Journalism and COVID-19 research in Spain: academic impact, methodological approaches and disinformation

La investigación en periodismo y COVID-19 en España: impacto académico, aproximaciones metodológicas y desinformación

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ABSTRACT

Introduction: The aim of this research is to analyze how COVID-19 was studied by the academic discipline of journalism, regarding its impact, methodology, thematic and source, and their repercussions on sites. **Methodology:** A universe of 124 articles is obtained through algorithmic grouping by InCites (journalism micro topic, Spanish affiliation, and COVID-19 keyword). A bibliometric analysis is performed, accompanied by a qualitative content analysis to generate common codes in methodology, themes, and use of sources. Quantitative analysis of co-occurrence and descriptive correlations between the three variables studied and their citations are carried out. **Results:** Articles on COVID-19 received five times more citations than the rest. The majority of cites (86%) are concentrated in the first-published articles. Classic methodologies were mostly used (49% content analysis, 16% surveys). Bibliographic review (13 cites/article) and advanced automated analysis techniques (10.75 cites/article) are the ones that receive the most citations. The main theme is disinformation (26%, 11,07 cites/article)

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and the most common source is the press (27%, 6,15 cites/article), although social networks (22%, 9.12 cites/article) and fact-checkers (10%, 8.50 cites/article) generated a greater impact. **Discussion and Conclusions:** The articles that were published during the first months generated the highest volume of citations. In journalism research, a recurrent use of classic strategies (content analysis, press) was found, although the slightly more novel approaches (advanced automated analysis techniques) are the ones that produced the most citations. Misinformation becomes one of the key issues in journalism studies. Unusual methodologies and themes receive practically no citations.

Keywords: Journalism; COVID-19; Academia; InCites; Citation Topics; Impact; Communication research.

RESUMEN

Introduction: Se analiza el impacto y el modo en el que la disciplina académica del periodismo investigó sobre el COVID-19 y su repercusión metodológica, temática y de fuentes. **Metodología:** Se obtiene un universo de 124 artículos mediante agrupación algorítmica por InCites (micro tópico periodismo, afiliación española y palabra clave COVID-19). Se procede a un análisis bibliométrico, acompañado por un análisis de contenido cualitativo para generar códigos comunes en metodología, temática y uso de fuentes. Se realizan análisis cuantitativos de co-ocurrencia y correlaciones descriptivas entre las tres variables estudiadas y sus citas. **Resultados:** Los artículos sobre COVID-19 recibieron cinco veces más citas que el resto, y la mayoría (86%) se concentran en los primeros artículos. Se emplearon mayormente metodologías clásicas (49% análisis de contenido, 16% encuestas). La revisión bibliográfica (13 citas/artículo) y las técnicas avanzadas de análisis automático (10,75 citas/artículo) son las que reciben más citas. La temática principal es la desinformación (26%, 11,07 citas/artículo) y la fuente más común la prensa (27%, 6,15 citas/artículo), si bien generan más impacto las redes sociales (22%, 9,12 citas/artículo) y los *fact-checkers* (10%, 8,50 citas/artículo). **Discusión y Conclusiones:** Los artículos que primero se publicaron generaron más citas. Se identificó un uso recurrente de estrategias clásicas (análisis de contenido, prensa) si bien son las aproximaciones ligeramente más novedosas (técnicas avanzadas de análisis automático) las que producen más citas. La desinformación deviene uno de los temas claves. Las metodologías y temáticas poco comunes no reciben prácticamente citaciones.

Palabras clave: Periodismo; COVID-19; Academia; *InCites*; *Citation topic*; Impacto; Investigación en comunicación.

1. Introduction

Crises pose a communicative challenge for contemporary societies, requiring an effort from their institutions, their media, and ultimately the people who make up such societies. It is not surprising, therefore, that communication - whether political, risk, scientific, or health - becomes such a notable element that catches the attention of the academic community. For that reason, there are various analyses that study crises and their consequences, either from a communicative perspective (Camacho, 2009; Chan et al., 2003; Cortiñas-Rovira et al., 2015; Salvador-Mata and Cortiñas-Rovira, 2023; Lewison, 2008; Casero-Ripollés, 2020), or by elaborating guidelines or recommendations (Seeger, 2006; Sandman, 1993; Reynolds and Seeger, 2005; Jones et al., 2010, among many others).

The case of COVID-19 is no exception. In fact, for a time, it became an exponential source of scientific production (Torres-Salinas, 2020). Studying how, under what conditions, and what impact these investigations have had, and are having, is crucial to elucidate the underlying scientific and academic mechanisms.

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Such studies are usually framed in disciplines. For example, from the health or natural sciences, multiple studies have been conducted analyzing the impact of COVID-19 on medical research or in specific disciplines within it (Weiner et al., 2020; Gregorio-Chaviano et al., 2022; Ruiz-Fresneda et al., 2021; Corrales-Reyes et al., 2021; López-López et al., 2020). The same has been done in the field of health communication (de las Heras-Pedrosa et al., 2022). The phenomenon has also been analyzed with a focus on communication and the dissemination structure of this research. For example, Cerda-Cosme and Méndez (2022) studied the percentage of academic articles published in 2020 by Spanish affiliations that shared their information or data, detecting that this only happened in 12.5% of cases. On the other hand, Waltman et al. (2021) focused on studying academic communication, paying attention to the type of publication, its impact (whether on social networks, in the media, or in the form of citations from the rest of the academic community). Torres-Salinas (2020) demonstrated that during the peak of the pandemic, an unprecedented explosion of scientific production in the field of COVID-19 occurred, generating significant challenges for scientific journals and databases.

Scientific production applied to very specific concepts or contexts of this crisis has also been studied, such as telework (Mamani-Benito et al., 2022), its funding profile (Shueb et al., 2022), diabetes and COVID-19 (Corrales-Reyes et al., 2021), or environmental studies (Casado-Aranda et al., 2021), among others.

Most of these studies have obtained their data either through aggregated search (using keywords, for example, Cerda-Cosme and Méndez, 2022; López-López et al., 2020) or through the classification profile of journals in different databases (for example, Gregorio-Chaviano et al., 2022). These approaches are useful for drawing generic maps of COVID-19 research (for example, in the medical context), on very specific elements (telework, diabetes, environmental sciences), or for establishing descriptive statistics (funding, citations, and other altmetric indicators). However, they are not efficient in mapping the way a specific academic discipline responds in its publications to the COVID-19 phenomenon, especially in social sciences where journals show high thematic dispersion.

