

CONSUMER CONFUSION ABOUT HEALTHY FOOD – A SYSTEMATIC REVIEW

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Abstract: As awareness of people and the official institutions about the importance of healthy nutrition is rising, research on consumers' habits and food choice making gains in importance. Nevertheless, despite the increased availability of the information and its overwhelming amount, consumers' understanding what is healthy when it comes to food products is not as straightforward as it may seem. New findings about healthiness of the food in the field of scientific knowledge are reported to the individuals, but they are not always able to directly translate them into their behavior. Additionally, media and marketers share their contents with consumers as well, and in the variety of information which they are surrounded with, consumers have difficulties to understand the recommendations and act accordingly. In this paper, we aim to draw attention to the presence of confusion about food healthiness among consumers. An extensive literature review concerning consumer confusion with nutrition and food information is presented, along with the main conclusions and directions for further research.

Keywords: healthy food, food choices, information sources, consumer confusion

PORABNIKOVA ZMEDA GLEDE ZDRAVE HRANE – SISTEMATIČNI PREGLED

Povzetek: Z naraščanjem ozaveščenosti ljudi in uradnih institucij o pomembnosti zdrave prehrane pridobivajo na pomenu raziskave o navadah porabnikov glede hrane in njeni izbiri. Kljub povečani razpoložljivosti informacij in njihovem velikem obsegu porabnikovo razumevanje tega, kaj je zdravo, ko gre za prehranske izdelke, ni tako enostavno. Nove ugotovitve o zdravstveni ustreznosti hrane na znanstvenem področju so sicer posredovane posameznikom, vendar jih ti ne morejo enostavno pretvoriti v svoje vedenje. Poleg tega mediji in tržniki svoje vsebine delijo

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tudi s porabniki in ob raznolikih informacijah, s katerimi jih obkrožajo, imajo porabniki težave pri razumevanju priporočil in ukrepanju v skladu z njimi. V tem prispevku si prizadevamo opozoriti na prisotnost zmede o zdravstveni ustreznosti živil med porabniki. Predstavljen je obsežen pregled literature s področja zmede potrošnikov glede prehranjevanja in informacij o živilih, skupaj z zaključki in smernicami za nadaljnje raziskave.

Ključne besede: zdrava hrana, izbira hrane, viri informacij, zmeda pri porabniku

1. INTRODUCTION

The increase in the information available to consumers for any decision they need to make is evident. While more information is generally appreciated, its increase also means bigger processing efforts in order to make an informed decision. Exponential proliferation of information with the Internet contributed not only to the information availability, but also to creating information that is not concise, and sometimes even contradictory (Nagler, 2014; Pollard et al., 2015). Such an environment (ambiguous data and information overload) significantly contributes to the state of consumer confusion (Mitchell & Papavassiliou, 1999).

In scientific terms, consumer confusion is a relatively new field of researchers' interest in marketing and consumer psychology. While early articles in this field date from the 1970s, when the focus was mainly on brand confusion, increase in information and its availability at the beginning of this millennium made this topic interesting for deeper examination. Consumer confusion has been defined as "a state of mind which affects information processing and decision making. The consumer may therefore be aware or unaware of confusion" (Mitchell & Papavassiliou, 1999: 327), while it can be also defined "as consumer failure to develop a correct interpretation of various facets of a product/service, during the information processing procedure" (Turnbull, Leek & Ying, 2000: 145). When talking about consumer confusion in general, overload, similarity of information and ambiguity of information are identified as three potential causes and categories of confusion (Mitchell & Papavassiliou, 1999).

While this confusion can be identified in many areas, including tourism (Matzler & Waiguny, 2005), mobile phone market (Turnbull et al., 2000), and wine selection (Drummond & Rule, 2005), the confusion with health and nutrition information has become relevant in the last few decades. When it comes to food-related choices, since they are influencing health in the most direct way, sensitivity of consumers and their need to make proper and informed choices is additionally increased. In the food-choice making process, not only available content differs, but also their sources, and the issue of source credibility emerges (Spiteri Cornish & Moraes, 2015). In addition to this, the mere amount of information available can be overwhelming and consumers might get confused.

However, sometimes the information source credibility alone does not provide consumers with the answer which food to select. Namely, as the

science advances, it might happen that the official advice also changes, and such contradicting information from same relevant source (frequently a consequence of additional research and new discoveries) and misleading information also contribute to the feeling of confusion, and they may lead to misinterpretation (Britten et al., 2006; Nagler, 2014), especially when the level of previous knowledge about healthiness of the food is low (Howlett, Burton & Kozup, 2008). In such cases, individuals are unable to rank available information in order of its relevance and reliability. Consequently, consumers might overappreciate the less important but salient information, and disregard the important one, which leads to selection of less-healthy options (Variyam & Golan, 2002; Himmelsbach, Allen & Francas, 2014).

