

Original Article

The influence of perceived risk on food supplement consumption intention

A influência do risco percebido na intenção de consumo de suplementos alimentares

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ABSTRACT

Purpose: The general objective of this study was to verify the relationship between the intention to consume dietary supplements and perceived risk, broken down into perceived risk in relation to health and perceived risk in relation to product performance.

Design/methodology/approach: Descriptive-quantitative research was carried out via an online survey through a structured questionnaire based on the scales of Laroche et al. (2005) and DelVecchio and Smith (2005). Data analysis was performed using multiple linear regression analysis. Of the total number of questionnaires answered, 207 were considered valid.

Findings: The result of the study points to statistical significance for the research hypotheses, confirming that the lower the perceived risk associated with the purchase of dietary supplements in relation to product performance and health damage, the greater the intention of consumption by individuals in this category of product.

Originality/value: The confirmation of the role of risk in the consumer's decision process leads to the observation that this risk perception is not always based on reliable information, for example, from the guidance of nutritionists and doctors. Thus, only the presentation in the communication of the effectiveness of the product and how beneficial it can be to human health, carried out by agents without technical knowledge, may not be enough for the real risks of consuming such products to be neglected.

Keywords: Food supplements; Perceived risk; Intention to consume; Public health

RESUMO

Finalidade: O objetivo geral deste estudo foi verificar a relação entre a intenção de consumo de suplementos alimentares com o risco percebido, desdobrado em risco percebido em relação à saúde e risco percebido em relação ao desempenho do produto.

Design/metodologia/abordagem: Foi realizada uma pesquisa descritiva-quantitativa a partir de um survey online, por meio de um questionário estruturado com base nas escalas de Laroche et al. (2005) e DelVecchio e Smith (2005). A análise dos dados foi efetuada por meio da análise de regressão linear múltipla. Do total de questionários respondidos, 207 foram considerados válidos.

Descobertas: O resultado do estudo aponta significância estatística para as hipóteses da pesquisa, confirmando que quanto menor o risco percebido associado à compra de suplementos alimentares em relação ao desempenho do produto e aos danos à saúde, maior a intenção de consumo pelos indivíduos dessa categoria de produto.

Originalidade/valor: A confirmação do papel do risco no processo de decisão do consumidor leva a observação de que nem sempre essa percepção de risco está fundamentada em informações confiáveis, por exemplo, a partir da orientação de nutricionistas e médicos. Assim, apenas a apresentação na comunicação da eficácia do produto e o quão benéfico pode ser a saúde humana, protagonizados por agentes sem conhecimento técnico, podem não ser suficientes para que os riscos reais em consumir tais produtos sejam negligenciados.

Palavras-chave: Suplementos alimentares; Risco percebido; Intenção de consumo; Saúde pública

1 INTRODUCTION

For the World Health Organization (WHO) 2000, dietary problems have considerable influence on the emergence of chronic diseases and on the increase in costs with the public health system (Azila Mohd Noor, Yap, Liew & Rajah, 2014; Küster-Boluda & Vidal-Capilla, 2017). In this context, a trend has been seen on the part of consumers for the purchase of food supplements, especially for those who seek to perform physical exercises frequently and need a product that ensures greater energy during activities (Homer & Mukherjee, 2018). Food supplements are defined as food products that can be concentrated sources of nutrients (vitamins and minerals) or other substances (amino acids, essential fatty acids, fiber, plants and plant extracts) with a nutritional or physiological effect, alone or in combination (Bessada Alves & Oliveira, 2018; Pereira Filho, Costa & Cavalcanti, 2021).

According to the Brazilian Association of Manufacturers of Nutritional Supplements and Foods for Special Purposes (BrasNutri), after the U.S., the Brazilian population is the one that consumes the most food supplements in the world (BrasNutri Online, 2022). This segment in Brazil has been the target of attention by the state. In November 2020, the Normative Instruction (IN) 76/2020 (amending IN 28/2018) was published in the Official Gazette of the Union, which provides for updating the lists of constituents, limits of use, claims and supplemental labeling of food supplements. The new standard established a period of 24 months for the adequacy of the labeling of food supplements that have in its composition any of the constituents provided in the document and that have been regularized in the National Sanitary Surveillance System until November 11, 2020.