The present study aims to characterize the science produced in the academic discipline of journalism during the period 2020-2022, focusing on the COVID-19 pandemic. The proposed methodological approach is mixed, both qualitative and quantitative, aimed at analyzing the methods, sources, and themes of these investigations, and complemented with a bibliometric component.

To do so, this study starts from a different premise for obtaining the initial domain: instead of relying on keywords or journal categories, it applies a novel algorithmic grouping offered by InCites. At the end of 2020 (Potter, 2020), a new method of grouping articles by their thematic relationships, Citation Topics, came into operation. These are clusters of articles that are formed based on citation patterns, establishing strong thematic relationships and generating greater specificity for the study of academic disciplines. The use of this strategy is not yet widespread, with few studies using it (one of the first being that of Herrero-Solana and Piedra-Salomón, 2020).

2. Objectives

Objective 1: Quantify the impact that COVID-19 has had on the field of journalism as an academic discipline, both in terms of productivity and the citations received and their distribution.

Objective 2: Identify the most commonly used methodological approaches, the most recurrent thematic central themes, and the sources applied to obtain results in the articles studied, as well as their relative impact in terms of citations.

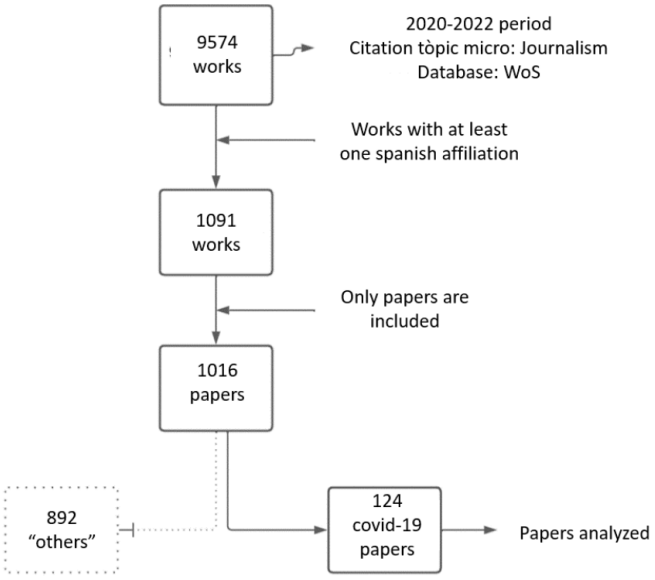
3. Methodology

3.1. Selection of the thematic domain

To delimit thematically our document corpus, we used the aforementioned Citation Topics from InCites. The algorithm (Potter, 2020) classifies documents contained in the Web of Science according to their citation relationships and establishes three levels of hierarchical classification: macro (10), meso (326), and micro (2444 topics). Each paper, based on its bibliographic references and regardless of the journal in which it was published, belongs to a unique topic, a meso level, and a macro level. This automatic article-level classification offers a much finer granularity of content than the usual thematic categories of journals. Among the meso topics is "Communication," which encompasses seven micro topics identified by this method. Of these seven, one is ideal for the objectives of this study: "Journalism."

Figure 1 shows the corpus selection scheme. The temporal range (2020-2022) was delimited on micro CT journalism. Of the total retrieved papers (9574), those with Spain affiliation were filtered out, i.e., those in which at least one of the authors is affiliated with a Spanish institution (1091). 75 papers that were not considered articles were discarded from this result. From the final tally (1016), a search for the keyword "COVID-19" was performed, resulting in the final sample of 124 papers that met all criteria, and obtaining a "control" group of 892 articles that did not directly deal with COVID-19.

Figure 1: *Sample selection process.*



Source: Authors' own work.

3.2. Analyzes performed

The sample of 124 articles was downloaded from the WoS database in full record format. Then, a series of analyses were carried out to obtain the data for the study.

3.2.1. Methodological coding:

To obtain the methodological codes, a two-phase coding process was applied. The methodology was inductively coded based on the information contained in the abstract field using the terms found in the

articles. In cases where the methodology was not specified, the corresponding methodology section of the article was consulted. Next, the obtained codes were grouped together to form groups that shared a methodological approach. Table 1 shows the final coding process and the methodological specifications.

Table 1. *Methodological coding in two phases.*

Methodology described in the article	Unified codes
Secondary analysis of surveys, comparative analysis of secondary data	Secondary analysis of data
Communicative content analysis, content analysis, analysis of data/pieces/..., in-depth context analysis, thematic content analysis, mixed quantitative and qualitative methodology, systematic observation, mixed methodology, comparative analysis, qualitative analysis methodology, exploratory content analysis, quantitative content analysis, inductive perspective-qualitative methodology, in-depth content analysis, semantic analysis, qualitative inductive-deductive content analysis,…	Content analysis
Social Network Analysis (NodeXL Pro software), computational content analysis, automatic process of topic modeling and network analysis, automatic analysis, machine-learning techniques, Social Big Data analysis, Natural Language Processing and Network Theory, Multilingual sentiment, automated text classification	Advanced automated analysis techniques
Bibliographical synthesis, literature review, systematic literature review, bibliographical review	Bibliographical review
Survey, online survey, adapted questionnaire, questionnaire, sub national survey, two-wave panel survey, self-administered questionnaire	Survey
Hemerographic analysis, bibliometrics, analysis of searches	Informetrics
Design-based research, theoretical paper, historical-discursive method, deductive and critical methodologies, critical discourse analysis, agenda-setting theory, focus group, experimental setting	Others
In-depth interview, semi-structured interview, semi structured open interviews	Interview

Source: Authors' own work.

The code "content analysis" encompasses the set of strategies used to obtain information (both qualitative and quantitative) from the analysis performed by individuals of a study element.

On the other hand, advanced techniques of automatic analysis refer to all those methodological approaches that automate the study of elements of interest. This is a broad category that includes different methodological approaches, such as social network analysis (SNA) with specific software, automated content analysis sometimes using machine learning (ML) algorithms, and the use of natural language processing (NLP) strategies, among others. Although they differ in their approaches, they have been grouped under the same code because they share an automated approach for the study of large datasets, usually obtained from social media.

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A code for informetrics has also been created. This term, which began to be used in the last fifteen years of the 20th century (Tague-Sutcliffe, 1992), is now somewhat out of use and serves to broadly group methodological approaches that are based on quantitative studies of information packages. In a generic sense, it is used here to group bibliometric, scientometric, and webometric studies (Egghe, 2005, based on Soós and Kiss, 2020), since informetrics is understood as a set of techniques.

Lastly, a category of secondary analysis has been created to group all those studies that obtain data produced by other research and reinterpret or analyze them in light of new research questions.

