

The Role of Radio Personalities as Endorsers of Food Supplements. An Analysis of Health-Related Claims (H-RCs) on Spanish Radio Mentions

El papel de las personalidades de radio como prescriptores de complementos alimenticios. Un análisis de las declaraciones de propiedades saludables (H-RCs) en las menciones de radio en España

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ABSTRACT

Introduction: Advertisers use endorsers due to their potential in terms of persuasion and message effectiveness. The objective of this work is to analyze health-related claims in food supplements advertising establishing the relationship between radio personalities and health-related information. **Methodology:** A content analysis of all radio mentions —with a final corpus of 437— broadcast in 2017 on the three news/talk radio stations with the largest audiences was conducted. **Results:** Radio hosts (55%) predominate over collaborators (45%), with function claims as the most prevalent type of claim (99.5%), followed by disease claims, prohibited by law. Collaborators mention non-authorized claims more frequently than radio hosts. Regarding mandatory information on product content, 79% of mentions do not refer to any mineral that supports their alleged benefits. **Discussion:**

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Advertisers exploit the reliability of opinion leaders to endorse food supplements. These personalities are clearly inadequate to recommend these products, which implies a great risk to consumers' health. The significant and illicit use of these claims demands more restrictive legislation and stricter control mechanisms by self-regulatory authorities. **Conclusions:** Although advertisers are solely responsible for the illicit endorsement, the responsibility must be extended to media owners and radio personalities, due to their social influence, for a greater protection against illicit advertising.

KEYWORDS: advertising; health claims; product information; food supplements; radio; media personality; source credibility.

RESUMEN

Introducción: Los anunciantes utilizan testimoniales debido a su potencial en términos de persuasión y eficacia del mensaje. El objetivo de este trabajo es analizar las declaraciones de propiedades saludables en la publicidad de complementos alimenticios estableciendo la relación entre las personalidades de radio y la información relacionada con la salud. **Metodología:** Se realizó un análisis de contenido de todas las menciones radiales —con un corpus final de 437— emitidas en 2017 en las tres emisoras de radio generalista con mayor audiencia. **Resultados:** Predominan los locutores de radio (55%) sobre los colaboradores (45%), siendo las declaraciones funcionales el tipo más prevalente (99,5%), seguido de las declaraciones de enfermedad, prohibidas por ley. Los colaboradores mencionan reclamos no autorizados con mayor frecuencia que los locutores. En relación a la información obligatoria sobre el contenido del producto, el 79% de las menciones no refiere ningún mineral que sustente sus supuestos beneficios. **Discusión:** Los anunciantes explotan la credibilidad de los líderes de opinión para respaldar los complementos alimenticios. Estas figuras son claramente inadecuadas para recomendar estos productos, ya que pueden implicar un gran riesgo para la salud de los consumidores. El uso significativo e ilícito de estas declaraciones exige una legislación más restrictiva y mecanismos de control más estrictos por parte de las autoridades autorreguladoras. **Conclusiones:** Si bien los anunciantes son los únicos responsables del anuncio, la responsabilidad debe extenderse a los responsables de los medios y personalidades de la radio, debido a su influencia social, para una mayor protección contra la publicidad ilícita.

PALABRAS CLAVE: publicidad; declaraciones de propiedades saludables; información de producto; complementos alimenticios; radio; personalidades de radio; credibilidad de la fuente.

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1. Introduction

1.1. Radio as a Means of Advertising

Despite growing distrust in the media, radio continues to be considered the most reliable medium by 42% of Spaniards —a percentage which is 8 and 11 points higher than that of press and television, respectively, and way beyond the 14% obtained by the social networks— and 58% of Europeans (European Commission, 2021). This trust translates into 22,290,000 daily listeners (AIMC, 2021), of which 53.4% choose news/talk radio stations to keep up with the latest news. These stations' programming is based on current affairs of different nature, broadcast throughout the day in various

formats. In this information scenario, journalists become the focus of attention, opinion leaders who transmit contents as well as the editorial line of the programs themselves.

Radio depends on advertising as its main, and sometimes exclusive, source of funding, with advertisements integrated in the programming as a further element of the flow of news items, between programs or sections or, even, within them. In fact, the average advertising occupancy rate in news/talk radio stations (N/TRS) is 11%, mainly condensed in the morning (AEA, 2021). In this regard, the most common practice is to broadcast radio spots in commercial breaks—separated slots in the programming— of around 3 minutes (AEA, 2021) so that listeners are able to identify advertising messages from the rest of information, which generates a relatively unfavorable attitude towards these commercial slots (Dens et al., 2018). Advertisers are aware of this reaction and therefore increasingly opt for mentions rather than radio spots (Espinosa Mirabet & Vico Blanco, 2016).