This standard exposes the concern to regulate and ensure the population's access to safe and quality products, and emerges as a response to the high consumption of these products, which is seen as a global phenomenon (Bailey, Gahche, Miller, Thomas, & Dwyer, 2013), especially among the younger public (Lieberman et al., 2015; Homer & Mukherjee, 2018). Nevertheless, the deliberate consumption of dietary supplements can become a public health issue, given the high number of people who consume these products on their own initiative or by recommendation of friends (without proper guidance from a specialized professional), which commonly leads to health problems (Gardiner et al., 2015; Molin et al., 2019).

Thus, the indiscriminate use of these products can generate milder health complications for its users, such as chronic diarrhea, constipation, dehydration, or more serious complications, such as cardiac arrhythmia and liver and kidney failure (Grundlingh, Dargan, El-Zanfaly & Wood, 2011; Stickel & Shouval, 2015; Cohen, Travis, Keizers, Deuster & Venhuis, 2017), or even lead to death (Flora Or, Yongjoo Kim, Juliana Simms & Bryn Austin, 2019). Thus, even with the proposition of bringing health benefits, dietary supplementation can be a danger to the well-being of its adherents (Molin et al., 2019).

From this reality, it is important that studies be developed to better understand the reasons why consumers do or do not purchase such products. Previous studies have focused on understanding the factors that may influence the consumer's decision to purchase such products, such as the need for a more appropriate diet, social stigma of obesity, search for a quick and easy solution for weight loss (Lacerda et al., 2015; Rocha et al., 2016; Marques et al., 2019), mostly related to the individual's dissatisfaction with their own body (Fuller-Tyszkiewicz et al., 2020). The intention to consume dietary supplements can also occur when such products are presented with a healthy through commercial appeals that attempt to induce the consumer to purchase (Küster-Boluda & Vidal-Capilla, 2017; Molin et al. 2019).

It is important to consider that the consumption of food supplements without proper guidance can cause damage to health. Moreover, it is necessary to consider that the attitude of individuals in wanting or not consuming such products is influenced by uncertainty (inherent to the choice), especially due to the potential lack of reliable information (labeling and advertisements) and at the same time the large number of product options available on the market (Gardiner et al., 2015). With this, it is important to ascertain factors that may inhibit the intention to consume dietary supplements indiscriminately. And as a way to fill the gap in the literature on consumer behavior, especially that of dietary supplements, among these possible factors would be the relationship between the intention to consume dietary supplements with perceived risk.

Thus, it is intended to evaluate the intention to consume food supplements when there are perceived risks involved in the purchase relationship, specifically considering the perception of risk in relation to product inefficacy and health. Therefore, in order to know which are the possible factors that influence the intention of consumers to consume food supplements, this research has as a general objective to verify the relationship between the intention to consume food supplements and the perceived risk, unfolded in perceived risk related to health and perceived risk related to product performance.

Furthermore, this paper is structured as follows. After this introductory section, the theoretical framework is presented. Next, the methodological steps of the research are presented. After the description of the research method, the results and the discussion of these results will be presented. Finally, in the last section the final consideration of the study is presented.

2 THEORETICAL FOUNDATION

2.1 Intention to consume food supplements

According to Bailey et al. (2013) and Zhao, Jin and Karinshak (2023) people consume dietary supplements in order to improve and maintain health, diet, prevent disease and increase energy. However, according to these authors most products of this nature are consumed without the recommendation of a health professional. Converging with this position, according to Starr (2015), almost always, patients diagnose themselves and treat themselves with dietary supplements without sufficient knowledge or understanding of these products.

One of the factors for this occurring is the idea that food alone does not provide the nutrients they need, as well as that they are at risk of developing nutritional deficiencies (Shreffler-Grand et al., 2013). This fear of malnutrition paves the way for the marketing and promotion of supplement consumption (Fabiansson & Fabiansson, 2016). Moreover, this consumption is not strictly controlled and it is possible to buy any kind of supplement in many different places - drugstores, supermarkets, herbalists - without a prescription or guidance from a health professional at the time of purchase.

A study by Fan et al. (2014) evaluated the consumption of dietary supplements in people with heart failure and the authors found that although most participants thought that these products could interact with medications, this did not influence their decision not to consume them. In other words, there was a perception of risk, but it was not determinant in generating a refusal to consume such products. This type of behavior is

understood from the moment that the use of a product is associated with a perception of low risk compared to not using it (Bernat, Ferrer, Margolis, & Blake, 2017).

