

UNVEILING DECEPTIVE CLAIMS: A CROSS-SECTIONAL OBSERVATIONAL ASSESSMENT OF DIETARY SUPPLEMENT ADVERTISEMENTS FROM THREE NEWS CHANNELS IN ROMANIA

Ingrid NĂDĂȘAN¹, Adél PETHŐ¹, Agnos Milian HERȚELIU², Valentin NĂDĂȘAN¹

¹George Emil Palade University of Medicine, Pharmacy, Science and Technology of Targu Mures, Romania

²Department of Communication, National Institute of Statistics, Bucharest, Romania

*Correspondence:

Valentin NĂDĂȘAN

valentin.nadasan@umfst.ro

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Abstract: Dietary supplements can provide the necessary nutrients for groups of people who need them, but their use comes with a few risks, such as excessive or unwarranted utilization, side effects, unwanted interactions, and the promotion of unhealthy behaviors or neglecting professional health care. This cross-sectional study analyzed 49 TV advertisements on three major news channels in Romania regarding their compliance with European and national laws concerning the advertisement of dietary supplements. A list of criteria was extracted from the current laws in Romania and was used to check the video promotional materials' compliance systematically. Despite more than half of the commercials complying with the technical criteria, it was found that a concerning amount of advertisements targeted people with various or specific pathologies, while a third of the ads included non-compliant words or representations associated with pathologies and medical professionals or institutions. As a practical implication, the study suggests a need for more consistent and closer surveillance of dietary supplement commercials broadcasted in the Romanian media.

Keywords: dietary supplements, nutravigilance, advertisement, compliance, legal regulations

Introduction

The consumption of dietary supplements among adult populations, particularly in the USA and Europe, has experienced substantial growth over the last few decades (Starr, 2015). The two main reasons for people using dietary supplements are to protect themselves from potential future illnesses proactively, and to seek healing for their existing health conditions (Lam et al., 2022). An analysis of the data about dietary supplement utilization collected from the participants in the European Prospective Investigation into Cancer and

Nutrition study has shown a wide variation across nations, from 2.0% in Greece to 51.0% in Denmark (Skeie et al., 2009). A survey recently conducted in city located in central Romania has shown that half of the respondents used dietary supplements. Vitamins, protein preparations, and minerals were the most popular dietary supplements (Fagaras et al., 2023).

Various forms of media, including television, are recognized as potent forces shaping an individual's choice to consume

nutritional supplements (El Khoury and Antoine-Jonville, 2012). According to some observations, the impact of media advertisement on dietary supplement utilization may have increased during the COVID-19 pandemic (Adams et al., 2020). In Romania, television stands out as the most prevalent information source, effectively reaching nearly 100% of the population (Crețu, 2017).

According to Romanian laws, more specifically, Ministry of Public Health Order No. 1069 of 19 July 2007 for the approval of the Norms regarding dietary supplements, Ministry of Public Health, Official Monitor No. 455 of 5 July 2007, and European Parliament and Council Directive 2002/46/EC of the European Parliament and of the Council of 10 June 2002 on the approximation of the laws of the Member States relating to food supplements, dietary supplements fall into the food products category whose intended purpose is to complement a regular diet by providing a proper intake of nutrients and can be used to correct a deficiency or to sustain physiological functions. However, there is no universal consensus regarding how the dietary supplements should be defined (Dwyer et al., 2018).

In theory, dietary supplements are helpful by providing beneficial effects to the organism, but several systematic reviews suggest that for most of the products on the market, there is no evidence to support their preventive or curative properties (Huang et al., 2006; Fortmann et al., 2013; Wierzejska, 2021). Moreover, there are numerous risks related to the use of these products, such as adverse reactions and unwanted interactions with other supplements or drugs administered together (Morgovan et al., 2019). As they can be obtained and administered without medical recommendations, there are additional risks such as excessive administration, dangerous interactions with other medications or

supplements, and most alarmingly, consuming counterfeited dietary supplements available on the market, which may contain toxic ingredients (Marcus, 2016). Professionals and regulators are increasingly aware of the need for stricter regulations to detect, monitor, and record adverse events associated with dietary supplements (Malve and Fernandes, 2023).

