Revista O Mundo da Saúde

# Functional foods: consumer perception in the Federal District, Brazil



Nádia Carolina da Rocha Neves*
Vânia Ferreira Roque-Specht*
Eduardo Monteiro de Castro Gomes*

**Abstract**

Functional foods are part of a new concept of food, which when consumed together with a healthy, balanced and usual diet, promote health benefits. However, the dissemination of information on functional foods through governmental, scientific, and marketing agencies, among others, has led consumers to different interpretations of this food. The aim of this study was to analyze how consumers in the Federal District, Brazil, are interpreting the information, effects, and risks of functional foods on health. A survey was carried out with 111 respondents, containing a structured interview script for data collection. The questions in the script went through validation of semantics, content, and statistics, and the constructs (trust, medication, media, need, reward, and risk) were assessed by consumers using a seven-point Likert scale. Consumers believe in the beneficial effect that functional foods can have on health, and see it as a cure or disease prevention effect. The process of disclosing information about functional foods should be reevaluated at all levels, both governmental and commercial, so that the information is clearer and understandable for everyone. The relationships between socioeconomic variables were analyzed using Chi-squared tests and the consumers' perception of functional foods through Pearson's correlation coefficient. The Chi-squared tests indicated highly significant associations ($p<0.001$) between the variables marital status and being the main buyer of food at home, and between level of education and family income. The medication construct was the only one that showed a significant relationship with all the other dimensions.

**Keywords:** Acceptance. Marketplace. Reward. Perception. Functional foods. Health. Public. Media.

## INTRODUCTION

In contemporary society, consumers are increasingly concerned about their health and well-being. This has led to their growing awareness of the effects of diet on their health, motivating changes in their eating habits[1]. Within this context, functional foods represent one of the areas of great interest to consumers, as well as for research and innovation in the food industry[2].

However, the increase in consumer confidence in new products launched on the market depends on several factors, particularly information made available about the product. Within this context, functional foods have aroused consumer interest due to their assumptions widely disseminated through different means of communication[3].

The term functional food has been gaining

DOI: 10.15343/0104-7809.202145099109

*Universidade de Brasília, Brasília/DF, Brasil
E-mail: vaniars@unb.br

visibility for being associated, according to most of the population, with healthier and more natural eating habits[4], for providing an improvement in the quality of life, and for preventing diseases related to food[5]. In fact, functional foods emerged in 1980 in Japan, when the local government launched a program to reduce costs of health insurance and medication, aimed mainly at the population that was aging prematurely, thus, encouraging any methodology that would improve the expectation of life in these individuals[6]. Currently, each international organization has a predefined policy on functional foods[5,7]. In summary, however, all definitions associated with functional foods involve the concept of foods or ingredients that promote some benefit to people's health.

Brazilian legislation does not use the term functional food, but food that are alleged to have functional and/or health properties[8,9,10,11]. However, according to common understanding, the term functional food is conveniently well accepted, which has led consumers, in general, to be confused with nomenclatures and claims of properties that have not yet been scientifically demonstrated[10,11]. In this study, for the purpose of standardizing national and international nomenclature, the term functional food will be used.

Understanding consumers' beliefs and desires related to functional foods, becomes important to boost new technologies and improve marketing strategies. Among the new technologies, the development of products with improved nutraceutical and sensory properties is expected. With regards to marketing, it is expected that in addition to the dissemination of products, it will be able to offer detailed and unambiguous information about its properties. With this understanding, this study aimed to analyze how consumers in the Federal District, Brazil, perceive the information, effects, and risks of functional foods on health.

## METHOD

This study is based on a set of information of an exploratory nature, whose data collection consisted of a survey, with a structured interview script. Data collection was carried out using forms developed and answered on the Google Forms platform between October and November 2019 with consumers over 18 years old, who reside in Brasília and Administrative Units of the Federal District, who reported consuming functional foods. Participation in the study was voluntary, without identification and without a reward system. The invitation to participate in the research was carried out on the main social networks by the authors. Before starting the survey, the participants confirmed the consent of the informed consent term, also made available on the *Google Forms* platform.

