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RESEARCH ARTICLE

Apomediation and Disintermediation: YouTube Prescribers on Fad Diets

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Abstract:

Background:

As a result of the confinements of the COVID-19 pandemic and the sedentary lifestyle due to teleworking, there is an increase in weight gain and dietary carelessness in the population, which leads to an increase in offers of fad diets based on recommendations made by digital influencers.

Objective:

The aim of the study was to examine the characteristics of dietary recommendation videos made by non-health professional prescribers in Spanish and English to understand what patterns are followed by the productions of this type of content and what effects they have on the interaction they receive.

Methods:

An exploratory walkthrough method analysis was applied to define the variables of a codebook, followed by a content analysis of a sample of 50 videos published between January 2020 and July 2021.

Results:

Most of the videos are published in the first months of the year, probably aimed at users seeking to reduce the weight gained during Christmas. The productions were characterized by having a very personal tone, informative and with relatively plural information, sometimes addressing the risks of diets or slimming products, and, although recommendations abound, the voices of experts are not frequent.

Conclusion:

The products and diets addressed in the videos often have a high health risk and do not involve practices recommended by experts, so although sometimes their contraindications or associated risks are pointed out, the promotional component and the search for traffic to the channel seem to be more relevant factors than public health in these videos.

Keywords: Health communication, Nutrition, Self-medication, Antiobesity drugs, Influencers, Fast diets, Miracle diets.

1. INTRODUCTION

Although the WHO has insisted in several reports that the basis of a healthy diet lies in balancing caloric expenditure, limiting the consumption of sugars and ultra-processed foods, reducing saturated fats, and the intake of fruits and vegetables, our communicative ecosystem is replete with advertising of hypercaloric products, high in sugars, trans fats, and salt, as well as fast and "miracle" diets, slimming products and supplements that promise rapid weight loss, a type of advertising that increased during the period of the confinements, trans fats, and salt, as well as quick and "miracle" diets, slimming products and supplements that promise rapid weight loss, a type of advertisement that increased during the period of confinements [1] caused by the COVID-19 pandemic, periods during which weight gain occurred due to sedentary lifestyles and careless eating [2].

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Promoting fad diets and slimming supplements is characterized by offering instant results, often exaggerating or distorting the scientific reality of a food or food supplement, and using emotional and advertising resources to increase their credibility and thus convince the consumer [3, 4].

This research aims to examine the characteristics of these productions in order to understand how streamers, and especially YouTubers, are creating content on nutritional recommendations, with the understanding that the Internet and its multiple platforms have become a space for the amplification of this type of material, especially those generated by non-professional nutrition users who are dedicated to recommending diets and supplements on their channels, which could pose a severe risk to public health.

In this regard, the objective of this research was to examine the characteristics of dietary recommendation videos made by non-health professional prescribers on YouTube in Spanish and English to understand what patterns are followed by the productions of this type of content and what effects they have on the interaction they receive.

1.1. Intermediation, Disintermediation, and Apomediation

Before the digital revolution, information on health issues was centralized in a few specialized media, so human intermediation with a health professional was necessary. This intermediation guaranteed, to a certain extent, that the studies of the specialist backed up the information obtained consulted. The popularization of the Internet brought with it a process of disintermediation, in which, as in other areas, the information available reduced the importance of professional intermediaries for accessing information or services directly. This capacity for "disintermediation" was initially seen as an empowerment of

citizens [5], as it allowed users to access a wealth of information from many sources, gaining direct access to content that previously could only be accessed by health professionals [6].

With the advent of social networks in the 2.0 era, this information disintermediation became "apomediation" based on forums, opinions in search engines, and user-generated content [6]. Eysenbach [6] argued that apomediation is partly positive because it guarantees better filtering against the flood of content available on the web while decreasing the dependence on the intermediary, and, in case these self-search processes were unsuccessful, the recipients could turn to the intermediary (Fig. **1**).

However, apomediation could also become a danger to public health insofar as not all users have the same levels of media, informational and digital competence to deal with fake news and disinformation [7], which can become a risk to the lives of individuals [8, 9]. These dangers have been evidenced, for example, in the proliferation of naturopathic treatments for cancer [10] or the rise of anti-vaccine movements, although algorithmic and user-centered mechanisms to correct misinformation exist today [11].