In 2002, the European Union Directive 2002/46/EC has regulated dietary supplements under food laws, noting that products containing concentrated nutrients or other types of substances with nutritive or physiological effects alone or in combination can be considered dietary supplements, with the note that only vitamins and minerals fall under the nutrients category. In addition, official guidelines in Romania state that dietary supplements are to be used in certain groups of people, more specifically those who may need to complete their daily intake of nutrients (elderly, kids, teenagers, for restrictive diets, or periods of pregnancy/ breastfeeding) (Garban and Florescu, 2013).

Dietary supplements can only be sold or advertised if they meet all the requirements provided by laws specific to each country. In Romania, according to Order No. 1069 of the Ministry of Health of 19th of June 2007, all dietary supplements require an authorization notice from the Public Health Ministry, and any advertisement can only be done after receiving approval from the same organization. One of the requirements for dietary supplements is for the label, presentation, and advertisement of the product not to include the following claims: prevention properties, capability to heal or prevent any human pathology or induce the idea that a balanced diet, in general, cannot provide the required nutrients.

Although some governmental agencies and authors pointed out that deceptive or questionable marketing and sales practices for

dietary supplements and exposure to distorted messages could potentially lead to detrimental impacts on consumers, including adoption or continuation of unhealthy behaviors and excessive intake of supplements, there has not been much research done on whether or not promotional materials meet all the legal criteria implemented by institutions (United States, Government Accountability Office, 2010).

The aim of this study was to investigate whether TV commercials on dietary supplements broadcasted on Romanian news channels meet all the necessary criteria under the current legislation. The study also sought to identify and analyze messages presented in promotional materials that would interfere with consuming dietary supplements responsibly or undermine the importance of a healthy lifestyle in favor of consuming these products.

2. Materials and methods

The main part of the research was designed as a quantitative, observational, cross-sectional study but also included a few qualitative assessments of the language of the health claims associated with dietary supplement advertisements. The most representative TV channels in Romania, namely, ProTV, Antena 1, and Kanal D, were selected based on audience statistics (Asociația Română pentru Măsurarea Audiențelor [Romanian Association for Audience Measurement], 2018). Each media channel was monitored for a whole day between January 1 and May 31, 2019, and the commercials were recorded using Bandicam Screen Recorder (Bandicam Company).

The study sample consisted of 49 dietary supplement advertisements that underwent content and formal analysis. Product names were anonymized and classified according to basic attributes like product type, presentation form, intended consumer demographic, and duration of the video content.

The advertisements' compliance with the specific regulations was checked based on a list of requirements extracted from European and Romanian legislation and good practice guides in the field:

1. European Parliament and Council. Directive 2002/46/EC of the European Parliament and of the Council of 10 June 2002 on the approximation of the laws of the Member States relating to food supplements.
2. Ministry of Public Health. Order No. 1069 of 19 July 2007 for the approval of the Norms regarding dietary supplements, Ministry of Public Health, Official Monitor No. 455 of 5 July 2007.
3. National Audiovisual Council DECISION No. 220/2011 of February 24, 2011, regarding the Audiovisual Content Regulatory Code.
4. REGULATION (EU) NO. 432/2012 OF THE COMMISSION of May 16, 2012, establishing a list of permitted health claims written on food products other than those referring to the reduction of the risk of illness and the development and health of children.
5. National Audiovisual Council DECISION No. 614/11.06.2019.

The criteria were operationalized in multiple-choice questions:

1. Health claims: If the commercial includes health claims, does it comply with legal regulations? a. Yes, fully; b. Yes, only for some of the ingredients; c. No; d. It does not include health claims; e. It does not include explicit mentions but suggests an effect on health. [National Audiovisual Council. Decision No. 220 of February 24, 2011, regarding the Audiovisual Content Regulation Code. Article 120 (2); Regulation (EC) No. 1924/2006 of the European Parliament and of

the Council of December 20, 2006, on nutrition and health claims on food products.]

