YouTubers and miracle diets: the dissemination of health content between 2020 and 2021

YouTubers y dietas milagros: la difusión de contenidos de salud entre 2020 y 2021

Bárbara Castillo-Abdul.
Universidad Rey Juan Carlos. Spain.
ESAI Business School, Universidad Espíritu Santo, Ecuador.
barbara.castillo@urjc.es
[CV]

David Blanco-Herrero.
Universidad de Salamanca. Spain.
david.blanco.herrero@usal.es
[CV]

Clara Muela-Molina.
Universidad Rey Juan Carlos. Spain.
clara.muela@urjc.es
[CV]

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RESUMEN
Introducción: La presente investigación profundiza en la posible influencia de factores poco estudiados en la interacción que despiertan los vídeos de YouTube sobre dietas milagro, dado el potencial riesgo de salud pública que pueden suponer los consejos que ofrecen, especialmente para la población joven. **Metodología:** Se analizaron los 50 vídeos más vistos sobre dietas rápidas subidos entre enero de 2020 y junio de 2021 en español y en inglés. A través de un análisis de contenido cuantitativo se estudió la influencia de variables sobre la relación con la audiencia y la presencia en cámara, la expresión de emociones y la descripción y análisis de la dieta o producto sobre la interacción y consumo del video. **Resultados:** Los factores estudiados no tienen apenas efecto, como tampoco lo tuvo el idioma, en las cifras de visionados, comentarios, *likes*, *dislikes* y compartidos. **Discusión:** Lo anterior se interpreta como señal de un consumo acrítico e irreflexivo, lo que podría suponer riesgos si la audiencia sigue

dietas o consume productos que puedan suponer un riesgo para la salud. **Conclusiones:** El trabajo aspiraba a abrir nuevas vías de análisis de contenidos de salud en YouTube poniendo el foco en características de los vídeos menos estudiadas en la literatura previa. A pesar de los escasos efectos observados, se plantea la necesidad de seguir abordando factores como las emociones transmitidas, el tipo de información utilizada o la actitud hacia los productos o dietas tratados.

PALABRAS CLAVE: *youtubers*; comunicación y salud; consumo de contenidos online ; dietas milagro; dietas détox; análisis de contenido.

ABSTRACT
Introduction: This research focuses on the possible influence of little-studied factors in the interaction aroused by YouTube videos on miracle diets, given the potential public health risk that the advice they offer may pose, especially for the young population. **Methodology:** The 50 most viewed videos on miracle diets posted between January 2020 and June 2021 in Spanish and English were analyzed. Through a quantitative content analysis, the influence of variables related to the relationship with the audience and the presence on camera, the expression of emotions and the description and analysis of the diet or product on the interaction and consumption of the video was studied. **Results:** The studied factors have hardly any effect, nor did the language of the video, on the numbers of views, comments, likes, dislikes and shares. **Discussion:** The above is interpreted as a sign of uncritical and thoughtless consumption, which could pose risks if the audience follows diets or consumes products that may pose a health risk. **Conclusions:** The work aspired to open new ways of analyzing health content on YouTube, focusing on characteristics of the videos less studied in the previous literature. Despite the few effects observed, there is a need to continue addressing factors such as the emotions transmitted, the type of information used or the attitude towards the products or diets treated.

KEYWORDS: Youtubers; health communication; online content consumption ; miracle diets; detox diets; content analysis.

CONTENIDO

CONTENT

Translation by **Paula González** (Universidad Católica Andrés Bello, Venezuela)

1. Introduction

In the most advanced societies, consumers face continuous decisions about their health in an environment saturated with products and recommendations, added to the growing advertising on social networks. Sometimes, this advertising is carried out by celebrities who, taking advantage of the audience that follows them, promote content and brands in a way that does not always follow the usual patterns, which can lead to forms of covert advertising, lowering awareness of the application of persuasion tactics.

The social media environment is complex due to less regulation and the absence of control of publications, which pose a risk to physical well-being and viewers due to the presence of products and

behaviors with little or no scientific justification. Thus, digital platforms such as YouTube have become one of the main contexts for disseminating tutorials and content related to health and wellness issues. For example, among the most popular videos on this network are those known as "miracle diets."

Pilgrim and Bohnet-Joschko (2019) report that numerous research works have confirmed that unhealthy eating habits and lack of exercise are risk factors for the development of certain chronic diseases. Therefore, establishing a connection between external beauty and the perception of well-being, and therefore mental health, is a direct effect of the health communication of influencers. In this sense, the health messages of YouTubers direct users to the consumption of the products presented (suggested or sponsored) and suggest a dependence on happiness based on satisfaction and beauty. Therefore, it is of interest to understand the impact of videos and how the variables of quality, credibility, and language affect interactions. At the same time, self-care is strongly influenced by the value that consumers give to the development of certain actions based on their own interests and needs (Jayanti and Burns, 1998; Mittal, 1995).

This interest is accentuated in a context of a pandemic in which many governments have imposed strict measures to prevent the spread of the *SARS-COV-2 virus*, including the limitation on going outside. In this sense, the following research is also justified by the fact that the quarantines imposed to stop the coronavirus gave rise to weight gains due to a sedentary lifestyle and, probably, the carelessness in nutrition that they caused (Robinson et al., 2020). Consequently, the desire of many users to lose weight was evidenced, for example, in the increase in the advertising of slimming products, such as Blanco-Herrero et al. (2021) observed in the case of Spain. All this is also reflected in the attention that videos of miracle diets have been able to have. It is this time frame that justifies the need to address not only the analysis of videos on miracle diets but above all to do so in a period in which attention to this type of audiovisual product has been able to increase. For this reason, content uploaded between January 2020 and June 2021 will be studied.