The practice of integrating advertising in the editorial content is currently becoming more and more common, and the journalists responsible for the program or their collaborators often voice the mentions. This inclusion of persuasive messages in the editorial content may affect its processing and give rise to differences in message evaluation or brand recall, due to the credibility that listeners grant the source. In this way, commercial messages are perceived less negatively and are less likely to be avoided (van Reijmersdal, 2011). This is what is known as “attention transfer” (Moorman, et al., 2012; Dens et al., 2018; Stipp, 2018) from news to advertising messages.

Unlike other formats, such as music programs whose main goal is to entertain, information radio requires a higher cognitive effort and the involvement of listeners to pay attention, and understand and process the information in order to form an opinion. Advertisers take advantage of this active listening to broadcast advertising because “program-induced involvement contributes to more attention for advertisements that appear during the program” (Moorman et al., 2012, p. 27). Thus, advertisers use these information programs as a tool to improve advertising efficiency. However, this practice breaches and blurs the traditional and ethical principle which has established for over a century that editorial and commercial operations must be separated, attempting even to legitimize its usage. In this way, as advertising’s potential return increases, listeners’ ability to voluntarily activate their attention filters diminishes before intrusive content or the journalist’s discourse, which are actually contrary to the information context in which they are placed and to the objectively perceived function of the format. According to Ha (2018), “by hiding the advertising purpose of the content, this runs into the ethical question of deceit” (p. 153).

1.2. Endorsers in Radio Advertising

Advertising has a central role for the food supplement industry, with commercials that, directly or indirectly, promote their consumption as an alternative for medicines (Royne et al., 2016) while promoting self-care instead of the attention of health professionals. Consequently, most countries have enacted regulatory measures aimed at controlling the commercial activities of food supplements and the advertised health-related claims (H-RCs).

Employing celebrities, typical consumers, professional experts, company employees or anonymous spokespersons as advertising endorsers is a recurrent strategy among advertisers (Perelló-Oliver et al., 2018; Schouten et al., 2020; Tran et al., 2019), since they imbue brands with personality and maximize the persuasive impact of the message. The objective is to create a brand image through the person rather than the product itself, with a view to capitalize on the perceived confidence of potential consumers (Mospan & Alexander, 2018). Radio personalities can be understood as

celebrity endorsers, defined as individuals who have public recognition and who align their image to a product or brand (McCracken, 1989). Aware of their greater effectiveness (Morimoto, 2020; Schouten et al., 2020), advertisers seek to increase the return on their investment by leveraging the impact of this type of endorsers on the audience in terms of credibility, influence and trust.

Additionally, advertisements integrated in news programs are more effective and memorable, since they are perceived by listeners as being more interesting and thus hold their attention longer. In this sense, many professionals in the advertising field favor the use of journalists as brand spokespeople, and of mentions, i.e., advertisements live read within the program by the presenters, team or co-workers. However, detractors argue that the dilution of the boundaries between editorial and advertising contents (Muela-Molina et al., 2020) makes the latter a pretext to influence listeners' purchase decision while violating the principle of journalistic independence. In addition, it is worth noting that Point 6 of the deontological code for Spanish journalists—its compliance, although not legally enforced, is compulsory for members of the profession, who may be expelled from the association, although not disqualified from practicing the profession, in the event of infringement of any principle included in the code—establishes that, in order to avoid misleading or confusing users, journalists must make a formal and rigorous distinction between information and advertising, and Point 7 asserts that journalists must not accept, directly or indirectly, payments or rewards from third parties to promote, guide, influence or publish information or opinions of any nature (FAPE, 2017). These deontological principles provide the foundation and reasons behind this work, especially when considering that opinion leaders and their collaborators cooperate with advertisers to promote the alleged health benefits of products whose consumption may entail health risks.

Although previous studies have analyzed the characteristics of radio mentions in general (Perelló-Oliver & Muela-Molina, 2017) and the presence of the different types of endorsers in dietary supplements radio spots (Muela-Molina et al., 2021), in the European context, studies in this field of research focus on health-related product information in food supplements advertising are scarce. Baudischova et al. (2018) have focused on the quality of Internet information regarding the best-selling food supplements in the Czech Republic, analyzing their substances, overall composition and the lawfulness of the health claims. However, no work has been found on the analysis of the role of radio personalities endorsing food supplements from the perspective of H-RCs European regulatory framework.

The present work contributes to the field by establishing the correlation between radio personalities as a reliable source and product health-related information. The objective of this work is to analyze health-related claims in food supplements advertising in news/talk radio stations in Spain, establishing the relationship between radio personalities and health-related information.

