language). The warning messages are set in sanserif typeface, upper case and centered alignment. The abbreviation of the Ministry of Health: ‘MIN. HEALTH’ (MIN. SAÚDE in Portuguese language) is displayed at the bottom of the triangle to indicate the governmental source of the nutrition warning. This is intended to increase the credibility of the warning message, and therefore, its acceptance by consumers, as evidenced in studies on similar initiatives (MINSAL, 2009). Figure 2 shows the triangle warnings for the FOP labeling designed to Brazil, and Figure 3 shows examples of the triangle warnings on fake food packages.

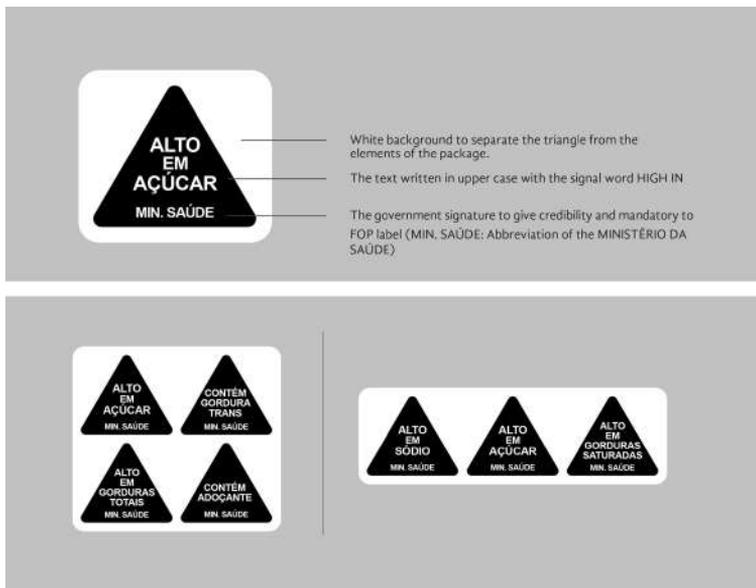


Figure 2. The triangle warnings for the FOP labeling designed to Brazil.



Figure 3: Examples of the triangle warnings on fake food packages.

### EVALUATION OF THE PROPOSED WARNING LABEL: THE TRIANGLE IN CHECK<sup>3</sup>

Proposals for FOP labeling should be based on scientific evidence of their communication value. Therefore, qualitative and quantitative studies were conducted to evaluate the communication efficacy of the proposed FOP triangle warning label to Brazil. An interdisciplinary team of researchers (nutritionists and information designers) developed the studies' material/protocols. In the scope of nutritional information, among other aspects, the studies considered the comprehension of the nutrition warning messages and their effect on consumers' purchase intention of food/beverage products. Visibility, attention grasp, legibility and perception of risk conveyed by the warning symbol (black triangle) were the aspects verified in the scope of information design. For the purpose of this chapter, I briefly present here the overall method and results regarding the information design aspects of the qualitative and quantitative studies.

An integrated research approach integrating qualitative and quantitative studies was adopted to the evaluation of the warning triangle proposal for the Brazilian FOP labeling. The qualitative study was conducted through focus groups, followed by an expert panel. Next, the quantitative study was conducted through randomized controlled trials (Khandpur et al, 2018). Figure 4 shows a summary diagram of the integrated approach.

<sup>3</sup> The qualitative and quantitative studies to evaluate the FOPL proposed were designed by the researchers of the IDEC, NUPENS and LabDSI/UFPR (Brazil) and funded by the Bloomberg Institute (USA)



Figure 4: Summary diagram of the integrated approach adopted in the evaluation of the proposal

In the qualitative study, 13 focus groups were conducted with a total of 101 participants varying in socio-economic status (ABCD classes) divided across the groups. The focus groups' sessions were carried out in the Brazilian regions: Southeast (São Paulo), Midwest (Goiania), South (Porto Alegre) and Northeast (Recife). The sessions were recorded in video and examined through content analysis technique. The results showed that the triangle FOP warning label performed satisfactorily in both nutritional and information design aspects. Participants of all focus groups were very receptive to the triangle as a symbol to alert them of the nutrients in excess in the food/beverage products. Following the focus groups, the expert panel was carried out with 10 professionals in the fields of psychology, pharmacology, medicine, nutrition, communication, education, law and information design. They discussed the results of the 13 focus groups and, then, determined adjustments in the proposed FOP labeling.