1.2. Dangers of Self-monitoring of Diets and Supplement Intake

Dietary patterns and physical activity are the behaviors that have the most significant impact on the overall health of individuals [12, 13], affecting "years of life" (longevity) and "life in years" (vitality). Lifestyle has also been shown to influence gene expression, evidencing the epigenetic importance of diet [14 - 16].
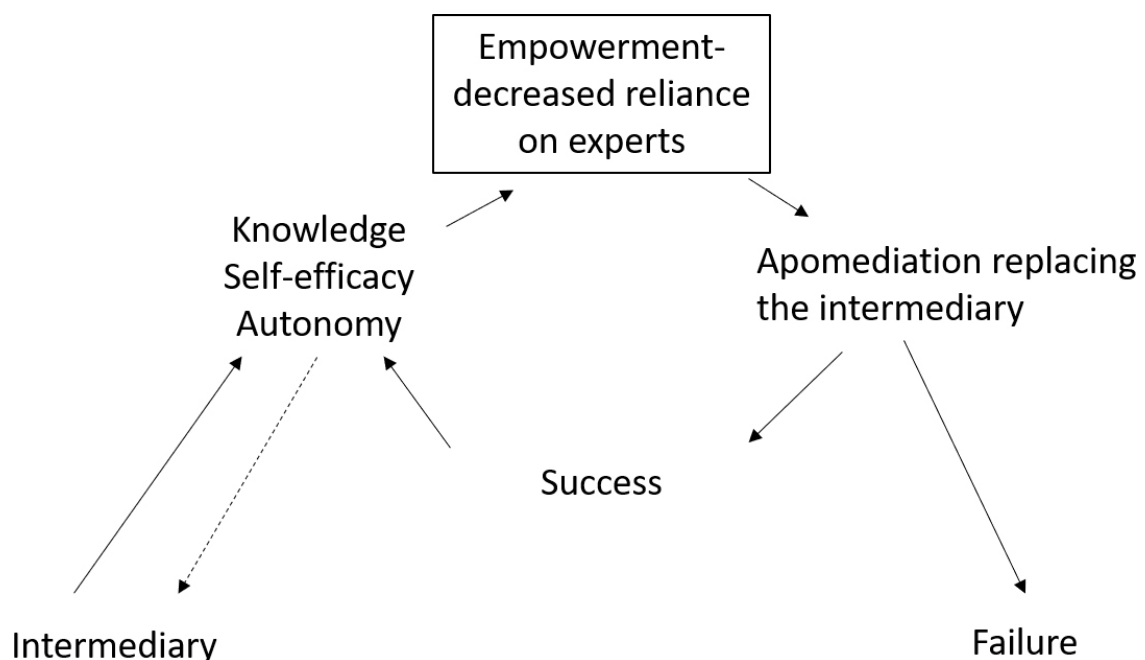

Fig. (1). Dynamic model of disintermediation/apomediatization.
Source: Eysenbach [6] (2007, p. 163).

New dietary regimens that claim miraculous results in a very short time are continuously appearing, becoming popular through conventional and digital media, and turning into fad diets or "cult diets" [17]. With a high advertising content, these diets promise short-term changes without effort, usually accompanied by products and food supplements, which attract many consumers without health training [18]. In addition, the self-care style that has become popular thanks to technologies promotes concepts such as self-medication [19].

In addition, these diets with miraculous results are often accompanied by a series of supplements freely purchased in supermarkets, herbalists, or pharmacies. However, their excessive use may carry a health risk [20], as is the case with the excessive consumption of beta carotene, which increases the risk of cardiovascular disease and lung cancer, selenium, which increases the risk of developing skin cancer, vitamin E, which increases the risk of prostate cancer, or folic acid, associated with an increased risk of colon cancer [21].

1.3. Health Prescribers, Influencers, and YouTubers

On digital platforms, channels, and content creators who care for and ethically filter information, seeking scientific and specialist support for their videos, coexist with those that do not. This situation makes it difficult for users to identify and discern reliable messages from inauthentic ones, including the ability to differentiate truthful information from opinions and advertising [22].

The scientific community has continued to warn about the risks of using YouTube as a source of health information. Among these studies are those on anti-vaccine content [23], pro-anorexia productions [24], which warned about videos in defense of anorexia with search criteria on eating disorders, procedures for self-injecting Botox [25], and more recently, studies on fake news about vaccines against COVID-19 [26 - 28].

Beyond the veracity and the dangers of the practices shared in these videos, the influential capacity of the videos is also determined by other factors, such as the interaction of the YouTuber with his audience, his emotional expression, or the personality shown.

The present study fills a gap in the academic literature by focusing on the formal characteristics of videos of dietary recommendations made by non-professional prescribers in Spanish and English, intending to understand what patterns such productions follow and their effects on the interaction they receive. Thus, the first research question (RQ1) asks: What communicational characteristics do videos produced by YouTubers on fast diets show?

Given that the interest of the study lies not only in the quality of the contents but also in the effects they may have on the audiences, the study of the interaction received by the contents is key since this influences their positioning and their ability to reach new consumers. Thus, the second research question (RQ2) is posed: How do the communicational characteristics of these productions on fast diets influence the interaction obtained by these videos?

Finally, the information is typically incomplete in Spanish-language YouTube videos, as opposed to English-language content, and the type of authorship has a significant impact on the reliability of the information offered [27]. To delve deeper into the differences derived from language, we aim to answer the third research question (RQ3): Are there differences between the communicational characteristics of fast diet videos published in English and Spanish?

2. METHODS

A content analysis was carried out with a previously validated codebook after an exploratory walkthrough method that allowed checking that the videos met the requirements and detecting possible flaws in the methodological design.

This work, in addition, goes further along the line proposed by Castillo-Abdul and Blanco-Herrero [29], in which they evaluated the quality and credibility transmitted in videos of fast diet influencers, finding that the quality of these contents is sometimes very low, with frequent allusions to "miracle products" and with recommendations with no scientific basis or guarantee of performance, and even with misleading indications and advice harmful to health.

For the composition of the sample, the selection requirements were: (1) that the videos had been published between January 2020 and June 2021 (a period of 18 months); (2) that YouTubers published them with a large volume of followers, but without being part of large companies or institutions; and (3) that they focused on content about miracle diets, quick diets or dietary or weight loss supplements.

With these characteristics, a sample of 300 videos was formed, later reduced to 50 with the highest number of reproductions. This selection comprised 25 videos in English (mainly from the United States) and 25 in Spanish (mainly from Latin America), intending to include content with a more international scope and other content with a more significant impact in Spanish-speaking regions. The variables are summarized in Table **1**.

Table 1. Variables of the study.