The aim of this paper is to provide a brief overview of the research findings in the field of consumer confusion and healthy food-related decision making. Namely, consumers are surrounded with varying information, and their ability to assess it is not always adequate. Therefore, more attention and research in the area of consumer confusion and consumer understanding of claims and food-product characteristics is necessary (Lähteenmäki, 2013). Furthermore, the rise in contradictory information related to health and nutrition contributes to the state of confusion as well, and deeper research is needed (Carpenter et al., 2016). Our research represents a comprehensive literature review and aims to contribute to consumer research, as well as the food and nutrition literature providing an overview of the current achievements in the identification of consumer confusion, its triggers as well as consequences. Relative to consumer confusion literature, we aim to deepen the knowledge about ambiguity confusion, caused by contradictory information about nutrition consumers are faced with. Recommendations and concluding remarks of this paper contribute to the existing knowledge in the literature related to consumer behavior and healthy food choices. They can also be used by marketers and policy makers who are striving to diminish confusion and enable better understanding and practical usage of food-related information.

The structure of the paper is as follows. First, we aim to provide an overview of the present findings about the consumer feeling of confusion related to food and nutrition in general. In the consecutive parts of our review, the confusion is deeper investigated as a phenomenon coming from various sources, as identified in the literature review – traditional media, food labels, social media and official documents (recommendations and guides). Finally, we finish by providing some

conclusions about the current state in the consumer-confusion literature when it comes to food and nutrition.

2. CONSUMER CONFUSION ABOUT FOOD HEALTHINESS

According to the previous research, in order to behave in a healthy manner, individuals need to be both motivated and knowledgeable in the field of healthy eating (Moorman & Matulich, 1993). Nowadays, acquiring knowledge about healthy eating can lead to a confusion that is caused by the increasing amount of information, despite the consumer efforts to make wiser and healthier choices (Marino et al., 2017).

Initial grounds for consumer confusion about healthy food arise from the term itself. Namely, what is healthy eating in the first place is not completely clear, and not many studies have been conducted with the aim to provide an understanding or a definition of this term. Some attempts have been made, and the results imply that the understanding of the term “healthy” in relation to food must be looked at on the level of an individual (Ronteltap et al., 2012). Additional contributor to the confusion of the consumers when it comes to food healthiness is the presence of contradictory information.

Contradictory nutrition information can be defined as “two or more nutrition-related propositions that are logically inconsistent with one another” (Carpenter et al., 2016: 1175). Usually, when people face contradictory information about nutrition, there are several strategies they can apply. Their reaction consists of strategies in order to make sense of the information available, including seeking more information, filtering out misinformation, or delaying the decision-making. Additionally, presence of ambiguity and conflicting information can lead to the situation in which individuals selectively choose to read and believe in information that supports their behavior (justificatory searches and behavior), or expose themselves to the information that is representing what they want to believe (Carpenter et al., 2016).

It is therefore important to realize that reliance on individuals' capability to find and process the information they need, as well as to properly select the relevant information for particular food-related decision is not completely adequate, especially if we take into account different socio-economic statuses, educational levels, and other demographic characteristics. Namely, previous research has found that individuals coming from higher educational level and socio-economic sta-

tus in most cases have access to more information sources (Tulloch & Lupton, 2002), and they show decreased trust in news published by the food industry or tabloid newspapers, which are frequently used as sources of information among less educated (Frewer et al., 1998). Lower levels of education are also found to be related to the characteristics of individuals to either accept the information given without further questioning, or to simply ignore the information that seems conflicting or contradictory to their previous convictions (Ward et al., 2011). Consequently, people in poorer economic categories are found to suffer more from food-related illnesses such as diabetes or obesity (Drewnowski & Darmon, 2005).

On the other hand, individuals from higher socio-economic status show greater trust in ability and capacity to judge the information available, and assess the risk of particular consumption (Ward et al., 2011). Furthermore, while women are more likely to follow the relevant healthy eating recommendations, and adjust their eating behavior in order to have a healthier diet (Wardle et al., 2004), men tend to classify healthy eating as insubstantial and monotonous, giving more importance to taste and gastronomical satisfaction (Gough & Conner, 2006).