2. Theoretical Framework and Literature Review

2.1. Endorsers in Food Supplements Advertising

Endorsers are considered a source of credibility. McCroskey and Young (1981) indicated that credibility is an attitude toward the source of information, which modifies the acceptance of the message (Schouten et al., 2020; Tran et al., 2019) and the degree of agreement with it. Therefore, to the extent that messages cannot be received outside their source, credibility is a decisive factor in the effectiveness of persuasion (Morimoto, 2020; Plasek & Temesi, 2019). In fact, the significance of the source's credibility in the communication process is such that it becomes vital in the choice of radio spokesperson (Martín-Santana et al., 2017). McGinnies and Ward (1980) introduced the experience of the reliable communicator as a means to foster persuasion. In this way, since trustworthiness is

related to the perceived honesty of the source, the experience is related to its knowledge and competence. Consumers' assumption that an expert source will provide accurate information reduces their sense of uncertainty, so they avoid the task of examining the message, which they blindly accept as valid (Teeny et al., 2017).

Previous research on dietary supplements advertisements has highlighted celebrities as the primary source of endorsement (Ethan et al., 2016). However, it has not been possible to find research on the use of media personalities in food supplements advertising. Consequently, and in this context, the first research question is proposed as follows:

RQ₁: What is the presence of radio personalities in food supplements radio mentions?

2.2. Health-Related Claims in Food Supplements

The European regulatory framework comprises three types of H-RCs (European Parliament and Council, 2000, 2002, 2006) and their acceptance in the following terms: (1) 'disease claims', that are not allowed, promote the notion that certain types of food prevent, treat or cure a human disease; (2) 'function claims' are exclusively permitted if they are based on scientific evidence and authorized by the European Food Safety Authority (EFSA); (3) 'reduction of disease risk claims' might be made when authorized by EFSA through the Process for the Assessment of Scientific Support for Claims on Foods (PASSCLAIM) and incorporated in a Community list.

In television and newspapers, the most frequent claims in dietary supplements advertisements were related to overall health (40%), were disease-specific (38.8 %), therapeutic (17.6%) or were made for cosmetic, sexual, or weight-loss purposes (14.7 %) (Lee et al., 2015). However, forbidden health claims for food supplements were present in 8.5% of Czech websites (Baudischova et al., 2018), and 84.5% of newspaper advertisements mentioned up to 12 different disease claims for each product (Chung et al., 2007).

The works of Soller et al. (2007), and Ethan et al. (2016) showed that 'function claims' are the most prevalent H-RCs in magazine dietary supplements advertisements, with a presence of 58% and 79%, respectively. Recently, Avery et al. (2017) concluded that 87% of magazine dietary supplements advertisements included 'function claims' referring to the most severe diseases, such as degeneration of brain function, heart disease or cancer. Similarly, Hassali et al. (2012) observed that 13.3% of magazine advertisements included claims related to the improvement and enhancement of sexual health.

Thus, based on previous research, the analysis of H-RCs in a mass medium which has hitherto received little consideration aims to partially fill this research gap. It therefore seems relevant to find out how the use of H-RCs claims is related to the presence of radio personalities, leading to the following question:

RQ₂: How often are the different types of H-RCs mentioned by radio personalities in food supplements radio mentions?

Some studies (Ethan et al., 2016) have revealed that most dietary supplements commercials do not mention the main ingredient (79%), while others (Lee et al., 2015) have concluded that they mention a recognizable ingredient of the advertised product (91.1%), which contained two or more elements. Hassali et al. (2012) have shown that, in women's magazines, the most prevalent ingredients were vitamins (17.8%), proteins (10.2%) and minerals (9.6%). Baudischova et al.'s work (2018) also

showed a significant appearance of non-herbal ingredients, vitamins and minerals, while herbal ingredients are mentioned in 70.1% of cases (Lee et al., 2015). Additionally, Philen et al. (1992) detected that amino acids were the most recurrent mentioned ingredient (21.7%) in bodybuilding magazines. Insofar as all H-RCs must be truthful and the European Directive on food supplements only permits minerals and vitamins (European Parliament and Council, 2002), it would be of interest to know how radio personalities make use of this product information, which leads to the following research question:

RQ₃: How often are product ingredients mentioned by radio personalities in food supplements radio mentions?

3. Methodology

As stated by the American Marketing Association (AMA), an advertising claim is a statement regarding the benefits, properties and/or performance of a product or service, which is intended to persuade the potential customer. Thus, the empirical nature of this study seems to require an analysis of verbal statements, as the most relevant elements of the message and description of the product. In this case, radio mentions have been selected for analysis and codification.

In line with this decision, the methodology chosen to develop this work follows a quantitative approach based on content analysis which enables the objective and analytical description of all radio mentions broadcast throughout 2017 on news/talk radio stations in Spain, with programming contents based on news and current affairs. The selection of the stations followed two criteria: national coverage and Spanish-language broadcasting. In accordance the Estudio General de Medios (EGM) (AIMC, 2017), the radio stations with the highest audience are: Cadena Ser, Cadena Cope and Onda Cero, with 9,000,000 daily listeners.