Category of Variable	Variable
Interaction variables	Number of views; Number of likes; Number of dislikes; Number of comments
Communication strategy	Absence on camera, but the voice is heard (in-off voice); Presence and voice on camera but not addressing the camera; Looks and speaks directly into the camera.
Interaction with the audience	Use of the second person and its variants; Direct request for comments and/or opinions; Use of a follower's name; Reply to a comment from a specific follower; Use of expressions to promote subscriptions; Invitation to watch other videos on the channel; Invitation to visit accounts on other platforms
Expression of emotions (EE)	Joy; sadness; anger; shame; frustration; amazement; fear; disgust; envy.

(Table 1) contd.....

Category of Variable	Variable
Emotional Appeals (EA)	Joy; Sadness; Anger; Shame; Frustration; Amazement; Fear; Disgust; Envy.
Presence of information and explanations	Explanation of a process from beginning to end; information about the products or processes necessary to carry out the diet; mention of information without appealing to the user to perform any action; description of the positive aspects of the product; description of the negative aspects of the product; inclusion of the positive and negative aspects of the product; explanation of how the diet works; description of how to apply the diet (for professionals); description of what to expect; description of side effects; description of contraindications; description of possible risks; instructions for self-care after use of the product; mention of things that can be done after use of the product; mention of things that should not be done after use of the product; mention of aspects for which the available information is uncertain; use of balanced information; use of biased information.
Promotional items	Inclusion of a brand name; mention of a specific center or professional; inclusion of promotional messages to sell a product.
The presence of outside sources or individuals	Inclusion of a person external to the channel in interview format; presence of an expert on the subject; mention of publications on the subject; inclusion of additional reliable sources; inclusion of additional unreliable sources.
Presence of the first person	Development of content in the first person; explanation that the information is based on the youtuber's personal experience; mention of relevant training or qualifications; mention of previous experience in success stories.

The coding of the videos was carried out in July 2021, and the analysis in November of the same year, at which time the interaction data of the productions were collected so that the last videos published would have had room to reach their peak of activity in the following months after their publication. This was to avoid distortions in the impact metrics derived from the different times the videos had been present on the network since a video achieves its highest number of interactions in the months following its upload, although these decline after some time [30].

After this, we proceeded to the statistical analysis of the variables. In addition to studying the distribution of frequencies and descriptive values, a study of the existing correlations was carried out using Pearson's R test and Student's t-test for independent samples to see if the language of the video was an influential variable. For all these tests, a type I margin of error of 95% was established (α=.05).

3. RESULTS

3.1. Characteristics of the Videos

In general, there is a remarkable uniformity in many aspects, so most variables are not balanced but are either almost always present or almost always absent, so the videos seem to follow fairly similar patterns.

Most content has a presence and voice on camera; a close, direct, and appealing relationship with the audience is a priority. Both expressions and emotional appeals are mainly positive. In addition, the videos are explanatory about the process or products involved. However, here we can observe a greater diversity in the approaches since not all the contents approach the information in the same way: the level of professionalism and detail of the information, as well as the type of recommendations to take into account and to avoid, are different.

Videos showing negative aspects or potential side effects, risks, or contraindications are not abundant. Biased information predominates, and expert opinions, interviews, or additional reliable information sources are not usually included. Likewise, the videos are very personal, alluding to previous experiences and speaking in the first person. Finally, although there is a certain promotional component, it is not predominant. All of the above is shown in a disaggregated and visual form in Fig. (**2**).

3.1.1. Correlations Between Video characteristics and the Interaction it Receives

Starting with the number of views, this correlates significantly negatively with the presence of invitations to watch other videos on the channel [R(50)=-0.382, p<0.01]. At the same time, the correlation is significant and positive between the number of views and the presence of emotional appeal to frustration [R(50)=0.284, p<0.05] and the description of contraindications [R(50)=0.288, p<0.05].

The number of likes shows significantly positive correlations with the emotional appeal to anger [R(50)=0.300, p<0.05], with the appeal to frustration [R(50)=0.591, p<0.001], with the description of contraindications [R(50)=0.516, p<0.001], with the description of possible risks [R(50)=0.401, p<0. 01], with the presence of balanced information [R(50)=0.463, p<0.01], the mention of a specific center or professional [R(50)=0.437, p<0.01], the inclusion of a subject matter expert [R(50)=0. 426, p<0.01], the inclusion of additional reliable sources [R(50)=0.409, p<0.01], and the mention of relevant training and qualifications [R(50)=0.411, p<0.01]. In turn, the correlation is negative between the number of likes and the mention of aspects about which the available information is uncertain [R(50)=-0.411, p<0.01], the inclusion of biased information [R(50)=-0.411, p<0.01] and the inclusion of additional unreliable or unqualifiable sources [R(50)=-0.411, p<0.01].