Nevertheless, despite the conflict in the available information related to healthy food and differences present in socio-demographic groups, research shows that people do have some common conceptions when it comes to their perception of food healthiness. For example, organic food, as well as the food whose natural components are well-known are perceived as healthier compared to other products by consumers (Magnusson et al., 2003). Also, fruits and vegetables are in general considered as healthy, as well as having regular, balanced meals. Ronteltap et al. (2012) found support for the claim that there is some common understanding of which food is healthy and unhealthy, but they also identified some differences for products that are not as straightforwardly put in one of the categories like fruit or mayonnaise.

Certainly, some product characteristics influence consumer perceptions and feeling of confusion or clarity. Dairy products seem to be an area where consumers are experiencing confusion of categories and their healthiness (Szakaly et al., 2012), while research shows that product name (Irmak, Vallen, & Robinson, 2011) and product packaging colours (Mead & Richerson, 2018; Tijssen et al., 2017) can contribute to clarity of consumer perceptions in terms of its healthiness. Furthermore, it has been shown that consumers face doubts and ambiguous information when it

comes to portions and serving sizes of the food they consume (Almiron-Roig et al., 2018).

The amount of information about food choices and different instructions about their healthiness that consumers are exposed to lowers the ability of individuals to select food that they are certain is healthy. As people are prone to generalizing features of food, researchers have come up with the term 'health halo effect'. This term originally referred to the tendency of people to underestimate the calorie content of foods served in restaurants where food choices are advertised as healthy, compared to restaurants that do not advertise a healthy image, proving the power of promotion of meals and foods as healthy in creating consumers' opinion (Wansink & Chandon, 2006). Recently, the term 'halo effect' has been widely used in health-related discussions, and has been used to describe the consumers' tendency to generalize one given claim (e.g. low fat) on the entire product, considering the product healthier than it actually is, with respect to the nutritional and health content of it (Wong et al., 2013).

3. METHODOLOGY

In order to provide a comprehensive literature review, we first conducted an extensive search for the articles published in relevant journals. The literature was reviewed in Web of Science and Scopus databases, and selected articles had to satisfy the condition of including "consumer confusion" and "nutrition" or "food" as keywords in their titles or abstracts.

The initial search resulted in 247 items (articles and conference proceedings) – 224 of which were found in Web of Science, while 247 articles were found in Scopus; due to the difference in the articles found and the extensive overlap in results, we decided to use the results from the Scopus search, since Web of Science identified no other articles besides those also present in Scopus. These articles were then taken into account, and initial screening of the title and abstracts was performed in order to filter papers for relevance for the topic and ensure that the included papers genuinely dealt with the topic of interest for the current study. The articles that dealt with the topic of consumer confusion in nutrition and food setting were then thoroughly examined and, along with their relevant references, used for evaluations of the field presented in this article. In order to structure our review, we aimed at connecting the existing research from the field and its findings in a constructive and logical manner.

4. RESULTS

The articles that were selected for further examination are very versatile in the topics, product characteristics, and categories that they are evaluating. In order to establish a firm connection among them and be able to track the development in the literature field, we determined the source of information that creates confusion as a criterion for review structuring. While various articles do include various products, recommendations and methodologies, the information source can be identified as one of the elements present in the background of each of the articles investigated (if not emphasized, the information source is present in form of a setting or research context).

Previous research focusing on the preferred information sources by consumers indicates that traditional media are still a very relevant information source for consumers (Vella et al., 2014), despite the fact that they are not among the most trusted ones (Ward et al., 2011). Tanner, Blake and Thrasher (2012) reported that news and media are the primary source of food and nutrition information for consumers (63% of respondents), followed by magazines (45%) and the Internet (24%). Nevertheless, along with newspapers or television which are known as prevalent, wide-reaching sources, expert sources (official and scientific), as well as food labels are also recognized as a relevant information source for consumers when it comes to food (Abbott, 1997).

In our research, we have also summarized findings related to consumer confusion with food data available on social media and the Internet. These sources are becoming a very important source of food and health information with a potential to influence consumer behavior, but have not been thoroughly researched due to their relative novelty (Chau, Burgermaster & Mamykina, 2018). Certainly, since the technology, the Internet and social media are gaining importance in consumers' lives, it is very relevant to include them in further research of consumer perceptions and behavior (Vaterlaus et al., 2015). Since consumers spend multiple hours using their devices to look for information on the Internet and social media (Vaterlaus et al., 2015), the use of online sources in search for health and nutrition information is a relevant topic (Ramachandran et al., 2018).

