

Article

Talking about Sustainability: How the Media Construct the Public's Understanding of Sustainable Food in Romania

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Abstract: Decades of medical research have focused on analysing the effects of sustainable eating on health and well-being; yet, less attention has been devoted to this subject in communication and media studies research. Recently, however, scholarly attention has shifted towards the way sustainable food is covered in the media. Nevertheless, previous studies analyse sustainable food together with other sustainability challenges, such as climate change. In this article, we focus our attention on analysing media reporting of sustainable food. Relying theoretically on the framing analysis approach coupled with Goody's five-phase analytical framework in building sustainable food-related behaviours (production, distribution, preparation, consumption and disposal) and by applying the rationale of content analysis, this article examines media coverage of sustainable food with a focus on sustainable food production, distribution, preparation, consumption and disposal. Therefore, the article identifies trends and patterns of media coverage of sustainable food in Romania between 2014 and 2017. Interesting results emerge, showing that Romanian journalists reporting on food-related topics do not have a solid understanding of the field and contribute to the spread of inaccurate information often, resulting from insufficient research or inadequate use of sources. As a result of the lack of in-depth knowledge of those involved in writing about food, the media coverage of sustainable food is strictly reduced to reporting on aspects related to the consumption of fresh fruit and vegetables, framed as the only healthy foods, and recommended diets for specific underlying health conditions (such as obesity, diabetes, hypertension and associated diseases).

Keywords: sustainability; media coverage; mediatization; sustainable food; dietary food; sustainable food production



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1. Introduction

Finding ways to return to healthier food consumption patterns with more nutritious, healthier foods is one of the current global challenges. Recent changes in food consumption patterns at a global level raise serious sustainability questions in terms of the food systems that are in place to meet this demand [1,2]. In order to tackle the continuing rise in nutrition-related diseases and ensure future sustainable food production systems that will benefit the environment, it is crucial to improve food consumption patterns everywhere in the world. To do so, most governments and some non-governmental organizations have begun to engage in regulatory activities in this area. At the European Union level, for example, there are regulatory efforts to improve nutrition and protect consumers' health, in accordance with the Treaty of Lisbon [3] and based on the General Food Law Regulation [4]. The latter

establishes a general and coherent framework for the development of food and animal food legislation, both at the Union and Member State level [4]. However, while there are reasons to hope that the regulation of public food policies will address some of the negative consequences of the widespread adoption of unhealthy food habits, there are equally many warnings from international bodies to alert both individuals and public authorities to the disastrous effects of unhealthy food intake already manifesting across the world [5,6].

The past few decades have shown that a major transformation of food production processes towards sustainability is both necessary and possible. Technologies, transformative networks of actors, mental models, sectoral roadmaps for sustainable transformation (e.g., in energy management, the mobility sector, the agricultural industry) and entrepreneurial business models geared towards sustainability have been developed in many countries [7]. The transformative measures initiated globally are part of the Sustainable Development Goals (SDGs), also known as the Global Goals [8]. The Sustainable Development Goals were adopted by all the United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030 [8]. The overarching aim of the SDGs is to generate wealth that contributes to poverty reduction while using natural resources responsibly and protecting the environment. It is believed that achieving this aim coupled with an improved food supply chain will ensure food security worldwide, making more nutritious food products available and accessible everywhere in the world [9–11]. However, even if several steps towards achieving this goal have already been taken globally, Duncan et al. [12] emphasize that the progress towards achieving SDGs (i.e., to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture) is slow and without significant positive outcomes. Indeed, data from 2016 suggest that the number of chronically undernourished people in the world increased to 815 million from 777 million in 2015 [13].

The media is considered to have an important part to play in this debate because of its ability to reach a wide audience and raise awareness of global challenges related to democracy, climate change, and globalization. The unprecedented interpolation of the media in all spheres of society, a phenomenon known as the “mediatization” of society [14–19], has prompted scholars to state that the “media are inside the society, part of the very fabric of culture; they have become ‘the cultural air we breathe’” [20] (p. 223). Furthermore, research on mediatization highlights the interdependence between media change and societal and cultural change [18,20–24].

Current debates on mediatization start from fundamental overviews [14,15,25,26] and underline the importance of mediatization as a transformative force [27]. The concept of mediatization is defined and discussed as a paradigmatic ontological and epistemological turning point. Additionally, mediatization is considered a metaprocess that is the subject of a “vast research program with a pragmatic purpose aimed at a critical understanding of our world for a responsible and sustainable ecomedia experience” [21] (p. 15). In fact, mediatization as a concept and paradigmatic change in contemporary society is considered a “metaprocess at the heart of hypermodernity,” “alongside globalization, democratization, climate change with profound civilizational and anthropological consequences” [23]. Moreover, mediatization is understood as a “new way of being in the world” [28], explicitly a “process by which culture and society become increasingly dependent on the media and its logic” [17] (p. 107). Since all phenomena of reality are submitted to the “media logic,” current studies emphasize the actual hyper-mediatization [21] or deep mediatization [29]. If mediatization refers to an “ongoing discourse of theorizing social and cultural transformations in relation to media and communication” [29] (p. 9), deep mediatization as “recursive transformation” involves the “re-figuration of society and the emergence of new figurations (platform collectivities, connective actions)” [29] (p. 13). Deep mediatization is also characterized by the fact that actors’ collaborative practices are entangled with digital media and their infrastructures [21,23,28,29].

In this context, taking into consideration the aforementioned influence that the media exerts on society and individuals and its power to “fix the modes of thought, to determine in large part the ideas, the habits and the customs” [30] and “decide and dictate the lifestyles” [31], this article takes its point of departure in the mediatization theory and explores the media coverage of sustainable food in Romania, a developing country usually left out of mainstream research on sustainability. Combining two analytical frameworks (the frame analysis and Goody’s [32] five-phases in building sustainable food-related behaviours) from two related disciplines (communication studies and the sociology of food), this study focuses on the Romanian media coverage of sustainable food between 2014 and 2017, identifying patterns of coverage related to sustainable food production, distribution, preparation, consumption and disposal.

Food systems and policies, food sourcing and processing, dieting and the quality of daily food have always been of interest to people, and therefore, they have become a constant presence in the media. Over time, media concerns about nutrition and health have diversified. New preferred topics have emerged in the media, such as healthy food, current dietary trends, sustainable nutrition, balanced lifestyles, risks related to consuming certain foods or how the environment is being affected by the whole process involved in sourcing and processing food. Moreover, the media seem to be one of the most effective channels through which the health risks related to food are disseminated and are likely to lead to a behavioural change [30]. However, it is believed that the media’s impact depends on both individual and contextual variables, such as an individual’s trust in the media and in public institutions and the perception of risk, as well as one’s ability to comprehend scientific data and arguments reported by the media [31].

While previous studies have focused only on one area of sustainable food (such as sustainable food consumption [33], sustainable food production systems [34], or sustainable food security [35,36]), the uniqueness of the present article lies in the fact that, in line with Goody’s [32] work, it provides an overview of the media coverage of all the phases included in what is currently known as sustainable food (production, distribution, preparation, consumption and disposal) [17]. In doing so, we take the view that the media coverage of sustainability challenges as a phenomenon is inseparable from contemporary social transformations, and communicating accurate information, in a non-biased way, is crucial to succeeding in achieving the aims outlined by the 2030 Agenda for Sustainable Development [10].

This article also promotes a need for consistency in the media discourse regarding the use of concepts related to sustainability and sustainable food. Therefore, the article starts by reviewing the literature on the topic and outlining the theoretical framework used in interpreting the data and then progresses to explain the data collection and analysis process, before ending with a discussion of the results, followed by recommendations for policy change in Romania and directions for further research. The results indicate that the media representation of sustainable food is inaccurate and misleading. Sustainable food is presented as being very expensive and is used as a synonym of organic food, while the consumption of sustainably sourced food often equals being on a diet.

1.1. Literature Review

Given the debates generated in the literature, it comes as no surprise that sustainability-related issues have found their way into the media. In fact, most people hear about environmental and scientific issues from media outlets (traditional or online) [37]. In some cases, media is the only source of environmental news. Therefore, the way the media communicates and portrays climate change and other issues related to sustainability has become crucial. Since the media is believed to influence people’s opinions and attitudes, it is also considered to influence consumers’ habits and decisions, both in positive and negative ways [38].

As it is a well-known fact that individuals often depend on how the elites or the media choose to frame certain issues, the mediatization of sustainability has become the

focus of an increasing number of academic studies [21] with mixed and often contradictory results. On the one hand, the media can make the unknown known [39], assuming the role of educating the public and promoting a healthy lifestyle. Indeed through “the content of articles [the media] encourages the public that struggles with different illnesses to increase the consumption of fruit and vegetables for better health” [40]. On the other hand, however, it cannot be ignored that the media is constantly (particularly through advertising) promoting junk food. It is this type of media content that is seen by some researchers [41,42] as being among the main causes of the continuous increase in the number of overweight and obese people.

Previous studies identified changes in how the media covers food-related topics, mainly due to the development of neoliberal public policies related to food and aimed at consumers [43–45]. A large part of the specialized literature in this field has focused on the food-related practices of consumers [46–48] and how they are formulated and depicted in the media [49–51]. Such studies have taken into account consumer strategies that go beyond conventional feeding systems and are interested in the impact of food on health, the environment and welfare, as well as analysing the eating and lifestyle practices involved in food acquisition, preparation, consumption and disposal. However, the literature has shifted its focus, and emphasis no longer falls on food research but on research into “healthy eating” that deals with examining adequate food intake and risk reduction for European citizens [52]. Overall, studies on media coverage have examined mainly four topics related to food: food security and food crises (such as the mad cow epidemic), genetically modified (GM) food, obesity and, to a much lesser extent, the impact of climate change on food [53].