3.2.2. Thematic characterization

For the thematic characterization, two approaches were applied: an automatic approach using the VOSViewer program (Eck and Waltman, 2010), which performs a co-word analysis of the title, keywords, and abstract fields. With these data, it is able to establish densities, centrality, and interactions of the dataset (after a process of filtering out generic and non-informative terms such as research, study, country, information, etc.).

Secondly, inductive analysis was conducted to organize the content into thematic groupings and sub-groupings based on the article analysis. Nine major thematic domains were identified (misinformation, media coverage, political communication, media consumption, journalistic practice, business model, public opinion, education, and others) as well as up to fifty-two sub-themes.

3.2.3. Characterization of sources

The sources from which the research data were obtained were extracted from each article, resulting in the following seven categories: press, population, social networks, fact-checkers, others, academic literature, and businesses, with their corresponding thirty-nine subcategories.

4. Results

4.1. Presence of COVID-19 in research in communication and journalism

Scientific articles signed by Spanish affiliations that analyze COVID-19 in the field of journalism represents 11.3% of the total published works in the period 2020-2022 (n=1090). If we go to the next organizational level of algorithmic grouping, the communication mesotopic (which includes journalism and the other six topics depicted in Figure 2), we see that scientific studies on COVID-19 represent 12.9% of the total published works in the period (n=2265).

In the macro topic of social sciences (which encompasses communication and a good number of other meso topics), articles about COVID-19 lose importance, occupying only 6.6% (n=36083). The effort made by the natural sciences, another macro topic (n=81228), is also lower than that of communication since it has only dedicated 7.4% of its work to it.

The academic discipline of communication, therefore, has made a research effort superior to the average of social sciences and natural sciences to focus on COVID-19. Interestingly, in a world in quarantine, public relations have the highest effort index (28.5%).

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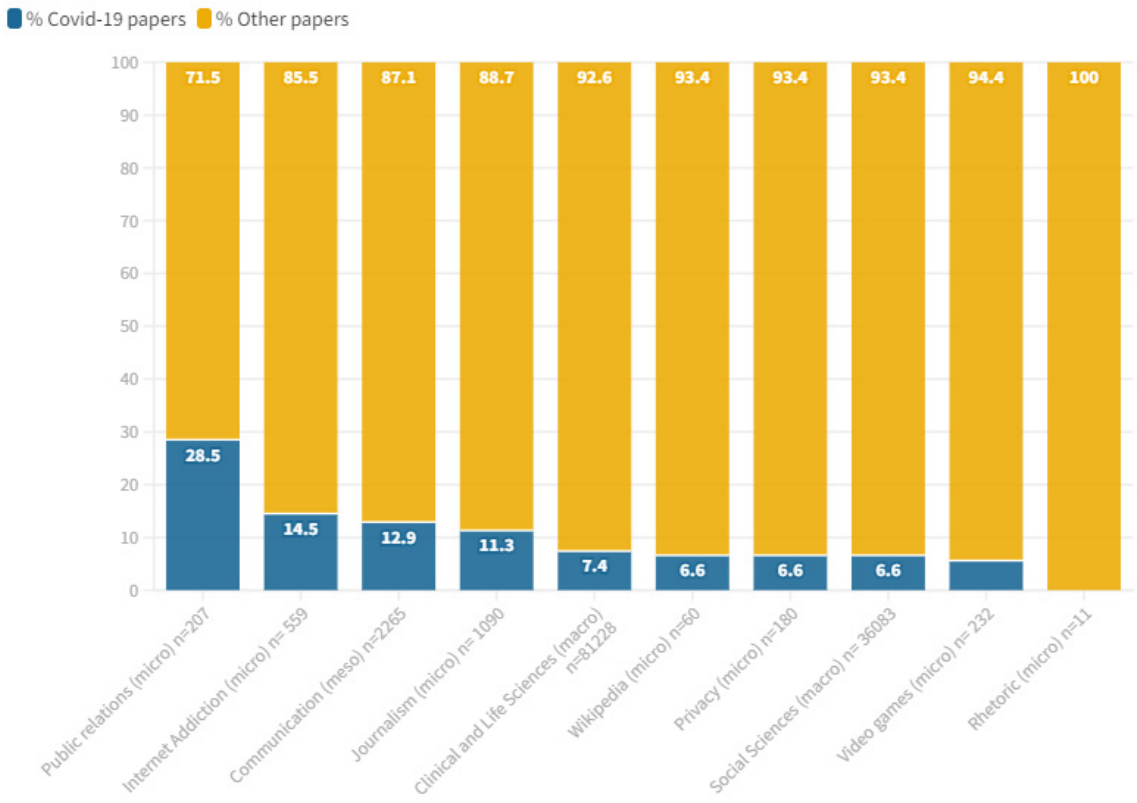
Figure 2. *Comparison of the percentage of COVID-19 articles over the total of each Citation Topic.*



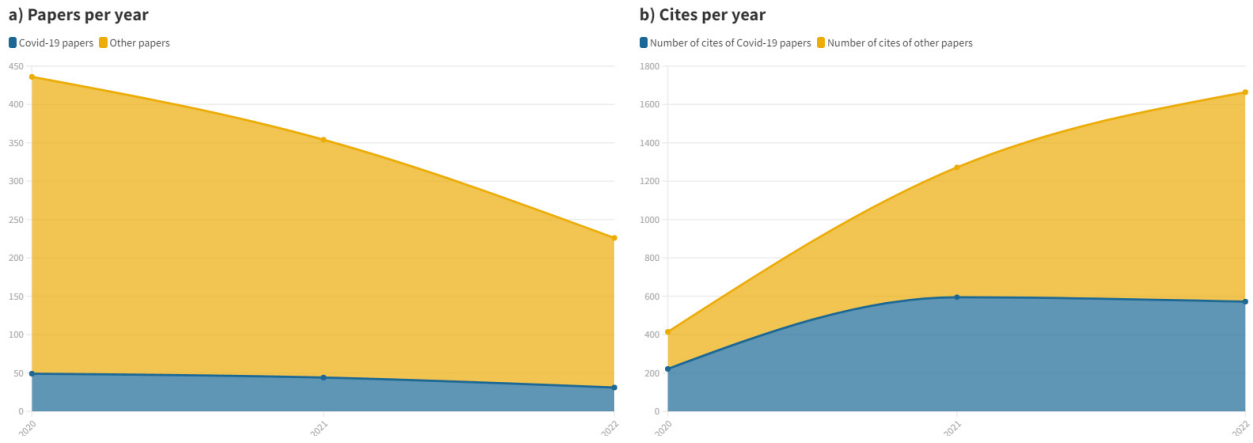
Source: Author´s own work.