The adjusted version of the triangle FOP label was assessed in the quantitative study through two consecutive online surveys (randomized controlled trials) conducted with a total of 3,422 respondents. They also varied in socio-economic profiles (ABCD classes) and were residents in different regions of Brazil. The results ratified the outputs of the qualitative study, showing that the proposed triangle FOP label performed satisfactorily, receiving positive responses from the participants.

The results of the qualitative and quantitative studies provide evidence to support the proposal of the black triangle for the warning FOP label to Brazil.

The triangle FOP label has proved to effectively inform on nutrients in excess in food/beverage products, alerting Brazilians about the consumption of these products. These findings ratify the communicative efficacy of warning FOP nutrition labeling and are in alignment with PAHO/WHO recommendations on food safety.

## FINAL THOUGHTS: CHALLENGING TITANS

In Brazil - like in any country - submitting proposals to regulate industrialized products (whether food/beverage or pharmaceutical products) is to face the Titans of the industry and of the government. With the triangle FOP warning labeling proposal was no different. The food and beverage industries have strongly reacted against the adoption of FOP warning nutrition labeling in Brazil, using their political influence in the various sectors of the society and government, as well as in the mass media and social media.

However, improving the quality of information on food and beverage products in Brazil is a longing for society. Hence, the Brazilian society organized through community leaders and non-governmental organizations has stood in opposition to the food and beverage industries, supporting the front of packaging nutrition warning labels. In this sense, IDEC led a national campaign (e.g., television shows/news, newspapers, social media, billboards) to support the triangle warning proposal for FOP labeling to Brazil. As part of the campaign, a petition was launched, receiving more than 50,000 signatures in favor of the triangle FOP warning label (Figure 5).



Figure 5: IDEC webpage announcing the signatures of the national petition to support the Triangle FOP warning label (<https://idec.org.br/rotulagem>)

Finally, I would like to conclude this chapter highlighting that the development of the proposal of a FOP warning label to Brazil was an enriching experience. Working in a multidisciplinary team, I had clearly seen the relevance of evidence-based information design and of information design for advocacy.

Information design plays a key-role in nutrition, bringing theoretical frameworks new to this field, thus, contributing to effective health communication.

## ACKNOWLEDGEMENT

I thank the following colleagues for the opportunity to work together in the elaboration and evaluation of the FOP warning label proposed to Brazil: Ana Paula Bortoletto Martins, Laís Amaral Mais, Mariana Tarricone Garcia of IDEC; Neha Khandpur, Priscila de Moraes Sato, and Patrícia Constante Jaime of the Center for Epidemiological Studies in Health and Nutrition (NUPENS)/Faculty of Public Health, University of São Paulo (USP). Special thanks are due to MA. Carlos U. Rojas for co-designing the FOP warning label.

## REFERENCES

- ANSI Z535.1-2017. American National Standard for Safety Colors. American National Standards Institute, Inc. [https://www.nema.org/Standards/ Complimentary Documents/ANSI%20Z535\\_12017%20CONTENTS%20AND%20SCOPE.pdf](https://www.nema.org/Standards/ComplimentaryDocuments/ANSI%20Z535_12017%20CONTENTS%20AND%20SCOPE.pdf)
- Bringhurst R. The Elements of Typographic Style. 2013. 4ª edição. New York: Hartley and Marks.
- Brown, J.W. (Ed). 2017. Neuropsychology of Visual Perception. Vol. 2 of Psychology Library Editions: Perception. New York: Routledge.
- Chen X, Jahns L, Gittelsohn J, Wang Y. 2012. Who is missing the message? Targeting strategies to increase food label use among US adults. *Public Health Nutr*;15(5):760-72.
- Código de Defesa do Consumidor. <https://presrepublica.jusbrasil.com.br/legislacao/91585/codigo-de-defesa-do-consumidor-lei-8078-90>. Acesso em 17/09/2018
- Gordon, I.E. 2004. Theories of Visual Perception. NJ: Psychology Press.
- Guimarães, L. A. 2001. cor como informação. São Paulo: Annablume.
- IDEC- instituto Brasileiro de Defesa do Consumidor 2016.. O rótulo pode ser melhor. Revista do IDEC. Edição 208. Set/Out 2016. Disponível em <https://idec.org.br/em-acao/revista/rotulo-mais-facil/materia/o-rotulo-pode-ser-melhor>. Acesso em 17/09/2018
- INTA- Instituto de Nutrición y Tecnología de Alimentos 2012. Universidad de Chile. Estudio sobre evaluación de mensajes de advertencia de nutrientes críticos en el rotulado de alimentos: Informe final.
- ISO 3864-2:2016. Graphical symbols - Safety colours and safety signs -- Part 2: Design principles for product safety labels. <https://www.iso.org/standard/66836.html>, Acesso em 17/09/2018
- Khandpur, N. ; Sato, P. M. ; Mais, L. A. ; Martins, A. P. B. ; Spinillo, C. G. ; Garcia, M.