2. Audio and visual warnings: Does the advertisement include the warning "This is a dietary supplement. Read the leaflet/information on the package carefully." in audio format for a minimum of 3 seconds? a. Yes; b. No." Does the advertisement include the warning "This is a dietary supplement. Read the leaflet/package information carefully." in visual format? a. Yes, visible and readable; b. Yes, but it is hard to read because the letters are too small; c. Yes, visible, but the display duration is insufficient for reading it fully; d. Absent. [National Audiovisual Council. Decision No. 220 of February 24, 2011, regarding the Audiovisual Content Regulation Code. Article 131; Art. 133]

3. Food intake: Does the commercial suggest that a varied and balanced diet cannot provide the daily requirements? a. Yes; b. No. [Directive 2002/46/EC the European Parliament and of the Council of June 10, 2002 on the approximation of the laws of the Member States relating to food supplements of June 10, 2002 Art. 7]

4. Prohibited words: Does the advertisement include prohibited words that indicate one of the following terms: "medical", "sick", "disease", "remedy", "medicine", "treatment", as well as their translations, synonyms or words that come from their lexical family (except for some warnings), names of diseases, the names or the representation of symptoms of diseases or sick people? a. Yes; b. No. [Ministry of Health, National Institute of Public Health. Food supplements - Guide, p.29; National Audiovisual Council. Decision No. 220 of February 24, 2011, regarding the Audiovisual Content Regulation Code. Art. 128 (a-f)]

5. Personalities, doctors, medical associations: Does the commercial include visual or audio messages stating or implying

that the dietary supplement is recommended by public figures, doctors or pharmacists, or medical associations recommending dietary supplements? a. Yes, public figures; b. Yes, health professionals; c. Health-related groups; d. No. [National Audiovisual Council. Decision No. 220 of February 24, 2011, regarding the Audiovisual Content Regulation Code. Art. 126 (1), (2), (3)]

6. Preventive, therapeutic, curative effect: Does the advertisement include information that attributes or suggests that the food supplement presented has properties to prevent, treat and cure human diseases? a. Yes, prevention; b. Yes, treatment; c. No. [National Audiovisual Council. Decision No. 220 of February 24, 2011, regarding the Audiovisual Content Regulation Code. Art. 120 (1); Directive 2002/46/EC of June 10, 2002 Art. 6 (2).]

7. Lifestyle: Does the commercial suggest that the dietary supplement could counteract the effects of an unhealthy lifestyle, overeating, alcohol abuse, etc.? a. Yes; b. No. [National Audiovisual Council. Decision No. 220 of February 24, 2011, regarding the Audiovisual Content Regulation Code. Art. 93 - (1)]

8. Sales, discounts: Does the advertisement include information that could encourage the unwarranted use of the dietary supplement by offering the product at reduced prices? a. Yes; b. No. [National Audiovisual Council. Decision No. 220 of February 24, 2011, regarding the Audiovisual Content Regulation Code. Art. 93 - (1)]

Descriptive statistics were calculated for each collected variable.

3. Results and discussion

The distribution of commercials based on the type of ingredients contained in the advertised dietary supplements is displayed in **Figure 1**.

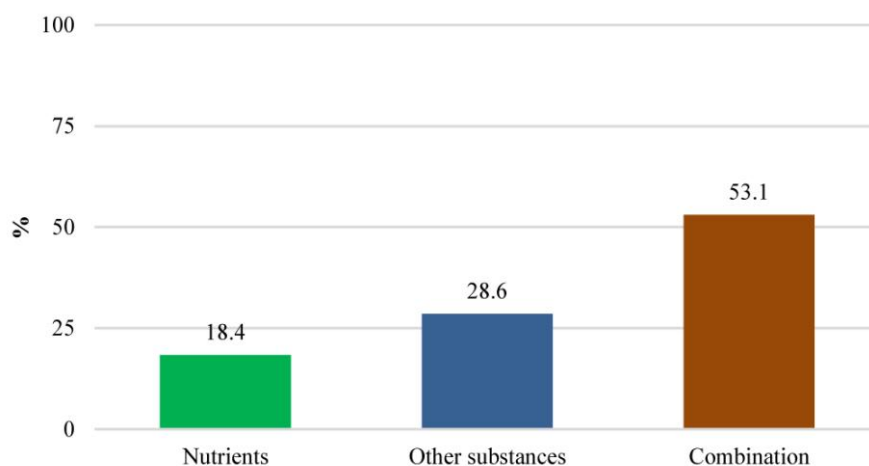


Fig. 1. Percentage of commercials according to the type of ingredients.

Most of the food supplements studied fell into the category of combined supplements, which contain other substances besides vitamins or minerals. This observation draws attention to a problem pointed out by specialists, namely, that the ingredients of food supplements also contain other substances (especially phytochemicals of plant origin), which have no role in supplementing the diet or possible deficiencies in healthy people but can lead to adverse reactions in combination with the medication prescribed by the doctor (for example St. John's wort, ginseng, goldenseal, garlic) (Ronis et al., 2018).