The survey structure was developed considering the consumers' perception of functional foods and socioeconomic parameters[12,13,14].

The survey was structured so that the respondent answered objectively socioeconomic questions (by only choice), and the other questions were related to their perception of functional foods, by indicating one point within the Likert scale of 7 (seven) points. The values were represented as follows: 1 - strongly disagree; 2 - strongly disagree; 3 - slightly disagree; 4 - indifferent; 5 - slightly agree; 6 - strongly agree; 7 - totally agree. The questions related to the perception of functional foods (answered by the Likert scale) were grouped according to six aspects (constructs): trust, medication, media, need,

reward, and risk.

The survey questions underwent semantic and content validation by 15 professionals, with qualifications in nutrition, agribusiness, food engineering, or similar areas. These issues were analyzed in terms of: (a) Language clarity - how clear and adequate the language is; (b) Practical relevance - relationship between the practical relevance of the issue and the researched context; (c) Theoretical relevance - scientific relevance of the question to the study carried out. This validation was also counted on the Likert scale score of 7 (seven) points.

The questions regarding consumers' perception of functional foods were also validated by statistical analysis. For this validation, a pre-test of the survey application was carried out in 30 interviewees, applying Cronbach's alpha coefficient[15,16] for each construct. The results of the alpha Cronbach indicate the reliability of the constructs applied in the study, considering following values and their indications: $0.9 \leq \alpha$ - excellent reliability; $0.8 \leq \alpha < 0.9$ - good reliability; $0.7 \leq \alpha < 0.8$ - acceptable reliability; $0.6 \leq \alpha < 0.7$ - questionable reliability; $0.5 \leq \alpha < 0.6$ - poor reliability; $\alpha < 0.5$ - unacceptable reliability17. According to the author, if any questionnaire construct displays reliability below 0.6, the questions should be reformulated, and the validation process restarted again. All validation items used the 7 (seven) point Likert scale.

Descriptive analysis was performed to characterize the study population, with calculations of summary measures.

Associations between socioeconomic variables were analyzed using Chi-squared tests considering a significance of 0.05. The possible relationships between the constructs trust, medication, media, need, reward, and risk were analyzed in Pearson's correlation tests considering a 0.05 significance.

## RESULTS

The result of the survey's validation (average of 6.0 - equivalent to strongly agree) indicated that the questions presented language clarity, practical relevance, and theoretical relevance, thus, reformulating the questions was unnecessary.

The validation of the constructs developed to assess consumers' perception of functional foods by Cronbach's alpha coefficient, indicated the following values: confidence - 0.812; medicine - 0.700; media - 0.845; need - 0.820; reward - 0.862; risk - 0.654; all constructs together - 0.874. As all values of the constructs were higher than 0.6, the questions were applied to the other interviewees, without the need for reformulation.

The survey results (Table 1) revealed that the majority of respondents (N=111) were male (76.58%), up to 35 years old (61.26%), single (59.46%), did not have children under the age of six (74.77%), did not care for an older person over 65 years of age (84.68%), the person interviewed and was the main buyer of food at home (54.95%), had no type of diet restriction (74.77%), and believed that daily consumption of functional foods could prevent some disease (95.50%). Regarding the level of education, there was a dispersion between the categories, highlighting that 39.64% had an some college, no degree and 37.84% had post-graduate studies. Similarly, regarding family income, there was also a certain homogeneity where the numbers of respondents in the categories “up to 2 minimum wages”, “2 to 4 minimum wages”,

and "4 to 10 minimum wages" varied from 25.23% to 27.93%.

The assessment of associations between socioeconomic variables using the Chi-squared tests indicated that there were associations between five groups (Table 2). The strongest relationships ($p<0.001$) were obtained between the variables of marital status and main buyer of food at home, and between level of education and family income.

The analysis of linear correlations by Pearson's tests indicated that the medication construct was positively and significantly related to all the others. In addition to these, significant correlations were detected between the constructs need and trust, need and reward, as well as trust and reward (Table 3).