The data analyzed were obtained from Arce Media's database (joined since 2007 to Nielsen's database), a company dedicated to the collection and analysis of advertising in conventional media. Using specific software, the company monitors and registers all radio advertising broadcast in different formats. The authors have bought access to the database and therefore to the mentions of the required product category broadcast in the referenced year in MP3 format. In this study, food supplements belong to a non-medication group within the category of health and include the following types of products: food and vitamin complexes, energy boosters, weight-loss supplements, tonics, cell regeneration supplements and other nutrition products. Based on this selection criteria, the corpus of analysis includes 437 radio mentions, which provides the opportunity to work with the complete universe. The entire analysis and codification process were carried out by two coders who conducted their work according to the following variables and attributes:

1. News/talk Radio Stations: (1) Cadena Ser; (2) Cadena Cope; (3) Onda Cero.
2. Radio personality role. Radio personality's level of responsibility within the program. The codification focuses on the voice which describes the product: (1) Radio host: The program director is a renowned journalist, responsible for running the program. As a public opinion leader, he/she has great influence on his/her audience and assumes the roles of editor, columnist and commentator; (2) Collaborator: Other journalists, commentators or columnists who collaborate as guests in certain fixed sections of the program; (3) Both: Radio host and collaborators who take part in the description of the product.
3. Types of health-related claims category. Non-exclusive category, as one or more claims can be incorporated in an advertisement. The conceptualization of variables was based on EU regulation:

- Disease Claims (DCs). It refers to the prevention, treatment or cure of a disease. The statement refers to the product's effects on a disease, with an explicit claim (e.g., brand 'X' improves arthritis) or an implicit claim (e.g., brand 'Y' relieves joint pain): (1) Absence; (2) Presence.
 - Function Claims (FCs). Refer or describe the role of nutrients or other substances in the development, growth, and functions of the body; in psychological and behavioral functions; and in weight-control or reduction of hunger. Two examples of claims authorized by EFSA are: Calcium maintain bones in good condition, and it helps proper muscle function and neurotransmission: (1) Absence; (2) Authorized; (3) Non-Authorized.
 - Reduction of Disease Risk Claims (RDRCs). To state or suggest that the consumption of a supplement or one of its components significantly reduces a risk factor in the development of a disease. An example of a claim authorized by EFSA based on the mentioned mineral is: Calcium helps to reduce the loss of bone mineral in post-menopausal women. Low bone mineral density is a risk factor for osteoporotic bone fractures: (1) Absence; (2) Authorized; (3) Non-Authorized.
4. Product content information category. The ingredients and substances in the product which are mentioned. Non-exclusive category, as one or more claims can be included in an advertisement. The conceptualization of variables was based on EU regulation:
- Vitamins: (1) Absence; (2) Authorized; (3) Non-Authorized.
 - Mineral: (1) Absence; (2) Authorized; (3) Non-Authorized.
 - Other substances: (1) Absence; (2) Authorized; (3) Non-Authorized.

In order to encode whether among the types of H-RCs and product content information categories, a function claim, a reduction of disease risk claim, an ingredient or a substance have been authorized by EFSA, it was validated with the website of the EU register on nutrition and health claims (European Commission, 2016).

The inter-codifier reliability was measured using Cohen's Kappa, which raises a variation between 0.785 and 1, calculated with SPSS (version 17). Besides the structural variables Radio Station and Time Slot ($k=1$), the variable Radio personality role also obtained a value of $k=1$. Regarding the variables included in the category Types of Health-Related Claims, for Disease Claims $k=0.785$, for Function Claims $k=1$ and for Reduction of Disease Risk Claims $k=0.955$. Finally, $k=1$ in the case of all the variables that integrate the Product content information category, such as Vitamins, Minerals and Others. To solve the few divergences detected, a third work session was made. After evaluating the cases, the final coding was decided by the two coders. The results shown below are based on a value $k=1$ for all variables. Furthermore, any crossed data of the coded variables have been submitted to relevant statistical significance tests using nonparametric χ^2 analysis.

4. Results

The first results indicate several significant aspects which effectively contextualize the subject of study of our research. In the first place, as shown in Table 1, it is worth noting that of the three analyzed radio stations, the most important one in terms of audience rates (Cadena Ser) avoids the use of radio personalities to advertise dietary or food supplements that entail implications for listeners' health. These types of broadcasts are primarily concentrated in Cadena Cope (76.9%) and to a lesser extent in Onda Cero (23.1%). The former, Cadena Cope, has a more intensive use of the studied radio personalities. In fact, it accumulates 75.8% of Radio hosts and 78.2% of Collaborators analyzed in the sample under study. The latter, Onda Cero, also uses these advertising resources, although to a lesser degree. It concentrates 24.2% and 21.8% of advertising featuring Radio hosts and Collaborators, respectively.