Faced with this scenario, in which the demand for miracle diets or products has been able to increase on the part of society, the importance of YouTube and other social networks as references, especially for young people, to seek entertainment and information, is added. For example, in the Spanish case, YouTube has been gaining importance to the detriment of other forms of audiovisual consumption, a trend particularly accentuated among youth, for whom YouTube is already the operator with the highest aggregate share –36.3% for young people between 18 and 24 years old, and 19.6% between 25 and 44 years old–, and it is almost equal to the set of time dedicated to linear television (Barlovento Comunicación, 2021).

In fact, YouTube has received considerable academic attention, and the characteristics and influence of its videos have been a frequent object of study. Within these works, those that have addressed issues related to health have been of notable importance (Gil Ramírez et al., 2020), and within this branch of health communication, the works that address the role of YouTube in matters related to food and eating disorders have achieved great relevance (Syed - Abdul et al., 2013; Yoo and Kim, 2012). However, few works have addressed the characteristics of YouTube videos on miracle diets and the metrics on consumption and interaction in a combined manner, trying to evaluate the potential effects of the former on the latter.

It is also worth highlighting the novelty of this work in carrying out a comparative analysis of content in English and Spanish since it is not limited to a single language, but rather addresses two of the most widely spoken and widespread in the world to establish international comparisons, something essential when analyzing a global network such as, in this case, YouTube.

Thus, this work proposes a preliminary study that allows detecting, among a very wide selection of characteristics of an emotional, visual, or content nature, if there are indications about the possible effects of any of these characteristics. Likewise, a linguistic component is incorporated –the use of English or Spanish–, to explore whether this variable could play some kind of role in the rest of the aspects, something that would point to potential cultural or linguistic differences.

2. Theoretical contextualization

According to Marwick (2016), the current configurations of the media allow consumers to become content producers, in many cases, to achieve a relevant number of followers who interact through reactions, shares, and comments, as part of the functions enabled by social networks. Specifically, YouTube is one of the main platforms for the creation and dissemination of audiovisual productions associated with beauty and product recommendations, by microcelebrities or the so-called micro-influencers (Castillo-Abdul et al ., 2021).

It should be noted that the so-called *influencers* are defined as individuals with a high number of followers and a high level of engagement, which means that they retain their followers through the creation of solid relationships. In this sense, micro-influencers are those that are between four and five figures in terms of the number of followers (Bonilla-del-Río et al., 2022).

According to the study by Wong et al., (2017) in this digital ecosystem sources of information and genres converge, which makes it increasingly difficult for users to identify and discern reliable messages from inauthentic ones, thus reducing the ability to differentiate the scientific information from opinions and advertising (Allgaier, 2019). In fact, traditionally, the audience could filter advertising, including the youngest, and detect advertisers' persuasion tactics (Rozendaal et al., 2011), something that does not happen in the same way with most hybrid formats in social networks. In this regard, eWOM (electronic word of mouth) has become one of the most influential factors in the world economy in terms of consumer purchasing decisions (Castillo-Abdul et al., 2021).

Social networks are one of the main communication channels used both by the youngest for the creation and consumption of content, and by adults for the consumption and consultation of topics related to beauty, health, body care, and aesthetics, among others (Interactive Advertising Bureau, 2021). However, younger audiences have different views and experiences of these channels compared to older ones. Previous research indicates that young people have reported benefits, in the social media ecosystem, in the areas of: learning, socialization, greater access to information, higher levels of social and emotional support, and creativity (Swist et al., 2015; Third et al., 2017).

YouTube is considered an intermediary participatory culture in which both commercial organizations and fans produce content simultaneously, so they are in a constant process of negotiating and building relationships with their viewers (Harris et al., 2020). YouTube, which has become the second most popular social media platform in the world (Statista, 2021), has also emerged as the main digital platform for the creation, modification, and dissemination of user-generated content, with beauty vlogging as the protagonist (Rapp, 2016). This plays out in a context that places an increasing emphasis on physical appearance, defined by representations of attractiveness, and perpetuated through conventions and social media. Thus, the appearance and success of beauty and physical health care influencers *on* YouTube have consolidated the focus of the current media ecosystem on ideal physical traits, serving as perfect platforms for product marketing (Rosara and Luthfia, 2020).

As a result, by enthusiastically sharing self-generated content on topics such as *fitness*, food, or fashion, these users—mostly women (Padilla-Castillo and Oliver-González, 2018) —have built up a large fan

base, turning their online presence into a profession as fashion bloggers or fitgirls (Schouten et al., 2019). In fact, the study by Coates et al. (2019), has shown that celebrity endorsements of healthy foods encourage younger people to eat more mindfully. Similarly, Abidin (2018) and Marwick (2015) suggest that health improvement efforts involving YouTubers are more effective among young people who have developed a level of trust and familiarity with these prescribers. However, health improvement collaborations with YouTubers must remain consistent with messages, tone, and personality according to Abidin (2018) and Rapp (2017), to be well received by their young audience. Therefore, they must clearly state the intended benefits for their stakeholders, otherwise, they risk alienating the young people they target and impacting public health.