The representation of nutritional health in the media poses greater problems than other topics, especially since, as stated by Laura Fernandez-Celemin and Anna Jung [54], these types of topics should be reserved for sections covered by science journalists. Journalists who write articles on various scientific issues, including sustainability, nutrition and health, have a greater responsibility to the reader than other journalists. They must first familiarize themselves with the scientific issues addressed by doing extensive research to fully understand the problem at hand and then translate this understanding accurately into a form that is both interesting and intelligible to an audience that lacks expertise in this field [54]. Given the requirement to meet tight deadlines, journalists do not always have time to do extensive research and tend to rely on scholars or statistics for accurate monitoring and portrayal of scientific breakthroughs instead [39]. Even so, or maybe because of the fact that they rely on the same public scholars, many important issues do not make media headlines. As a result, important information about food-related issues is often overlooked by the media, which has prompted some to ascertain that the media “participate both in the construction of objectivity (real value because of the explanation provided), as well as in the construction of subjectivity (lack of real value due to a lack of explanation), within the broader process of knowledge building” [55]. For example, there is an interest in over-promoting healthy diets and a healthy lifestyle, whereas there is no mention of the impact that people’s dietary choices have on the environment or of the fact that by 2050 the current dietary trends are believed to become a major contributor to an estimated 80% increase in global agricultural greenhouse gas emissions from food production and global land clearing if left unchallenged [56].

The transition towards more sustainable dietary choices is considered a global challenge mainly because it is believed that “(T)he dietary choices that individuals make are influenced by culture, nutritional knowledge, price, availability, taste and convenience, all of which must be considered if the dietary transition that is taking place is to be counteracted” [56]. Alternative diets that offer substantial health benefits could, if widely adopted, reduce global agricultural greenhouse gas emissions, reduce land clearing and resultant species extinctions and help prevent such diet-related chronic non-communicable diseases [56]. However, this information is not adequately and broadly mediatized in order to contribute to educating the public and start implementing the necessary dietary transitions. This example illustrates the importance of providing contextual information for

the topics covered in the media. Borra et al. [57] support this argument and point out that “most nutrition news has failed to provide contextual information.” Therefore, possible inaccuracies and the lack of contextualization are key elements that call into question the value of media information related to food, as well as people’s level of media and health literacy, i.e., the ability of individuals to interpret and understand health information in ways that would help them improve their health [57]. However, some authors defend the media and point out [40,58,59] that the role of the media in relation to health, food and nutrition is not to make up for the deficiencies of public health services but only to inform about these topics.

At the same time, other scholars observe that many news stories related to food are incomplete and tendentious [60] or include unbalanced or inaccurate views [61–63] often presented in a contradictory manner [40,57]. Indeed, after reviewing more than 500 health news items, Caple and Bednarek [64] found that only 33% of the media presented nutrition and dietary hazards accurately, 35% of which adequately discussed the quality of the evidence related to these subjects and 56% used independent sources [64]. Previous studies have also shown that the media coverage of food has often been sensationalist, using titles that do not correctly reflect the essence of the scientific research presented [65,66]. This journalistic tendency towards sensationalism and scandalization but also negativism [67] is one of the defining features of the phenomenon called “tabloidization” of the media, i.e., the drastic change currently observed in the presentation of mainstream news, which involves the replacement of topics related to politics and civic issues with media content designed to attract attention and entertain. Articles written in a tabloid manner tend to emphasize sensational elements, including infamous and/or ostentatious details, in order to encourage gossip about celebrities and public figures, rather than publishing and disseminating information designed to keep the public informed about government policies and societal issues [67]. In relation to food, this trend includes, for example, “revelations” in the media about some supposedly “scandalous” aspects of food, such as the media coverage of phenomena or conditions such as Bovine spongiform encephalopathy (popularly known as “mad cow disease”), Avian Influenza or African swine fever, “disclosures” that involve the use of visual images that appeal to emotions and are meant to draw the public’s attention using outrageous photos of the mass killing of infested animals and misinterpreted data presented as evidence.

Taking into account the trends in the media coverage of food and nutrition described above (including tabloidization of news, negativism and the overreliance on public/celebrity scholars and pre-digested statistics/information), this article aims to identify patterns in media coverage of sustainable food in Romania during 2014–2017. Relying theoretically on the framing analysis approach coupled with Goody’s [32] five phases in building food-related behaviours (production, distribution, preparation, consumption and disposal) and by applying the rationale of content analysis, this study brings together two academic fields: communication studies and the sociology of food. Central to our analysis is to elaborate on the way journalists communicate information related to sustainable food to the public and find out which particular food-related issue most attracts journalistic interest and in what way. To do so, we use the framing analysis as described by Goffman [68], which is a theoretical approach most commonly used in communication studies [69] particularly “when researchers try to unpick the processes through which a frame is presented” [70]. In short, framing is described as “the process by which a communication source constructs and defines a social or political issue for its audience” [71]. For this article’s purpose, we adopt Hanningan’s [72] explanation of framing. According to Hanningan [72], framing represents “the repetitive use of particular ways for presenting information that help the reader, viewer, or listener interpret the meaning and significance of that information.” These frames placed by communication sources (in our case, the media) on the information they convey can influence greatly how people understand and digest information, contributing to how people perceive reality, constructing beliefs by indicating how a message should be interpreted [73] and setting an agenda. Moreover, according to

Reese [74], frames are “organizing principles that are socially shared and persistent over time, that work symbolically to meaningfully structure the social world.” Therefore, media frames and the ability to recognize them are very important as they guide people’s perceptions and representations of reality. Moreover, the process of framing requires frames “to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, casual interpretation, moral evaluation, and/or treatment recommendation for the item described” [74].

Frames have been categorized in several yet very similar ways [75]. For example, Goffman [68] differentiates between natural and social frames, while other scholars, such as Chong and Druckman [76] or Scheufele [77], differentiate between frames in communication (“media frames”) and frames in thought (“individual frames”). Both natural and individual frames refer to the unconscious frames that often reflect an individual’s understanding of a specific event, person, object or information [68]. As Goffman [68] explains, “when the individual in our Western society recognizes a particular event, he tends, whatever else he does, to imply in this response (and in effect employ) one or more frameworks or schemata of interpretation [. . .]. Natural frameworks identify occurrences seen as undirected, unoriented, unanimated, unguided, ‘purely physical.’” In contrast, social frames and frames in communication (or “media frames”) refer to the words, communication style and/or images used by the media to convey a message to its audience. These frames often “reveal what the speaker sees as relevant to the topic at hand” [76]. Most frames are believed to be culture-bound as they stem from “prevalent ideas, values, and norms in any given culture” [78].

Although related to the agenda-setting theory, the framing theory expands further by examining not just what the media tells people to think about but also how the media tells people to think about a particular issue. The latter, in particular, makes the focus of this article explore how the media constructs and shapes people’s understanding of sustainable food. While both the framing and agenda-setting theories focus on how media attracts or diverts the audience’s attention towards specific topics, through the framing theory, researchers can get insight into the conscious choices made by journalists on how they present information to the public (meaning how they organize, interpret and present arguments and ideas) and how these choices create an identifiable frame for that information. This study will focus on identifying frames in communication (media frames/social frames), and therefore, it will analyse the way the Romanian media conveys messages and relays information about sustainable food to the public. In doing so, we acknowledge that social frames stem from primary (natural) frames [67], which means that the media frames identified in this article stem from the natural frames of individual journalists involved in writing the articles included in the sample. For consistency purposes, however, we will use the term “media frames” throughout this paper.

It is crucially important for the current study to contextualise and assess our findings by taking into account Goody’s [32] framework of analysis. According to Jack Goody,“(T)he study of the process of providing and transforming food covers the four main phases of production, distribution, preparation and consumption . . . to which a fifth phase can be added, often forgotten, disposal” [32]. While it is true that Goody used these five phases to analyse research data on food-related practices and behaviours from two societies in West Africa (LoDagaa and Gonja), we choose to apply them to the Eastern European context. We believe that the five phases described by Goody are relevant to the European context, and their mediatization would contribute to a better overall understanding of food, with the potential to lead to a change in dietary behaviours. Indeed, the way media explains and informs the public about how food is produced, distributed, prepared, consumed and disposed of could lead to better food choices and help people make informed decisions regarding their diets. Goody’s [32] phased-system coupled with Goffman’s [71] framing analysis, which was developed in a Western context, provide the perfect theoretical framework for our analysis. Drawing on these two theoretical frameworks, this article aims to find an answer to the following research questions:

RQ1: What are the media representations of sustainable food in Romania by which the media construct and shape the public's understanding of sustainable food?

RQ2: What journalistic factors influence the way in which sustainable food is reported?

RQ3: Taking into account the journalistic factors that influence the way in which sustainable food is reported, how does the Romanian media frame the five phases described by Goody [32]?