Word of mouth and advice from friends and relatives is another relevant source of information for consumers in general. However, our results from the literature did not identify this source of information as one of the most researched in this area. Since the literature does not offer

much research or overview of this source and its influence on individual's confusion and decision making, we have omitted it from further research. One of the reasons why this information source is not examined in the consumer confusion literature might be the fact that it is mostly used to mitigate risk, while it is generally not regarded as confusion creator in the consumer confusion literature (Mitchell & Papavassiliou, 1999).

The articles presented in Table 1 show the most common spheres of interest in the present research within the four nutrition confusion sources. The articles were selected based on their importance in the area (number of citations), as well as their recency. Additionally, in this table we aimed to show a shortened but still a comprehensive overview of consumer confusion research results from different areas, including medicine and health, nutrition and health communication, food and nutrition sciences as well as consumer research.

The aim of this brief tabular literature overview was to show the main areas in which research on consumer confusion about food and nutrition advices, guidelines and knowledge is developing. The four main information and confusion sources identified in the previous literature (traditional media, food labels and claims, social media, the Internet, and official recommendations) are further explained in detail in the following four sections.

4.1. ROLE OF TRADITIONAL MEDIA IN FOOD-RELATED CONSUMER CONFUSION

Source of information, its appeal, and availability are some of the critical elements for food-related decisions (Henderson et al., 2010). For example, while there is awareness of certain inadequacies of the ways in which traditional media report on food issues, as well as the rising reported distrust in media, previous research shows that media and its sources still have a strong impact on the attitudes and behaviors of consumers who are exposed to it, and it still has a crucial role in informing individuals about nutrition (Tanner et al., 2012). As average consumers cannot be expected to read articles and findings from scientific journals or official reports in order to inform themselves, it is logical to suppose that they rely on the information that is available from more accessible and easier-to-acquire sources (Ward et al., 2011).

Media is full of contradictory information about food and its nutritional values, and consumers

Table 1: Brief literature overview divided by the information source they take into account

Authors	Information source examined	Methodology	Findings/Conclusions
Almiron-Roig, E., et al. (2018)	Food labels/ claims	Review	- Portion sizes on food labels need standardization and definition in order to be of a better informative value to consumers
Chan, C., Patch, C., & Williams, P. (2004)		Focus groups	- Consumers are in general skeptical about labels and claims indicating low or 0 fat content, they find them confusing to a certain extent but admit that such information on packaging influences their purchase decisions
Lalor, F., & Wall, P. G. (2011)		Review (literature and legislation)	- Regulatory requirements are not harmonized among countries, which leads to different claims being permitted in different countries. This further creates consumer confusion and develops an uneven playing pitch for the industry
Hasler, C. M. (2008)		Review	- Overreliance on health claims for informing consumers not justified – it is often misleading
Aschemann-Witzel, J., et al. (2013)		Experiment	- Food label format can influence healthiness of food selected when people aim to choose healthy; motivation is nevertheless still a relevant determinant of selection, and labels seem to be unable to increase the health motivation
Chau, M. M., Burgermaster, M., & Mamykina, L. (2018)	Social media and the Internet	Review	- Social media have a potential to educate consumers and intervene in order to improve their food choices and diminish confusion
Pollard, C. M., et al. (2015)		Survey	- All age groups use Internet as source of information – great opportunity for policy makers to provide easily accessible and informative recommendations for consumers
Ramachandran, D., et al. (2018)		Online content analysis	- Content available to consumers online and especially on social media is rich with contradictory information and deviations from official guidelines for nutrition and a healthy diet
Vaterlaus, J.M., et al. (2015)		Focus groups/ interviews	- Social media and technologically advanced information sources can motivate but also hinder healthier food choices of young adults
DiFillipo, K.N., et al. (2015)		Review	- Food and nutrition apps are becoming a relevant source of information people are using online, and further research of their influence on actual behavior is needed
Robinson, E., & Chambers, L. (2018)	Official/ Scientific	Review	- Dietary guidelines need to be developed in accordance with scientific progress, and be updated in order to provide unique definitions and diminish confusion
Spiteri Cornish, L., & Moraes, C. (2015)		Interviews	- Healthy eating campaigns need to do more to clarify specifically what a healthy diet looks like
van Dijk, H., et al. (2012)		Focus groups	- Consumers perceive personalized recommendations as very appropriate, when looking for advice or information, they are aiming at finding a solution