The association between education level and family income (Table 3) is detailed in Table 4, where it can be seen that the highest incomes were restricted to interviewees who had postgraduate degrees.

**Table 1 –** Socioeconomic, health, and functional food parameters of the interviewees. Federal District, Brazil, 2019.

| Variable Evaluated | Parameter | N (number of individuals) | % |
|---|---|---|---|
| **Sex** | Male | 85 | 76.58 |
| | Female | 26 | 23.42 |
| **Age** | 18 to 25 | 34 | 30.63 |
| | 26 to 30 | 14 | 12.61 |
| | 31 to 35 | 20 | 18.02 |
| | 36 to 40 | 17 | 15.32 |
| | 41 to 45 | 15 | 13.51 |
| | More than 45 | 11 | 9.91 |
| **Educational Level** | Graduated high school | 6 | 5.41 |
| | Bachelor's degree | 11 | 9.91 |
| | Incomplete higher education | 44 | 39.64 |
| | Post-graduate degree | 42 | 37.84 |
| | Some post-graduate, no degree | 8 | 7.21 |
| **Family Income** | Up to 2 minimum wages | 31 | 27.93 |
| | From 2 to 4 minimum wages | 28 | 25.23 |
| | From 4 to 10 minimum wages | 31 | 27.93 |
| | From 10 to 20 minimum wages | 16 | 14.41 |
| | Above 20 minimum wages | 5 | 4.50 |
| **Marital Status** | Married | 40 | 36.04 |
| | Divorced | 5 | 4.50 |

*to be continued...*

*...continuation table 1*

| Variable Evaluated | Parameter | N (number of individuals) | % |
|---|---|---|---|
| | Single | 66 | 59.46 |
| **Has children under 6 years old at home** | No | 83 | 74.77 |
| | Yes | 28 | 25.23 |
| **Has an elderly person above 65 years old at home** | No | 94 | 84.68 |
| | Yes | 17 | 15.32 |
| **Main Buyer of food at home** | Father or mother | 37 | 33.33 |
| | Partner | 10 | 9.01 |
| | The person interviewed | 61 | 54.95 |
| | Another person | 3 | 2.70 |
| **Some family member has some kind of dietary restriction** | No | 80 | 72.07 |
| | Yes | 31 | 27.93 |
| **The interviewee has some kind of dietary restriction** | No | 83 | 74.77 |
| | Yes | 28 | 25.23 |
| **Daily consumption of functional foods can prevent some of the diseases** | No | 5 | 4.50 |
| | Yes | 106 | 95.50 |

Source: research data.

**Table 2 –** Values of Chi-squared statistics and evaluation of the significance between the relationships of the socioeconomic variables. Federal District, Brazil, 2019.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| **1** | --- | 2 $^{ns}$ | 4 $^{ns}$ | 0 $^{ns}$ | 1 $^{ns}$ | 2 $^{ns}$ | 7 $^{ns}$ | 0 $^{ns}$ |
| **2** | | --- | 18 $^{ns}$ | 18 $^{*}$ | 4 $^{ns}$ | 3 $^{ns}$ | 37 $^{***}$ | 3 $^{ns}$ |
| **3** | | | --- | 53 $^{***}$ | 2 $^{ns}$ | 6 $^{ns}$ | 32 $^{**}$ | 9 $^{ns}$ |
| **4** | | | | --- | 3 $^{ns}$ | 4 $^{ns}$ | 12 $^{ns}$ | 10 $^{*}$ |
| **5** | | | | | --- | 0 $^{ns}$ | 5 $^{ns}$ | 0 $^{ns}$ |
| **6** | | | | | | --- | 7 $^{ns}$ | 0 $^{ns}$ |
| **7** | | | | | | | --- | 1 $^{ns}$ |
| **8** | | | | | | | | --- |

Where: 1 - gender; 2 - marital status; 3 - educational level; 4 - family income; 5 - has children under 6 years old at home; 6 - has elderly people over 65 years old at home; 7 - main food buyer at home; 8 - has some kind of dietary restriction. ns- not significant (p>0.05); * significant (p<0.05); ** significant (p<0.01); *** significant (p<0.001).
Source: research data.