1.2. Food Systems and Policies: The Romanian Context

The global food system comprises many local and regional food systems. It includes food production and other food-related activities and explains how these activities impact the Earth's natural resources and processes [12,78,79]. However, "Because of its climate and environmental impacts and shortcomings in healthy, safe nutrition for all, today's global food system is unsustainable. Moreover, it does not guarantee healthy food patterns for the world's population. On the contrary, studies estimate that more than 820 million people are still hungry" [80]. At the same time, "Globally, 2 billion adults are overweight, as are 40 million children under 5 years of age" [80,81].

Alongside interconnected issues, such as climate change, biodiversity loss, urbanization, and population growth, the unsustainable nature of our food system is one of the most significant challenges facing humanity [78,82]. Recently, a report published by the Science Advice for Policy by European Academies (SAPEA) 2020 [83] offered elements for impactful policies supporting sustainability, called the Farm to Fork Strategy [83]. The SAPEA report proposes a move from the linear mass-consumption model to a more inclusive, regenerative, circular system [30] that will mean changing habits and routines and engaging all the actors in the food system in order to achieve the goals of the EU's Green Deal [84]. This type of "social" approach is part of a broader trend, which defines sustainability "as a societal challenge rather than an environmental one and, thus, subject to the societal, political, economic and commercial dynamics occurring globally" [7].

Romania has been a member of the European Union since 2007, and most of its regulations regarding sustainable or ecological agriculture stem from the application of the established European policies in the field. In short, these regulations stipulate the promotion and adoption of sustainable agriculture and make references to product certification as sustainable (therefore, ticking two boxes: eco and bio). In understanding the Romanian context, it is important to note that Romania is a European country with rather small farms, and, unlike the Western model, the type of agriculture adopted is peasant, basic and practiced mostly by families who own small plots of land in rural areas. This type of agriculture is less connected to large economic and trade flows, and its products are very difficult to include in the system of official certifications, although the products have specific qualities that class them as bio.

Concepts such as "sustainable agriculture," "ecological agriculture," or the "eco" and "bio" labels for food are frequently being used in national debates, reports written by Romanian experts in the field of agriculture, the agri-food industry and trade. These concepts are also being used by several specialized NGOs and are frequently mentioned in the media. However, they are not fully understood by those who use them. Moreover, concepts related to sustainable food have only entered into the public debate recently. Sustainable agriculture and sustainable food are not common or favourite media topics in Romania, and very few journalists have the expertise to report on these issues. Although there are a few specialized TV shows (such as The Village Life ("Viașatului") or Agricool), a niche TV station dedicated to agricultural related issues (Agro TV), as well as a few specialised magazines (often financed by corporations that invest in agriculture), overall, these media outputs do not represent an expression of the public's interest in the subject and target a rather expert audience. This shows that our analysis of how the Romanian media frames sustainable food-related issues is timely and much needed.

2. Materials and Methods

2.1. Sample and Data Collection

In order to identify the patterns of coverage of sustainable food in the Romanian media, we conducted a study that used as a method quantitative thematic content analysis [85,86].

The sampling procedure for the articles selected for analysis involved the following steps: (a) we started by typing a set of selected keywords (“food”, “nutrition”) in the online search engine www.google.com (accessed from 20 June 2017 until 1 September 2017); (b) then we selected “News” from the Google menu to generate only articles published in the media; (c) from “Tools” we selected “Recent,” in order to set the desired time period. The timeframe was set by clicking on “Custom Range” and limiting the search to the time interval 1 January 2014–1 January 2017. Our sampling procedure was influenced by Choi and Varian [87], which means that we only included the media articles listed on the first ten pages of our Google search in the sample. All the articles included in the sample were written in Romanian.

The total sample included 314 articles, of which 27.4% were published in 2014, and 40.4% were published in 2015, and 31.3% were published in 2016. In 2014–2017, the highest number of articles related to food and nutrition were mostly published in newspapers (21%) and on aggregated news websites (20.1%), followed by articles published on the websites of some TV stations (18.8%) and articles published in magazines (17.2%). Only 10.5% of the sample consisted of articles published on the website of news agencies and 12.1% on aggregated news sites, while the articles published on the website of radio stations were the lowest in number in the entire sample (0.3%).

2.2. The Research Instrument

The analysis grid included 45 items, each with a number of sub-categories ranging from 2 to 33 (Table 1). Depending on the unit of analysis, the categories were either binary, as in the case of items related to the media type, the article type, etc., or multiple, as in the case of items related to each article’s type, the type of food presented in articles, controversial issues addressed, etc., (see Table 1 below). In our analysis, we did not start from pre-existing frames; instead, we coded our frames as the data analysis progressed. Therefore, we grouped the 45 items listed in the analysis grid into main frames (Table 1).

Table 1. Analysis grid used in the data analysis.

Item	Type of Item	Categories
Type of article	Exclusive	Simple news; Opinion article; Article of analysis; Reportage; Interview; Online discussion; General TV programme; Review article; Opening/overview article.
Topic of the article	Multiple	Organic cultures; Food in general (without any specification); International/European standards and labels for food; Pesticides and herbicides; Animal industry; Nutrition; Sustainability of food production; Big business in food industry; Quantity of food; National standards and labels for food; Diets; National food patrimony; Genetic modified organisms; Diseases related to food; Junk-food; Risks associated with food; Consumer rights related to food; Humanitarian and/or famine crisis related to food; Taxes related to junk-food/alcohol/tobacco; International/European legal system related to healthy food; National legal system related to healthy food; National policies related to healthy food; International/European policies related to healthy food; Crops (in general, without any specification); Bio and nano-technologies related to food; Pollution; Deforestation/Drought/soil erosion and/or environmental issues; Global warming/climate changes related to food production; Biodiversity risks and benefits; Local communities risks and benefits related to food; Animal-related diseases (Avian influenza, Blue tongue disease, Salmonella); Food related to a specific disease or illness; Food related to specific national or religious celebrations/feasts.

Table 1. Cont.

Item	Type of Item	Categories
Controversial issues presented in the article	Multiple	Food consumers' rights and safety; Food producers' costs and benefits; Food industry issues; Environmental issues; Health-related issues; Economic, social and environmental sustainability of food production; Social issues; Ethical issues; Other types of controversial issues.
Food related-issues presented in the article	Multiple	The standards of food quality; Hygiene related to food; Hygienic norms related to food; Governmental/national rules related to food; International/European rules related to food; The packaging of food; The labels of the food; The role of the food industry; The use of disinfectants related to food; The use of pesticides in food production; The role of the producer of food; The role of food in relation to health; the role of the consumer in relation to food; Elements of marketing and communication about food products; Education and information about food; Modern life vs traditional life; Nutritive value of food; Sanitary norms related to food preparation; Myths and popular beliefs related to food; Food sovereignty; Local agriculture/local herds; Urban agriculture; Ecological/biological agriculture; Agro-industry; Other aspects.
Types of products (dietary vs. non-dietary) mentioned in the article	Binary	Both dietary and non-dietary products; Only dietary products; Only non-dietary products; The product cannot be classified as dietary or non-dietary.
Dietary products mentioned in the article	Multiple	Bread, rice, pastry; Cereals; Fruit and derivatives without sugar; Low milk products; Low-processed aliments without sugar and salt; Aliments for small children; Bottled water; Vegetables and derivatives without sugar and salt; Other products; Unspecified products.
Non-dietary products mentioned in the article	Multiple	Sugar-rich cereals; Meat and substitute with sugar and salt; Pastry and bread; Juice and drinks from fruits with sugar; Frozen aliments; Fat milk products; Frozen desserts; Chocolate and desserts with sugar; Fast-food; Sweet drinks; Alcohol; Salt or sweet products; Canned products; Ready-to-eat products; Other products; Unspecified products.
Recommendations/advice made in the article referred to	Exclusive	Healthy food; Health in general; Diets; Diseases; All from above (healthy food, health in general, diets, diseases).
The recommendations made in relation to diseases referred to	Multiple	Gastro-intestinal diseases; Allergies; Use of specific medicines/treatment; Cystitis; Infertility; High level of cholesterol; Anaemia; Alcoholism; Aging; Heredity; Immunity diseases; Dialysis; Diabetes; Obesity; Hyper and/or hypothyroidism; Hypertension and associated diseases; Cardiovascular diseases; Cancer; Other disease.
The recommendations made in relation to diets referred to	Multiple	Slimming; Religion; National culture; Food restrictions; Low in lipids; Premature babies; Vegetarian or vegan; Hypercaloric; Draconic and severe; Barriers for the diets; Other aspects of a diet.
The main appeal of the article	Binary	Logical; Emotional.
The tone of the article	Binary	Positive; Negative; Neutral.

2.3. Statistical Analysis and Measures

In performing the statistical analysis, we selected only those items that were relevant to the way information regarding sustainable food was conveyed by the media, respectively: a diet richer in fruits and vegetables and poorer in animal products, which corresponds to what is described in the literature as ideal elements of a healthy diet [88,89] and the consumption of healthy versus unhealthy foods, as they have been classified in the literature on Eastern European food practices [90]. The selected data were analysed using both descriptive and inferential statistics (logistic regression). The main reason for using logistic regression as a statistical tool in data analysis was to identify some trends in the coverage

of sustainable food in the media that would have been impossible to identify otherwise. According to Stoltzfus, the logistic regression can help determine the influence of multiple independent variables that exert an influence on the dependent variables [91]. Although there is no room for predictions in an approach that uses several independent variables, we tried to minimize the unexpected effects, and we controlled as much as possible the variables included in our analysis models. In this way, regression has become the main statistical tool used to verify the correlations between identified frames and how these patterns in media coverage have developed over time [92].