4.2. Impact of research on COVID-19 on journalism

Figure 3a shows the volume of articles grouped in the CT journalism that deals with COVID-19 in relation to the total number of articles published per year. It can be observed that there is a sustained decline in the number of articles produced within this field, although the number of articles dealing with COVID-19 per year does not decrease as noticeably. However, what is noteworthy is that these articles, which account for 11.3% of the total production, are responsible for 40% of the citations received in the study period.

On average, an article dealing with COVID-19 is cited 11.27 times, while an article that does not deal with the topic only receives 2.24 citations, a significant difference that indicates the centrality and importance of the topic.

Figures 3a and 3b: *Articles per year and citations per year of the articles that deal with COVID-19 in relation to those that do not.*

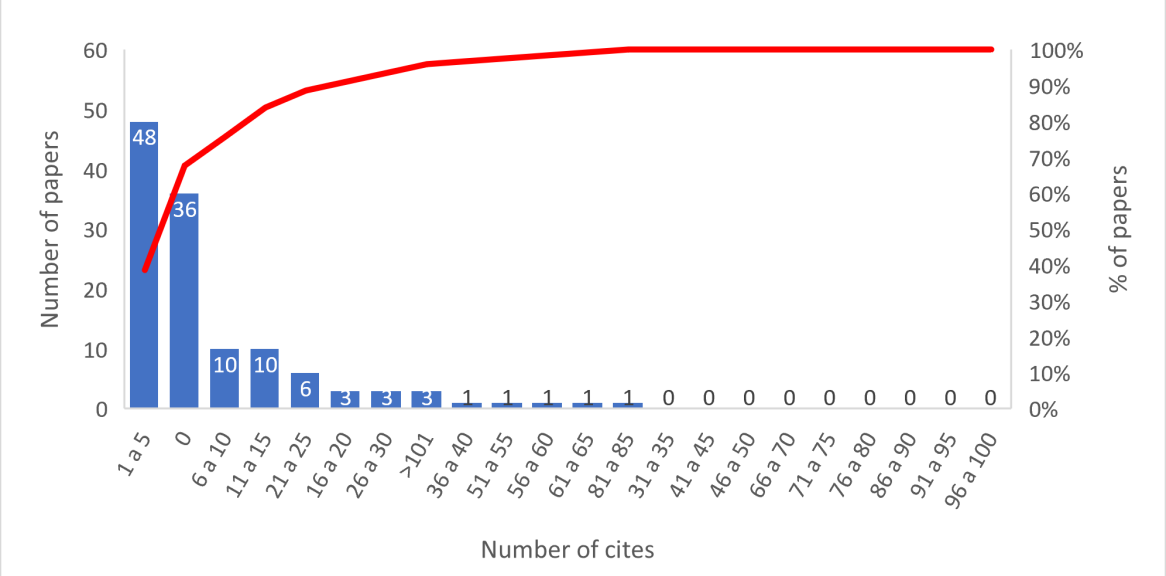


Source: Author´s own work.

Figure 4 shows the distribution of articles according to the number of citations received. 29% of the works (n=36) have not received any citation, and 39% (n=48) have received between one and five. The average is 11 citations per article, but 24% of the articles (n=30) exceed it. There are three cases where the hundred citation threshold is exceeded.

In the 892 articles of the discipline that do not contain research on COVID-19, 47% of the articles have not yet received any citation, and 40% are in the range of one to five. Only 4.3% of the works have received 11 or more citations, indicating that research on COVID-19 has had a greater academic impact than the rest of the works in general, and not only due to a few specific investigations that reach high citation rates.

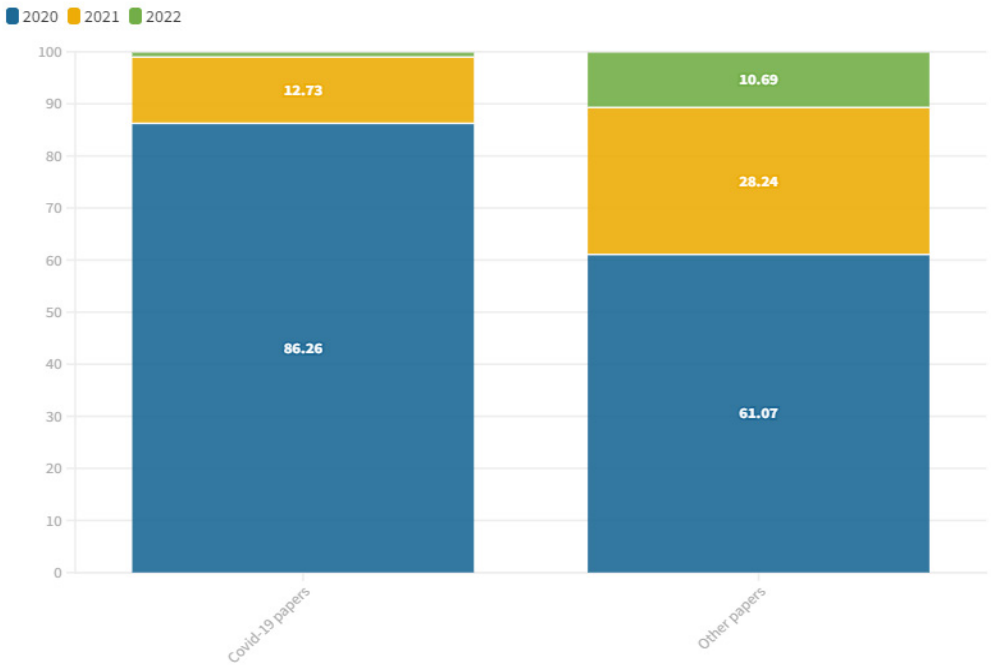
Figure 4: *Distribution of articles according to citations.*



Source: Authors' own work.

Figure 5 shows how the most highly cited works are those published during the year 2020. This is expected because articles published earlier have more time to be cited and more articles that potentially can cite them. However, when compared to the control group (the 892 articles that do not include the keyword COVID-19), this phenomenon is exacerbated in COVID-19-related works. 86% of the citations received by these articles are due to publications from 2020, although they only represent 38% of the total volumen of articles. In contrast, in the control group, the works from 2020 generate only 61% of the citations, although they also represent 38% of the total publications. COVID-19-related articles published in 2021 generated 12% of the citations, while in the control group, they produce 28%. In 2022, this trend was even more pronounced: COVID-19-related works produce an imperceptible volume of citations, while those in the control group approached 10%.