Moreover, it is understood that the consumption of a given product can be influenced in several ways, among these forms of influence would be the marketing action, through advertisements and promotional actions, and the issue of popular appeal which, in turn, is based on popular opinion and common sense to defend or strengthen an argument (Andrade, Hastings & Angus, 2013). In the context of buying and consuming dietary supplements it is no different. For example, information about side effects is rarely found on the labels of these products. Consequently, the lack of this information, as well as its availability and easy access in the market, leads the population to believe that the consumption of these products is safe and offers no health risk (Zhao, Jin, & Karinshak, 2023).

In addition, because these products are marketed as natural substitutes for pharmaceuticals, they are often associated with authenticity, unlike pharmaceuticals that contain chemically synthesized products in laboratories (Fabiansson & Fabiansson, 2016). This creates in the population positive beliefs and attitudes related to the consumption of these products, with a large information and knowledge gap, as well as low levels of risk perception regarding dietary supplements (Vaz, 2018).

From the above, this study is based on the theoretical assumption that to explain and predict consumption behavior in this context it is necessary to consider the attitude of individuals (Rosenstock, 1974). Thus, attitude is one of the most widely used structures to understand consumer behavior, especially in relation to aspects linked to health and well-being (Austin et al., 2002; Montanaro and Bryan, 2014; Smith et al., 2011). In other words, it is assumed that a person will take a specific health-related action, such as whether or not to consume dietary supplements, if they believe (and expect) that doing so will help prevent a negative health state or even contribute to maintaining their health (Bandura, Basu & Dutta, 2004).

This attitude, considered the basis for the intention to consume dietary supplements in this study, may be influenced by several factors, either intrinsic or extrinsic, and the factor that will be considered in this research is the influence of perceived risk.

2.2 Perceived risk

Risk is understood as a situation, event or activity that can cause uncertain and negative consequences to the point of affecting the goals that individuals value (Steg, Berg & De Groot, 2013). Perceived risk is identified as an important evaluation variable because they are inherent in purchase/consumption situations. Which implies saying that there is an objective or real risk existing in the acquisition of products and or services that, when perceived, exert influence on consumers' decisions (Paek & Hove, 2017). In this sense, it is necessary to understand how the perception of these risks by individuals influence consumers' decision to purchase dietary supplements (Suh & Lim, 2014; Campbell, Le, Gubner & Guydish, 2018).

It is known that risk perception is influenced by sociodemographic characteristics, such as gender, age, ethnicity, etc., as well as by the perception of control that an individual has, and by previous memories of risks and personal experiences, which determine the evaluation and weight given to certain risks (Chauvin, 2018; Vaz, 2018). Thus, within social studies it is possible to infer that each society emphasizes a set of risks and minimizes others according to its dynamics, which proves that there is influence of social constructions on individuals' risk perception (Vaz, 2018). Thus, according to Slovic et al. (2007) understanding the risk perception of individuals and studying it becomes essential to understand how groups and societies manage the risks of everyday life.

Another factor that affects the way risk is interpreted by individuals is the way it is presented. Therefore, besides being conditioned by the attitudes, beliefs and knowledge of the individual who receives it, the format in which it is presented also influences its understanding. There are differences in understanding and,

consequently, in the persuasiveness of a message (labels, advertisements, etc.), for example, this is noticeable when the message is presented through numerical, graphic or textual information (Palma-Oliveira, Gaspar & Mendes, 2017).

From this perspective, in the study by Schwartz, Woloshin & Welch (2007) it is possible to verify that individuals more easily agree on the correct answers and consider fewer risks when the information is presented in organized tables and explaining the risks and benefits of the decision. However, the same does not occur when, instead of this organized and clear structure about the pros and cons, there are extensive texts with the same information, as occurs with medication package leaflets, as well as several food supplements. For McDowell, Rebitschek, Gigerenzer & Wegwarth (2016) this has implications for risk communication strategies because individuals can only make important decisions about their health if they can interpret the information presented to them in an attractive and clear way.