Following the existing literature [92–94], we explored several models of possible causal relationships between independent and dependent variables (Table 2).

Table 2. Independent and dependent variables included in the models of logistic regression.

Variables Included in the Model	Name of the Variable	Specific/Peculiar Variable	Type of Variable	
Independent variables	Type of media outlet in which the article was published		Dichotomous (1 = Aggregate news website/online website; 0 = Other type of media)	
	Type of article		Dichotomous (1 = Editorials/Opinion pieces; 0 = Other type of article)	
	Type of food mentioned in the article		Dichotomous (1 = Dietary food; 0 = Other type of food)	
	Specific aspects related to food and nutrition mentioned in the article	The standards of food quality;		Dichotomous (1 = Presence of the particular aspect in the article; 0 = Absence of the particular aspect in the article)
		Hygiene related to food;		
		Sanitary norms related to food;		
		Governmental/national rules related to food;		
		International/European rules related to food;		
		The packaging of food;		
		Food labels;		
Controversial issues included in the article	The role of the food industry;		Dichotomous (1 = In the article a controversial issue is presented; 0 = No controversial issue is presented in the article)	
	The use of disinfectants related to food;			
	The use of pesticides in food production;			
	The role of the producer of food;			
	The role of food in relation to health;			
	The role of the consumer in relation to food/consumer rights;			
	Elements of marketing and communication of food products;			
	Education and information about food;			
	Modern life vs traditional life;			
	Nutritive value of food;			
The tone of the article	Hygienic norms related to food preparation and consumption;		Dichotomous (1 = Positive; 0 = Negative)	
	Myths and popular beliefs related to food;			
The main appeal of the article	Food sovereignty;		Dichotomous (1 = Logical/rational; 0 = Emotional)	
	Local agriculture/local herds;			
	Urban agriculture;			
	Ecological/biological agriculture;			
	Agro-industry;			
	Other aspects.			

Table 2. Cont.

Variables Included in the Model	Name of the Variable	Specific/Peculiar Variable	Type of Variable
Dependent variables	The way sustainable food production and distribution were conveyed		Dichotomous (1 = Sustainable food production and distribution are presented in the article; 0 = Sustainable food production and distribution are not presented in the article)
	Media coverage of stories related to the inclusion of fruit in sustainable diets		Dichotomous (1 = Fruits and derivatives without sugar are presented in the article; 0 = Fruits and derivatives without sugar are not presented in the article)
	Media coverage of stories related to the inclusion of fruit vegetables in sustainable diets		Dichotomous (1 = Vegetables and derivatives without sugar and salt are presented in the article; 0 = Vegetables and derivatives without sugar and salt are not presented in the article)

In order to evaluate the logistic regression model applied, we assessed the relationship between all of the independent and dependent variables, using the following coefficients: the inferential goodness-of-fitness, the Hosmer–Lemeshow test, the Cox–Snell R-Squared test and the Nagelkerke R-Squared test [91,94,95]. At the same time, we assessed the importance of each of the independent variables included in our model based on the statistical tests of individual predictors, such as individual regression coefficients (β s) tested using the Wald Chi-Square statistic, the likelihood ratio score (degrees of liberty—df.—and the level of significance for the correlation coefficient—Sig.) and the value of the Wald test [92,94,96].

3. Results

The results of our analysis are presented below in two sections: descriptive statistics and inferential statistics.

3.1. Descriptive Statistics

Most Romanian articles that dealt with the topic of food were opinion pieces (36.3%), offering a more detailed overview of the topic accompanied by the journalist's points of view (Figure 1). Second place in the hierarchy of articles that focused on food-related issues were news reports (27.4%), i.e., news in which the subject of food was treated or reported, usually briefly, without the journalist having to analyse or express his opinion, followed by review articles (12.1%), i.e., types of articles that offer a retrospective or overall perspective on a topic related to food or summarize the current state of knowledge/understanding of the topic, targeting the general public. We also identified 6.7% of interviews and television programmes dedicated to a general audience that addressed food-related topics. At the same time, there were only a few features (2.5%), i.e., the type of journalistic genre that combines the synthesized content of several articles specialized in a broad-spectrum article and very few reportages on this topic (only 2.2%).

Our analysis focused on the subject or topic of the articles included in the sample (whether it was the main topic or it was a secondary topic), as well as on the extent to which certain specific aspects or elements of interest regarding food have been mentioned and discussed in each article. On the other hand, we investigated the extent to which the text of the articles was referring, in one way or another, to food, including the categories of food most covered by the media, as well as the extent to which dietary or non-dietary foods prevailed in the narrative of these articles. Based on this, our analysis shows that

the articles included in the sample had “Food in general (without any other specification)” (11.1%), “Nutrition” as the main topic for 20.9% of the articles, “Nutrition and food-related to a specific disease” in the case of 11.6% of the articles, and “Diets” for 8.9% of the samples (Figure 2a).

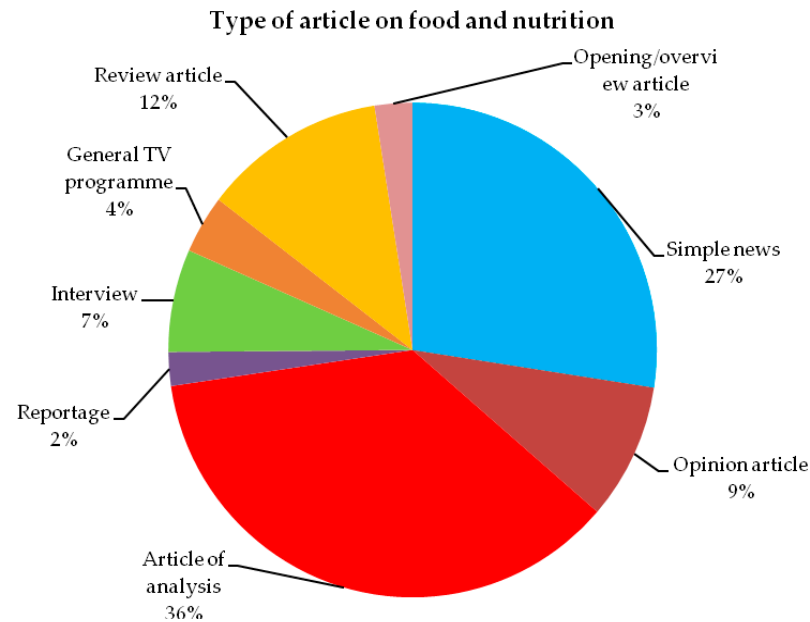


Figure 1. The main topics of the articles.

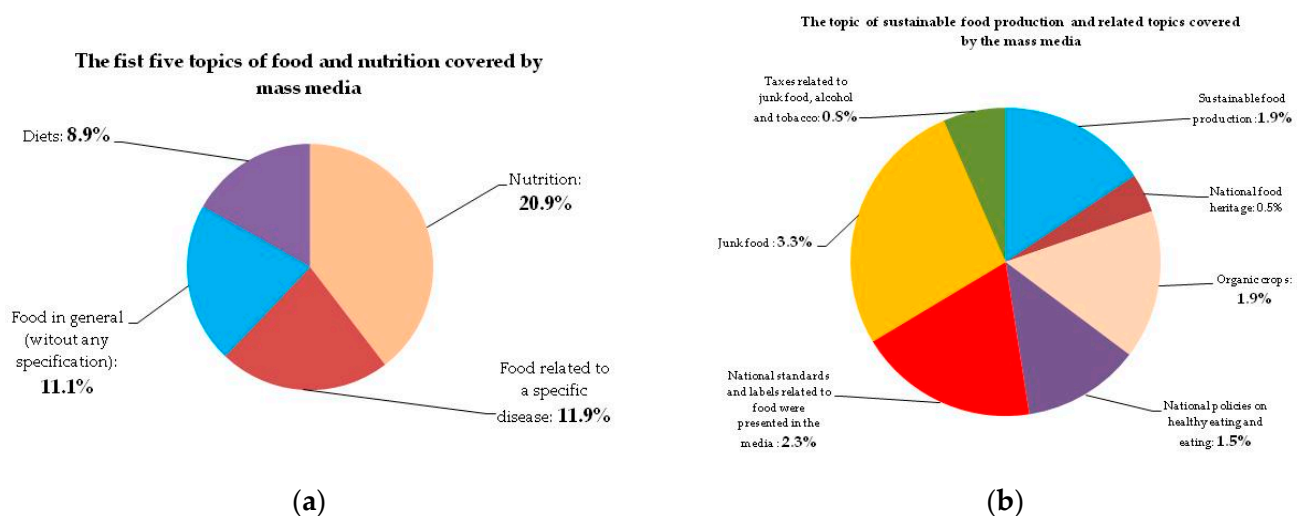


Figure 2. The topics of the articles: (a) The first five topics of food and nutrition covered by the mass media; (b) The topic of sustainable food production and related topics covered by the mass media.

The results also show the media’s preference for certain aspects related to food consumption, such as the amount of food consumed and the composition of the food consumed (the ratio of healthy/unhealthy ingredients in some foods). Other topics that were approached with an average frequency by the Romanian media were those related to the amount and quality of food consumed during specific, national or religious holidays (1.3%), as well as those related to crops in general (interestingly, without specifying exactly what type of crops, (0.6%)). Conversely, the issues barely covered by the Romanian media were international/European policies related to food and nutrition (0.5%), international/European legal system related to food and nutrition (0.5%), animal-related diseases (such as Avian influenza, African Swine Flu, Blue Tongue Disease), which were presented

in only 0.3% of all the articles, bio and nano-technologies related to food (0.2%). In addition, pollution (0.1% of the total sample) and biodiversity risks and benefits (0.1%) were almost never mentioned in the articles analysed.