The beauty influencer market was estimated in 2019 at 8 billion dollars worldwide (Gerdeman, 2019), which suggests that it is an area with great investment potential and that it is highly valued by companies trying to persuade users to buy and use their beauty and body aesthetics products (Berkowitz, 2017). For this reason, for companies to have notoriety in the current media ecosystem, they need these figures to represent the image of the brand and give it a voice through social networks (Castillo-Abdul et al., 2020).

It should be noted that YouTube complements traditional media health campaigns by expanding the reach of the audience and users, from health professionals to lay influencers, providing the opportunity to broadcast ads and, subsequently, measure the reach of the issued messages and the response and interactions of the audience (Zhang et al., 2017). For this reason, the sponsors of the ads influence the amount of information available, which makes the message economically more profitable. Furthermore, the functionalities and practices of users and influencers in the digital realm have adapted to the need to appear perfect, focusing more and more on the use of filters, image enhancement, and digital manipulation to appear more close to these ideals in body measurements, skin color, eyes, and hair, among other factors. Meanwhile, the same digital environment that has helped define what is acceptable in terms of aesthetic features has become a primary context for the creation and dissemination of a wide variety of content related to this sector (Burgess and Green, 2018).

On the other hand, it is interesting to note that according to an analysis by Sistemius (2021), YouTube indicates, according to the regulations of each country, whether influencers must clearly state that this content is sponsored or is part of an advertising campaign, leaving typified that complying with its policies will not exempt the person who disseminates the contents from possible legal responsibilities.

3. Objectives

Following this line, this research aims to evaluate the characteristics of YouTube videos in Spanish and English on content related to crash diets, also known as miracle or detox diets, to learn how they influence consumption and the interaction generated by these videos, since this type of diet, besides being frequent, can pose significant health risks. Specifically, the objective is to find out which variables –including specifically the language of production– have effects on consumption and interaction.

In this sense, some previous works' results seem to indicate that the specific characteristics of the message do not have a substantial effect on its evaluation and interaction (O'Keefe and Hoeken, 2021), and that, in general, content should be seen fully and not separated into its various components. However, given the relevance of this type of content due to its implications for public health, our work aims to detect those possible elements that can be explored in greater depth in the future, such as, for example, what characteristics of videos of miracle diets (or of similar issues related to health and personal image) may be more effective in terms of achieving greater interaction and audience, but also greater quality and reliability in the audience.

To this end, the following research questions are posed:

RQ1: What variables of YouTuber videos about miracle diets influence the consumption and interaction of the audience?

RQ2: Does the language of YouTuber videos about miracle diets influence their consumption and interaction?

RQ3: How are the different variables studied in YouTuber videos on miracle diets related to each other?

4. Methodology

The technique used in this research was quantitative content analysis, carried out with a previously validated codebook used in previous research (Castillo-Abdul et al., 2021) and after having carried out a preliminary exploratory study that allowed us to verify that the videos met the requirements and detect possible flaws in the methodological design (Castillo-Abdul et al., 2021).

For the composition of the sample, the requirements were: (1) that the videos had been published between January 2020 and June 2021 (18 months); (2) that they were published by micro-*influencers* YouTubers, which will be the object of study in this work, together with macro- *influencers*, between four and five figures in terms of the number of followers, but without being part of large companies or institutions; and (3) to focus on content on miracle diets, crash diets, or dietary or weight loss supplements. It should be pointed out that the period of analysis chosen is due, on the one hand, to the potential increase in interest in these contents indicated in the first section, and on the other, it sought to cover a sufficiently broad period to avoid distortions caused by isolated cases (the period includes phases before the pandemic, the months of strict confinement, and times of improvement close to certain normality), but concrete enough to be able to analyze the contents in depth and achieve a complete vision. Since most of these videos are made from home, it is assumed that the pandemic did not affect them.

Regarding the second criterion, it should be noted that in the general profile of the influencers, women predominate, as previously indicated, of the millennial generation in its majority, with a geographical location centered on Spain, Mexico, Colombia, Venezuela, and the United States.

To search for these contents, the following terms or keywords were used: '*adelgazar rápido*', '*detox*', '*dieta détox*', '*dietas milagrosas*', '*dietas rápidas*', 'fast diet', 'fast weight loss', and 'slimming''. With these characteristics, a sample of 300 videos was formed, which was later reduced to the 50 with the highest number of views to carry out a deeper study of each one. This selection consisted of 25 videos in English (mainly from the United States) and 25 in Spanish (mainly from Latin American countries). In this sense, it should be pointed out that the fact that the videos come from the indicated regions is due to their greater presence and visibility in this type of content since no type of geographical criteria was introduced in the search.

The selection of the videos was carried out in July 2021, after which the content was viewed and encoded by the researchers. After this, the data was analyzed throughout August of the same year. It was in that month when the impact variables were also collected, which were: the number of followers of the account (a variable that will be used in an exploratory manner, but not to answer the research questions), the number of views (consumption variable), the number of likes (interaction variable), the number of dislikes (interaction variable), and the number of comments (interaction variable).