Studies, such as Featherman and Savlou, (2003) and Suh and Lim (2014), focused on the relationship between perceived risk and consumption behavior, point out that the higher the level of perceived risk about a product, aligned especially with the lack of knowledge, the lower the consumer's intention to buy it. According to these authors, the probability of negative results due to an unsuccessful purchase may lead consumers to decline the purchase. Considering that the perceived risk in a purchase situation encompasses different potential risks (Paek & Hove, 2017), the ones that are most aligned with that of food products are those of health risks and product ineffectiveness, according to Campbell, Le, Gubner and Guydish (2018), and will be addressed in this study.

When relating perceived risk with the intention to consume dietary supplements it is common to have positive evaluative perceptions of risk-benefit, even though there is no clear scientific evidence about the benefits, efficacy and safety of these products (Royne, Myers, Deitz & Fox, 2016). For example, in the work of Slovic et al. (2007), with the use of the Psychometric Paradigm, the authors evaluated the participants' risk

perception about 53 situations and found that of all the elements evaluated, the one that presented the lowest risk perception was the vitamin supplement product. Thus, proving the weak association between the consumption of these products and their possible associated risks.

Additionally, in the study of Egan, Hodgkins, Shepherd, Timotijevic & Raats (2011) it is possible to verify that, from the consumer's point of view, buying and consuming food supplements gives them a sense of control and autonomy over their health, which ends up being something comforting and pleasurable. Following this line of reasoning, the fact that the individual chooses which food supplement to consume gives them the feeling of playing an active and independent role in managing their health, rather than just being a passive consumer, for example, following the treatment (supplement consumption) guided by a health professional, such as a nutritionist or doctor (Halsted, 2003).

In this understanding, for Lima (1998), by imagining that he/she has control over a certain situation, the subject will present a lower risk perception than if he/she does not feel he/she has that control. Moreover, it is possible to state that the decision to consume dietary supplements is also influenced by individual beliefs and attitudes of the risks associated with these products (Dodge, 2016), as well as beliefs of their efficacy, which may generate consequences in the health behaviors of individuals. Therefore, according to Dodge (2016) it is expected that the higher the risks perceived by the individual, the less willing he/she will be to consume a dietary supplement.

However, it is assumed that the opposite is also true, that is, there will be an inversely proportional relationship when, in the context of the intention to consume food supplements, individuals perceive lower risks in relation to health and performance of the product, which will increase the possibility of consumption. Thus, this study proposes the following hypotheses:

H1- The lower the perceived health risk the higher the intention to consume dietary supplements;

H2- The lower the perceived risk regarding product performance the higher the intention to consume dietary supplements.

3 METHOD

To verify the objective proposed by this study, a descriptive quantitative research was carried out (Malhotra, 2006). To this end, initially, during the months of November and December 2022, a bibliographic survey was carried out on the Science Direct, SPELL, SciELO and Periódicos Capes portals to build the relationship between the study variables. For this survey, the terms used to direct the search were perceived risk, risk perception and intention to consume dietary supplements. After in-depth bibliographical research, field research was carried out during the month of February 2023 using an online questionnaire to analyze the influence of the independent variables, perceived risk of damage to health and product performance, on the dependent variable, intention consumption of dietary supplements (Leeuw, Hox & Dilman, 2008).

A structured questionnaire was adopted as a data collection instrument, with the purpose of ensuring that the questions met the research objective, and developed using the Google Forms digital platform. At the end of the collection, a total of 207 responses were obtained. The form was structured with five questions that addressed sociodemographic aspects (covering gender, completed education, marital status, age, individual income and family income).

To evaluate the constructs, the questionnaire included 11 items and was divided as follows: four questions referring to the perception of risk of harm to health, adapted from the scale developed by Laroche et al. (2005) (There is a good chance that I will harm my health if I consume dietary supplements - RPS1; I have a feeling that consuming dietary supplements will actually cause me a lot of health problems - RPS2; My health will be at risk if I consume dietary supplements in the coming months - RPS3, and; Consuming dietary supplements is very risky for my health - RPS4).

Six questions related to the perceived risk of product performance were created, adapted from the scale created by DelVecchio and Smith (2005) (I am sure that the food supplement I am going to buy will work satisfactorily - RPD1; Is there a risk that I will have problems with the product's performance food supplement that I am going to buy (it will not be effective) - RPD2; If the food supplement that I am going to buy does not bring the expected effect, the consequences can be quite serious - RPD3; Buying the wrong food supplement can lead to very negative results - RPD4; I need be careful when purchasing a food supplement, as a lot can go wrong with my well-being when consuming such products - RPD5; The possibility of a food supplement causing any harm to my health is low - RPD6).