Additionally, the topic of sustainable food production was rarely covered by the Romanian media, with only 17 articles (1.9%) being published on this topic in the three years analysed (Figure 2b). However, other related topics such as national food heritage (0.5%), organic crops (1.9%), national policies on healthy eating (1.5%), national food standards and labels (2.3%), junk food (3.3%) and taxes related to junk food, alcohol and tobacco (0.8%) were touched on in passing in some articles (Figure 2b). Given the relatively low frequency of these topics in the total sample, we can conclude that these topics were treated only sporadically or accidentally in the articles included in the sample. Moreover, no article touched on topics such as deforestation/drought/soil erosion and other environmental problems, including global warming or climate change. Although these phenomena are currently major social and environmental problems in Romania, they have not been the subject of any article in the three years analysed.

The same data set indicates that the most common types of particular issues present in the food-related articles analysed were the role of nutrition in relation to health (mentioned in 85.6% of articles), the nutritional value of food (mentioned in 72.5% of articles), various educational and informative aspects regarding food and nutrition (present in 53% of articles) and food quality standards (51.6% of articles) (Figure 3). Amongst the Romanian media’s preferred topics, we also identified popular myths and beliefs related to food and nutrition (mentioned in 32.1% of articles) and hygienic norms related to food and nutrition (mentioned in 31.2% of articles). Other issues or aspects about nutrition mentioned relatively frequently in articles referred to consumer’s attitudes towards incorrect practices in the commercialization, storage or preparation of food (30.1%), various elements of marketing and communication of food and eating-related products (mentioned in 26.6% of articles), modern vs. traditional lifestyle (mentioned in 19.6% of articles) and the food industry’s role (mentioned in 17.8% of articles) (Figure 3).

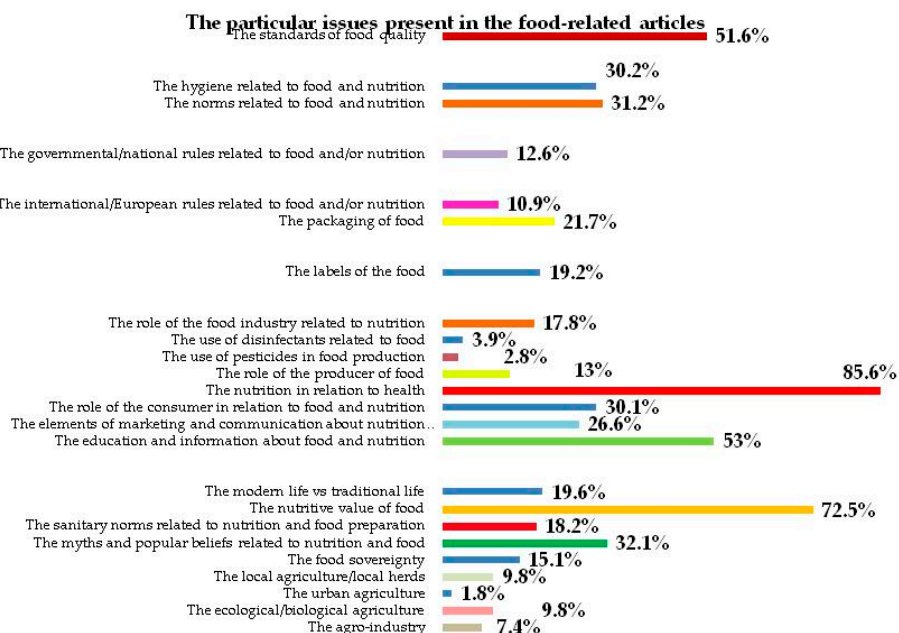


Figure 3. The main particular issues present in the food-related articles.

Legal issues related to food production, distribution and consumption were rarely covered in the Romanian media. For instance, governmental/national regulations regarding food appeared only in 12.6% of articles, while only 10.6% of articles referred to the European regulatory system (Figure 3). However, aspects regarding food packaging (21.7% of the total sample), food labelling (19.2% of articles) and sanitary norms related

to nutrition and food preparation (18.1% of articles) were sporadically mentioned in the analysed articles (Figure 3).

Given the obvious link between diet and health identified in the sample, it was not surprising that most articles (49.6%) frequently mentioned both dietary and non-dietary products (see Table 3). It is also worth mentioning that the articles on dietary food products (27.2%) clearly outnumbered the articles on non-dietary products (only 8.3% of the sample). However, 14.9% of articles mentioned products that could not be classified as “dietary” or “non-dietary.”

Table 3. Types of products (dietary vs. non-dietary) presented in articles.

The Types of Products	Percentage (%)
Both dietary and non-dietary products	49.6
Only dietary products	27.2
Only non-dietary products	8.3
The product could not be classified as dietary or non-dietary	14.9

The total sample of articles (N = 314).

A sub-sample identified in our main sample resulted in interesting findings. This sub-sample included 112 articles on dietary and non-dietary food products published between 2014–2017. Looking at the sub-sample, when dietary foods are discussed, the Romanian media focused primarily on fruit and their sugar-free derivatives (mentioned in 24.8% of articles on dietary foods), followed closely by vegetables and their derivatives without sugar and salt (identified in 24.4% of articles on dietary products) (See Figure 4). Cereals as dietary foods were mentioned less frequently in the Romanian media (in only 12.8% of articles on dietary foods), and low-milk products were present in 10.8% of the analysed articles. At the same time, the Romanian media also addressed issues related to poorly processed foods without sugar and salt (7% of articles included in this sub-sample) and bread, rice and pastry (6.6% of the total of this sub-sample). Rarely covered were stories related to water (generally or bottled), included in only 0.4% of articles, and food for young children (mentioned in 1.7% of articles) (Figure 4).

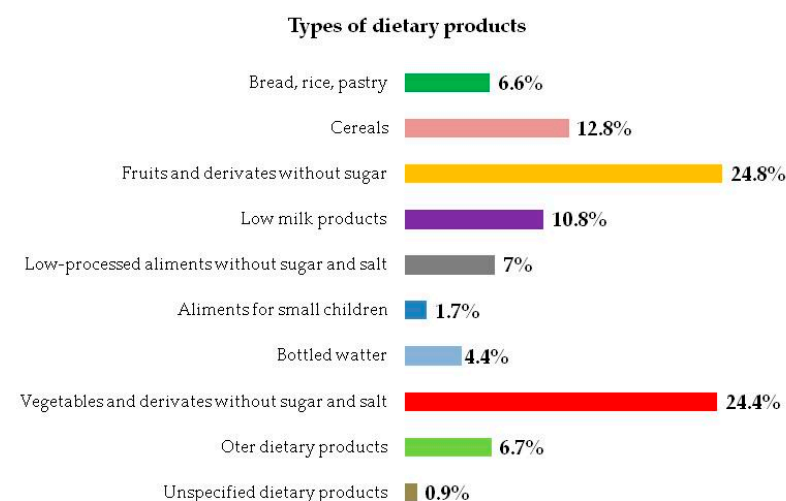


Figure 4. Types of dietary products covered in the sub-sample (dietary vs. non-dietary).

The most popular category of non-dietary products identified in the sample was the one that included meat and its derivatives (sausages, burgers, meatballs, etc.). These products made the subject of 14.4% of the articles on non-dietary food products (Figure 5). The second non-dietary product preferred by the media was chocolate and sugary desserts (identified in 12.2% of articles), followed by pastry and bread (mentioned in 11% of articles). Other non-dietary foods that appeared sporadically in the media were “fast-food” products

(in 8% of articles), sugar-rich cereals (in 7.4% of articles) and fat milk products (in 7% of the articles included in this sub-sample). On the other hand, some types of non-dietary foods were relatively less covered in the media, such as canned food and canned products, which were mentioned in only 5.2% of articles, frozen foods (mentioned in 3.3% of articles), juice or other fruity beverages containing sugar (6.5% of articles) and fizzy drinks (6.4% of articles) (Figure 5). Moreover, alcohol was mentioned in only 8% of articles as a non-dietary product.

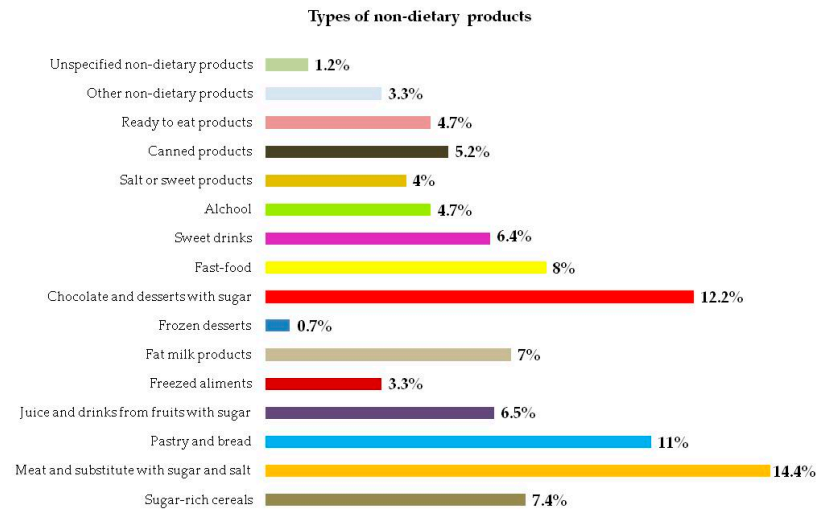


Figure 5. Types of non-dietary products covered in sample.