Liu, A. G., et al. (2017)	Official/Scientific	Review	<p>- Recommendations for successful scientific communication:</p> <p>*Condense complex information into convincing and motivating messages, but keep them evidence-based.</p> <p>*Use language at the 6th–8th grade reading level that is clear and easy to understand.</p> <p>*The best messages are actionable, easy to implement, and easy to visualize.</p> <p>*Remember to put research findings in context within the prevailing body of evidence and avoid sensational headlines.</p> <p>*Work with reporters to make sure your comments and quotes are correct.</p> <p>*Have a few (e.g. three) key messages that consumers can remember and reinforce with a strong bottom line.</p> <p>*Specify practical dietary substitutions with a “compared to what” approach rather than the general “eat more/less”.</p>
Ward, P., et al. (2011)	Traditional media	Interviews	<p>- Media information that is confusing or contradictory are found to increase anxiety, uncertainty and diminish trust in the food system in general</p>
Lee, C. J., Nagler, R. H., & Wang, N. (2018)	Traditional media	Survey	<p>- Exposure to contradictory nutrition information creates confusion, and its strength is dependent on its source (stronger for television than for newspapers)</p>
Nagler, R.H. (2014)	Traditional media	Survey	<p>- Contradictory information about specific foods is creating consumer doubt and perceptions of food healthiness and recommendations provided in general</p>
Kininmonth, A. R., et al. (2017)	Traditional media	Content analysis	<p>- Consumers are regularly exposed to poor quality information in newspapers about food and nutritional advices; clear and concise messages created as a result of mutual work of journalists, official institutions and experts is needed to diminish confusion and properly inform consumers</p>

are aware of that. Studies (Nagler, 2014; Lee, Nagler & Wang, 2018) showed that over 71% of study respondents remember being faced with conflicting information about products’ healthiness in the media. Nowadays, acquiring information about healthy eating can lead to a confusion that is caused by the increasing amount of information and its contradictory nature. When faced with media information about both risks and benefits, consumers were found to report confusion from differing opinions and changing recommendations, resulting in distrust in the information source. Ignoring information was

another consequence (van Dijk et al., 2012). This confusion is additionally enhanced with the scaring titles and articles available in popular media that is read by the majority of people (Knight, Worosz & Todd, 2007).

Confusion with contradictory information in nutrition can have even broader negative consequences. Media is identified as the major source of information for people, and it can have a significant role in developing, maintaining, demolishing and/or rebuilding consumer trust in food and food systems (Ward et al., 2011). In addition

to this, exposure to conflicting information on the benefits and risks of various food is connected with confusion about foods that are best to eat, as well as the belief that nutrition scientists are instable and keep changing their minds (Nagler, 2014). Furthermore, this research showed that confusion and contradictory information may lead to doubt in nutrition and health advice and recommendations in general—including foods that are not an object of conflict.

While media does cover information and news from scientific research to some extent, lots of content it provides is still related to the producing companies and their statements, as media looks for sensation, but it also accepts sponsored publications. Advertising is an additional source of product information that is frequently present in the media. When making a decision about which food product to acquire, individuals are often unaware of the inability to process all the information, and they welcome any available nutrition information in order to evaluate the product (Kozup, Creyer & Burton, 2003; Newson et al., 2013). In some situations, consumers do not have other information about the product but the ones provided by the marketers, and in such case this information shapes their attitudes and intentions related to their consumption patterns of the product, which ultimately may have a significant effect on their health (Kozup et al., 2003; Emrich et al., 2015).

Media and advertising also have a strong influence in shaping food choices. Recent research shows that the food information provided by media and marketers seems to be more relatable and palatable to individuals, leading to higher reliance on them (Spiteri Cornish & Moraes, 2015). Young population is especially susceptible to their influence (Halford et al., 2004). Kids frequently confuse the ads with other fantasy characters present in cartoons and movies, and their exposure to ads seems to be in relation with their body mass index (Harrison et al., 2017). In addition to this, preferences for less healthy food that are formed in the early period of life are likely to follow them in their lives later (Harrison et al., 2017). Young adults on the other hand also use the media information when making their food choices, but the peer influence is a dominant determinant of their choice (Croll et al., 2001).

4.2. ROLE OF FOOD LABELS AND HEALTH CLAIMS IN FOOD-RELATED CONSUMER CONFUSION

In order to enable consumers to make informed choices at the point of sale, many countries have

more or less regulated the information that should and can be presented on the products, most of the time on the product labels (Grunert & Wills, 2007; Department of Health, Food Standards Agency, Welsh Government, The Scottish Government, 2013; European Parliament and Council of the European Union, 2007). While there are some regulations, previous literature calls for their standardization, since the food labels and claims are not synchronized within EU, let alone with the rest of the world. Such situation has been reported to be a trigger for consumer confusion about product healthiness and information correctness (Lalor & Wall, 2011; Lee et al., 2018).