The number of dislikes follows a pattern similar to that of likes. The correlation is significantly positive between the number of dislikes and the emotional appeal to frustration [R(48)=0.506, p<0.001], with the description of positive and negative aspects of the product [R(48)=0.339, p<0.05], the description of side effects [R(48)=0.398, p<0.01], description of contraindications [R(48)=0.505, p<0.001], description of possible risks [R(48)=0. 527, p<0.001], the presence of balanced information [R(48)=0.559, p<0.001], with the mention of a specific center or professional [R(48)=0.355, p<0.05], with the inclusion of a subject matter expert [R(48)=0. 450, p<0.01], with the inclusion of additional reliable sources [R(48)=0.500, p<0.001] and with the mention of relevant training or qualifications [R(48)=0.464, p<0.01]. On the other
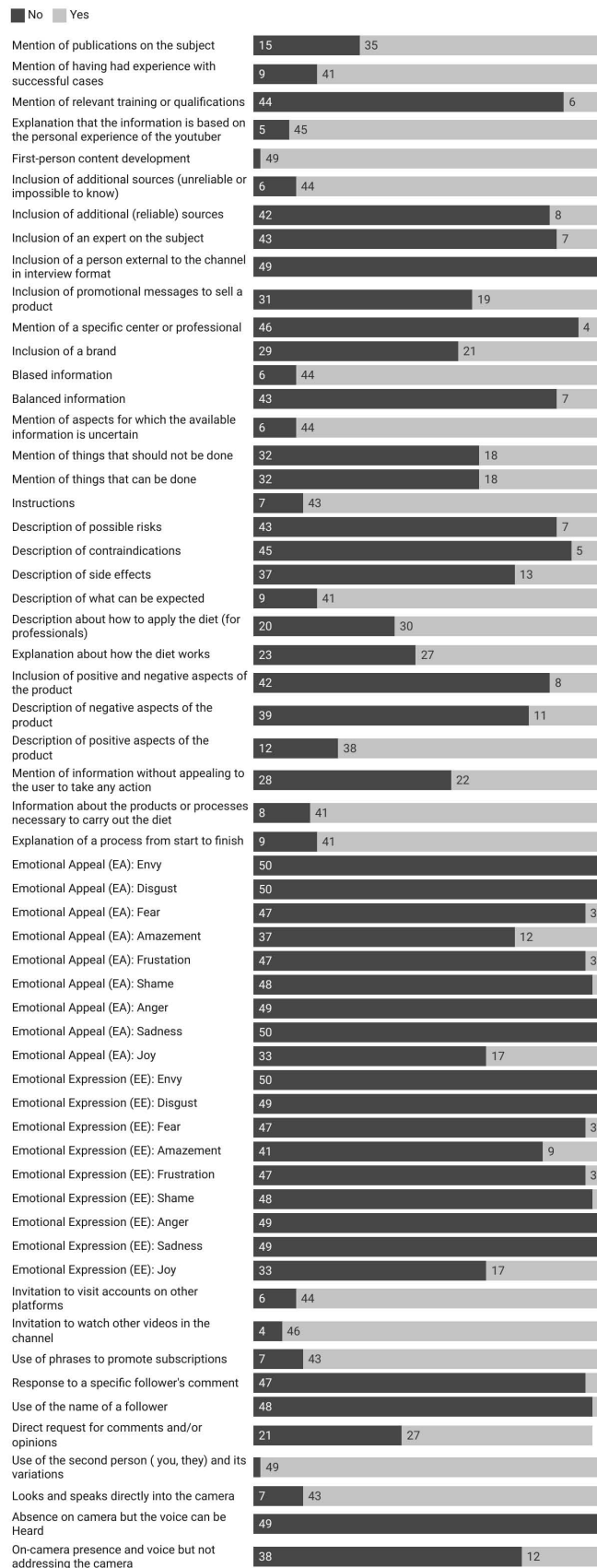
■ No   ■ Yes

Variable	No	Yes
Mention of publications on the subject	15	35
Mention of having had experience with successful cases	9	41
Mention of relevant training or qualifications	44	6
Explanation that the information is based on the personal experience of the youtuber	5	45
First-person content development		49
Inclusion of additional sources (unreliable or impossible to know)	6	44
Inclusion of additional (reliable) sources	42	8
Inclusion of an expert on the subject	43	7
Inclusion of a person external to the channel in interview format	49	
Inclusion of promotional messages to sell a product	31	19
Mention of a specific center or professional	46	4
Inclusion of a brand	29	21
Biased information	6	44
Balanced information	43	7
Mention of aspects for which the available information is uncertain	6	44
Mention of things that should not be done	32	18
Mention of things that can be done	32	18
Instructions	7	43
Description of possible risks	43	7
Description of contraindications	45	5
Description of side effects	37	13
Description of what can be expected	9	41
Description about how to apply the diet (for professionals)	20	30
Explanation about how the diet works	23	27
Inclusion of positive and negative aspects of the product	42	8
Description of negative aspects of the product	39	11
Description of positive aspects of the product	12	38
Mention of information without appealing to the user to take any action	28	22
Information about the products or processes necessary to carry out the diet	8	41
Explanation of a process from start to finish	9	41
Emotional Appeal (EA): Envy	50	
Emotional Appeal (EA): Disgust	50	
Emotional Appeal (EA): Fear	47	3
Emotional Appeal (EA): Amazement	37	12
Emotional Appeal (EA): Frustration	47	3
Emotional Appeal (EA): Shame	48	
Emotional Appeal (EA): Anger	49	
Emotional Appeal (EA): Sadness	50	
Emotional Appeal (EA): Joy	33	17
Emotional Expression (EE): Envy	50	
Emotional Expression (EE): Disgust	49	
Emotional Expression (EE): Fear	47	3
Emotional Expression (EE): Amazement	41	9
Emotional Expression (EE): Frustration	47	3
Emotional Expression (EE): Shame	48	
Emotional Expression (EE): Anger	49	
Emotional Expression (EE): Sadness	49	
Emotional Expression (EE): Joy	33	17
Invitation to visit accounts on other platforms	6	44
Invitation to watch other videos in the channel	4	46
Use of phrases to promote subscriptions	7	43
Response to a specific follower's comment	47	
Use of the name of a follower	48	
Direct request for comments and/or opinions	21	27
Use of the second person (you, they) and its variations		49
Looks and speaks directly into the camera	7	43
Absence on camera but the voice can be Heard	49	
On-camera presence and voice but not addressing the camera	38	12

Fig. (2). Distribution of the presence of the variables studied.

hand, this correlation is negative with the express request for comments and/or opinions [R(46)=-0.299, p<0.05], with the mention of aspects about which information is uncertain [R(48)=-0.464, p<0.01], with the presence of biased information [R(48)=-0.464, p<0.01] and with the inclusion of additional unreliable sources of information [R(48)=-0.464, p<0.01].