**Table 3 –** Pearson's linear correlation values, with significance comparing Likert scale values for relationships between constructs related to the perception of functional food consumers. Federal District, Brazil, 2019.

| *Construct* | Medication | Media | Need | Reward | Risk |
|---|---|---|---|---|---|
| Trust | 0.565*** | 0.150 ns | 0.677 *** | 0.530 *** | 0.055 ns |
| Medication | ---- | 0.198 * | 0.751 *** | 0.535 *** | 0.273 ** |
| Media | | ---- | 0.102 ns | -0.021 ns | 0.180 ns |
| Need | | | ---- | 0.597 *** | 0.036 ns |
| Reward | | | | ---- | -0.037 ns |

ns- not significant (p>0.05); * significant (p<0.05); ** significant (p<0.01); *** significant (p<0.001). Source: research data.

**Table 4 –** Number (N) and percentage (%) of respondents according to the level of education and family income. Federal District, Brazil, 2019.

| Minimum wages | High school | | Some college, no degree | | Bachelor's degree | | Some post-graduate, no degree | | Post-graduate degree | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % | |
| Up to 2 | 3 | 9.68 | 20 | 64.52 | 4 | 12.90 | 2 | 6.45 | 2 | 6.45 | 31 |
| 2 to 4 | 1 | 3.57 | 13 | 46.43 | 4 | 14.29 | 3 | 10.71 | 7 | 25.00 | 28 |
| 4 to 10 | 2 | 6.45 | 10 | 32.26 | 3 | 9.68 | 2 | 6.45 | 14 | 45.16 | 31 |
| 10 to 20 | 0 | 0.00 | 1 | 6.25 | 0 | 0.00 | 1 | 6.25 | 14 | 87.50 | 16 |
| Above 20 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 5 | 100.00 | 5 |

Source: research data.

## DISCUSSION

Regarding the profile of the interviewees, most of whom were at the age of 35, there is no global consensus on the classification of the population's age group, especially in adulthood. However, it can be considered that there are three periods in adulthood: the young adult (between 20 and 40 years old approximately), the mature adult (40 to 60 years old approximately), and the elderly adult (above 60 years old)[18]. In Brazil, the Youth Statute classifies young people between 15 (fifteen) and 29 (twenty-nine) years of age[19]. Regardless of the classification, the majority of respondents, up to 35 years old (Table 1), can be considered as young adults, whose life stage is characterized by the search for experiencing a great diversity of experiences and new things, such as different foods, even functional foods.

The fact that most of the research

participants (94.6%) who claimed to consume functional foods, had contact with higher education in undergraduate and graduate courses (Table 1), as already described in the literature[20], must imply consumption with a higher level of education.

Despite the purchasing power of a family being one of the determining factors for the choice of food[21], in the present study there was a relatively homogeneous distribution in relation to the interviewees' income. In this study, the correlation between family income and purchasing power was not tested, but the results indicate a positive significance ($p<0.001$) between family income and education level (Table 2). This indicates that the reciprocal increase between family income and level of education, expands the amount of information concerning new foods and the possibilities of acquisition and consumption of functional foods.

Children, due to their rapid growth and physiological immaturity, need adequate food[22], as well as the elderly, who during aging undergo anatomical, functional, and physiological changes in the body[23]. The fact that the research result shows that 74.77% (Table 1) did not have children under 6 years old at home and 84.68% did not live with elderly people over 65 years old, indicates that the interviewees may have greater flexibility in their diet and be more receptive to functional foods. This greater acceptance of functional foods can also be associated with the fact that both the interviewees (74.77%) and their family members (72.07%) did not have food restrictions (Table 1).

The concern with preventing diseases is increasingly present in the general population[24,25,26,27] who are looking for solutions to improve their health. Although this behavior is important, the survey showed that 95.50% of the interviewees (Table 1) stated that they believe that the consumption of functional foods, daily, can prevent some types of diseases. This conception contradicts the rules of the National Health Surveillance Agency - Brazil (ANVISA)[8,9], which prohibits the indication that functional foods have medicinal or therapeutic properties. Thus, although health concerns are important, consumers are making mistakes based on the information available. Similar results were observed in research with a group of gastronomy and nutrition students, who associated functional foods with disease prevention and health promotion[28].