Among the products that cannot be included in the previously mentioned categories (“dietary” vs. “non-dietary”), fats were the most frequently mentioned (6.1% of the total sub-sample), behind coffee by a lot (19.6% of the analysed articles). At the same time, spices were mentioned in 13.5% of articles, and nutritional supplements were mentioned in 13% of articles. Tea was mentioned only in 7.8% of the articles included in the analysis. In addition, 41.5% of the articles mentioned a controversial issue related to food production, distribution, preparation and consumption. The most important controversial issues that appealed to the Romanian media in the three years analysed were health-related issues (47.6%), food consumers’ risks and safety (11.8%) and food industry issues (9.6%) (Table 4). Only 9.1% of the controversial issues concerned economic, social and environmental sustainability, and a similar situation in the case of social issues (9.1%), followed by food producers’ costs and benefits (7%). Controversial environmental issues (0.5%) and other ethical issues (2.1%) were the least covered in the time period analysed (Table 4).

Table 4. The controversial issues presented in the articles.

The Controversial Issue	Percentage (%)
Health-related issues	47.6
Food consumers’ rights and safety	11.8
Food industry issues (production, distribution, preparation and consumption)	9.6
Economic, social and environmental sustainability of food production	9.1
Social issues	9.1
Food producers’ costs and benefits	7
Environmental issues	0.5
Other ethical issues	2.1

Only the articles which mentioned a controversial issue (N = 131).

The most controversial aspects identified in the articles about food made references to health issues and everything related to being healthy (including maintaining one’s health or specific medical conditions, diseases, illnesses, etc.). The risks and safety of food

consumers and some aspects related to the sustainability of the food industry (production and distribution) were rarely covered by the media. However, ethical and environmental issues have not been debated or taken into account in the Romanian media at all. Simultaneously, issues of economic, social and environmental sustainability were presented quite sporadically in the Romanian media.

Given the Romanian media's almost exclusive focus on health-related food, it was no coincidence that out of the total media articles analysed, 38.2% referred to healthy food, while 28.8% referred to diseases and how these could be cured through consumption of selected foods. For example, we identified dietary recommendations made for people suffering from obesity (12%), diabetes (10.7%) and hypertension and associated diseases (10.7%). In addition, dietary recommendations were also related to food restrictions (25.2% of articles), weight loss diets (19.7%) and diets low in lipids (15%). Other categories of articles that covered diets presented a list of recommendations related to healthy nutrition and referred to the quality vs. quantity of food (22.9%), the use of fresh food (20.8%) and the importance of a balanced lifestyle (15.6%).

3.2. Inferential Statistics

At this stage, the data analysis was performed based on logistic regression. In interpreting the data, we were interested in identifying the type, size and direction of the relationships between dependent variables (sustainable food production and distribution and the media coverage of foods included in sustainable diets, i.e., fresh fruits and vegetables) and a number of independent variables (the type of media platform that published the article, the type of article, particular aspects related to food presented in the article, the tone of the article, the main appeal of the article—e.g., argumentative/logical or emotional).

In the first model (Table 5), we fitted the logistic regression model ignoring the survey sampling design and then estimated the Hosmer–Lemeshow goodness-of-fit test. The Chi-Square test has a value of 4.639 (df. = 8) and was significant (Sig. = 0.795). The indices measuring variations of the R^2 concept defined for the OLS regression models indicated a good fit of the model: the Cox–Snell R-Square = 0.100.; the Nagelkerke R-Square = 0.270. Regarding the contribution of each independent variable to the variation of the dependent variables, our results indicate that the presentation of food as dietary explains a proportion of 22% of the variable “sustainability of food production and distribution.” This means that if an article mentioned food as dietary, there is a probability of 22% that that same article also discussed sustainable food production and distribution processes. At the same time, if journalists used logical appeal in reporting for these articles, it is 12% likely that they also analysed the sustainability of the food production and distribution processes. The media coverage of the sustainability of food production and distribution was mostly positive, with journalists adopting an optimistic tone in 9% of articles (Table 5).

Table 5. Model I: Media Coverage of the sustainability of food production and distribution.

Sustainability of Food Production: Media Coverage	B	S.E.	Wald	df	Sig.	Exp(B)
Aggregate news website/ online website	−0.391	0.175	5.030	1	0.025	0.676
Editorials/Opinion pieces	−0.147	0.109	1.813	1	0.178	0.863
Controversial issue in the article	−2.418	0.799	9.155	1	0.002	0.089
Food presented in the article is dietary	0.802	0.363	4,889	1	0.027	2.230
Logical appeal of the article	0.260	0.707	0.135	1	0.713	1.297
Positive tone of the article	−0.001	0.405	0	1	0.997	0.999

When looking at the defining aspects related to food that can explain the media's preference for excessively covering topics related to the sustainability of food production

and distribution, we found (through the use of a second regression model) that certain aspects, such as analysing the quality of food, the way the food was packed or the use of sanitary products in the food preparation phase, had a reduced impact on the way food production and distribution were covered in the media (Table 6). This means that if any of these aspects were mentioned in an article, that article was definitely discussing sustainable food production and distribution (Table 6). It has to be mentioned that this time the estimated model had a robust goodness-of-fit too, as indicated by the Hosmer–Lemeshow Test (Chi-square = 17.312 for 8 degrees of freedom and a significance of 0.27) and descriptive indices of this goodness-of-fit (Cox–Snell R-Square with a value of 0.288 and Nagelkerke R-Square with a value of 0.793).

Table 6. Model II: Media Coverage of the sustainability of food production and distribution.

Mediatization of Sustainability of Food Production	B	S.E.	Wald	df	Sig.	Exp(B)
Standards of food quality	−4.803	4.464	1.158	1	0.282	0.008
Hygiene related to food	1.757	3.589	0.240	1	0.624	5.797
Sanitary norms related to food	9.563	6.071	2.481	1	0.115	14.231
Governmental/national rules related to food	−2.398	3.221	0.554	1	0.457	0.091
International/European rules related to food	−4.024	4.083	0.971	1	0.324	0.018
The packaging of food	−4.912	5.564	0.779	1	0.377	0.007
The labels of the food	5.034	5.782	0.758	1	0.384	153.568
The role of the food industry	6.321	5.069	1.555	1	0.212	556.129
The use of disinfectants related to food	−3.486	64.126	0.003	1	0.957	0.031
The use of pesticides in food production	4.253	64.051	0.004	1	0.947	70.337
The role of the producer of food	−4.486	4.431	1.025	1	0.311	0.011
The role of nutrition in relation to health	−1.412	4.564	0.096	1	0.757	0.244
The role of the consumer in relation to food	−1.703	1.747	0.950	1	0.330	0.182
Elements of marketing and communication about food	−2.318	2.415	0.922	1	0.337	0.098
Education and information about food	0.789	2.643	0.089	1	0.765	2.202
Modern life vs traditional life	0.342	2.023	0.029	1	.866	1.407
Nutritive value of food	−1.755	4.426	0.157	1	0.692	0.173
Sanitary norms related to food preparation	−1.197	2.238	0.286	1	0.593	0.302
Myths and popular beliefs related to food	4.256	4.144	1.055	1	0.304	70.547
Food sovereignty	−7.383	4.641	2.531	1	0.112	0.001
Local agriculture/local herds	−6.347	4.114	2.380	1	0.123	0.002
Urban agriculture	4.730	4.865	0.945	1	0.331	113.346
Ecological/biological agriculture	−2.643	2.608	1.027	1	0.311	0.071
Agro-industry	2.854	3.173	0.810	1	0.368	17.365

The results of this regression model also indicated that the main factors that contributed to the journalists' choice to cover topics related to the sustainability of food production and distribution were primarily dictated by arguments against the use of pesticides in plant production (70%), followed by food education and public information (22%), agro-industry (17%) and promoting the advantages of traditional vs. modern lifestyle (14%) (Table 6).

Given the differences in media coverage between the sustainability of food production and distribution and sustainable diets [97,98], we focused on fruit and vegetables for the

analysis of sustainable diets. We chose fruit and vegetables because they are synonymous with a healthy diet due to low fat, low sugar, and no or low salt content, and they are generally recommended in the literature that their consumption should be increased [89,90]. For example, according to Eurostat [6], one way to measure progress in adopting a healthy diet is to monitor the consumption of fruit and vegetables (through the daily frequency of consumption and the number of servings consumed daily). Other studies [90] consider that an increase in the intake of this type of food should replace the intake of saturated fat and trans-fat (such as butter or margarine) [88,97].

These general recommendations highlighted in the medical literature [77–79] were reinforced by the results of our inferential analysis. Thus, it is obvious that there was a relationship of dependence between the media coverage of fresh fruit and vegetables and the coverage of sustainable food production and distribution processes. Another interesting trend identified was indicated by the fact that greater media coverage of fresh fruits and vegetables favoured greater media coverage of the topic of sustainable food production and distribution (Table 7).