Finally, the number of comments is positively correlated with the expression of shame [R(50)=0.299, p<0.05], with the emotional appeal to anger [R(50)=0.448, p<0. 01], with emotional appeal to shame [R(50)=0.299, p<0.05], with emotional appeal to frustration [R(50)=0.283, p<0.05], with emotional appeal to fear [R(50)=0.382, p<0. 01], with the description of side effects [R(50)=0.368, p<0.01], with the description of contraindications [R(50)=0.373, p<0.01], with the description of possible risks [R(50)=0.368, p<0. 01], with the presence of balanced information [R(50)=0.440, p<0.01], with the inclusion of additional reliable sources [R(50)=0.379, p<0.01] and with the mention of relevant training or qualifications [R(50)=0.287, p<0.05]. Furthermore, the correlation is negative with the invitation to watch other channel videos [R(50)=-0.301, p<0.05], with the mention of aspects for which the available information is uncertain [R(50)=-0.287, p<0.05], with the presence of biased information [R(50)=-0.287, p<0.05] and with the inclusion of additional unreliable sources [R(50)=-0.310, p<0.05].

It should be noted that there is a similar pattern among the descriptive variables with which the copper consumption and interaction variables are correlated. It has been observed that the number of reproductions, likes, dislikes, and comments are significantly and positively correlated, with quite remarkable sizes. Thus, the number of views is correlated with the number of likes [R(50)=.876, p<.001], dislikes [R(48)=.798, p<.001], and comments [R(50)=.687, p<.001]; also the number of likes is correlated with the number of comments [R(50)=. 597, p<.001] and, perhaps strikingly, with that of dislikes [R(48)=.910, p<.001]; finally, the number of dislikes and comments also correlates positively [R(48)=.629, p<.001].

3.2. Comparisons Among Languages

Although not abundant, some significant differences between the videos in both languages were observed. The Spanish videos (M=85985.96; SD=107849.012) had a higher volume of likes than the English videos (M=30219.48; SD=44470.015), [t(31,932)=-2.390, p<.05, d=.68]. Also, the number of dislikes is higher in Spanish videos (M=2165.25; SD=282222.264) than in English (M=618.46; SD=816.080), [t(26,819)=-2.579, p<.05, d=.74]. Moreover, the same is true for the number of comments (MESP=3470.64; SDESP=3563.911; MING=1480.40; SDING=1627.641), [t(33.594)=-2.540, p<.05, d=.72]. Although the number of views is not significantly different, there is a trend difference towards a higher average number of views in Spanish videos, which could indicate that, in general, Spanish videos seem to receive more attention and interaction (Fig. **3**).

Regarding the rest of the variables, we see that the direct request for comments and opinions is higher in English videos (M=.72; SD=.458) than in Spanish videos (M=.39; SD=.499), [t(44,710)=2.371, p<.05, d=.69]. Furthermore, similarly, it is also more frequent in English videos (M=.96; SD=.200) that there are expressions to promote subscriptions than in Spanish videos (M=.76; SD=.436), [t(33.676)=-2.085, p<.05, d=.59].

For its part, the description of side effects is more frequent in the videos in Spanish (M=.40; SD=.500) than in English (M=.12; SD=.332), [t(41,694)=-2.333, p<.05, d=.66]. The same is true for the description of contraindications (MSPA=.20; SDSPA=.408; MENG=.00; SDENG=.000), [t(24,000)=-2.449, p<.05] and of possible risks (MSPA=.24; SDSPA=.436; MENG=.04; SDENG=.200), [t(33.676)=-2.085, p<.05, d=.59]. Also balanced information is more common in Spanish videos (M=.24; SD=.436) than in English (M=.04; SD=.200) [t(33.676)=-2.085, p<.05, d=.59].

Finally, both the mention of a specific center or professional (MSPA=.16; SDSPA=.374; MENG=.00; SDENG=.000), [t(24,000)=-2.138, p<.05] and the inclusion of a subject matter expert (MSPA=.24; SDSPA=.436; MENG=.04; SDENG=.200), [t(33.676)=-2.085, p<.05, d=.59], are significantly more common in Spanish videos (Fig. **4**).
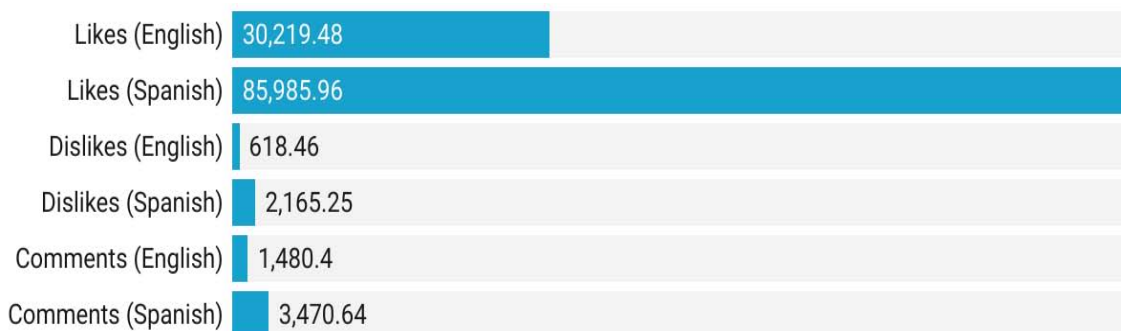