The indication that the marital status has a significant relationship with the variables of family income ($p<0.05$) and main buyer ($p<0.001$) (Table 2) is probably related to the family structure. In this sense, it was observed that among married people (36.03%, n=40) family income is mainly between 4 to 10 and 10 to 20 minimum wages, probably from both spouses. This behavior was seen in other studies, where it was noticed that regardless of the family structure and its objectives, the family income increases if both spouses work in the labor market[29,30].

In the case of the correlation with the main buyer variable, it was observed that the main difference concerning that the main buyer of food for single people was their father and mother (n=35), while for married (n=30) and divorced (n=3) people, it was the interviewee themselves. Related research on healthy choices also highlights the father or mother figure as the food providers at home, either by purchasing power or by choosing the type of food[31,32,33].

The significant relationship between the level of education and the variables of family income ($p<0.001$) and the main buyer of food at home ($p<0.01$) (Table 2) implies that both the greater purchasing power and greater knowledge are associated with the higher level of education. In this sense, the interviewees who had more than 20 minimum wages (n=5) presented, in their totality, the highest degree of education in the entire group. On the other hand, as the

number of minimum wages decreased, there was a corresponding decrease, both in the level of education and in the proportion of respondents (Table 4). Similar behavior was found in research on influencing factors in the purchase of meat in supermarkets, observing positive and significant relationships between income, education level, and frequency of meat consumption[34].

The family income variable showed a significant association with having some type of dietary restriction ($p<0.05$) (table 2). A progressive increase in the declaration of having some type of food restriction as the salary range increased was also noticed. Specifically, the proportion of respondents who declared that they have food restrictions were 16.13% (up to 2 minimum wages), 21.43%, (2 to 4 minimum wages), 22.58% (4 to 10 minimum wages), and 43.75% (10 to 20 minimum wages), respectively. A possible cause for the progressive increase of these percentages would be the greater access to preventive medical care as the family income increases, providing an increase in diagnoses related to food restrictions. Another possible cause would be the population's greater access to knowledge about intolerance and/or allergies, which were previously unknown among the general public.

Pearson's correlation values between the constructs (Table 3) demonstrated that more than 50% of the relationships were significant. It is worth mentioning that there were a greater number of significant relationships that occurred between medicine (n=4), trust and reward (n=3).

The four significant paired relationships between medicine with media, need, reward and risk (Table 3) indicate, in addition to their importance, that consumers consider these constructs together, as already described in the literature[2,20].

Consumers are heavily influenced by marketing, which leads companies to research the profile of consumers to better understand them and, thus, optimize advertising efforts and resources that best influence consumers in choosing their products. In the case of functional foods, the media, in general, encourages consumers to believe that there are no risks, and that consumption can lead to improved health[14,35]. The information transmitted by health professionals also tends to have greater credibility and confidence, than other professionals[2].

However, depending on the focus and the way in which information is transmitted by the media, consumers believe that there is some risk in the consumption of these foods. When describing the process of making functional foods, using modern technology, it can lead consumers to believe that they are less natural than conventional foods. Thus, functional foods can be avoided by consumers who value natural foods[20].

When consumers consider functional foods to be safe, they believe they can improve health and the result obtained from the benefits of functional foods is considered a reward. Thus, the constant consumption of functional foods becomes a necessity to promote a healthy lifestyle[20].

The trust construct is related to items that describe consumers' attitude towards information and the promises of the action of functional foods on people's health. Briefly, this construct describes how much consumers believe in the active components discovered and described in scientific research[36]. Although this study does not analyze consumers' understanding of the active components of functional foods, it can be seen that there is a positive correlation (Table 3) between the constructs trust and medication, trust and need, and trust and reward (Table 3). This leads us to believe that consumers trust information and promises about functional foods and, mainly, they believe that a traditional diet is not enough to ensure adequate nutrients for maintaining

health thus needing to complement the diet with manipulated and/or concentrated nutrients.