Figure 5: *Citations distributed according to the year of publication of each article.*



Source: Author´s own work.

4.3. Methodologies used in the publications

The two-phase inductive analysis of the methodological resources used in the 124 investigated studies has allowed us to detect that in 49% of cases, results were obtained through content analysis. Although the object of this analysis has been varied (journalistic pieces, tweets, posts, comments, conferences, visuals, videos, press conferences, covers), and the data obtained are of diverse nature (quantitative, qualitative, mixed), it is the most standardized way of obtaining data.

The next most common technique is the survey (16.1%), which in most cases has been conducted in an online format. Advanced automatic analysis techniques, which encompass a set of automated content analysis methodologies, generally from social networks, account for 9.6% of the case studies. Interviews (7.2%), bibliographic reviews (4.8%), and secondary data analysis (2.4%) are the other methodological resources employed.

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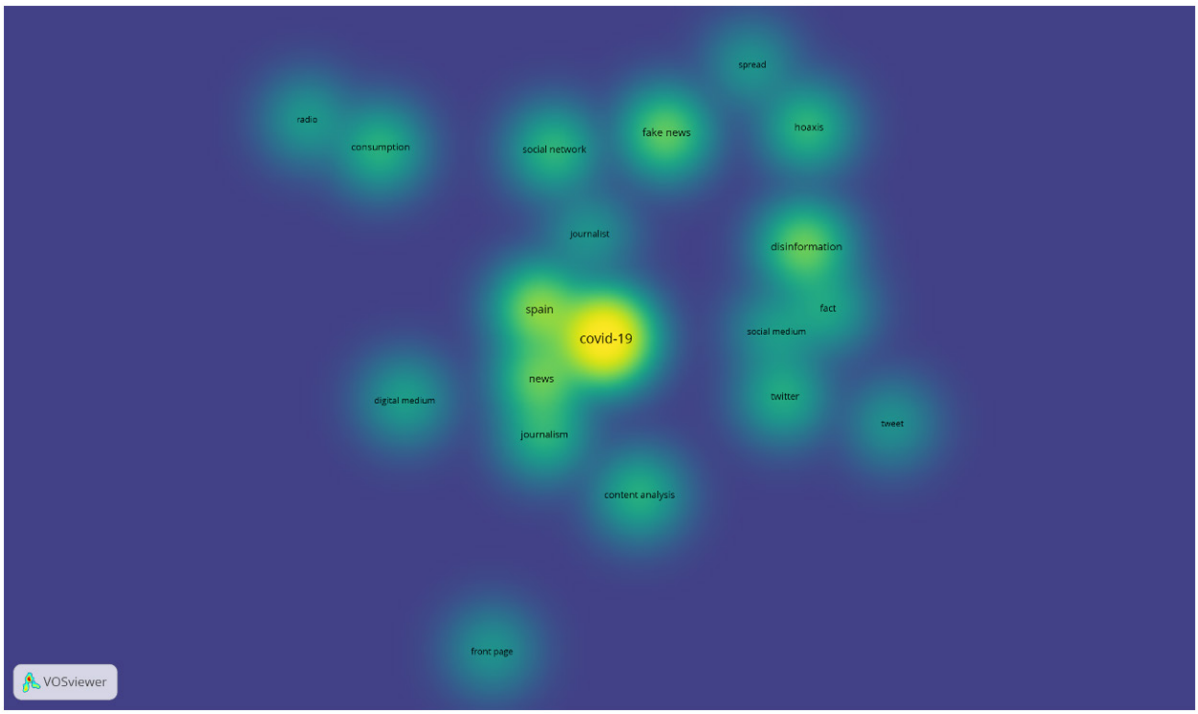
The category of "informatics" represents 2.4% of the studies, encompassing hemerographic, bibliometric, and website analysis. It should be noted, however, that informetric analyses have been detected in studies with other main methodologies. Some studies that inductively analyzed content have occasionally used informetric approaches to complement their results, albeit as a secondary methodology.

A certain number of methodological strategies have also been identified that have appeared with a frequency of less than 1% (i.e., in a single article). They are mentioned below to demonstrate the methodological richness of the field: experiments, focus groups, critical essays, educational interventions with impact measurement, and critical analysis strategies.

4.4. Themes present on the research articles

Figure 6 shows a VOSViewer heatmap based on a co-word analysis of the title, abstract, and keywords fields. The centrality of COVID-19 and Spain as fundamental elements is apparent, followed by a high density of terms related to misinformation (fake news, hoaxes, disinformation), another block related to journalism (journalism, news, frontpages), and finally an extended presence of social media.

Figure 6: *VOSViewer density map.*



Source: Author´s own work.