In addition, a question was constructed for the dependent variable, intention to consume dietary supplements, created by the authors of the article (I intend to consume dietary supplements, such as: thermogenics, whey protein, vitamin compounds, essential fatty acids, etc. - ICSA1). The constructs were measured by Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

The study population was composed of Brazilian youth and adults between 18 and 51 years of age and the sample was chosen by the non-probability snowball sampling technique (Babbie, 1999), chosen for favoring the scope of the study from the moment it is disseminated through a sharing network, in which individuals send questionnaires to their acquaintances. The participation was conditioned to previously established criteria: (1) to be over 18 years old, and (2) to have the intention of consuming food supplements.

The data analysis occurred in three moments. In the first, the data were analyzed using basic descriptive statistics, distributed between percentage, mean, and standard deviation, to describe the sociodemographic profile of the sample. In the second moment, multivariate statistical techniques were used to evaluate the study scales. In order to verify the reliability of the items in each construct, *Cronbach's* alpha was used, with levels considered acceptable as from 0.6, and for the dimensionality analysis of

the items, the exploratory factor analysis was used, using the *Kaiser-Meyer-Olkin* (KMO) index and *Bartlett's* test of sphericity (Hair et al., 2009). In the third moment, seeking to corroborate or refute the hypotheses proposed by the theoretical model, we resorted to the ANOVA test and the multiple linear regression analysis.

4 RESULTS

Initially, the answered questionnaires were analyzed to identify whether there was a filling error, with the purpose of eradicating the non-response error (Leeuw, Hox & Dillman, 2008). After the analysis, all completed questionnaires were considered validated, making up a final sample of 207 respondents. Next, the statistical analyses and the evaluation of the theoretical model were performed.

4.1 Sociodemographic profile of the respondents

The sociodemographic profile of the respondents was obtained from the use of simple descriptive statistics, as presented in table 1. Most of the subjects represented by the sample of this research are male (69%) and the level of education of the respondents is, preeminently, higher education (52.7%).

Table 1– Sociodemographic profile based on frequencies, means and standard deviation

Level of education completed			Genre	
Higher Education	52,7%		Male	69%
Post-graduation	20,8%		Female	31%
High School	26,5%		Marital Status	
Variables	Average	Standard Deviation	Single	74,9%
Age	25,81	6,259	Married	19,8%
Individual income	R\$: 2.409,77	R\$: 2.351,124	Divorced	2,4%
Family income	R\$: 5.230,45	R\$: 14.612,32	Another	2,9%

Source: Field research

After analyzing the sociodemographic profile of the sample, the next section presents the results of the reliability and dimensionality analysis of the scales, prerequisites for conducting multiple regression analysis.

4.2 Item reliability and data dimensionality

The reliability of the items used in the scales was measured through Cronbach's alpha, with levels considered acceptable as from 0.6 (Hair et al., 2009). In the first analysis, the construct perceived risk in relation to Product Performance presented a value below the parameter for items RPD1 and RPD6, which were removed to perform the second analysis, which obtained Cronbach's alpha values above the reference factor. Next, the factor analysis was performed to assess the dimensionality of the construct scales, using the KMO and Bartlett's sphericity tests. Table 2 presents a synthesis of the data.

Table 2 – Summary of data reliability and dimensionality

Variables	C.F.	H ²	KMO	Df	Bartlett		V.Exp.*	Cronbach
					X ²	Sig.		
RPS1	0,911	0,830						
RPS2	0,931	0,876	0,862	6	735,036	0,000	84,005	0,934
RPS3	0,910	0,828						
RPS4	0,914	0,836						
RPD2	0,886	0,784						
RPD3	0,795	0,633	0,775	6	507,563	0,000	74,877	0,885
RPD4	0,889	0,791						
RPD5	0,887	0,787						

Source: Field research. *Variance explained

The dimension related to the perceived risk of harm to health showed alpha of 0.934, with the items loading on the same factor without the need to remove any of them, with KMO index of adequacy of 0.862, Bartlett's test of sphericity with chi-square values of 735.036, with 6 degrees of freedom, and significance of 0.000 ($p < 0.05$), which was called RPS. The dimensions of the construct perceived risk in relation to product performance,

already without the items RPD1 and RPD6, presented alpha value of 0.885, and the factor analysis indicated that the remaining items loaded on the same factor, with KMO index at 0.775, Bartlett's test of sphericity with chi-square equivalent to 507.563 with 6 degrees of freedom and significance of 0.000 ($p < 0.05$), which was named RPD.