Apart from the available information that can itself be confusing, people's information processing characteristics also create room for potential confusion. Namely, people have a tendency to generalize the dominant feature of a product to the entire product. In this particular case, this means that if the label on the food product states that the product has whole grains, people will automatically think the product has low fats and calories, and consequently consider it healthy even though that might not be the case (Emrich et al., 2015).

Food labels are in general considered to be an efficient mechanism for improvement of individuals' diets and nutrition-related diseases (Cecchini & Warin, 2016). Simplified front-of-pack food labels are proven to be the most frequently used by consumers in order to obtain information about the food nutrition value, and be able to make more informed food choices (van Kleef & Dagevos, 2015). However, standardized criteria for content and visual elements of food labels are not established yet. This opens wide opportunities for companies to gain advantage and attention for their products by using these labels, compared to products without health claims and food labels (Emrich et al., 2015).

Using this knowledge, manufacturers are making efforts to place their products as healthy, disregarding the fact that misleading claims can actually have negative consequences for their reputation (Kozup et al., 2003). As it has been proven, the food claims on labels seem to be influencing the decisions of consumers (Barreiro-Hurlé, Gracia, & De-Magistris, 2010), even though the food with claims on their packaging is not necessarily healthier than the food in the packaging without such claims (Emrich et al., 2015). Usually, people have certain ideas about food healthiness based on their previous experience, and they are less prone to look for information about these products (such as eggs, fruits of

vegetables) on the food labels on the products in stores (Colby et al., 2010).

Additionally, previous research has shown that consumers, in order to avoid additional information processing, usually do not pay attention to the product labels of the products generally considered to be healthy (fruit, vegetables, fish, honey products) (Mhurchu et al., 2018). Consumers are also prone to rely on symbolic information they receive through messages about products, and underestimate the meaning of the other parts of the message. For example, a recent study has shown that simply adding the word 'fruit' when describing sugar changes the judgment of the non-observable food properties. In this particular case, people saw food with 'fruit sugar' as much healthier than the food that contained just 'sugar' (Sütterlin & Siegrist, 2015).

On the other hand, claims related to lower content of harmfully perceived ingredients (such as fat, sugar, or gluten) make consumers infer that the product is healthier and even increase the price they are willing to pay, while the real increased healthiness of such products can be dubious (Geyskens et al., 2007; Wu et al., 2015; Kaur et al., 2015; Mozaffarian & Ludwig, 2015). This also contributes to the overall confusion of the consumer, who develops different strategies in order to be able to choose, including ignoring certain information or relying on familiar one (Küster & Vila, 2017).

Finally, food labels that contain health claims or low-fat content can actually result in a situation in which people eat more of those products compared to the products without such claims (Geyskens et al., 2007), and individuals consume up to 35% more of the food labelled as low-fat or healthy compared to the food that has no such label (Wansink & Chandon, 2006; Provencher, Polivy & Herman, 2009; Provencher & Jacob, 2016). Low-fat and other specified health claims about a particular element of the product (whole grain, low-fat, sugar-free, etc.) do not mean that the product as a whole is necessarily healthier, since lowering the presence of one unhealthy ingredient usually means increase in other equally unhealthy ingredients (Mozaffarian & Ludwig, 2015; Colby et al., 2010). Therefore, it becomes obvious that such claims can actually lead to food consumption that is not optimal, despite the consumers' thinking that it is healthy and optimal for their well-being.

4.3. ROLE OF SOCIAL MEDIA AND THE INTERNET IN FOOD-RELATED CONSUMER CONFUSION

While traditional sources such as media (television, magazines, etc.) are still dominant when it comes to informing consumers about food and nutrition, the Internet and social media are gaining in importance due to their availability and ease of use (Tanner et al., 2012). Use of the Internet and social media has grown rapidly, enlarging their potential to become the leading sources of food and nutrition information.

Perhaps due to access to more information than ever, including conflicting information of uncertain and variable quality, many consumers are more confused than ever. Social media and the Internet are no exception when it comes to providing contradictory information to consumers; conflicting and misleading health and nutrition information has been observed on social media as well, and their sharing is eased and spreading very fast (Rutsaert et al., 2013; Carpenter et al., 2015). A recent study showed that popular diet and nutrition website pages online are actually not perfectly aligned with official recommendations and guidelines about nutrition. Pages that do refer to official sources often include their own interpretations and evaluations, sometimes causing conflicting information and readers confusion (Ramachandran et al., 2018).