In this context, there is a relationship between the consumption of functional foods and the need to introduce these foods into the diet[37] as a way to reduce the risk of diseases[21,37]. However, the widespread use of functional foods, accompanied by promises of health benefits, which are often difficult to verify in the short term, can promote errors and confusion among consumers regarding the choice of an adequate and balanced diet[37].

For consumers, the predisposition for consuming functional foods is related to several factors, as can be seen through the various relationships found in Table 3. However, the reward of having a healthy life, with low risk of developing diseases, makes consumers more inclined to buy and consume functional foods[20,38].

## CONCLUSION

The results derived from this study provide information about the complex scenario of how consumers in the Federal District understand what functional foods are, their effects, and risks of consuming them on their health.

The bivariate analyses showed positive correlations between the medication construct and the others. Consumers believe they understand that functional foods, alone or together, can help treat diseases. On the other hand, when the risk construct was assessed, it was noticed that some consumers are suspicious about the effects that functional foods can have on the body.

These contradictory perceptions indicate the need to reflect on the main factors related to the acceptance or not of functional foods. What is their clarity of the information available in the media and/or on product labels? Is there the presence of any chronic illnesses in these consumers or in a family member? What is their level of education? What is their social class? What is their purchasing power?

This study indicated that each individual is influenced by multiple factors, but regardless of the factors involved, any and all information about functional foods should be presented in simple and direct language to avoid mistakes in food choices.

## REFERENCES

1. Bogue J, Collins O, Troy, AJ. Chapter 2 - Market analysis and concept development of functional foods. In: Bagchi D, Nair S (Eds). Developing New Functional Food and Nutraceutical Products, Cambridge: Academic Press, 2017. p. 29-45, https://doi.org/10.1016/B978-0-12-802780-6.00002-X
2. Annunziata, A; Vecchio, R. Functional foods development in the European market: A consumer perspective. J Funct Foods. 2011; 3(3), 223-228. https://doi.org/10.1016/j.jff.2011.03.011
3. Liakopoulos M, Schroeder D. Trust and functional foods. New products, old issues. Poiesis Praxis. 2003; 2(1): 41–52. https://doi-org.ez54.periodicos.capes.gov.br/10.1007/s10202-003-0032-7
4. Stringheta PC, Muniz JN. (Ed.). Alimentos orgânicos: produção, tecnologia e certificação. Viçosa: UFV; 2003.
5. Díaz LD, Fernández-Ruiz V, Cámara M. The frontier between nutrition and pharma: The international regulatory framework of functional foods, food supplements and nutraceuticals. Crit Rev Food Sci Nutr. 2020; 60(10): 1738-1746. https://doi.org/10.1080/10408398.2019.1592107
6. Araya LH, Lutz RM. Alimentos funcionales y saludables. Rev Chil Nutr. 2003; 30(1): 8-14. http://dx.doi.org/10.4067/S0717-75182003000100001