- T. ; Rojas, C. F. U. ; Jaime, P. C . 2018. Are Front-of-Package Warning Labels More Effective at Communicating Nutrition Information than Traffic-Light Labels? A Randomized Controlled Experiment in a Brazilian Sample. *Nutrients* , v. 10, p. 688.
- Koffka K. 2013. Principles of Gestalt Psychology. Volume 44 of International Library of Psychology. Vol. 7 of International library of psychology: Cognitive psychology. New York: Routledge.
- Lesch M. 2003. Comprehension and memory for warning symbols: Age-related differences and impact of training. *J Safety Res.*;34(5):495-505.
- Levin I.P, Schneider S.L, Gaeth G.J. 1998. All Frames Are Not Created Equal: A Typology and Critical Analysis of Framing Effects. *Organ Behav Hum Decis Process.* Nov;76(2):149-88.
- Lupton, Ellen; Phillips, Jennifer Cole; Borges, Cristian. 2008. *Novos fundamentos do design.* Cosac Naify.
- Ministério da Saúde. Vigitel Brasil. 2016. Saúde Suplementar: Vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico [recurso eletrônico]/ Ministério da Saúde, Agência Nacional de Saúde Suplementar. – Brasília : Ministério da Saúde, 2017.
- Ministerio de Salud (MINSAL). 2009. Gobierno de Chile. Feedback. Informe de investigación “Evaluación de mensajes de advertencia en el etiquetado de alimentos mediante grupos focales”. Santiago. Disponível em: <<http://web.minsal.cl/portal/url/item/70557e2f8142b947e04001011f014021.pdf>>. Acesso em 17/09/2018
- Pedrosa, I. 2003. *O universo da cor.* São Paulo: SENAC Nacional.
- Pettersson, R. 2010, Information Design—Principles and Guidelines, *Journal of Visual Literacy*, 29 (2), 167-182.
- RDC No 47, of 08/09/2009 <http://portal.anvisa.gov.br/documents/33836/2814380/RDC+47+09.pdf/c8e87008-a27d-435e-b137-f51e02e45858> Acesso em 17/09/2018
- RDC 259/03 and 360/03) [http://portal.anvisa.gov.br/documents/33880/2568070/res0360\\_23\\_12\\_2003.pdf/5d4fc713-9c66-4512-b3c1-afee57e7d9bc](http://portal.anvisa.gov.br/documents/33880/2568070/res0360_23_12_2003.pdf/5d4fc713-9c66-4512-b3c1-afee57e7d9bc). Acesso em 17/09/2018
- RDC 333-2003. [http://bvsmms.saude.gov.br/bvs/saudelegis/anvisa/2003/rdc0333\\_19\\_11\\_2003.html](http://bvsmms.saude.gov.br/bvs/saudelegis/anvisa/2003/rdc0333_19_11_2003.html)Acesso em 17/09/2018
- Schrifer, K. A. 1997. *Dynamics in Document Design: Creating Text for Readers.* NJ: Wiley.
- Visschers V. H, Hess R, Siegrist M. 2010. Health motivation and product design determine consumers’ visual attention to nutrition information on food products. *Public Health Nutr.* Jul;13(7):1099-106.
- Wogalter, M. 1999. Factors influencing the effectiveness of warnings. In: Zwaga, H.; Boersema, T.; Hoonhout, H. (editors). *Visual information for everyday use. Design and research perspectives.* London: Taylor and Francis. 93-109.
- Wogalter, M. 2006. *Handbook of Warnings.* Mahwah, NJ: Erlbaum.