Together with these variables, the presence or absence of a series of dummy-type factors was measured –where 0 implies absence and 1 implies the presence of the item in question–. These variables made it possible to analyze the communicative strategies of the video, as well as to identify which of them were most influential to achieve greater impact and interaction figures from the audience. These variables are collected in Table 1:

Table 1. *The variables studied for each video.*

Category	Variable
Relationship with the camera	Absence on camera, but the voice is heard
	Presence on camera and voice, but without looking at the camera
	Gaze and voice directed at the camera
Relationship with the public	Use of the second person and its variations
	Express request for comments and/or opinions
	Use of a follower's name
	Specific response to a follower's comment
	Using expressions to promote subscriptions
	Invitation to watch other videos on the channel
	Invitation to visit accounts on other platforms
Expression of emotions	The verbal or non-verbal expression of emotions (combination of the entire category)
	Expression of joy
	Expression of sadness
	Angry expression
	Embarrassed expression
	Expression of frustration
	Surprised expression
	Fear expression
	Expression of displeasure
	Expression of envy
Emotional appeal	Emotional appeal to the audience (combination of the entire category)
	Emotional appeal to joy
	Emotional appeal to sadness
	Emotional appeal to anger
	Emotional appeal to shame
	Emotional appeal to frustration
	Emotional appeal to surprise
	Emotional appeal to fear
	Emotional appeal to dislike
	Emotional appeal to envy
Informative elements	Explanation of a process from the beginning to the end
	Information on the products or processes necessary to carry out the diet
	Presence of information without calling on the audience to take any action
	Description of positive aspects of the product or process
	Description of negative aspects of the product or process
	Description of positive and negative aspects of the product or process
	Explanation of how a diet works
	The description of how to apply to the diet (for professionals)

	Description of what to expect
	Description of side effects
	Description of contraindications
	Description of possible risks
	Instructions for personal care after using the product or process
	Mention of things that can be done after using the product or process
	Mention of things not to do after using the product or process
	Mention of aspects for which the available information is uncertain
	Use of balanced information
	Use of biased information
Promotional elements	Inclusion of a brand
	Mention of a specific center or professional
	Inclusion of promotional messages to sell a product
Presence of other sources	Inclusion of an external person to the channel in the interview format
	Presence of an expert on the subject
	Mention of publications on the topic
	Inclusion of additional reliable sources
	Inclusion of additional unreliable sources
Presence of the first person	First-person content development
	Presence of information based on the personal experience of the *YouTuber*
	Mention of training or relevant qualifications
	Mention of previous experience in success stories

Source: Own elaboration.

The selection of these variables is due to the exploratory vocation of the study and its intention to open new lines of analysis regarding the type of content since there are already abundant research works that point to the influence of other variables of a personal nature, such as physical attraction or parasocial interaction (Kim, 2022; Sokolova & Kefi, 2020) in the feedback and acceptance of content produced by YouTubers. Since these have been studied more frequently, the focus is on the characteristics of video and how communication occurs.

Besides studying the distribution of frequencies and the descriptive values of all the variables, a study of the correlations (with Pearson's R test) between variables was carried out, as well as Student's t-tests for independent samples to see if language was an influential variable. Since the sample size is limited, the statistical package SPSS v. 26 was used, establishing a type I error margin at 99.9% (α=.001), so that values with truly significant effects were obtained.

5. Results/Discussion

5.1. Features of the videos

The results of the analyzed videos, although with a very high impact and volume of interactions, show high inequalities. Thus, the average number of followers is 979,164.40, although the standard deviation is 1,141,681.52, with the minimum being 3,150 and the maximum being 3,950,000, while the asymmetry was 1,489 and the kurtosis 1,150. This trend is reflected in all the impact variables, as can be seen in Table 2, showing that, although a large number of the contents provide relatively low values –as is also shown by the fact that the median is much lower than the average–, some contents with very high values significantly affect the central values.

Table 2. *Central values and dispersion of the measures of consumption and interaction.*

	Number of followers	Likes	Dislikes	Views	Comments
Average	979,164.40	52,483.62	1,245.67	1,374,195.30	2,304.44
Median	480,500.00	25,492.00	370.00	627,217.00	1,136.50
Standard deviation	1,141,681.52	80,124.53	2,016.70	1,697,648.35	2,803.85
Asymmetry	1.49	3.330	3.233	1.759	1.953
Kurtosis	1.15	14.210	13.066	2.588	3.388
Minimum	3,150	1,957	66	105,640	75
Maximum	3,950,000	465,711	11,316	7,008,813	11,506

Source: Own elaboration.

Regarding the descriptive variables, a remarkable uniformity is observed in a large number of aspects. Thus, all the videos are aimed at the general population and none of them are aimed at professionals. In 12 of the cases analyzed (24%), there is an absence on camera while the voice is still being heard, and only in one video there is presence on camera, but without addressing it, while in 43 sample units (86%) the gaze and the voice goes to the camera. Regarding the relationship with the audience, all the videos except one use the second person, 46 videos (92%) invite them to watch other videos on the channel, 44 invite them to visit the account or other platforms, in 43 videos expressions are used to promote subscriptions, in 27 (54%) comments or opinions are directly requested, and in two videos it is even used in the specific name of a follower and specific comments from followers are answered.

Where a greater diversity is observed is in the use of emotional expressions that are present in 22 videos (44%): in 17 videos (34%) joy is expressed; in 1, sadness; in 1, anger; in 2, shame; in 3, frustration; in 9, surprise; in 3, fear: in 1, disgust; and envy was not observed in any of them. Similarly, in 22 videos the user is emotionally appealed: in 17 videos, through joy; in 1, with anger; in 2, with shame; in 3, with frustration; in 12, with amazement; in 3, with fear; and in no case with sadness, disgust, or envy.