Regarding the pharmaceutical presentation, the following forms were found: tablets – 22 (of which 15 were simple tablets, two film-coated tablets, three effervescent tablets, and two chewable tablets); capsules – 17 (of which 14 were simple capsules and three soft capsules); powders – 4 (of which 1 was simple powder and three powders for oral solution); syrups – two; oral solutions – one; oro-dispersible granules – one; soft gummy jellies – one, and lozenges – one. Market research data indicates that even on the global scene, tablets are the predominant form of presentation (Persistence Market Research, 2017).

The distribution of dietary supplement commercials depending on the intended consumer group is shown in **Figure 2**.

The analysis of the intended target groups also highlighted the orientation of the messages in the advertising materials to people other than healthy ones. Practically, only one out of five advertisements unequivocally had healthy people as a target group. The rest of the ads focused on a wide range of people affected by various diseases or symptoms, from liver and psychiatric conditions to eye disorders and hypercholesterolemia. The most frequently encountered advertising messages were addressed to people with weakened immunity, urological conditions, respiratory system conditions, and musculoskeletal conditions (each of them with more than 10% of the total ads).

There were 47 advertisements that included health claims. Of these, 16 (34.0%) fully complied with the EU regulations on the matter, two (4.3%) showed partial compliance, and 29 (61.7%) did not comply at all. A comprehensive examination of supplement advertisements published in the USA from 2003 to 2009 reported that they encompassed a wide variety of claims from common to very severe diseases (Avery et al., 2017).

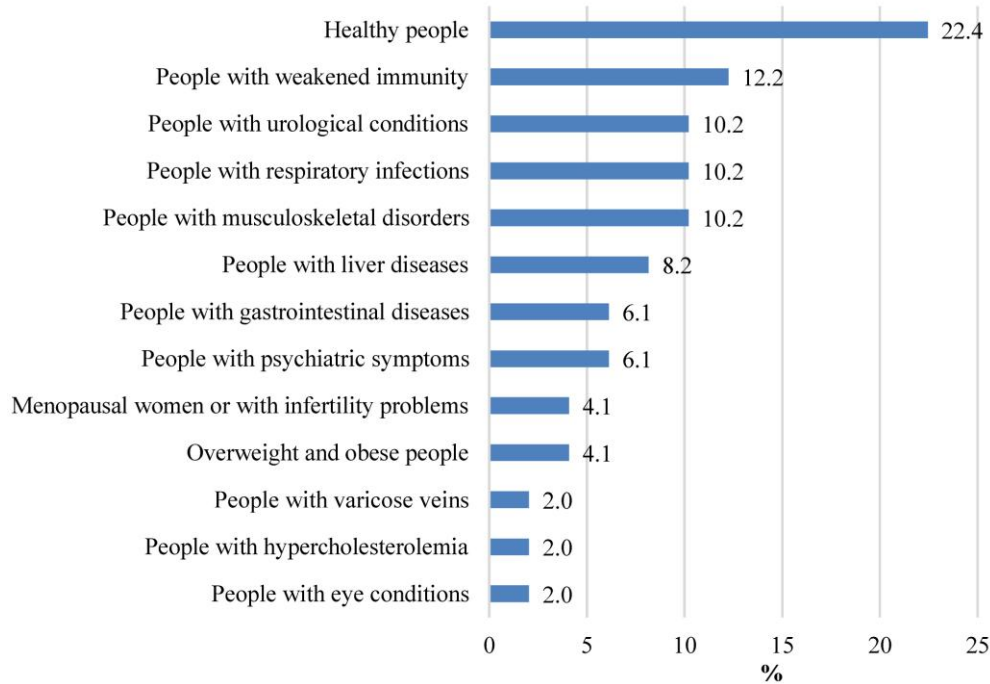


Fig. 2. Proportion of commercials by type of ingredients.