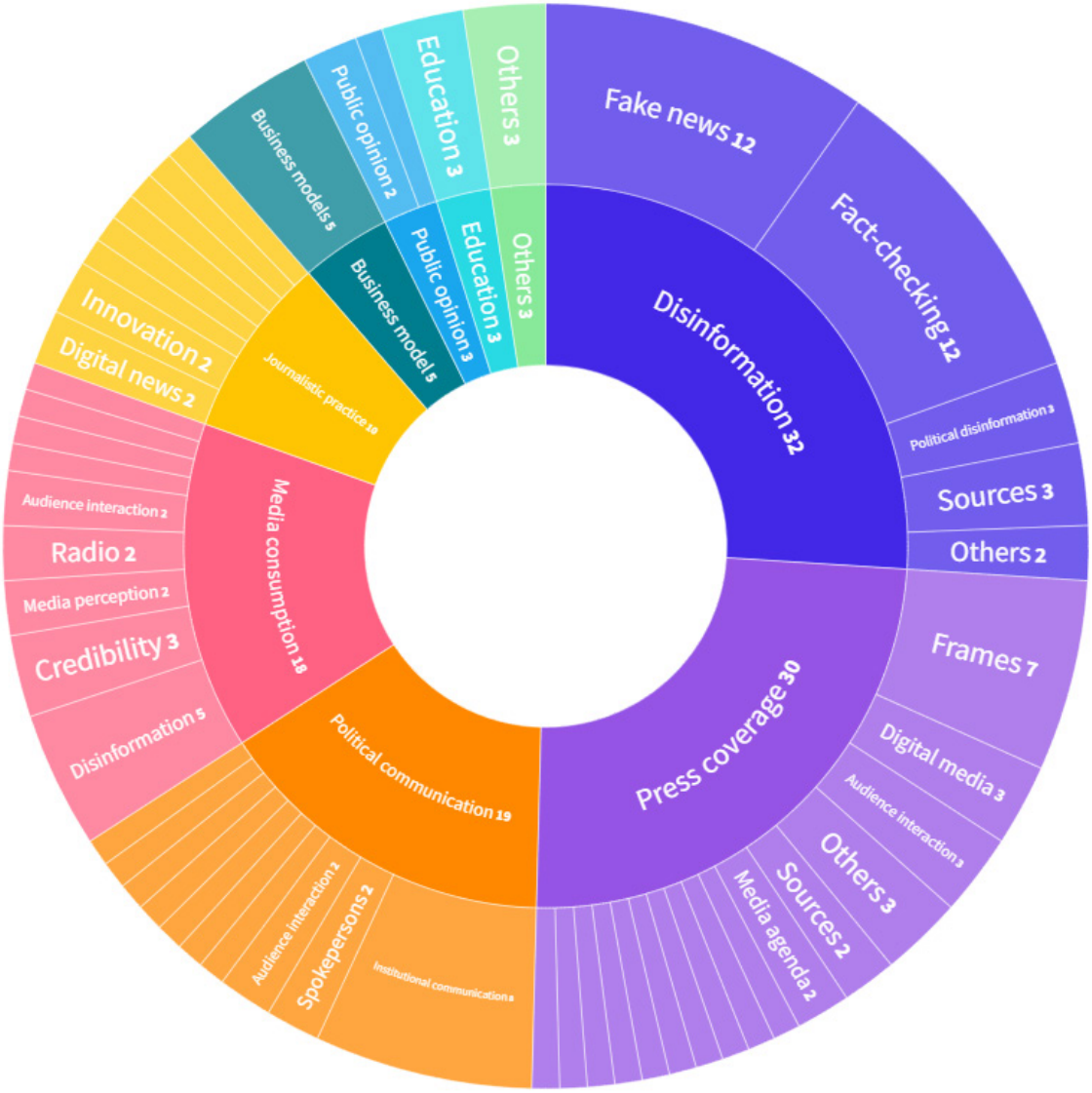
The data from the manual inductive analysis is consistent with the word clustering, and at the same time allows for a better conceptualization of the phenomenon. Figure 7 summarizes the results.

A total of 26% of the analyzed articles have disinformation as their main thematic focus, either addressing fake news, analyzing the fact-checking process, or investigating hoaxes and content distribution. In the second place, media coverage is the main theme of 24% of the works. These are analyses with a specific objective (different from disinformation), which generates a wide variety

of subthemes: from the study of frames and topics in the coverage of different media to the study of sources, political appearances, journalistic genres, journalistic ethics, use of images and visual resources, etc.

To a lesser extent, political communication represents 15% of the analyzed publications, with a special focus on institutional communication (from spokespersons, organizations, governments, or others). Thirdly, themes related to media consumption were identified in 14.5% of the articles. Finally, there were fewer studies that addressed journalistic practice (12.4%) and new business models for media outlets (6.2%).

Figure 7: *Classification of themes and their sub-themes.*



Source: Author's own work.

4.5. Data sources

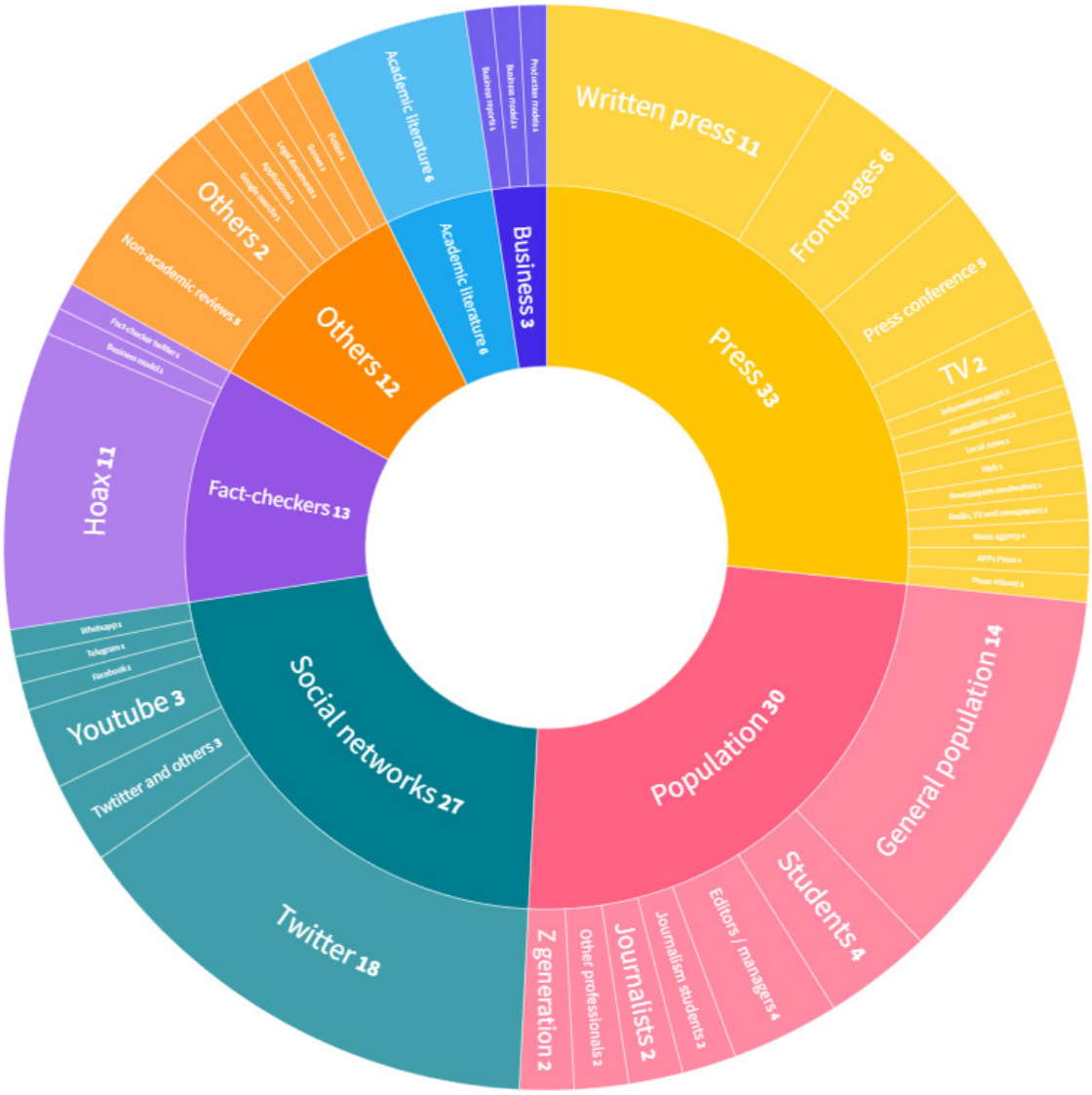
The following, we analyzed where the data for these studies was obtained from. In 27% of the articles, the object of study was the press (news pieces, front pages, press conferences, TV, radio...).