In general, the videos are explanatory, so that in 41 of them the process is explained from the beginning to the end, and in the same number of videos information is offered on products or processes necessary to carry out the diet; Moreover, 22 videos (44%) refer to information without asking the user to take any action. 27 videos explain how the diet works, and 30 videos also describe how to apply it in a professional imitation style. 43 videos offer instructions on care after using the product or diet, 28 mention things that can be done after applying the product or diet, and 18 also refer to things that should not be done. Regarding the plurality and quality of the information, 44 videos (88%) mention aspects about which the available information is uncertain, 38 (76%) describe positive aspects of the product or diet in question, 11 (22%), negative aspects are described, and in 8 both positive and negative aspects are included. Likewise, 41 videos describe what can be expected from the diet, in 13 cases side effects are mentioned, in 5 contraindications are reported, and in 7 there is a warning of potential risks.

The contents are, in general, personal: only one video resorts to the interview of a person external to the channel, and in only one case, content is not used in the first person. 45 videos (90%), also, show the information based on the personal experience of the YouTuber. On the other hand, the promotional aspect of the videos is not dominant, although it is relevant: in 21 videos (42%) specific brands are mentioned, in 4 a specific center or professional is mentioned, and in 19 (38%) promotional messages are included to sell a product.

Regarding the variables of quality and credibility studied within the quantitative analysis, it was observed that only 7 of the 50 videos (14.0%) included information from experts in the field, and only 12% made reference to qualifications or relevant training. 41 videos (82.0%) mentioned previous experience with success stories, and 35 (70.0%) mentions of publications on the subject were included. In 7 of the 50 videos (14.0%), balanced information was included, while in 44 (88.0%) biased information was included; It should be noted that, although it is not usual, the same video could include information from both types. On the other hand, 16.0% of the videos included reliable sources of additional information, and 88.0% included sources of additional information that were unreliable or impossible to classify; again, a video could include both reliable and unreliable additional sources of information simultaneously.

Finally, the average duration of the videos is 10.45 minutes, with a standard deviation of 04.16 minutes. The shortest video is 02.45 minutes, and the longest is 24.32 minutes.

5.2. Relations between variables

After exposing the characteristics of the videos in the sample, we now proceed to study the effects of the different variables on consumption and interaction, so that we can answer the research questions.

Starting with the relationship that may exist between the descriptive variables of the videos and the quantitative variables on interaction and impact and duration, it was observed that no variable was significantly correlated with the number of followers -something understandable since it is an element that does not directly affect each video, but rather the entire account of the YouTuber – but neither does it affect the number of views or comments. For its part, the volume of likes of a video is significantly and positively correlated with the emotional appeal to frustration $[R(50)=.603, p<.001]$ and with the description of contraindications $[R(50)=.533, p<.001]$ And similarly, the number of dislikes is significantly and positively correlated with the emotional appeal to frustration $[R(48)=.515, p<.001]$, with the description of contraindications $[R(48)=.524, p<.001]$ and possible health risks $[R(48)=.544, p<.001]$.

On the other hand, the duration was significantly correlated with the expression of sadness $[R(50)=.507, p<.001]$ and frustration $[R(50)=.488, p<.001]$, as well as with the emotional appeal through shame $[R(50)=.507, p<.001]$ and fear $[R(50)=.620, p<.001]$, and negatively, with the presence of instructions to personal care after using the product or diet $[R(50)=-.533, p<.001]$.

Among the **quantitative variables**, it was observed that the number of followers and the duration are not related to the rest. Although the views, the number of likes, dislikes, and comments always correlate with each other in a positive and significant way. Thus, the number of views is correlated with the number of likes $[R(48)=.876, p<.001]$, dislikes $[R(48)=.800, p<.001]$, and comments $[R(48)=.696, p<.001]$, also the number of likes is correlated with the number of dislikes $[R(48)=.910, p<.001]$ and with the number of comments $[R(50)=.609, p<.001]$, and finally, the number of dislikes and comments is also positively correlated $[R(48)=.633, p<.001]$.

Among the **descriptive variables**, statistically significant correlations are not abundant, given that they are frequently variables with little or no diversity –variables in which the absence or presence is total or almost total are frequent–, although some readings are of interest. As it seems logical, there is a negative correlation between the absence on camera keeping the voice and the gaze and the voice directed at the camera $[R(50)=-.448, p<.001]$. Talking and looking directly at the camera correlates positively with the invitation to watch other videos on the channel $[R(50)=.518, p<.001]$. The use of the second person is positively correlated with the invitation to watch other videos on the channel

[R(50)=.484, p<.001] Likewise, the invitation to watch other videos on the channel is positively correlated with the invitation to visit the account on other platforms [R(50)=.572, p<.001].