Social media is recognized as an important medium for sharing information among brands and private businesses (Rutsaert et al., 2013). Nevertheless, while companies are using them successfully, public organizations and authorities did not recognize the potential social media has, and they are not using them as much (Thackeray et al., 2012).

Social media has been connected with younger consumers in most of the studies, and they are claimed to have influence on their behavior (Vaterlaus et al., 2015). Additionally, it can be noticed that a growing body of nutrition interventions on social media is present, and their positive impacts on young adults' food-related behavior is shown (Chau et al., 2018).

While the research was mostly focusing on the issue of social media and Internet influence on food-related decisions of young adults, studies show that older users tend to frequently use the Internet for searches about food and nutrition, which consequently influences their decisions as well (Pollard et al., 2015). In addition, a recent research shows that using technology- and internet-aided devices in educating people and

enabling them to find proper information about nutrition can be appropriate for all age groups, including the middle-aged and elder population (Chiu, Kuo & Lin, 2017).

Food apps are another very frequently used source of food information, and as such they can help individuals monitor and improve their eating habits (Franco et al., 2016; West et al., 2017). Nevertheless, even the app information was shown to be conflicting, namely, different apps use different methodologies to evaluate product healthiness, leading to different information provided to consumers, and their confusion (Maringer et al., 2018).

As the rise in social media and the Internet is a relatively novel phenomenon, their genuine influence on consumer attitudes and behavior will probably take some time before it gets identified and thoroughly researched. The studies presented in this chapter clearly indicate that the power of social media and the Internet to inform individuals and help them with their choices is present, while further research is needed to deeper evaluate the consumer confusion in this aspect.

4.4. ROLE OF OFFICIAL INSTITUTIONS IN FOOD-RELATED CONSUMER CONFUSION

In the last few decades, healthier and better quality food options are becoming preferred among consumers, following the period in which they were mostly consumed by individuals with health issues (Moorman & Matulich, 1993; Gil, Gracia & Sanchez, 2000; Sandrou & Arvanitoyannis, 2000; Fung et al., 2015). The importance of proper nutrition was recognized not only by consumers, but also by relevant institutions (Ronteltap et al., 2012). For example, consumers' food choices have been examined in WHO reports for over 20 years, emphasizing their effect on health (2003; 2018) and disease prevention (1990). Additionally, the majority of developed countries are developing policies with the intention to provide their citizens with better and healthier food options, as well as to educate them to choose such products (e.g. Government of Canada, 2010; European Food Information Council, 2013; Department of Health, Food Standards Agency, Welsh Government, The Scottish Government, 2013).

Overall, official institutions strive to provide consistent information to the population. Dwyer et al. (2012) stated in their work that the official recommendations in the form of dietary guidelines for majority of food and nutrition categories have not changed over the past 30 years. In addition to this, when consumers are looking for dietary

guidance, they can find both food-based dietary guidelines and recommended nutrient intakes. While such data are usually not contradictory, it can be confusing for consumers since the former is mostly written primarily for food professionals. Nevertheless, despite the consistent official messaging and consumers self-claimed familiarity with the guidelines provided, the majority of people still does not consume the recommended amounts of nutrients.

Partial explanation might be that recommendations such as food pyramid, although concise, are seen as too broad and general, and individuals are unable to properly understand and integrate such advice in their food patterns. Other recommendations, like the one concerning fruit and vegetable recommended intake are found to be lacking clarity, especially when it comes to identifying foods that are included in the guideline, as well as the portion size of the individual intake (Rooney et al., 2016). Additionally, people do feel the need for more exact and concrete information, advice and guidelines that would enable them to make well-informed decisions, and to be certain that they have interpreted the available information correctly (Britten et al., 2006).

Additional confusion maker is the lacking universal agreement on a measurement tool for portion size. Different terminologies and measurement units used by different institution cause confusion and lack of clarity on recommended serving sizes, making consumers unable to determine proper food portion with certainty (Bucher et al., 2017). Additionally, new categories of food are being discovered and recommended, but the inexistent standardized intake recommendations, as well as oversimplified ones can be confusing for consumers, and consequently limit the effectiveness and the impact public health messages have (Robinson & Chambers, 2018; Mobley, Slavin & Hornick, 2013).