7. Iwatani S, Yamamoto N. Functional food products in Japan: A review. Food Sci Hum Well. 2019; 8(2): 96-101. https://doi.org/10.1016/j.fshw.2019.03.011
8. Anvisa. Ministério da Saúde. Portaria n° 398, de 30 de abril de 1999. Dispõe sobre o Regulamento Técnico que Estabelece as Diretrizes básicas para análise e comprovação de propriedades funcionais e ou de saúde alegadas em rotulagem de alimentos. 1999a. Disponível em: http://bvsms.saude.gov.br/bvs/saudelegis/anvisa/1999/prt0398_30_04_1999.html
9. Anvisa. Ministério da Saúde. Resolução nº 16, de 30 de abril de 1999. Dispõe sobre o Regulamento Referente a Procedimentos para Registro de Alimentos e ou Novos Ingredientes. 1999b. Disponível em: http://portal.anvisa.gov.br/documents/10181/2718376/%281%29RES_16_1999_COMP.pdf/4bf63dcb-722b-4b77-849c-9502f544ff49
10. Anvisa. Ministério da Saúde. Resolução nº 18, de 30 de abril de 1999. Aprova o Regulamento Técnico que Estabelece as Diretrizes Básicas para Análise e Comprovação de Propriedades Funcionais e ou de Saúde Alegadas em Rotulagem de Alimentos. 1999c. Disponível em http://portal.anvisa.gov.br/documents/10181/2718376/RES_18_1999_COMP.pdf/dd30fd35-e7ea-4f8d-be72-ae2e439191b0
11. Anvisa. Ministério da Saúde. Resolução nº 19, de 30 de abril de 1999. Aprova o Regulamento Técnico de Procedimentos para Registro de Alimento com Alegação de Propriedades Funcionais e ou de Saúde em sua Rotulagem. 1999d. Disponível em: http://portal.anvisa.gov.br/documents/10181/2718376/RES_19_1999_COMP.pdf/311b03f5-c2f5-4b97-89a8-30331f8145f3
12. Küster-Boluda I, Vidal-Capilla I. Consumer attitudes in the election of functional foods. SJM – ESIC. 2017; 21(S1): 65-79. https://doi.org/10.1016/j.sjme.2017.05.002
13. Ozen A, Bibiloni M, Murcia M, Pons A, Tur J. (2015). Adherence to the Mediterranean diet and consumption of functional foods among the Balearic Islands' adolescent population. Public Health Nutr, 18(4), 659-668. https://doi.org/10.1017/S1368980014000809
14. Sääksjärvi M, Holmlund M, Tanskanen N. (2009) Consumer knowledge of functional foods, The International Review of Retail, Distribution and Consumer Research. 19(2): 135-156. https://doi.org/10.1080/09593960903109469
15. Bland JM, Altman DG. (1997). Statistics notes: Cronbach's alpha BMJ; 314:572. https://doi.org/10.1136/bmj.314.7080.572
16. Hora HRM, Monteiro GTR, Arica J. (2010). Confiabilidade em questionários para qualidade: um estudo com o coeficiente alfa de Cronbach. Gest Prod., 11(2): 85-103. https://doi.org/10.22456/1983-8026.9321
17. Murphy KR, Davidshofer CO. Psychological testing: Principles and applications. Englewood Cliffs, New Jersey: Prentice Hall; 1988.
18. Dutra-Thomé L, Koller, SH. Emerging Adulthood in Brazilians of Differing Socioeconomic Status: Transition to Adulthood. Paidéia (Ribeirão Preto). 2014; 24(59), 313-322. https://doi.org/10.1590/1982-43272459201405
19. Brasil. Lei nº 12.852, de 5 de agosto de 2013. Institui o Estatuto da Juventude e dispõe sobre os direitos dos jovens, os princípios e diretrizes das políticas públicas de juventude e o Sistema Nacional de Juventude - SINAJUVE. 203. Disponível em: http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2013/Lei/L12852.htm
20. Urala N, Lähteenmäki L. Attitudes behind consumers' willingness to use functional foods. Food Qual Prefer. 2004; 15(7–8): 793-803. https://doi.org/10.1016/j.foodqual.2004.02.008
21. Kaushal N, Muchomba FM. How Consumer Price Subsidies affect Nutrition. World Dev. 2015; 74: 25–42. https://doi.org/10.1016/j.worlddev.2015.04.006
22. Corvalán C, Garmendia M L, Jones-Smith J, Lutter CK, Miranda JJ, Pedraza LS, Popkin BM, Ramirez□Zea M, Salvo D, Stein AD. Nutrition status of children in Latin America. Obes Rev., 2017;18(Suppl.2): 7–18. https://onlinelibrary.wiley.com/doi/full/10.1111/obr.12571