The expression of emotions[1] has a strong positive correlation with the emotional appeal to the viewer [R(50)=.675, p<.001] and with the emotional appeal through joy [R(50)=.725, p< .001]. The expression of joy is positively correlated with the emotional appeal to the audience [R(50)=.640, p<.001] and with the use of joy [R(50)=.733, p<. 001] to address the audience. The expression of sadness shows an absolute positive correlation with the expression of anger [R(50)=1.000, p<.001], and a high correlation with the expression of frustration [R(50)=. 565, p<.001] Also, the expression of anger is positively correlated with the expression of frustration [R(50)=.565, p<.001], while the expression of shame is positively correlated with the expression of frustration [R(50)=.808, p<.001] and with the emotional appeal through anger [R(50)=.700, p<.001], from shame [R(50)=1.000, p <.001], frustration [R(50)=.808, p<.001], and fear [R(50)=.808, p<.001], as well as with the inclusion of an interview with a person external to the channel [R(50)=.700, p<.001], information on contraindications [R(50)=.612, p<.001], and the warning of possible risks [R(50)=.506, p<.001], while negatively correlating with the mention of aspects for which the available information is uncertain [R(50)=-.553, p<.001] and with the care instructions after use of the product [R(50)=-.506, p<.001]. The expression of frustration shows a positive correlation with the emotional appeal through anger [R(50)=.565, p<.001], shame [R(50)=.808, p<.001], frustration [R(50)=.645, p<.001], and fear [R(50)=.645, p<.001], besides the description of contraindications [R(50)=.477, p< .001], while it is negatively correlated with the inclusion of instructions for care after use of the product [R(50)=-.626, p<.001]. The expression of surprise is positively correlated with the expression of fear [R(50)=.539, p<.001] and with the emotional appeal to the audience through surprise [R(49)=.710, p<.001]. The expression of fear is positively correlated with the expression of disgust [R(50)=.565, p<.001] and with the emotional appeal through anger [R(50)=.565, p<.001].

Emotional appeal through anger is positively correlated with emotional appeal through shame [R(50)=.700, p<.001], frustration [R(50)=.565, p<.001], and fear [R(50)=.565, p<.001].The emotional appeal through shame is positively correlated with the appeal through frustration [R(50)=.808, p<. 001] and fear [R(50)=.808, p<.001], as well as the inclusion of interviews with people outside the channel [R(50)=.700, p<.001] and the description of contraindications [R(50)=.612, p<.001] and possible risks [R(50)=.506, p<.001], and it correlates negatively with the mention of aspects on which the available information is uncertain [R(50)=-.553, p<.001] and with the presence of personal care instructions after using the product or diet [R(50)=-.506, p<.001]. The emotional appeal through frustration shows a positive correlation with the appeal through fear [R(50)=.645, p<.001], with the inclusion of interviews with people outside the channel [R(50)=.565, p<.001], and with the description of negative aspects of the product [R(50)=.476, p<.001], contraindications [R (50)=.758, p<.001], and possible risks [R(50)=.626, p<.001], and negative with the mention of aspects for which the available information is uncertain [R(50)=-.684, p<.001]. Finally, the emotional appeal through fear is positively correlated with the inclusion of interviews with people outside the channel [R(50)=.565, p<.001] and the description of negative aspects of the product [R(50)=.476, p<.001], contraindications [R(50)=.477, p<.001], and possible health risks [R(50)=.626, p<.001], and negatively with the mention of aspects for which the information available is uncertain [R(50)=-.684, p<.001], with the description of positive aspects of the product mentioning aspects for which the information available is uncertain [R(50)=-.450, p<.001], and with the mention of care instructions after use of the product [R(50)=-.626, p<.001].

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[1] Existing correlations between this variable and the different emotions expressed are not included, since this variable includes them all. The same happens with the emotional appeal to the audience and the different emotions used for this appeal.

The mention of a brand is positively correlated with the inclusion of promotional messages to sell a product [R(50)=.503, p<.001]. The mention of aspects on which the available information is uncertain is negatively correlated with the description of contraindications [R(50)=-.492, p<.001] and possible risks [R(50)=-.560, p<.001]. The description of positive aspects of the product has a positive correlation with the presence of instructions on personal care after using the product [R(50)=.583, p<.001]. On the other hand, as seems evident, the description of negative aspects of the product is positively correlated with the information on side effects [R(50)=.566, p<.001], contraindications [R(50)=.628, p<.001], and possible health risks [R(50)=.760, p< .001]. The explanation of how the diet works is positively correlated with the description of how to apply the diet with a more professional communication style [R(50)=.721, p<.001].

Finally, the reference to possible side effects is positively correlated with information on contraindications [R(50)=.562, p<.001] and possible risks [R(50)=.681, p<.001], which in turn are also correlated with each other [R(50)=.826, p<.001]. Mentioning what can be done after using the product is positively correlated with mentioning what cannot be done after using the product [R(50)=.497, p<.001].

With this, RQ1 can be answered by stating that there are no clear patterns regarding which variables give rise to greater consumption or interaction in videos about miracle diets by YouTubers; Except for the emotional appeal to frustration and the description of contraindications, which are significantly positively correlated with the number of likes and dislikes, no relevant influences were observed. However, consumption does influence interaction: that is, greater consumption (more views) leads to higher levels of interaction (more likes, dislikes, and comments).

Finally, it should be mentioned that no significant differences were observed between the videos in both languages. Some trends can be seen, such as the fact that the videos in Spanish have a greater volume of interactions than those in English or that the videos in Spanish also tend to show risks and contraindications, but the differences are small. Thus, in response to RQ2, no significant differences have been observed derived from the use of English or Spanish in the videos, so it can be stated that the videos of both languages follow similar patterns.

Finally, and in response to RQ3, hardly any correlations between the different variables have been detected, so we can interpret that they follow independent patterns. Except for a few specific cases –correlations between variables on the presence of emotions or the emotional appeal to the viewer, or correlations between variables on informative elements–, the relationships that have been observed do not seem to follow a clear theoretical pattern. This seems to confirm the work that pointed to the need to understand videos as a whole rather than based on very specific characteristics (O'Keefe & Hoeken, 2021).