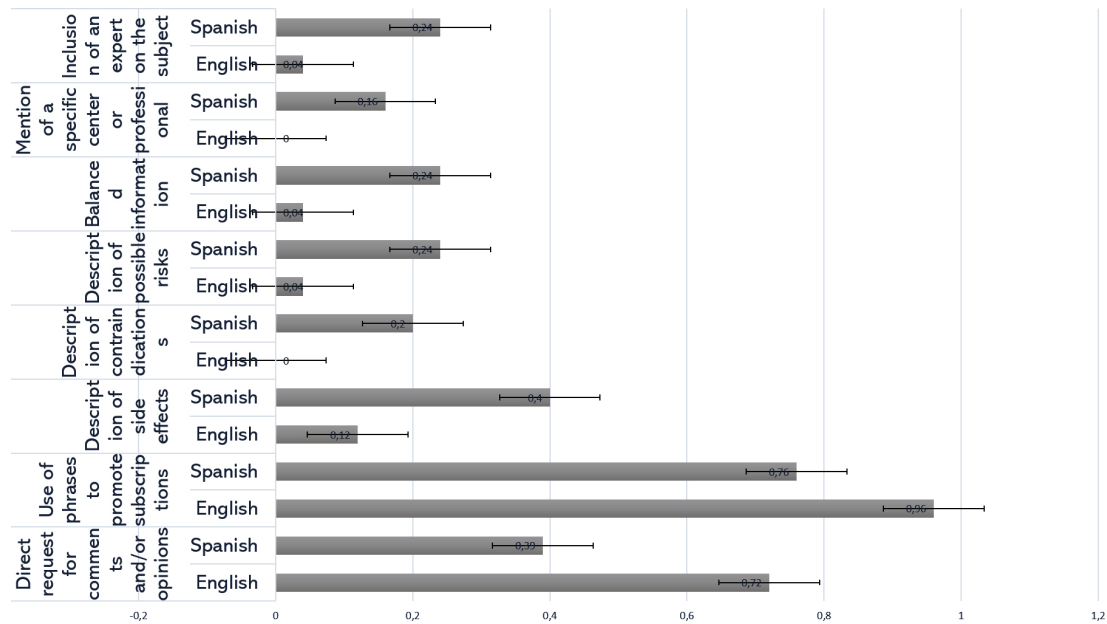**Fig. (3).** Interaction variables with significant differences as a function of language.

Fig. (4). Descriptive variables with significant differences according to language.

4. DISCUSSION

Although this research is exploratory, it evidences some trends in consuming content on miracle diets and food supplements for weight loss. Responding to RQ1 about the communicational characteristics shown by these videos, it is observed that they are of a personal, intimate, and appealing nature, with a predominance of positive visions and feelings. Although sometimes risks or negative aspects of slimming diets or products are mentioned, biased information predominates over balanced information, and the voices of experts in nutrition, dietetics, or endocrinology are not frequent.

It should be noted that the products and diets addressed often have a high health risk and do not involve practices recommended by experts. Hence, although sometimes their contraindications or associated risks are pointed out, the promotional component and the search for traffic to the channel seem to be more relevant factors than public health in these videos, so their potential effects should be taken into account, in line with the results found by Castillo-Abdul; Jaramillo-Dent and Romero-Rodríguez [25]. Thus, although the quality and veracity of the videos have not been evaluated from a nutritional or medical perspective, the communicative variables studied (quality information or sources, recognition of risks or contraindications, *etc*.) could encourage potential risk practices, something that was already noted in the work of Castillo-Abdul and Blanco Herrero [29] (2020), which serves as a preliminary study of the present study.

In response to RQ2, regarding how the communicational characteristics of these productions influence interaction, it can be seen that the videos that obtain higher values of likes, dislikes, and comments (ergo, interactions) are those that include balanced information, additional information from reliable sources, in which an expert on the subject is mentioned, or in which the possible negative or undesirable aspects of the product or diet are referred to. Something very

clear is when negative correlations are observed between these variables and the presence of biased information or unreliable sources of additional information. In this sense, the audience seems to have a critical capacity to interact with the videos that, from a communicational perspective, could be considered of better quality. It was also striking that the videos with the highest number of reproductions were those containing warnings and contraindications.

However, the positive correlation between dislikes and other variables such as reproductions, comments, and likes is striking. It can be seen that the dislike option, rather than decreasing the number of views or likes, seems to be another form of interaction that the algorithm could favor in its positioning. Although this analysis has not examined whether the comments were positive or negative, in general terms, they also seem to be an interaction that is positively related to the rest of the variables.