23. Gomes AP, Soares ALG, Gonçalves H. Baixa qualidade da dieta de idosos: estudo de base populacional no sul do Brasil. Ciên Saúde Colet. 2016; 21(11):3417 – 3428. https://doi.org/10.1590/1413-812320152111.17502015
24. Caivano S, Colugnati FAB, Domene SMA. Diet Quality Index associated with Digital Food Guide: update and validation. Cad Saúde Pública. 2019; 35(9): e00043419. https://doi.org/10.1590/0102-311x00043419
25. Alves DC, Ugá, MAD, Portela, MC. Promoção da saúde, prevenção de doenças e utilização de serviços: avaliação das ações de uma operadora de plano de saúde brasileira. Cad Saúde Colet. 2016; 24(2), 153-161. https://doi.org/10.1590/1414-462X201600020199
26. Medina MG, Aquino R, Vilasbôas ALQ, Mota E, Pinto Jr EP, Luz LA, Anjos DSO, Pinto ICM. Promoção da saúde e prevenção de doenças crônicas: o que fazem as equipes de Saúde da Família?. Saúde debate. 2014; 38(spe): 69-82. https://doi.org/10.5935/0103-1104.2014S006
27. Achutti A. Prevenção de doenças cardiovasculares e promoção da saúde. Ciênc Saúde Coletiva. 2012; 17(1): 18-20. https://doi.org/10.1590/S1413-81232012000100003
28. Melo GRC, Teixeira, AP, Zandonadi RP. Acceptance and perception of gastronomy and nutrition students regarding functional foods. Alim Nutr. 2010; 21 (3): 367-372. Disponível em: http://200.145.71.150/seer/index.php/alimentos/article/view/1226/1226
29. Bloome D. Childhood Family Structure and Intergenerational Income Mobility in the United States. Demography. 2017; 54, 541–569. https://doi.org/10.1007/s13524-017-0564-4
30. Thomas A, Sawhill I. For Love and Money? The Impact of Family Structure on Family Income. The Future of Children, 2005; 15(2), 57-74. [acesso 15 de setembro de 2020]. Disponível em: from http://www.jstor.org/stable/3556563
31. Hollis-Hansen K, Seidman J, O'Donnell S, Epstein LH. Episodic future thinking and grocery shopping online. Appetite. 2019; 133:1-9. https://doi.org/10.1016/j.appet.2018.10.019
32. Gram, M. Buying Food for the Family: Negotiations in Parent/Child Supermarket Shopping: An Observational Study from Denmark and the United States. J Contemp Ethnogr. 2015, Vol. 44(2) 169–195. https://doi.org/10.1177/0891241614533125
33. Dallazen C, Fiates GMR. Brazilian parents' perceptions of children's influence on family food purchases. Brit Food J. 2014; 116(12): 2016-2025. https://www.emerald.com/insight/content/doi/10.1108/BFJ-05-2013-0126/full/html
34. Sousa LKS, Roque-Specht VF, Gomes, EMC. (2020). Principais Direcionadores de Compra de Carnes em Hipermercados. Rev Adm Contemp. 24(4), 335-348.https://doi.org/10.1590/1982-7849rac2020190097
35. Pereira RC, Angelis-Pereira MC, Carneiro JdDS. Exploring claims and marketing techniques in Brazilian food labels. Brit Food J.

2019; 121(7): 1550-1564. https://doi.org/10.1108/BFJ-08-2018-0516
36. Huang L, Bai L, Gong S. The effects of carrier, benefit, and perceived trust in information channel on functional food purchase intention among Chinese consumers. Food Qual Prefer. 2020; 81:103854. https://doi.org/10.1016/j.foodqual.2019.103854
37. Di Pasquale J, Adinolfi F, Capitanio F. Analysis of Consumer Attitudes and Consumers' Willingness to Pay for Functional Foods. Int J Food Syst Dyn. 2011; 2(2): 181-193. http://centmapress.ilb.uni-bonn.de/ojs/index.php/fsd/article/view/227
38. Karelakis C, Zevgitis P, Galanopoulos K, Mattas K. Consumer Trends and Attitudes to Functional J Int Food Agribusiness Mark. 2020; 32(3): 266-294. https://doi.org/10.1080/08974438.2019.1599760



Received in november 2020.
Accepted in february 2021.