5.3. Discussion of observations

In general, this research has shown that the videos on health-related content produced and disseminated by influencers through YouTube are very personal, informative, and, although not generally, with relatively plural information, sometimes addressing risks or negative aspects, although positive visions and recommendations predominate. It should be noted that the products and diets addressed often have a high risk to health and do not represent practices recommended by experts, so, although their contraindications or associated risks are sometimes indicated and there is a large amount of information, the promotional component and the search for channel traffic seem to be more relevant factors than health in these videos. In this sense, according to Harris et al. (2020), one of the motivations of YouTubers to produce health content, and, specifically, diets such as those addressed in this research, focus on the possibilities of obtaining personal benefits. Gedeman (2019) specifies that the market for

beauty influencers is massive; in fact, today it continues to represent an area with great investment possibilities.

Given the questionable quality and reliability of the videos, their effects must be accurately analyzed. In fact, Coates et al. (2019) observed that celebrity endorsement of healthy foods encourages younger people to eat more consciously, therefore, it is reasonable to predict that if the advice is harmful, it may also be assumed by the audience. In this sense, the fact of hardly detecting any influence of the different variables studied on consumption or interaction with the videos could point towards passive consumption, almost indifferent to the characteristics of the video, which could be considered a risky attitude if it led to non-critical consumption. This uncritical consumption is reinforced given one of the most striking observations of the study, the positive correlation between dislikes and other variables such as views, comments, and, above all, likes. It is appreciated that the dislikes option, rather than reducing views or the number of likes, seems to be another form of interaction. This may be because the factor that increases the number of interactions – likes, dislikes, and comments – is the volume of views and the popularity of the video, rather than its content or characteristics.

The work has not addressed whether the comments were positive or negative, although in general terms it is a form of interaction that is also positively related to the rest of the quantitative variables. Still, it would be convenient for future works to observe whether the meaning of the comments may be related to other variables. Nor has it been analyzed whether these interactions have effects on the attitudes and behaviors of the audience, although it can be assumed that the greater the impact and the greater the audience, the greater the probability of effects on viewers, especially if it is an uncritical consumption.

The foregoing is relevant because influencers are perceived as knowledgeable about the products and services of their domain, and it is for this reason that the consumption of these videos by viewers must be aware of and guided by regulatory processes that allow recommendations to be differentiated from advertising spaces. Similarly, from training in communication and dissemination of content, there must be a process of digital literacy that allows exploring and searching for content in a more conscious, critical, and efficient way. In fact, to achieve a transformative impact on the positive, it is essential to acquire the necessary skills for the development of that awareness of self-care (Chang, 2019; Hibbard et al., 2007; Koh and Rudd, 2015) with the ultimate goal of improving the decision-making process on health (Mason and Scammon, 2011; Powers et al., 2010; Southwell et al., 2019).

It should be pointed out that all the observations made on the correlations between the different descriptive variables of the videos should be taken with caution because, although most offer logical and theoretically sustainable data, they are subject to the effect of the limited sample size, with 50 videos analyzed. The use of inferential statistical tests, precisely, makes it possible to discern the significant effects from those in which the effect of chance cannot be ruled out; Added to this is the decision to use a smaller margin of error than usual ($\alpha=.01$), increasing the confidence margin. However, the limitation that the study poses in this regard and the need to verify, with larger samples, the observations made in this exploratory research, are recognized.

Additionally, the results of this research must be interpreted by taking into account two aspects. In the first place, variables related to the characteristics of the videos on YouTube have been analyzed, rather than aspects related to the authors or the content itself, having left out of the study factors external to YouTube, such as where each video has been promoted. The analysis tried to explore a series of characteristics less studied in previous studies to find out their potential effects, something that has been fulfilled, although the possible influence of other variables not studied, and which may have had effects on the observed consumption and interaction, cannot be ruled out. Second, to approach the

study reliably and guarantee observations with a high degree of certainty, it was decided to always report values with a high degree of significance ($p<.001$); this guarantees that the results are reliable, especially when dealing with a limited sample like this, but it prevents the visualization of correlations or differences that may be significant with lower significance values ($P<.05$ or $p<.01$).

Likewise, the limitation of the sample size must be taken into account, which prevents the elaboration of more forceful statistical observations, but whose justification is the need to have a manageable number of videos to be able to carry out the views, since there are no computational methods – as is the case with content in text format – that can reliably speed up this task. Given that it is an exploratory work, it is understood that the size of the sample is sufficient since it allows opening new lines of work in this type of content and reflecting on the impact of these videos on the health of the audience.

On the other hand, the work that has been proposed here adopts an eminently quantitative perspective, which allows numerous variables to be consistently addressed in the videos analyzed, but it is not the only way to expand knowledge of the subject. On the contrary, it is recommended that future lines of work continue to delve into more qualitative analysis –for example, analysis of the discourse of videos–. Another essential line of work will be reception studies, since the data analyzed here have made it possible to evaluate exploratory questions about interaction and consumption, but they do not manage to understand the effects and reception process of the videos in question, a key element for its potential effects on the health of consumers.