Finally, answering RQ3 on the existence of differences between videos on fast diets published in English and Spanish, we refute what was expected according to the work of Hernández-García and Giménez-Júlvez [27], who state that in the case of Spanish videos on YouTube the information is usually incomplete and the type of authorship has a strong influence on the reliability of the information offered. This study found that videos in Spanish have a higher quality and volume of interaction than videos in English. Understandably, both phenomena occur together since this was observed in the correlation study, but it is striking that these differences occur, especially in view of the fact that English is the language with the largest number of users on the social network. In this regard, the possible effect of the selection of keywords and the fact that the study was carried out in a Spanish-speaking country (Spain) should be recognized as a limitation, something that may have influenced the contents returned by the search engine.

All these observations should be taken with caution

because, although most of them offer theoretically sustainable data, they are subject to two limitations: first, the size of the sample, with 50 videos analyzed, and second, the fact that in many of the variables, the cases were absolutely or highly concentrated in either the presence or absence of the variable in question, so that in these cases the effects may be observed in very few cases. Inferential statistical tests make it possible to discern the significant cases from those in which the effect of chance cannot be ruled out. Nevertheless, we recognize the limitation that the study poses in this regard and the need to test, with larger samples, the observations made in this research as future lines of research on apomediation in social networks.

CONCLUSION

Understanding that the success -in terms of statistics such as the number of views, likes, and comments- of production is closely related to aspects of the professional quality of its audiovisual production, but also on the mood and emotional aspects of the video discourse, it is essential to understand that first of all, it is necessary to generate in the audience a critical sense in their consumption of social networks through plans and programs of digital and media competences, which allow to easily analyze the suitability of the broadcaster and always consult with expert health personnel the decisions on diets and use of dietary supplements.

Second, this research lays a foundation stone for the idea that YouTube and other social networks, such as Instagram, TikTok, Facebook, and X, require those channels specialized in health issues -and among them, fitness and dietary supplements-that their owners and content creators have the necessary professional certifications to give recommendations on diets, exercises and taking supplements without putting the health of audiences at risk.

AUTHORS' CONTRIBUTION

BCA drafted the proposal, wrote the theoretical framework, and prepared the manuscript. DBH did the data analysis and wrote the results. LMRR participated in editing, analysis and write-up of the result. All authors read and approved the final manuscript.

LIST OF ABBREVIATIONS

EE = Expression of emotions

EA = Emotional Appeals

ETHICAL STATEMENT

The study used secondary data available and released under the YouTube standard license. The data set had no identifiable information on the survey participants; therefore no ethical approval is required for this work.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The data and supportive information are available within the article.

CONFLICT OF INTEREST

Dr. Luis M. Romero-Rodríguez is the Editorial Advisory Board Member for The Open Public Health Journal.

REFERENCES

[1] Blanco-Herrero D, Gallardo-Camacho J, Arcila-Calderón C. health advertising during the lockdown: A comparative analysis of commercial TV in Spain. Int J Environ Res Public Health 2021; 18(3): 1054.
[http://dx.doi.org/10.3390/ijerph18031054] [PMID: 33504002]

[2] Robinson E, Gillespie S, Jones A. Weight□related lifestyle behaviours and the COVID□19 crisis: An online survey study of UK adults during social lockdown. Obes Sci Pract 2020; 6(6): 735-40.
[http://dx.doi.org/10.1002/osp4.442] [PMID: 33354349]

[3] Harris JL, Bargh JA, Brownell KD. Priming effects of television food advertising on eating behavior. Health Psychol 2009; 28(4): 404-13.
[http://dx.doi.org/10.1037/a0014399] [PMID: 19594263]

[4] Shen F, Sheer VC, Li R. Impact of narratives on persuasion in health communication: A meta-analysis. J Advert 2015; 44(2): 105-13.
[http://dx.doi.org/10.1080/00913367.2015.1018467]

[5] Eysenbach G, Jadad AR. Evidence-based patient choice and consumer health informatics in the internet age. J Med Internet Res 2001; 3(2): e19.
[http://dx.doi.org/10.2196/jmir.3.2.e19] [PMID: 11720961]

[6] Eysenbach G. From intermediation to disintermediation and apomediation: New models for consumers to access and assess the credibility of health information in the age of Web2.0. Stud Health Technol Inform 2007; 129(Pt 1): 162-6.
[PMID: 17911699]

[7] Romero-Rodríguez LM, Contreras-Pulido P, Pérez-Rodríguez MA. Media competencies of university professors and students. Comparison of levels in Spain, Portugal, Brazil and Venezuela. C&E Cult Educ 2019; 31(2): 326-68.
[http://dx.doi.org/10.1080/11356405.2019.1597564]

[8] Smailhodzic E, Hooijsma W, Boonstra A, Langley DJ. Social media use in healthcare: A systematic review of effects on patients and on their relationship with healthcare professionals. BMC Health Serv Res 2016; 16(1): 442.
[http://dx.doi.org/10.1186/s12913-016-1691-0] [PMID: 27562728]

[9] Wang Z, Walther JB, Pingree S, Hawkins RP. Health information, credibility, homophily, and influence *via* the Internet: Web sites *versus* discussion groups. Health Commun 2008; 23(4): 358-68.
[http://dx.doi.org/10.1080/10410230802229738] [PMID: 18702000]

[10] Chen L, Wang X, Peng TQ. Nature and diffusion of gynecologic cancer-related misinformation on social media: Analysis of tweets. J Med Internet Res 2018; 20(10): e11515.
[http://dx.doi.org/10.2196/11515] [PMID: 30327289]

[11] Walter N, Brooks JJ, Saucier CJ, Suresh S. Evaluating the impact of attempts to correct health misinformation on social media: A meta-analysis. Health Commun 2021; 36(13): 1776-84.
[http://dx.doi.org/10.1080/10410236.2020.1794553] [PMID: 32762260]

[12] Katz DL. Nutrition in Clinical Practice. Filadelfia: Lippincott Williams & Wilkins 2008.