Table 7. The dependence between the media coverage of topics related to sustainability of food production and distribution and fruits and vegetables consumption.

	Mediatization of Sustainability of Food Production and Distribution	Mediatization of Fresh Vegetables	Mediatization of Fresh Fruit
Pearson Correlation	1	−0.151 (**)	−0.187 (**)
Sig. (2-tailed)		0.007	0.001
Pearson Correlation	−0.151 (**)	1	0.637 (**)
Sig. (2-tailed)	0.007		0
Pearson Correlation	−0.187 (**)	0.637 (**)	1
Sig. (2-tailed)	0.001	0	

N = 314. *** represents the level of significance for the correlation index (p); its value is greater or equal with 0.05.

When we estimated the Hosmer–Lemeshow Test for goodness-of-fit, the results indicated a Chi-square test with a value of 7.247 (df. = 7), which was significantly higher than the threshold of 0.005 (Sig. = 0.404). We further checked the goodness-of-fit for the model, and the results indicated a good fit of the R^2 Cox–Snell indices (0.100) and R^2 Nagelkerke (0.270). From the perspective of the individual contribution of each predictor in the model, the results indicated that the inclusion of fruit and vegetables in the narrative was a strong predictor for articles that presented vegetables as part of sustainable diets. In contrast, the arguments for linking these sustainable products to the sustainable food production process have proven to be less statistically relevant (Table 8). In this case, the journalistic style of reporting was much more statistically significant, meaning whether they included an appeal to rational, logical arguments (which explained 13% of the coverage of such food in the media), the positive tone used by the author/authors of the article (12%) and the choice of the media platform for the publication of that article (10% explained the presence of vegetables as part of a healthy diet) (Table 8).

In the case of fruits, however, a regression model including the same factors could not be calculated, signalling the existence of differences between the average coverage of sustainable diets that include vegetables compared to the coverage of sustainable diets that include fruits.

Regarding the specific defining aspects related to food that favoured Romanian media’s coverage of the issue of sustainable diets based on vegetables, from the point of view of statistical goodness-of-fit, the explanatory model was adequate. Thus, for the Hosmer–Lemeshow test, the value of Chi-Square was 7.026 (for 8 degrees of freedom and a higher statistical significance of 0.534), and the values of the additional R^2 indices (R^2 Cox–Snell of 0.203 and R^2 Nagelkerke of 0.271) strengthened the overall evaluation of the model. Again, the model indicated that the most important predictors were the journalists’ arguments

in favour of eliminating the use of pesticides in food (these arguments put forward by journalists explained 22% of the presentation of vegetables as part of a sustainable diet). In addition, if an article focuses on the agro-industry, there is a 17.5% probability that the same article will also include fruit and vegetable in the discussion of sustainable diets. At the same time, the appeal to international/European food regulations was identified as a predictor of the media coverage of vegetables as part of sustainable diets (Table 9).

Table 8. Model I: Media Coverage of vegetables included in sustainable diets.

Inclusion of Vegetables in Sustainable Diets: Media Coverage	B	S.E.	Wald	df	Sig.	Exp(B)
Aggregate news website/Online news	0.061	0.075	0.657	1	0.418	1.063
Editorial/Opinion piece	−0.070	0.051	1.910	1	0.167	0.932
Logical appeal of the article	0.261	0.303	0.742	1	0.389	1.299
Positive tone of the article	0.181	0.164	1.215	1	0.270	1.199
Mediatization of sustainability of food production	−1.884	0.767	6.031	1	0.014	0.152

Table 9. Model II: Media Coverage of vegetables included in sustainable diets.

Vegetables Included in Sustainable Diets: Media Coverage	B	S.E.	Wald	df	Sig.	Exp(B)
Standards of food quality	−0.363	0.347	1.096	1	0.295	0.696
Hygiene related to food	−0.444	0.451	0.971	1	0.324	0.641
Sanitary norms related to food	0.922	0.467	3.900	1	0.048	2.515
Governmental/national rules related to food	−0.289	0.922	0.098	1	0.754	0.749
International/European rules related to food	1.952	1.028	3.602	1	0.058	7.041
The packaging of food	−0.530	0.758	0.489	1	0.484	0.588
The labels of the food	1.226	0.827	2.199	1	0.138	3.407
The role of the food industry related to nutrition	1.113	0.594	3.509	1	0.061	3.044
The use of disinfectants related to food	−2.753	2.299	1.434	1	0.231	0.064
The use of pesticides in food production	3.117	2.547	1.498	1	0.221	22.586
The role of the producer of food	−0.452	0.842	0.288	1	0.592	0.637
The role of nutrition in relation to health	−0.019	0.524	0.001	1	0.971	0.981
The role of the consumer in relation to food and nutrition	−0.003	0.382	0.000	1	0.993	0.997
Elements of marketing and communication about food	0.230	0.382	0.364	1	0.546	1.259
Education and information about food	−0.196	0.294	0.445	1	0.504	0.822
Modern life vs traditional life	−0.174	0.408	0.182	1	0.669	0.840

Table 9. Cont.

Vegetables Included in Sustainable Diets: Media Coverage	B	S.E.	Wald	df	Sig.	Exp(B)
Nutritive value of food	−0.375	0.337	1.237	1	0.266	0.687
Sanitary norms related to food preparation	−0.076	0.467	0.026	1	0.871	0.927
Myths and popular beliefs related to food	−0.019	0.336	0.003	1	0.956	0.981
Food sovereignty	0.499	0.568	0.773	1	0.379	1.648
Local agriculture/local herds	−1.198	0.867	1.906	1	0.167	0.302
Urban agriculture	−1.158	1.783	0.422	1	0.516	0.314
Ecological/biological agriculture	0.291	0.816	0.127	1	0.722	1.337
Agro-industry	2.858	1.376	4.311	1	0.038	17.419

To test this for the fruits included in the sustainable diets, we developed a logistic model in which fruits were considered as a dependent variable. From the point of view of the adequacy of the model, the Hosmer–Lemeshow test indicated a value of 4.713 for the Chi-Square test (with 8 degrees of freedom, this being significantly higher than 0.005 (Sig. = 0.788)) and the R^2 indices supported the robustness of the model (Cox–Snell R-Square = 0.163 and Nagelkerke R-Square = 0.220). The regression model developed indicates both some similarities and significant differences in the case of including vegetables as part of a sustainable diet in articles (Table 10). Thus, the presentation of the journalists' arguments in favour of eliminating the use of pesticides in food production (with an explanatory contribution of 33%), the agro-industry (explained 51% of the media preference for the publication of such articles) and international regulations/in the field of food (with an explanatory value of 28%) remain robust predictors of the presentation of fruits as part of a sustainable diet in Romanian media, as in the case of vegetables (Table 10).

Table 10. Model I: Media Coverage of fruit included in sustainable diets.

Media Coverage of Fruits Included in Sustainable Diets	B	S.E.	Wald	df	Sig.	Exp(B)
Standards of food quality	0.041	0.340	0.014	1	0.905	1.041
Hygiene related to food	−0.071	0.430	0.027	1	0.869	0.931
Sanitary norms related to food	0.204	0.441	0.214	1	0.644	1.226
Governmental/national rules related to food	−0.159	0.948	0.028	1	0.867	0.853
International/European rules related to food	1.024	0.974	1.107	1	0.293	2.786
The packaging of food	−0.201	0.730	0.076	1	0.783	0.818
The labels of the food	0.392	0.806	0.237	1	0.626	1.480
The role of the food industry related to nutrition	0.358	0.577	0.384	1	0.535	1.430
The use of disinfectants related to food	−2.283	2.377	0.922	1	0.337	0.102
The use of pesticides in food production	1.195	2.510	0.227	1	0.634	3.305

Table 10. Cont.

Media Coverage of Fruits Included in Sustainable Diets	B	S.E.	Wald	df	Sig.	Exp(B)
The role of the producer of food	0.533	0.862	0.383	1	0.536	1.705
The role of food in relation to health	−0.440	0.530	0.689	1	0.406	0.644
The role of the consumer in relation to food	0.029	0.385	0.006	1	0.940	1.029
Elements of marketing and communication about food	0.327	0.383	0.727	1	0.394	1.387
Education and information about food	−0.385	0.290	1.762	1	0.184	0.680
Modern life vs traditional life	−0.477	0.406	1.378	1	0.240	0.621
Nutritive value of food	0.005	0.337	0	1	0.988	1.005
Sanitary norms related to food preparation	0.605	0.475	1.624	1	0.203	1.831
Myths and popular beliefs related to food	−0.034	0.328	0.011	1	0.916	0.966
Food sovereignty	−0.054	0.570	0.009	1	0.924	0.947
Local agriculture/local herds	−0.054	0.851	0.004	1	0.950	0.948
Urban agriculture	0.653	1.507	0.188	1	0.665	1.921
Ecological/biological agriculture	0.872	0.834	1.094	1	0.296	2.392
Agro-industry	1.645	1.335	1.518	1	0.218	5.181

At the same time, starting from the same statistical model, we identified the appearance of a distinct set of topics that favoured the coverage of fruit in articles: the presentation of aspects related to eco/bio-agriculture (articles that mentioned this aspect having a 24% higher probability of presenting fruit in sustainable diets), the mention of urban agriculture (when these aspects were mentioned led to an increase of 1.9% of the probability of fruits being presented in the article), the coverage in the article of sanitary norms related to food preparation (where the explanatory contribution for articles covering the inclusion of fruit in sustainable diets was 18%) and the portrayal of the role of the food producer (the inclusion in the article of this aspect also leading to a 1.7% increase in the probability of fruit being presented as part of sustainable diets) (Table 10).