Table 1. *Radio Personalities and News/talk Radio Stations.*

		Radio Station							
		Cadena Ser		Cadena COPE		Onda Cero		Total	
		n	%	n	%	n	%	n	%
Radio personality role	Radio host	0	0.0	182	75.8	58	24.2	240	100.0
	Collaborator	0	0.0	154	78.2	43	21.8	197	100.0
Total		0	0.0	336	76.9	101	23.1	437	100.0

Source: Own elaboration

Note: Radio personality role and Radio Station; χ^2 : .333; Significance: .564

Answering RQ1, the results obtained from the analysis of the 437 endorsements show a relatively balanced presence of the two Radio personality roles, with Radio hosts predominating with 55% presence (240) over the 45% presence (197) of Collaborators. The attribute Both has no presence since, in actual practice, the description of the product is usually entirely voiced by one of the two Radio personalities.

Analyzing the frequency with which Radio personalities mention the different Types of H-RCs is one of the main objectives of this paper. Table 2 partly answers RQ2 and shows the relationship between the variable Radio personality and Disease claims (DCs), which, as previously mentioned, are prohibited in food supplements advertising. However, 20.4% (89) of total radio mentions use claims which explicitly or implicitly refer to the prevention or treatment of illnesses through the consumption of this type of products, and of this percentage, 77.5% are endorsed by Collaborators and 22.5% by Radio hosts. The following excerpts provide examples of Disease claims detected in the sample under study: ‘[Brand X decreases joint pain and helps you to recover your quality of life]’; ‘[during the early symptoms of memory loss]’.

Table 2. *Radio Personalities and Disease Claims.*

		Disease claims					
		Absence		Presence		Total	
		n	%	n	%	n	%
Radio personality role	Radio host	220	91.7	20	8.3	240	100.0
	Collaborator	128	65.0	69	35.0	197	100.0
Total		348	79.6	89	20.4	437	100.0

Source: Own elaboration.

Note: Radio personality role and Disease claims; χ^2 : 47,528; Significance: .001

Table 3 provides the final answer to RQ2 and relates the other two types of H-RCs and the variable Radio personality role. Function claims are the most frequent type of claims in food supplements radio mentions, although the majority have not been authorized. Specifically, illicit Function claims are mentioned in 66.7% (240) of endorsements voiced by Radio hosts and in 97% voiced by Collaborators. The following extracts provide examples of how several Collaborators endorse the same product in different advertisements using Function claims: ‘[Brand X helps to decrease tiredness and fatigue and helps you to recover your energy metabolism and vitality]’; ‘[Brand X provides the nutrients, vitamins and minerals necessary to have energy and vitality throughout the day]’; ‘[they help look after and protect your joints]’.

On the other hand, the use of Reduction of Disease Risk Claims presents a relative weight of only 8.7% in the analyzed corpus. None of these claims have been authorized, and they are mainly voiced by Collaborators (11.2%), although the presence of Radio hosts is also relevant in 6.7% of cases. The following example features a Radio host who addresses the audience in the first person —testimonial style— to describe the health properties of the product, although without mentioning any type of substance: ‘[Brand X reduces and normalizes bad cholesterol levels]’.

Table 3. *Radio Personalities, Function Claims (FC) and Reduction of Disease Risk Claims (RDRCs).*

	Radio host								Collaborator							
	Absence		Presence				Total		Absence		Presence				Total	
			Authorized		Non-Authorized						Authorized		Non-Authorized			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
FCs	2	0.8	78	32.5	160	66.7	240	100.0	0	0.0	6	3.0	191	97.0	197	100.0
RDRCs	224	93.3	0	0.0	16	6.7	240	100.0	175	88.8	0	0.0	22	11.2	197	100.0

Source: Own elaboration.

Note: Radio Personality Role and Function claims (FCs); χ^2 : 62,829; Significance: .001; Role of Radio Personality and Reduction of disease risk claims (RDRCs); χ^2 : 2,761; Significance: .097

All health claims regarding food supplements must be supported with scientific evidence based on a vitamin, mineral or other type of authorized substance. Thus, in response to RQ3, Table 4 shows the information provided by Radio personalities regarding the endorsed products. 78.9% (345) of food supplements radio mentions fail to name —as required— a Mineral that would support the alleged benefits of the product’s consumption, and this percentage reaches 67.7% (296) in the case of Vitamins and 56,2% (246) in the case of Other substances. Nevertheless, Minerals are the most frequently named ingredient in authorized Function and Reduction of Disease Risk claims voiced by Radios hosts (23.4%) and Collaborators (3%). The following is an example of two authorized Function claims endorsed by a Radio host, referring to two different minerals: ‘[Developed in collaboration with the CSIC, it contains Zinc, which contributes to effective DNA synthesis, and selenium, which contributes to cellular protection in cases of oxidative stress]’.