Secondly, the population has been used as a source of information (in 24% of the works). Most of the time, the sample was not segmented, although specific groups such as professionals, journalism students, or editors have also been studied.

Social media has served as a source for 22% of the research, with Twitter being the main one by far.

Fact-checking organizations have provided data in 10% of cases: generally, based on the hoaxes they have described and which have served as the unit of analysis for the research, although their business model and institutional communications on social networks have also been studied.

Figure 8: *Classification of the sources used.*



Source: Author's own work.

4.6. Impact on citations by methodology, theme, and source

Figure 9 shows the average number of citations received by articles based on their methodological, thematic, and source classification. To avoid biases, this analysis excluded the three articles with the

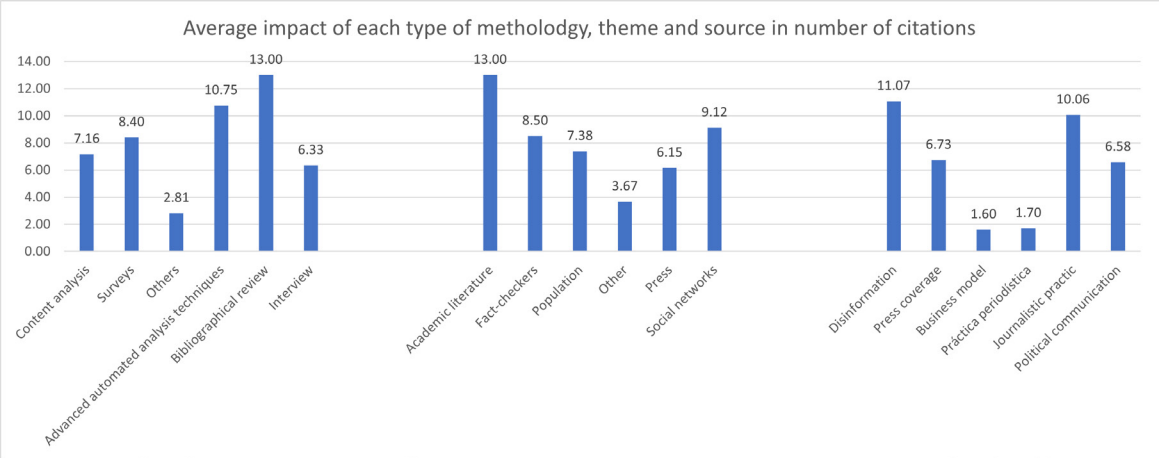
highest number of citations at the time of analysis (213, 187, and 114, respectively) as they increased the margin of error. Therefore, the final sample size of the analyzed population is 121 journals, and the graph includes all categories with at least 5 articles.

The methodology that generates the most impact, quantified by the number of citations, is literature review (13 citations/article), followed by computational analysis of social networks (10.75), surveys (8.40), and content analysis (7.16). Interviews (6.33) and minority methodologies, grouped as others, (2.81), are the least productive in terms of citations.

The source of data with the greatest impact is academic literature (from which bibliographic reviews are derived) since it has 13 citations per article. It is followed by the study of social networks (9.12). It should be noted that this value is lower than that of computational analysis of social networks because it includes articles that are based on social networks but does so from the perspective of content analysis and, proportionally, receive fewer citations. The study of fact-checkers (8.50) has also proven to be relevant. The approach through press sources shows the second worst citation profile, with only 6.15 citations per article, surpassed only by minority sources (3.67).

Regarding thematic areas, most of the impact is concentrated in studies on disinformation (11.07) and media consumption (10.06). Media coverage (6.73), political communication (6.58), journalistic practice (1.7), and business models (1.6) are well below the average citations per article.

Figure 9: *Average impact of each type of methodology, theme and source in number of citations.*



Source: Author`s own work.

5. Discussion and Conclusions

5.1. Impact of research in COVID-19: the importance of being the first

Research on COVID-19 during the 2020-2022 period has generated a greater impact in terms of citations than rest publications in the field of journalism. These results are consistent with other research in the medical field (Gregorio-Chaviano et al., 2022), which also showed that COVID-19 articles in medical journals generated more citations than expected, representing 13% of articles but generating nearly 25% of the impact. Our data, applied to the field of journalism, demonstrate that the effect is even greater than in the medical case (11% of articles generate 40% of the impact).

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This may be due to several reasons: first, for a time it was the main element of debate and political and academic centrality, possibly increasing the visibility of these researches, both in academic and informative environments. There are studies that indicate that articles published during the early stages of the pandemic had high transmissibility in networks and weeks later reported a higher level of citations than the rest (Kousha and Thelwall, 2020). Second, there is the commitment of many journals to publish COVID-19-related research in open access (Besançon et al., 2021; Gardener et al., 2022), making them more susceptible to citations (Huang, 2020). Third, the fact that it is a topic of new origin implies a low number of publications (124 vs. 892), all of them linked thematically, which reinforces the citations between them and centralizes them in a concrete core of articles (mostly published in 2020) that concentrate the highest number of citations. This phenomenon has been observed in other research (Waltman et al., 2021), which indicates, in a general sense, that articles published in the early months of the pandemic received much greater attention, both in terms of citations and altimetric measurements.

Another factor that may be involved is the high production (above the expected effort in the field) of the academic discipline of journalism. Since the late 2000s, and due to the ANECA effect (Soriano, 2008; Delgado-López-Cozar et al., 2021), scientific production in the form of articles has skyrocketed in the discipline, thus reducing the average impact of the works. This situation would affect publications on COVID-19 to a lesser extent because, especially at first, there were hardly any articles addressing the topic. The evolution of the publication trend in the field, which until 2020 maintained an upward pace and now seems to be decreasing, will need to be studied in the coming years to understand if there is a paradigm shift or if other factors are playing a role.

In conclusion, and in a generic sense, it could be suggested that investigating a crisis, especially at the of it and when it is very present in the social landscape, brings a marked academic benefit.