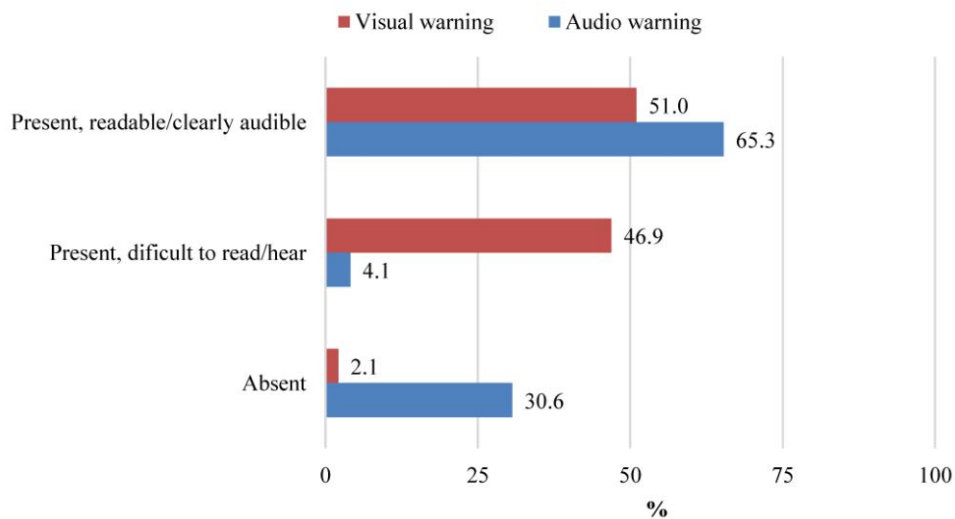


Fig. 3. The presence of visual and audio warnings in the advertisement of dietary supplements ("This is a dietary supplement. Read the leaflet/information on the package carefully").

Another earlier investigation conducted in San Francisco and Los Angeles, California, USA, revealed that advertisements for dietary supplements were more prevalent on non-English media outlets compared to English ones and a significant proportion of them did not comply with the regulations and disseminated unsubstantiated claims (Lee et al., 2015). In a study conducted in Poland, the

authors found that approximately 30% of the promoted dietary supplements made claims about their effectiveness in various health situations, such as overweight and obesity, without reliable proof to back up those claims (Wierzejska, 2022).

European and national legislation mandates that all commercials of dietary supplements should specifically warn potential

consumers that "This is a dietary supplement. Read the information on the leaflet/package carefully." The assessment results regarding mandatory visual and audio warnings in the TV advertisement of dietary supplements are presented in **Figure 3**.

Only slightly more than half of the advertisements included the mandatory visual and audio warnings. Of further concern is the complete absence of audio warnings in almost a third of the sampled advertisements. Also, in almost half of the examined videos, the visual warnings were difficult or impossible to read because of the small size of the fonts or the short display time. The mean duration of video ads in the sample was 19 seconds (SD= 7.4 seconds, minimum 9 seconds, maximum 30 seconds). Non-compliance to requirements regarding visual and audio warnings is better understood considering these constraints imposed by costs of air time and the pressure to use the spots to convey persuasive information that increases sales.

Among the 49 evaluated commercials, one (2.0%) subtly suggested that a particular dietary supplement is needed besides physical activity and diet to provide adequate nutrients to the joints. Dietary supplement marketers must strictly refrain from stating or implying that a balanced or varied diet cannot provide appropriate quantities of nutrients or from conveying the idea that the population at large is at risk of vitamin or mineral deficiency. Our examination suggests that the marketers in Romania at the time of the study had almost fully complied with this critical requirement.

Prohibited words such as "medical", "sick", "disease", "remedy", "medicine", "treatment", or terms referring to names of diseases, representations of symptoms, or sick people were detected in 17 (34.7%) of the monitored advertisements. In comparison, 32 (65.3%) did not incorporate any of the unaccepted or related words. These deviations

from the regulations in the field also seem surprising, taking into account that detecting illegal words does not raise technical difficulties. However, this phenomenon is not unique to Romania as authors from the USA also observed a significant number of banned verbs in health and function claims, which hinted toward therapeutic effects (Avery et al., 2017). This type of non-compliance may interfere with the standard of objectively informing the consumers, potentially leading to a misunderstanding regarding the purpose of food supplements, and possibly to the decision to buy supplements in the hope of improving symptoms or healing from certain conditions.