On the other hand, Non-Authorized Other substances predominate in H-RCs made by Collaborators (53.8%) and Radio hosts (35.4%), followed by Vitamins, which are also frequently mentioned by Collaborators (43.7%) and, to a lesser degree, by Radio hosts (17.9%). The following example describes a benefit which the vitamin cannot provide: ‘[Memory is where you first notice your age. You become forgetful and your mind doesn’t seem to function. It contains phosphorus and B-group vitamins, which help strengthen our memory]’.

Table 4. *Radio Personalities and Product Content Information.*

	Radio host								Collaborator							
	Absence		Presence				Total		Absence		Presence				Total	
			Authorized		Non-Authorized						Authorized		Non-Authorized			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%		
Vitamins	185	77.1	12	5.0	43	17.9	240	100.0	111	56.3	0	0.0	86	43.7	197	100.0
Minerals	182	75.8	56	23.4	2	0.8	240	100.0	163	82.7	6	3.0	28	14.3	197	100.0
Others	155	64.6	0	0.0	85	35.4	240	100.0	91	46.2	0	0.0	106	53.8	197	100.0

Source: Own elaboration.

Note: Radio personality role and Vitamin; χ^2 : 40,999; Significance: .001; Radio personality role and Mineral; χ^2 : 60,255; Significance: .001; Radio personality role and Other substances; χ^2 : 14,872; Significance: .001

Finally, and taking into consideration the data provided in Table 4, it is worth noting that no Radio host or Collaborator has mentioned any authorized H-RC supported by Other substances different from vitamins or minerals.

5. Discussion

This investigation provides new data regarding food supplements advertising in the European context, where studies of this nature are scarce. The main contribution of this analysis is to establish the relationship between radio personalities as a credible source and product information in food supplements, which are considered a high involvement product for consumers due to the health issues involved. A further contribution of this study has to do with the choice of analyzed medium. Radio programming is based on news items of different nature, and its audience is predisposed and used to listening to information content. In fact, radio is determined as the most trustworthy source of information by most Spanish and European people (European Commission, 2021).

Radio hosts are usually well-known journalists responsible for running the program and, as opinion leaders, have great influence on their audiences. Advertisers use radio hosts —considered celebrities (McCracken, 1989)— because they increase advertising effectiveness by projecting onto the product the values and credibility of their profession. This paper confirms the prevalence of this type of radio personality whose perceived information and professional credibility is also projected onto the rest of messages (McCroskey & Young, 1981), including advertising messages. When a radio host endorses a product to a faithful audience who listens daily to his/her program, listeners will tend to accept arguments as valid, without questioning the advertisement's reliability and taking for granted the alleged benefits and properties of the endorsed product (Wong et al., 2020). When the radio host also acknowledges his/her own consumption of the product, this experience is added to the perceived trustworthiness —linked with the honesty of the source (Kim & Yang, 2019; McGinnies & Ward, 1980; Mospan & Alexander, 2018)— increasing the endorsement's persuasiveness (Wong et al., 2020). The trust generated in listeners by radio hosts and renowned journalists as opinion leaders may be the main reason why advertisers choose this type of role to endorse their product.

With regard to the analysis of H-RCs, it is worth remembering that the different types of claims are not mutually exclusive, so that one mention may include various types. In this sense, one out of five endorsements contains disease claims, a practice which has also been analyzed in previous studies (Baudischova et al., 2018; Chung et al., 2007; Lee et al., 2015). On the whole, the analysis conducted shows that although in this type of illicit claim —whose use is forbidden— radio personalities do not

directly mention illnesses, they do so indirectly. Thus, they explicitly refer to aging as the cause of joint pain or memory loss instead of naming arthrosis, Alzheimer's or senile dementia. Additionally, this type of claim does not only propose the cure of an illness or the immediate disappearance of pain, it also recommends the consumption of a product for their prevention, as in the following example:—'[As you get older, you notice how you lose memory and mental agility... Brand X contains a high concentration of phospholipids, vitamins and minerals that maintain your memory; it is the supplement indicated to avoid memory loss]'. Fear appeals and mentioning medical or clinical terms —such as 'symptoms'— or risk factors that may worsen our quality of life —for example, aging— are also frequent in food supplements radio mentions.

This study provides novel empirical data on the source who endorses this type of products, showing that collaborators prevail in disease claims over radio hosts. Both, on occasion, take on the role of prescribers as if they were physicians advising on the dosage and use of the product: '[Two capsules a day of Brand X relieves pain]; [two capsules a day is enough]; [one capsule a day reduces and normalizes bad cholesterol levels]'. In this sense, when radio personalities endorse products giving opinions outside their area of expertise, the information provided could be biased and may mislead consumers.