4.3 Analysis of the proposed theoretical model

As a necessary procedure for performing the multiple linear regression method, the items that composed the constructs of the study were grouped into compound variables. Thus, according to Table 3, the average responses in the constructs, considering a Likert scale from 1 (strongly disagree) to 7 (strongly agree), were presented.

Table 3 – Descriptive statistics of the composite variables and model summary

Variables	N	Average	Standard Deviation	
Purchase Intention	207	6,05	1,554	
Perceived risk of harm to health	207	2,21	1,436	
Perceived product performance risk	207	2,75	1,701	
R	R ²	R ² adjusted	Estimation of the standard error	Durbin-Watson
0,633	0,400	0,394	1,210	2,088

Source: Field research

The value of R, which corresponds to 0.633, indicates a correlation of the independent variables with the dependent variable. This determination coefficient, according to Hair et al. (2009), can be understood as the proportion of the total variation in the intention to consume food supplements explained by the independent variables. In the case of this research, specifically, the independent variables explain 40% of the consumption intention, a value measured from R^2 . However, it is the value of R^2 adjusted value that should be considered for the explanation of the relationships between the independent and dependent variables. This is because the

index proposes a correction of the determination coefficient in cases where there is more than one independent variable. In this study, the value of R^2 adjusted is 0.394, with a standard error estimate of 1.210.

Next, table 4 details the ANOVA values. Based on the test results, it was possible to verify that the theoretical model proposed presents statistical significance, indicating that, mathematically, the two independent variables are significant to the point of explaining the behavior of the dependent variable. The F statistic, with a value of 68.040, is also significant, suggesting that the simultaneous test that each coefficient is 0 (zero) was rejected. Therefore, the proposed theoretical model has proven statistical significance.

Table 4 – ANOVA result

MODEL	SUM OF SQUARES	Df	MIDDLE SQUARE	F	Sig.
Regression	199,076	2	99,538	68,040	0,000
Residual	298,441	204	1,463		
Total	497,517	206			

Source: Field research

To conclude, Table 5 presents the coefficients from the multiple regression analysis that give the evaluation of the research hypotheses. The negative numbers of the unstandardized coefficients for RPS ($B=-0.546$) and RPD ($B=-0.140$) communicate an inversely proportional relationship between the independent and dependent variables, i.e., the hypotheses that as there is a lower perception of risk with respect to both health and product performance there is a higher intention to consume dietary supplements were bought. Therefore, hypotheses H1 and H2 are confirmed.

However, it is worth noting that the variable perceived risk in relation to product performance presented a Sig. value in the multiple regression of 0.082, which represents that its influence, as an independent variable, was marginally accepted, since in this study Sig. $t < 0.05$ is considered the reference standard. This acceptance

of H2 also occurred from the statistical endorsement of the values resulting from the reliability and dimensionality of the items presented for this construct.

Table 5 – Coefficients

Model	Non-standardized Coefficients		Standardized coefficient		95% confidence interval for B		
	B	Standard Error	B	T	Limit inf.	Upper limit	
(Constant)	7,639	0,164		46,57	0,000	7,32	7,96
RPS	-0,546	0,95	-0,505	-5,74	0,000	-0,73	-0,36
RPD	-0,140	0,80	-0,153	-1,75	0,082	-0,28	0,018

Source: Field research

5 DISCUSSION

The confirmation of H1 indicates that the lower the perception of risk related to health, the higher the intention to consume food supplements. This result confirms the important role of risk perception on the purchase of dietary supplements, and contributes to strengthen the understanding that a subjective aspect of the consumer, such as risk perception, is a conditioning factor of consumption behavior. Additionally, this result converges with the findings of the work of Campbell, Le, Gubner, and Guydish (2018) when analyzing perceived risk related to cigarette consumption, which found that respondents who identified lower perceived health risk in relation to consuming these products were more likely to continue using them.