Another aspect regulated by the legislation regarding the publicity of dietary supplements refers to visual or auditory representations that evoke medical professions (through the clothing, equipment, or emblems presented) or recommendations, prescriptions, certificates, or statements of medical approval. The proportion of dietary supplement advertisements that integrated in a more or less direct or explicit way various unacceptable recommendations or endorsements is shown in **Figure 4**.

Detecting more or less direct, explicit, or subtle non-compliance to regulation in almost a fifth of advertisements is also alarming. These messages might manipulate the consumer, inducing the idea that medical experts endorse the promoted supplement. These observations are similar to those reported by researchers from Poland, where some advertisements elicited the medical profession's authority to support the claimed effects (Wierzejska, 2016). Furthermore, an investigation conducted in Spain on dietary supplement advertisements on the radio showed that unauthorized endorsers, including healthcare practitioners, everyday consumers, and celebrities, were featured in 40% of the promotional audio spots (Muela-Molina et al., 2020).

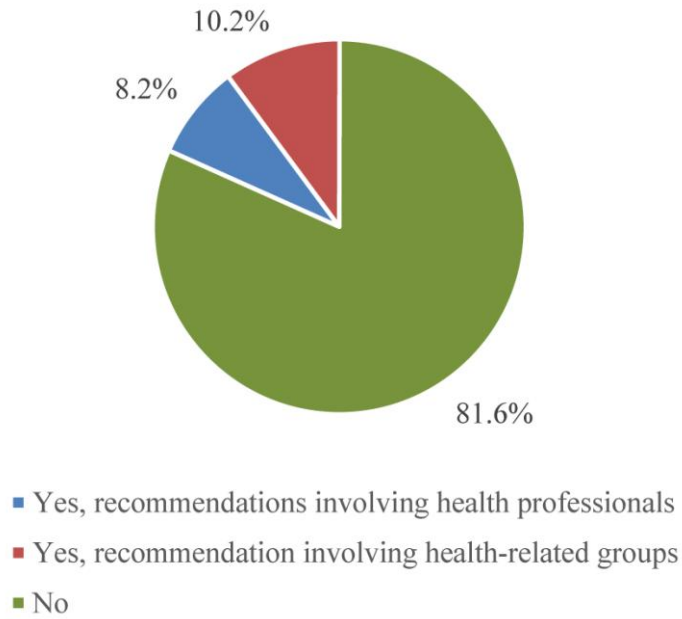


Fig. 4. The proportion of dietary supplement advertisements integrating unacceptable recommendations.

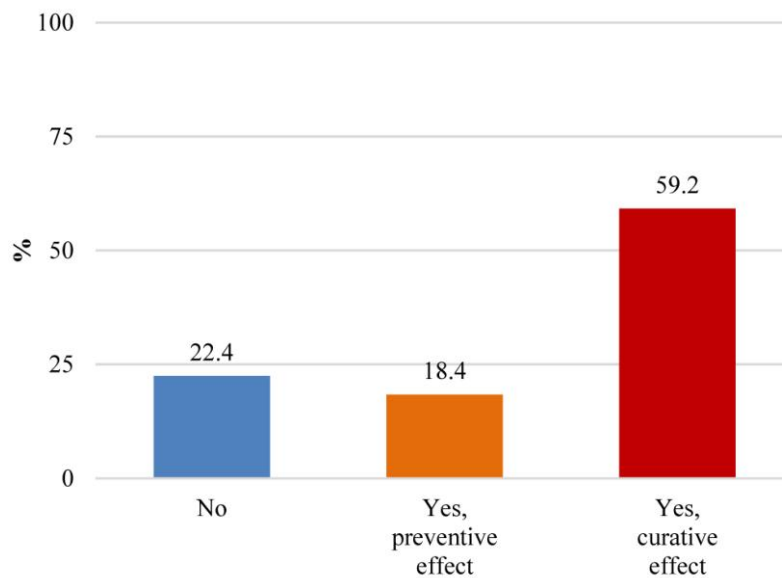


Fig. 5. The prevalence of advertisements with information suggesting that dietary supplements have preventive or curative properties.

One of the essential requirements regulated by legislation concerning labeling and advertising of dietary supplements concerns the claim or suggestion of preventive and therapeutic effects. The results of screening the TV publicity of dietary supplements on the Romanian news channels for information that attributes or suggests the product has

preventive or curative properties in human diseases are reported in **Figure 5**.