In agreement with previous studies (Avery et al., 2017; Ethan et al., 2016; Soller et al., 2007), function claims have a high presence in dietary supplements advertising. The present work strongly confirms this finding. Function claims voiced predominantly by radio hosts appear in almost all analyzed cases. Of these, more than half have not been authorized by EFSA. It is usual practice in food supplements radio mentions to describe health benefits as product attributes: '[Brand X is the only product that normalizes cholesterol]; [Brand Y is specifically formulated to look after and nourish your bones and joints, and prevent pain, because you can't avoid getting older]; [Brand Z looks after your memory]'. Nevertheless, claims must only make reference to the role of nutrients or other substances in terms of growth, development and functions of the body for maintenance of good health. Furthermore, other claims made by radio personalities assure listeners of the alleged benefits of the product —'[Brand X is the solution]; [Brand X is a revitalizer of guaranteed effectiveness]'— appeal to a '[new, more powerful formula]', '[exclusive formula]', '[natural formula]', '[effective formula tested by professional laboratories]', or denote that the product is sold in pharmacies. These advertising resources may condition consumers to make a purchase decision influenced by the omission of indispensable information about the product. In this way, listeners' trust in radio personalities becomes a decisive factor of major persuasion (Martín-Santana et al., 2017).

With regard to the information provided by radio personalities in relation to the content of food supplements, and again in agreement with previous studies (Ethan et al., 2016), this work shows that most of the analyzed radio mentions do not name any of the types of mandatory substances required by current legislation. Other substances are the most mentioned type, although the claims they are included in have not been authorized. In contrast with previous research which found that the most frequently mentioned substance were vitamins (Baudischova et al., 2018; Hassali et al., 2012), in this study vitamins hold second place, although again in most cases their use is illicit. Finally, and despite being the substance with the lowest presence, minerals accumulate the highest number of authorized claims. On the whole, authorized claims that refer to the different analyzed substances are more frequently voiced by radio hosts, while collaborators use to a higher degree non-authorized claims in radio mentions where they describe the product. The use of vague and general arguments such as '[Brand X provides vitamins, minerals and nutrients]' is frequent in food supplements radio mentions and, although its presence has been recorded in the codification process, it cannot be considered authorized since the arguments do not indicate the substance nor claim the health benefit provided.

Advertising, as a form of massive communication, reaches and informs consumers of the existence and availability of products in the market with speed and efficiency. However, malpractice in the promotion of food supplements —false, illicit and deceptive claims, or the omission of essential characteristics and/or benefits of the products— can lead consumers to mistaken purchasing decisions (Kowalska et al., 2019). It is important to bear in mind that the current regulation (European Parliament and Council, 2006) establishes as a general principle that health-related claims should not be misleading, confusing or uncertain. In this sense, advertisers exploit the trustworthiness of opinion leaders and use radio personalities to endorse food supplements, sometimes in a testimonial style whereby they share their consumption experience with the audience (Kim & Yang, 2019; Muela-Molina et al., 2020). Some radio hosts even recommend the product as if they were physicians, misleading consumers to think of food supplements as an alternative to drugs or traditional medicine, which in turn promotes the practice of self-care instead of often required professional advice (Mospan & Alexander, 2018). In the context of a rapidly expanding market, the demand for this type of products is increasing worldwide (Binns et al., 2018), while current legislation —which is relatively recent— and its application remain inadequate.

5.1. Managerial Implications

Food supplements advertising is subject to controversy since it provides information on products which may entail a health risk or involve economic fraud (Baudischova et al., 2018). The worrying presence of illicit H-RCs has been acknowledged as a public risk to the extent that it induces false perceptions and inappropriate behavior (Royne et al., 2016). Many experts and researchers (Binns et al., 2018; Kowalska et al., 2019; Starr, 2016) have already expressed their concern, as well as demanded the need for restrictive legislation on food supplements advertising and strict monitoring of manufacturers, taking into account the administrative laxity, health problems and other issues observed since the application of the current legal text (Binns et al., 2018; Makowska & Jasiński, 2019; Starr, 2016).

Recent studies raise concern over the great presence of deceptive H-RCs (Baudischova et al., 2018; Lee et al., 2015) and even of audacious claims that lack any kind of scientific support (Royne et al., 2016; Silchenko & Askegaard, 2020) or that are not credible (Plasek & Temesi, 2019; Soller et al., 2007). Although the primary objective of EU regulation is to avoid the existence of misleading claims, our investigation has found frequent vague claims which may be considered clearly deceptive by omission (Kowalska et al., 2019). Therefore, given the high level of consumption and advertising of this type of products, it would be beneficial to implement relevant mechanisms to protect consumers, such as: efficient governmental supervision of advertising activity; an increase of the sanctions imposed by self-regulatory systems; and, in media, the implementation of a preclearance system that ensures messages are in tune with legal requirements before dissemination. This would filter out misleading communications before they reach consumers, and thus avoid the purchase of products that do not fulfil their advertised benefits.