The fact that there are more citations does not necessarily imply that these articles are innovative or of better quality than the rest of the production. Firstly, the articles that accumulate more citations, up to 86% of the total (those published during 2020), have been carried out in very short time periods (between one and nine months), leading to the conclusion that planning and data collection may have been partial and that their success is determined by the timing of their publication. In this sense, the eight articles with the most citations (together they gather up to 809, about 60% of the total) were published between March and July 2020. While the review processes during that time were much faster, this fact indicates that the research was carried out in a very short period, especially when compared to similar articles published in 2021 or 2022, with which they usually share the methodology and subject matter.

Likewise, these articles were initially less funded, since in the early stages of the pandemic there were no subsidized projects for the study of COVID-19. Despite this, lines were quickly opened to support this research (although more focused on biological or health sciences). According to Shueb et al. (2022), only 32% of published articles received funding. These indicators (promptness and speed of research, lack of funding, and still preliminary or partial data) may lead us to assume that these investigations are not as robust as one might expect, and yet they have received strong support from the academic community.

5.2. Methodology and COVID-19: the classical and descriptive approach is still maintained, but innovation in social networks generates more impact

In a methodological sense, it is observed that the approaches taken do not differ from what is expected in the field of social sciences and communication, unlike what has been studied in more general

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scientific contexts, where an increase in scientific novelty and innovation, as well as collaboration lines, has been detected (Liu et al., 2022).

The most identified approach is content analysis (in 49% of the research), a catch-all term that encompasses much of the qualitative (and sometimes quantitative) research done in social sciences. Despite being the most commonly used, it does not have the best impact (7.16 citations per article on average). These analyses are characterized by the study of a particular piece of information and content in a manual way, that is, under the criteria and parameters set by the researchers. Although it is the most recurrent element, it is not without certain risks or problems, such as possible bias, delimitation of the sample for measurability, interpretation of data, and the lack of ability to extrapolate findings due to the lack of a statistical approach that is not descriptive.

The most effective method in terms of impact (beyond the bibliographic review, which is generally considered one of the most profitable methods in terms of citations received) is computational social network analysis. This relatively novel strategy allows the handling of large datasets for the study of interactions and the automated coding of codes, sentiments, and others.

However, this is still a minority methodology (only 9.6% of the research uses computational methods for social network analysis). In fact, more than half of the studies that have analyzed social networks have done so with a content analysis approach (12 computationally and 15 with content analysis). This demonstrates that, despite the existence of innovative analysis strategies, classic analyses still predominate, in most cases with manual coding and sample selection (either random or inclusion criteria). These manual approaches have the advantage of enabling more discourse-based conclusions to be drawn, as they allow for more refined qualitative analyses than quantitative approaches since it is easy to adapt the data to the discourse. However, they suffer from much smaller samples and a much-reduced statistical and population impact.

Surveys (8.40) are shown to be more effective than interviews (6.33). This may confirm the increasingly prevalent trend of prioritizing large datasets over more qualitative results, highlighting the transition of communication science towards a more quantitative context. The same happens with content analysis, which shows a worse profile than computational analysis, which is more quantitative in nature.

Less common and innovative samples, such as interventions to quantify effects (López-Flamarique and Planillo-Artola, 2021), and experimental contexts to determine the impact or effect of an independent variable (Folkvord et al., 2022), generate a much-reduced impact. In part, this can be explained by the fact that similar research is often cited, which easily excludes innovative work, although this does not prevent them from gaining ground in the scientific field in the future.

5.3. Sources and COVID-19: press still predominates, but social media and fact-checkers generate more impact

The most used source is the press (27% of the articles), as expected in a grouping of articles organized by the algorithm around the concept of journalism. However, it is the source with the worst citation impact (6.15), once minor sources are excluded. This seems to indicate that researchers continue to frequently rely on the study of the press, although it is becoming less relevant to the scientific community. The most common way of studying the press is through content analysis in 29 out of 33 cases, possibly reinforcing the classic idea of academic study in the field.

Despite this, the fact that almost 22% of the publications have shifted towards the study of social media illustrates that the field of journalism study may be moving away from classic media coverage in the press to cover other levels of analysis, a phenomenon already studied by some authors (Herrero-Solana and Ramos-Ruiz, 2022). This occurs even when in many cases this study also involves analyzing media behavior on social networks. In fact, we find a higher academic performance as they present up to 9.12 citations per article in studies that focus on social networks. The predominant source of information is Twitter, and only tangentially are other information channels such as WhatsApp, Telegram, or others studied, pointing again to the comfort zone of the academic community. It should be noted that the study of Twitter is relatively easier in methodological terms as there are many tools to obtain, classify, and describe the information.

Thanks to the explosion of research on misinformation, one of the sources that has recently gained prominence are fact-checking platforms (nearly 10%). The study of their products to combat misinformation has proven to be very profitable in terms of citations, as they have reported 8.50 citations per article. It would be worth reflecting on whether this research directed towards fact-checking companies and products has had an impact on the entities and activities analyzed or is merely descriptive in nature.

5.4. Topic of the study of COVID-19: disinformation is the majority, both in number and impact

Disinformation (26%) is the main theme found in the analyzed articles. Not only is it the most common research topic, but it also has the best citation profile (11.07). In 20 of the 33 studies, it was done through content analysis, generally using fact-checker products or on social media. Surveys of the population have also been used in some cases.

Media coverage, generally measured through content analysis of the press, is the second major thematic block, although with much less citation relevance (6.73). Once again, it is observed that classical study methods (such as content analysis of the press to codify journalistic codes and practices) generate less impact than the study of "hot" topics (such as disinformation), or those with more innovative methodological approaches (such as computational analysis on social media).

Political communication (6.58), business models (1.60), and journalistic practice (1.70) are the topics with the least impact in terms of citations, although the first has generated up to 19 research articles (generally focused on studying profiles on social media or press conferences held by different spokespersons).

This research has allowed to identify the academic behavior of journalism in relation to COVID-19. It is concluded that it was a more relevant area of study in terms of number of citations and impact than other topics in the field. A phenomenon of citation concentration in the early articles that emerged was also detected. No absolute methodological innovation was found, although more innovative studies appear to correlate with more citations. The dominant theme has been misinformation and fake news, exemplifying the transition that the field of communication has been experiencing in recent years. This research has meant a first step towards a new model of study of academic publications, based on algorithmic thematic groupings and impact analysis, which can be complemented in the future by increasing the number of topics analyzed and establishing correlations and comparisons with statistical significance to anticipate the future of the academic discipline of communication.

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