Only one out of five advertisements in the studied sample fully complied with the rules in force. Almost 20% of the ads suggested some preventive effects, and worse, almost 60% suggested curative effects. For example, supplement X1 prevented viral infections in

children; supplement X2 prevented diseases (unspecified) in children; commercial for supplement X3 suggested preventing cardiovascular diseases; supplement X4 prevented complications associated with prostate dysfunctions; supplement X5 treated "all types of coughs"; supplement X6 hinted it could treat menopausal symptoms; supplement X7 cured urinary incontinence; supplement X8 solved infertility in women; and supplement X9 inferred it treats varicose veins. The qualitative analysis of the content of the advertisements suggests that these messages could persuade consumers to purchase and use dietary supplements for a purpose foreign to the very definition and destination of such products established by the relevant legislative and professional bodies. These findings suggest that many dietary supplements may be bought and administered for their preventive-curative properties, specifically for properties distinctive to pharmacological drugs.

These findings align with those reported in 2014 by authors from Poland. A sample of 27 dietary supplement advertisements broadcast on TV and radio were analyzed, and 23 of them stated that the products would improve organ functions using expressions like "prevents," "treats," and "maintains." The investigators concluded that supplements are publicized in disregard of regulations for dietary supplements, thus contributing to further wrong opinions regarding the properties of these products (Wierzejska, 2016).

One last critical aspect of the research resides in analyzing food supplement advertisements in terms of their potential influence on health behaviors. The assessment found that 11 (22.4%) of the commercials more or less directly suggested that the respective dietary supplements could offset or mitigate the undesired effects of some detrimental behaviors. Finally, seven (14.3%) advertisements included information that might

encourage the unwarranted use of the dietary supplement by offering reduced prices. Apparently, almost a quarter of dietary supplement ads incorporated messages that could undesirably influence the lifestyle of the target consumers by encouraging excessive food and alcohol intake or irresponsible use of pharmacological medications. Many advertisements implied that the unwanted consequences of behavioral risk factors, such as physical or mental overstrain, can be offset by administering food supplements, a view that may interfere with health education and promotion efforts. For example, the advertisement for supplement Y1 depicted appealingly unhealthy foods and drinks, after which it mentioned that "in case of burns and gastric discomfort, it [the supplement] calms and keeps the digestive system healthy," suggesting that the unpleasant consequences associated with unhealthy eating were canceled by using the dietary supplement. Likewise, the ads for supplement Y2 ("Say stop to fatigue!"), supplement Y3 ("Helps reduce fatigue") and supplement Y4 ("Increases resistance to stress") conveyed the notion that dietary supplements may be an easy solution to fatigue and that recovery may be achieved without physiological rest. Another example with serious implications would be the advertisement for supplement Z1, which suggested that administering it counteracted the effects of an unhealthy lifestyle, including smoking and alcohol abuse, by "naturally restoring the liver cell membrane." Another commercial with troublesome implications was the one for supplement Z2, which urged consumers to "naturally protect their liver" with the advertised product "in the case of excessive medicinal drugs consumption," suggesting that in this way, the liver will no longer be affected by the possible adverse effects of drugs.

Authors from Japan also investigated this type of impact of a dietary supplement on

individual lifestyles. They found that the most prevalent dietary supplement ads were in the category of so-called "Exemption ads". This term means that using the supplement frees the individual from the necessity to abstain from certain unhealthy behaviors. The unspelled but implied message of these types of advertisements is "No need to resist the desire for binge eating if the product is consumed" (Iye et al., 2021).

Regarding the study's limitations, despite monitoring the television channels with the largest audience, the findings may not be representative for all news channels in Romania. Also, certain aspects of the evaluation were influenced, at least in part, by the subjectivity of the evaluator. Future research should address these issues to ensure more reliable conclusions.

Conclusions

Although, by definition, dietary supplements should be aimed at healthy people, most of the studied advertisements targeted people with various diseases or symptoms.

Only about half of the analyzed advertising materials exhibited the visual and audio warnings required by regulations.

Most advertisements incorporated non-compliant health claims, and more than a third included words or visual and acoustic representations not permitted by the regulations.

More than three-quarters of the advertisements claimed or suggested preventive or curative effects expressly prohibited by the relevant legislation, and almost a quarter of the advertisements included messages that could undesirably influence the consumers' lifestyle.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or

financial relationships that could be construed as a potential conflict of interest.

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