Furthermore, considering the studies of Paek and Hove (2017), it is analogously possible to infer that consumer risk perception may be influenced by factors such as level of information and familiarity with the product. It is assumed that subjects who have the intention to purchase dietary supplements and perceive that the health risk is minimal when consuming such products are potentially consumers who consume or

have consumed these products at another time, as demonstrated by Paek and Hove's (2017) study when dealing with the intention to consume dietary products.

Additionally, with the confirmation of H2, it is understood that the lower the perceived risk regarding product performance, the higher the intention to consume dietary supplements. Thus, those who intend to buy dietary supplements do so because they believe that these products actually present a lower risk of inefficacy. However, this finding contrasts with the research result of Homer and Mukherjee (2018), when they obtained as a research result that beginners of bodybuilding practice tend to consume dietary supplements not because they believe that the inefficacy risks of the products are low, but because they trust the recommendation of their instructors.

Thus, considering the consumer's behavior based on his perception of risk in situations of consumption of food supplements, it is understood that consumption occurs because consumers realize that the use of food supplementation does not carry great risks to health and that it works effectively. Thus, it is understood that the individual adopts a protective behavior to health when he perceives that he is at greater risk of a potential problem aligned to a product he intends to consume, or maintains the consumption of a product when he perceives a lower risk linked to its use (Patrick et al., 2020). The same behavior occurs for risks related to inefficient product use, i.e., the product not complying with what was established on the label or was visualized in communication campaigns, for example (Featherman & Savlou, 2003; Suh & Lim, 2014).

In this sense, communication campaigns play an important role in influencing consumer decisions by increasing the level of knowledge of nutritional information and product outcome and consequently reducing the risks derived from lack of information. According to Suh and Lim (2014), the higher the level of consumers' knowledge about dietary supplements, the lower the perceived risk regarding their consumption. It is assumed that many consumers who intend to use dietary supplements without the guidance of a professional qualified to indicate such product may have been influenced by sources of information derived from the media (Whitehouse & Lawlis, 2017).

In fact, several studies (Bailey, Gahche, Miller, Thomas, & Dwyer, 2013; Molin et al., 2019) confirm that the consumption of such products is greatly influenced by marketing and advertising. Supplement advertisements and information passed by the various media would be the main responsible for consumers' understanding of these products, which may be related to the low perception of risk presented by the audience of this research (Willis & Royne Stafford, 2016). In addition to marketing and advertising, family members, friends, and internet opinion leaders are also sources of information that consumers recurrently seek when seeking some opinion about dietary supplementation (Jain & Katarya, 2019), which can be further investigated to provide more information to help understand the phenomenon.

6 CONCLUSION

From the results presented, it is understood that the perception of risk influences the intention of individuals to consume dietary supplements, represented here by the lower perception of risk perceived in relation to the performance of dietary supplements and in relation to the damage that can cause the health of the individual consumer. Thus, this result presents the contribution and innovation of this study, by evaluating the perception of risk related to the most current consumption demands of individuals, such as dietary supplements.

The result also reinforces findings from previous investigations that evaluated the relationship between perceived risk and purchase intention for products similar to the one investigated here (Featherman & Savlou, 2003; Suh & Lim, 2014; Patrick et al., 2020). Thus, it is possible to conclude that the variable perceived risk is identified as a antecedent to the purchase of dietary supplements, especially related to the risk of damage to health and the product's non-effective performance.

It is suggested that this finding may be related to the thesis of the influence of third parties in the process of consumer perception regarding the risks of consuming such products, whether through guidance from professionals capable of doing so,

through reference groups such as friends and relatives, and/or information from media/communicative campaigns from companies producing food supplements. These possible relationships with the intention to consume dietary supplements serve as suggestions for future research. Therefore, continuing this discussion, from a social point of view, may endorse the results of the research by Suh & Lim (2014) when observing the importance of making information about possible risks on product labels and in advertisements more transparent.

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3. Development of theoretical propositions (theoretical work)	√	√		
4. Theoretical foundation / Literature review	√	√		
5. Definition of methodological procedures	√	√	√	
6. Data collection	√		√	
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9. Critical revision of the manuscript		√	√	
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