4. Discussion

The concept “sustainable food” is used in the UN reports as referring to food split into three categories: fruits, vegetables and seafood [97]. Our results show that the Romanian media do not unanimously adopt this definition and lack a clear alternative definition of sustainable food. At the moment, there is also a lack of consensus between the use of the concepts of “sustainable food” and “sustainable or healthy diet,” with these terms being used interchangeably at times. For example, in the online Romanian articles, sustainable food was almost exclusively equated with the presentation of diets in direct connection with a healthy lifestyle. In other words, for these Romanian journalists, sustainable food was strictly reduced to covering aspects related to dietary and/or non-dietary foods (27.2% for dietary foods and 8.3% for non-dietary foods), the quantity and quality of foods present in some diets and recommended diets for diseases or conditions (such as obesity, diabetes, hypertension and associated diseases).

A clarification of the link between sustainable food, a sustainable diet and a healthy diet comes from Betoret Ester and Noelia Betoret [98]. Based on a thorough analysis of the reports published by the Food and Agriculture Organization (FAO) concerning food consumption and the impact that the current trends in food consumption have on health,

the authors conclude that “the concept of sustainable diets combines the challenges of creating a food system that supplies healthy diets for a growing population while reducing its environmental impacts and staying within planetary boundaries. Sustainable diets are context-specific. This highlights the need for context-specific strategies that balance environmental impacts between global and regional scales” [98]. Taking this argument further, we believe that Romania needs of a country-specific strategy for the adoption of sustainable diets. Romania also requires support with the establishment of a strong regulatory body and devising laws on the production and distribution of sustainable food.

Based on our analysis of the media coverage of sustainable food, we cannot help but notice that there is no clear understanding of what the difference between a “sustainable” and “healthy” diet is, as there is no consensus on how labels such as “eco” or “bio” should be used. Although a sustainable diet is overall depicted as positive and desirable, there is no consensus regarding what a sustainable diet should include. At the same time, the journalistic reporting lacks balance when it comes to informing the public about the benefits and risks of what is considered to be a “healthy diet.” The Romanian media’s overemphasis of the benefits of a healthy diet leads to the complete ignorance of the potential risks or negative consequences that come with the adoption of these diets, particularly for people with a low income, no education or underlying health conditions. Furthermore, the Romanian media tend to prefer to make use of different statistics and predigested information when reporting on issues regarding low consumption of fruit and vegetables (compared to other European states) but fail to address questions such as: What are the eating customs in our culture? What are the nutritious needs of a person that is born and lives in Romania (associated with the geographical differences of the country)? What would be the wider implications of adopting a sustainable diet?

Simultaneously, our results show that the media coverage of sustainable food in Romania was highly specialized, with journalists often using scientific or medical terms that are difficult to comprehend by those members of the audience with no or less expertise in the field [99,100]. However, at times, these highly specialized terms are not correctly used because the journalists themselves do not have the expertise to fully understand the complexity of these concepts before explaining them to the public. This is consistent with existing findings [73] that show that most of the journalists who write on these topics need to do extensive research in order to translate statistics accurately in their articles. This finding calls for the need to offer professional training to journalists who wish to specialize in the field of sustainability. Additionally, similar to existing findings [101], our results confirm that the Romanian journalists who write about health and food-related issues do not always mention their sources. Moreover, at times these sources are impossible to locate or identify, which makes the piece less credible.

When we coded our frames following Goody’s [32] five phases in building sustainable food-related behaviours, six main media frames resulted (Table 11). The first significant finding was that the Romanian media has never addressed the topic of sustainable food disposal in the three years analysed. In addition, the descriptive statistics indicated a minimal coverage of the topic of sustainable food production and distribution; only 17 articles (1.9% of the entire sample) being published on this topic in the three years analysed.

The phases of food preparation and consumption were represented in the media as strictly linked to the consumption of fruit and vegetables and healthy diets. There was a clear emphasis on fruit and vegetables’ nutritional value and their miraculous power to cure certain underlying medical conditions, such as obesity, diabetes, heart problems or high blood pressure. The journalistic tone used in reporting these topics was mostly positive, and journalists made use of rational arguments and citing doctors or medical specialists as main sources. Interestingly, no mentions of the negative consequences of the excessive consumption of certain fruit or vegetables were identified. Moreover, we did not identify any recommendations regarding the ideal daily intake of fruit or vegetables or how to best prepare them to ensure maximum nutritional benefits (Table 11).

Table 11. The main frames used in Romanian media to cover sustainability of food.

The Five Phases in Food-Related Behaviours (According to J. Goody)	Variables Used in the Logistic Models		Media Frames
	Dependent Variable	Independent Variables	
The phase of production	Sustainable food production	The use of logical arguments The positive tone Arguments against the use of pesticides in agriculture The agro-industry The advantages of traditional life-styles vs. modern life	Bio-ecological and traditional food production
The phase of distribution	Sustainable food production	The presentation of food as dietary The use of logical arguments The positive tone Public education and information about food and nutrition	Educating for the awareness of sustainable food
The phase of preparation	Sustainable diets based on vegetables	The use of logical arguments The positive tone The appeal at the international/European rules related to food The labels of the food	International normativity
	Sustainable diets based on fruits	The appeal at the international/European rules related to food Sanitary norms related to food preparation	Medical internationalism
The phase of consumption	Sustainable diets based on vegetables	The use of logical arguments The positive tone The role of the producer of food	A focus on the human relational-industrial with the industry
	Sustainable diets based on vegetables	Ecological/biological agriculture Urban agriculture Ecological/biological agriculture-	Urbanism eco-bio
The phase of disposal	-	-	-

5. Conclusions

Food and sustainability are subjects that have been analysed from a variety of different disciplinary perspectives, from biochemical research on nutrients to anthropological and sociological research on food consumption rituals and the meaning and value attributed to food in different cultures. The overarching aim of these studies is to contribute to a better understanding of food at both the individual and societal levels and find solutions to global food-related challenges.

Furthermore, the topic of climate change seems to have triggered a surge of interest and research on the topic of sustainable food and sustainable agriculture. However, many of these concepts lack conceptual clarification. Indeed, referring to the issue of sustainable food and its phases, Reisch, Eberle and Lorek [102] point out that a comprehensive definition of this term is difficult to provide. While most similar studies focus on analysing larger sustainability-related issues, such as climate change or sustainably sourced food, the present article aimed to take the discussion further and explored the media representation of all the processes of sustainable food, from sustainable food production, distribution, preparation, and consumption to sustainable food disposal.

In the context of the global fight against sustainability challenges, this article examined media representations of sustainable food in Romania (2014–2017), identifying frames and patterns of coverage related to sustainable food production, distribution, preparation, consumption and disposal. Overall, our analysis indicated that the media representation of sustainable food in Romania is unclear and misleading. As shown above, there is no clear and unitary definition of what sustainable food is, and moreover, the term is used in the

sense of “eco” or “bio” or as a synonym of the traditional model of food production. The media is shaping the public’s understanding of sustainable food by stating that sustainable food is in fact dietary food. Moreover, the media’s tendency to associate sustainable food with diets or illness has led to the public’s general perception that consuming sustainable food equals weight loss or being ill and having to be on a diet. Often this leads to the rejection of sustainable food and healthy eating habits altogether and even the adoption of risky and extreme food consumption behaviours that result in serious health problems. This trend is amplified by the emphasis placed on the costs associated with the acquisition and preparation of sustainable food by the media.

At the same time, our analysis indicated that the appeal to rational, logical arguments, the positive tone used by journalists, the presentation of journalists’ arguments in favour of eliminating the use of pesticides in food production, the agro-industry and international regulations in the field of food were the main journalistic factors that influenced the way sustainable food was reported in the Romanian media in 2014–2017.

Following the typology of the five phases in food-related behaviours proposed by Goody [32], we could thus observe the use of six main frames related to sustainable food in Romanian media: “Bio-ecological and traditional food production”; “Educating for the awareness of sustainable food”; “International normativity”; “Medical internationalism”; “A focus on the human relational-industrial with the industry”; “Urbanism eco-bio” (Table 11). As indicated by the analysis of the data set, we could not identify a frame that corresponds to the fifth phase proposed by Goody [32], the phase of disposal, due to the lack of articles published on this topic.

However, the present study has some limitations. The most important being that it only focuses on three years of media coverage (2014–2017) in Romania, and it uses a too-broad existing definition of sustainable food, currently understood as what is safe, healthy and nutritive for consumers [103,104]. This is why we believe that future studies should carry out literature reviews on the definitions that exist for sustainable food and analyse the media coverage of food related-issues at a European level. At the same time, future research should concentrate on interventions, such as education workshops for journalists and media professionals, on what sustainable food is and how to report food-related issues in order to educate the audience.

Despite the obvious limitations of our study, we believe that our results are original and unique because they reveal current media coverage patterns of sustainable food in Romania, a country with a food culture placed at the crossroads between Eastern Europe and the Balkans. Indeed, the media coverage of sustainable food has not been studied in this part of Europe. Therefore, this article contributes to the existing literature and highlights the need for more country and comparative studies from Eastern European countries that will advance the global understanding of the importance of educating the public on topics related to sustainability and sustainable food systems.

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