On the other hand, radio hosts and collaborators may mislead consumers when they give opinions regarding an issue outside their area of expertise, so that the use of endorsements compels knowledge and understanding of the associated legal parameters. Although radio personalities usually lack the qualified knowledge to endorse food supplements, advertisers use them frequently. The case of journalists and radio hosts as endorsers is special due to their social influence and recognition as public opinion leaders. Additionally, the code of ethics of the sector does not allow their participation in any advertising message or activity (Muela-Molina et al., 2020). In this respect, advertisers are ultimately responsible for their advertising and content, so that when the law or codes are breached, endorsers —the source of the message— are usually exempt from any responsibility. This impunity

needs to be analyzed in terms of public policy, since endorsers should also be held responsible for what they say to consumers. Likewise, because health information can be related to representative risk and consumers might grant greater confidence to an endorsement from a reliable source (Rollins et al, 2020; Royne et al., 2016), radio personalities and public opinion leaders must show greater responsibility toward society and respect for the codes and law. And finally, the media in general — in this case the radio medium— should implement a preclearance system within the self-regulatory framework to avoid the broadcasting of illicit endorsements.

5.2. Limitations and Future Research

This work has focused on the radio medium and full-service stations. The scope of future research could be extended to include other types of radio stations and media, such as television. In this regard, it would be pertinent to compare the presence of radio personalities in food supplements radio mentions in different European countries, for a better understanding of the impact of cultural and sociological determinants, since all of us share the same legal principles.

Another limitation of this work is that it only analyzes the presence of H-RCs and substances allowed by law in food supplements radio mentions. That is, the following step would require a more specialized analysis of the object of study from the perspective of self-regulation. It would also be relevant to conduct an analysis from the perspective of consumers in order to determine their knowledge regarding the different types of H-RCs and if they are able to distinguish between them.

The results of this work pave the way for the development of future experimental research that may provide continuity or solve emerging questions and hypotheses. For example, it would be interesting to learn how the source's trustworthiness affects information processing, and to what extent the persuasive power of the message is dependent on the gender and role of the radio personality — whether male or female, ambassador or testimonial.

It is also worth noting that the results of this work show that one of the three analyzed radio stations did not broadcast food supplements mentions. This requires a further analysis that would explain the reasons behind it. It would be of interest to interview radio owners and radio hosts to gain insight into the advertising management process, with emphasis on the acceptance, production, revision and dissemination of food supplements radio mentions. The implementation of self-regulation and accountability systems, the observation of the editorial line or the existence of a style guide also provide lines of future investigation.

6. Conclusions

The high use of health-related claims not permitted by law for the promotion of food supplements endorsed by radio personalities is a matter of concern. The fact that one out of five mentions includes claims that ensure the cure, relief or prevention of an illness explicitly prohibited by law evidences the irresponsible behavior of radio hosts and collaborators, who, in any case, should not collaborate in advertising campaigns, since it is not permitted by the ethical code of the profession. To exacerbate matters, we must stress the alarming presence of unauthorized H-RCs which, in the case of function claims, appear in the majority of mentions, while none of the analyzed reduction of disease risk claims have been authorized by the European regulatory framework and, by extension, the Spanish regulatory framework. In addition, regarding the information related to the products' ingredients which should substantiate the health benefits endorsed by radio personalities, in most cases it is omitted or so vague and ambiguous that it is misleading. This is also included in the

regulation, which stipulates that H-RCs must be substantiated by substances and health properties approved by EFSA.

Although, when the law is breached, advertisers are solely responsible for the illicit endorsement, the social responsibility toward message recipients must be extended to media owners and radio personalities, due to the social influence and potential persuasion power of certain endorsers, such as radio hosts and/or journalists as opinion leaders. Furthermore, the worrying presence of misleading messages —false and vague claims, and omission of product information— suggests that public administrations and self-regulatory authorities must apply stricter monitoring and control mechanisms, as well as stronger sanctions, to food supplements advertising in order to dissuade advertisers from further breaches of the law and to protect consumers. In the case of the EU, it seems essential to address the current regulatory legislation on food supplements advertising with an action plan and common framework for sanctions, so that government policy makers of the member states can protect consumers' health from the potentially hazardous effects of its consumption, often promoted through bad advertising practices. Policy makers should place responsibility on the media and radio personalities as endorsers, and even prohibit the use of the latter in food supplements advertisements in order to protect consumers against illicit health-related advertising.

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