5. DISCUSSION AND CONCLUSION

Consumers make their choices to consume healthy food depending on their health-related motivation, knowledge, and opportunities to acquire healthy products (Moorman & Matulich, 1993; Ward et al., 2013). However, even though individuals may be interested and willing to make healthy choice, sometimes the amount of information they are surrounded with hinders their ability to make the genuinely healthy food choice. It is not a rare situation for individuals to get confused or misled by the food- and diet-related information they get from the media, governments, experts, food companies, their peers,

or other sources (Liu et al., 2017). Therefore, it is necessary to understand that the availability of information is not enough; consumers should be able to read it properly, adopt it, and apply it in their daily food choices.

As previously mentioned, different socio-demographic groups might differ in access to information about food, as well as their perceptions and the way they use available information. Such factors and characteristics must be taken into account when developing and executing a strategy that aims to provide consumers with concise and usable information and guidelines that genuinely influence their behavior. Individual characteristics are therefore of high relevance, and they need to be taken into account in order to ensure that food and nutrition recommendations and guidelines are clear and appropriate for an individual's needs. One approach to tackling these differences might be personalization of recommendations. In the consumer confusion literature, an increasing number of articles recommends a personalized approach to education and guiding individuals towards a healthier diet. Such an approach is found to be able to diminish the confusion created by contradictory information, as well as motivate consumers to actually follow the instructions and advice (Schmidt, 2006; van Dijk et al., 2012).

Despite the widely present feeling of confusion among individuals, successful practices are also present. Country program results from several countries worldwide imply that displaying the food nutritional value approved by credible agencies in the supermarkets and food labels inspire consumers to purchase more of healthy products, as well as shape their knowledge and attitude (Macaskill et al., 1998; Kozup et al., 2003; Casini et al., 2015; Variyam & Golan, 2002). Moreover, simplified messages about the food nutritional value at the point of sale are shown to have a positive effect on the healthier choice of consumers (Nikolova & Inman, 2015; Azman & Sahak, 2014), and healthy eating messages are shown to reach even sensitive consumer categories such as adolescents and young adults (Croll et al., 2001).

These results are encouraging, as they imply that the healthy food related behavior of individuals can be improved with a systematic approach; what is needed is help with translating the information into behavior, as well as the assistance when dealing with a huge amount of information, much of which is contradictory. Therefore, health care and nutrition professionals should also be aware of the confusion in which their patients

might be, individual characteristics and dynamic nature of individuals' belief systems related to a healthy diet and eating, and act accordingly (Henderson et al., 2010; Bisogni et al., 2012).

New ways of communicating nutrition recommendations, guidelines, and novel discoveries should be implemented as well. Social media and the Internet might be a good option, since the population present is wide in socio-economic characteristics (Tobey & Manore, 2014). These are also the most convenient for the users, as they are provided with an option to interactively participate, share new knowledge and get involved in the communication and behavior change process more deeply (Rutsaert et al., 2013).

In addition to this, past research draws attention to the need for providing concrete examples of healthy food choices and combinations, clear explanations about terminology used (i.e. what does trans-fat actually mean?, What is whole grain?, and similar), as well as usage of well-known measurements when providing recommendations to individuals is considered necessary in order to avoid or at least diminish confusion (Britten et al., 2006).

From this perspective, trying to eat healthy seems to be a challenging task, and the rich information received from external sources does not make it particularly easier, since some of the sources are not credible, and the information consumers get from different sources is often misleading or contradictory. While the idea that individual's decisions are more informed is present, this does not mean that we as individuals are more certain in optimality of our decisions and food choices. Attention and actions from official institutions (in forms of instructions and more regulations about the health claims and nutrition information allowed on the products, as well as their harmonization; structuring the way in which dietary guidelines and recommendations are reported is also necessary), marketers (by adjusting their promotional activities in a way that brings healthier options closer to the consumers and diminishes the confusion), media (paying more attention to the manner in which they report about scientific discoveries, as well as commercial research in order to avoid confusing masses with contradictory or misleading information) and consumers themselves are therefore needed in order to enhance the ability of individuals to make informed decisions about the food they consume, and genuinely get to understand and evaluate its healthiness before the final consumption choice is made.

Limitations to our study include the potential exclusion of relevant articles. While the search was conducted in two renowned databases, some of the articles might have been omitted in case they are not published in these databases. In order to diminish this, we have widened this research to the references of selected articles as well; still, some omissions might have occurred. Another limitation might come from the search strategy – while we aimed at researching the consumer confusion, some of the keywords may be unintentionally omitted. Further research should pay attention to the confusion that is created by the contradictory information consumers are faced on a daily basis. Especially relevant is further research in the field of social media as the information source for consumers. Realizing how social media and individuals' involvement in them can be utilized for their education and behavior change is crucial in order to prevent larger adverse effects of the increasing amount of contradictory information present.

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