Finally, the values of the number of followers, views, likes, dislikes, and comments are expected to have increased from the moment the fieldwork was carried out. Although it was found that the date was not a determining variable in this aspect and videos collected over more than a year were included to avoid this effect, future studies with a greater temporal distance or with a longitudinal perspective will complement this aspect of the present work.

6. Conclusions

To conclude, RQ1 can be answered by indicating that the variables of YouTuber videos on miracle diets hardly seem to have an influence on consumption (measured through the number of views) or on interaction (measured through the number of likes, dislikes, and comments). It is only worth mentioning that the emotional appeal to frustration and the description of contraindications are correlated with a greater number of likes and dislikes, to which is added the mention of possible health risks, which also correlated with a greater number of dislikes. Responding to RQ2, language does not seem to influence the consumption and interaction figures in the videos studied.

Regarding RQ3, it has been preliminarily observed that, within the different descriptive variables, the greatest number of correlations occur between the different expressions and emotional appeals. Thus, although positive feelings dominate, both the expression and the emotional appeal to the viewer through negative feelings usually occur in more than one dimension: for example, the presence of anger or fear usually occurs together with that of frustration or shame.

This adds to the results of this work that, despite the limitations mentioned and its preliminary and exploratory nature, offers ways of analysis to delve into the characteristics of the videos on miracle diets produced by YouTubers on this platform. The great potential of these videos – not only due to their possible health risks but also due to their ability to transmit healthy habits – makes it necessary to continue delving into the factors that give rise to greater impacts. And it is that, following what has been exposed in previous research, it is unquestionable that YouTubers are one of the many sources of health information -especially for young people-, so their potential to communicate messages in

this area should be appreciated. In this regard, it should be noted that working in collaboration with *influencers* who are already producing health content could contribute to efforts to improve health, reaching an audience of young people who are already predisposed to this type of message. Thus, the recommendation is not only the control of these contents but the joint work with those who produce them.

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AUTHOR/S:

Bárbara Castillo-Abdul
Universidad Rey Juan Carlos.
ESAI Business School, Universidad Espíritu Santo, Ecuador.

Predoctoral Researcher of the Department of Communication Sciences and Sociology of the Universidad Rey Juan Carlos and Visiting Professor of the ESAI Business School, Universidad Espíritu Santo in Guayaquil. Student of the Interuniversity Doctoral Program in Communication of the Universities of Seville, Malaga, Huelva, and Cádiz and the Program in Social and Legal Sciences of the Universidad Rey Juan Carlos. She has a Master's Degree in Communication and Audiovisual Education from the Universidad Internacional de Andalucía and the Universidad de Huelva. She is associate editor of the *Revista Index.Comunicación* and Coordinator of the Visibility Council and Social Networks of *Revista Comunicar*. She is a member of the Ágora research group of the Universidad de Huelva, the Alfamed Network, and international scientific associations such as ECREA and IAMCR.
barbara.castillo@urjc.es

Índice H: 7
Orcid ID: https://orcid.org/0000-0002-3711-1519
Google Scholar: https://scholar.google.es/citations?hl=es&user=E74B2F0AAAAJ
ResearchGate: https://www.researchgate.net/profile/Barbara-Castillo-Abdul
Scopus ID: https://www.scopus.com/authid/detail.uri?authorId=57219174678
Academia.edu: https://urjc.academia.edu/B%C3%A1rbaraCastilloAbdul

David Blanco-Herrero
Universidad de Salamanca.

He is a doctoral student at the Universidad de Salamanca. He has a degree in Journalism (Universidad a Distancia de Madrid, 2016) and Business Administration (Universidad de León, 2014) and a master's degree in Audiovisual Communication (Universidad de Salamanca, 2018). He is a member of the Audiovisual Content Observatory and has an FPU grant from the Ministry of Science, Innovation, and Universities. His main lines of research are journalistic ethics, disinformation, and hate speech. He is an editorial assistant in the Electronic Yearbook of Studies in Social Communication "Disertaciones".
david.blanco.herrero@usal.es

Índice H: 6
Orcid ID: https://orcid.org/0000-0002-7414-2998
Google Scholar: https://scholar.google.es/citations?hl=es&user=rVgTEUwAAAAJ
ResearchGate: https://www.researchgate.net/profile/David-Blanco-Herrero
Scopus ID: https://www.scopus.com/authid/detail.uri?authorId=57211948447

Clara Muela-Molina
Universidad Rey Juan Carlos.

Clara Muela-Molina is a Professor of Audiovisual Communication and Advertising and Professor of Advertising at the Faculty of Communication Sciences of the Universidad Rey Juan Carlos. Her preferred lines of interest are advertising regulation and self-regulation, health communication, the role of the mass media in health promotion, and the social responsibility of advertisers, the media, and personalities who collaborate in the advertising of health-related products. She has participated in several competitive projects related to the commercial communication of health-related products. Since 2009, she has been a member of GRER (Groupe de Recherches et d'études sur la Radio), an international group specialized in radio based in France and attached to the Université Michel de Montaigne Bordeaux III.
clara.muela@urjc.es

Índice H:14
Orcid ID: https://orcid.org/0000-0002-1344-8731
Google Scholar: https://scholar.google.es/citations?hl=es&user=1og7TbUAAAAJ
ResearchGate: https://www.researchgate.net/profile/Clara-Muela-Molina
Scopus ID: https://www.scopus.com/authid/detail.uri?authorId=55356512800
Academia.edu: https://urjc.academia.edu/ClaraMuela