[13] Ford ES, Bergmann MM, Kröger J, Schienkiewitz A, Weikert C, Boeing H. Healthy living is the best revenge: Findings from the European prospective investigation into cancer and nutrition-potsdam study. Arch Intern Med 2009; 169(15): 1355-62.
[http://dx.doi.org/10.1001/archinternmed.2009.237] [PMID: 19667296]

[14] Hietaniemi M, Jokela M, Rantala M, *et al.* The effect of a short-term hypocaloric diet on liver gene expression and metabolic risk factors in obese women. Nutr Metab Cardiovasc Dis 2009; 19(3): 177-83.
[http://dx.doi.org/10.1016/j.numecd.2008.06.009] [PMID: 18804985]

[15] Ornish D, Magbanua MJM, Weidner G, *et al.* Changes in prostate gene expression in men undergoing an intensive nutrition and lifestyle

intervention. Proc Natl Acad Sci USA 2008; 105(24): 8369-74.
[http://dx.doi.org/10.1073/pnas.0803080105] [PMID: 18559852]

[16] Katz DL, Meller S. Can we say what diet is best for health? Annu Rev Public Health 2014; 35(1): 83-103.
[http://dx.doi.org/10.1146/annurev-publhealth-032013-182351] [PMID: 24641555]

[17] Hart K. Fad diets and fasting for weight loss in obesity. In: Hankey C, Ed. Advanced nutrition and dietetics in obesity. Nueva York: Wiley 2018; pp. 177-82.
[http://dx.doi.org/10.1002/9781118857991]

[18] Muela-Molina C, Perelló-Oliver S, García-Arranz A. Endorsers' presence in regulation and endorsements in dietary supplements' advertising on Spanish radio. Health Policy 2020; 124(8): 902-8.
[http://dx.doi.org/10.1016/j.healthpol.2020.05.003] [PMID: 32532566]

[19] Figueiras A, Caamaño F, Gestal-Otero JJ. Sociodemographic factors related to self-medication in Spain. Eur J Epidemiol 2000; 16(1): 19-26.
[http://dx.doi.org/10.1023/A:1007608702063] [PMID: 10780338]

[20] Starr RR. Too little, too late: Ineffective regulation of dietary supplements in the United States. Am J Public Health 2015; 105(3): 478-85.
[http://dx.doi.org/10.2105/AJPH.2014.302348] [PMID: 25602879]

[21] University of Colorado Cancer Center. Excessive use of dietary supplements linked to increase cancer risk. 2015. Available From: www.sciencedaily.com/releases/2015/04/150420182403.htm

[22] Allgaier J. Science and medicine on YouTube. In: Second International Handbook of Internet Research. Berlin: Springer Nature 2019.
[http://dx.doi.org/10.1007/978-94-024-1555-1]

[23] Keelan J, Pavri-Garcia V, Tomlinson G, Wilson K. YouTube as a source of information on immunization: A content analysis. JAMA 2007; 298(21): 2481.

[24] Fernández-Luque L, Bau T. Health and social media: Perfect storm of information. Healthc Inform Res 2015; 21(2): 67-73.
[http://dx.doi.org/10.4258/hir.2015.21.2.67] [PMID: 25995958]

[25] Castillo-Abdul B, Jaramillo-Dent D, Romero-Rodríguez LM. 'How to botox' on YouTube: Influence and beauty procedures in the era of user-generated content. Int J Environ Res Public Health 2021; 18(8): 4359.
[http://dx.doi.org/10.3390/ijerph18084359] [PMID: 33924004]

[26] D'Souza RS, D'Souza S, Strand N, Anderson A, Vogt MNP, Olatoye O. YouTube as a source of medical information on the novel coronavirus 2019 disease (COVID-19) pandemic. Glob Public Health 2020; 15(7): 935-42.
[http://dx.doi.org/10.1080/17441692.2020.1761426] [PMID: 32397870]

[27] Hernández-García I, Giménez-Júlvez T. Characteristics of youtube videos in Spanish on how to prevent COVID-19. Int J Environ Res Public Health 2020; 17(13): 4671.
[http://dx.doi.org/10.3390/ijerph17134671] [PMID: 32610523]

[28] Li HOY, Bailey A, Huynh D, Chan J. YouTube as a source of information on COVID-19: A pandemic of misinformation? BMJ Glob Health 2020; 5(5): e002604.
[http://dx.doi.org/10.1136/bmjgh-2020-002604] [PMID: 32409327]

[29] Castillo-Abdul B, Blanco-Herrero D. Youtube: Health and wellbeing in the age of the prosumer. Analysis of youtube videos about miracle diets. Anàlisi: Quaderns de Comunicació i Cultura 2022.
[http://dx.doi.org/10.5565/rev/analisi.3518]

[30] Castillo-Abdul B, Bonilla-del-Río M, Núñez-Barriopedro E. Influence and relationship between branded content and the social media consumer interactions of the luxury fashion brand Manolo Blahnik. Publ MDPI 2021; 9(1): 10.
[http://dx.doi.org/10.3390/publications9010010]

[24] [http://dx.doi.org/10.1001/jama.298.21.2482] [PMID: 18056901]