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Formulating the Novelty of Communication Research in Post-COVID-19 Era

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ARTICLE INFO	A B S T R A C T
	This study aimed to uncover innovative research topics about communication in the post-COVID-19 pandemic. Bibliometric analysis depicted research topic trends within a certain period from big data and online publications on specific sites to find research novelties. Data analysis used VosViewer. Several 1000 of the most relevant 5562 articles were analyzed using network, overlay, and density visualization. Network visualization analysis found 12 clusters with 13 communication topics. Further analysis indicated that three communication topics emerged as central themes. Novelty research was possible on other issues such as public relations, internal communication, communication theory, science communication, misinformation, and public opinion. An overlay visualization analysis revealed eight topics that lacked communication themes in recent COVID-19 research. However, opportunities for novel research were found in issues like information and communication technologies, crisis communication, public relations, internal communication, communication theory, science communication, and public opinion. The density visualization analysis revealed that previous studies focused on communication, risk communication, and social media. Therefore, this study suggests that future communication research during the post-COVID-19 recovery period should explore information and communication technologies, crisis communication, public relations, internal communication, communication theory, science communication, and public opinion.

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INTRODUCTION

The impact of the COVID-19 pandemic has shifted global research focus, including communication. From 2000 to 2019, communication was not a frequently used keyword in scientific publications on COVID-19 (Zhang & Shaw, 2020). However, the early stages of the pandemic highlighted the need for further investigation into COVID-19 and effective communication, as emphasized by the International Network of Government Science Advice (INGSA) and Zhang and Shaw (2020).

Extensive research has been conducted on communication during the COVID-19 pandemic, focusing on its effectiveness (Finset et al., 2020; Reddy & Gupta, 2020). The role and strategy of mass media (Anwar et al., 2020; Hafni et al., 2023; Mheidly & Fares, 2020), social media (Mohammed & Ferraris, 2021; Rahmanti et al., 2021), communication skills (Back, Tulsky, & Arnold, 2020), communication in times of crisis (Noar & Austin, 2020; Yu et al., 2021), hoax management (Hidayat, Rohendi & Christin, 2022), and trends in media use (Limilia & Pratama Way, 2020; Nguyen et al., 2020) have also been extensively discussed.

While pandemics declined in 2022 and 2023, some studies remain focused on pandemic-related topics (DeFilippis et al., 2022; Digby et al., 2023; Purnomo, 2022a; Evensen, Warren, & Bouder, 2023). However, more recent research has shifted towards post-pandemic scenarios (Caffrey, 2023; Kim et al., 2022; Purnomo, Pratidina, & Setiawan, 2022; Zhao et al., 2023).

The shift in communication research topics due to the pandemic requires attention. One research method that can provide an overview of trends in communication research topics is bibliometric analysis.

Bibliometric analysis is a common method for studying research trends over time (Chahrour et al., 2020; Donthu et al., 2021). This analysis can process large amounts of data and display the results as bibliometric maps (Donthu et al., 2021; Ho, 2018). Data for bibliometric analysis is sourced from online publications on specific websites (Azizah, Maryanti, & Nandiyanto, 2021). By analyzing extensive data from online publications on specific sites, bibliometric analysis can identify and describe research topic trends within a specific period.

Bibliometric analysis can assist in identifying research novelty. Researchers need information about previous similar research topics and trends to determine research novelty (Stefani et al., 2020). This. Method enables scholars to determine the novelty within frequently explored topics in the past literature. Novelty research can be formulated by addressing underexplored

themes (Mulyawati & Ramadhan, 2021) or between two or more topics that have not been examined simultaneously in earlier research (Yanuarti & Suprapto, 2021). Analysis of topics in all publications can produce novelty compared to studies in most cited articles (Wang, Veugelers, & Stephan, 2017). This method can identify potential research gaps and opportunities and provide valuable insight for researchers. Furthermore, it enhances understanding of the existing body of literature within a given field..

Post-COVID 19 communication research has yet to adequately address the novelty of communication studies. Previous studies have explored communication through bibliometric analyses. The study by Lei and Wang (2024) revealed that the most frequently appearing topics were health communication, communication technologies, and the effects of information dissemination. Moreover, other studies have identified social media, journalism, news, Twitter, Facebook, and Instagram as the most common keywords (Kurnaz, 2021). Some research has also focused on communication within specific domains, such as tourism (Molina-Collado et al., 2022; Purnomo, 2022a), health communication (de Las Heras-Pedrosa et al., 2022; Makkizadeh & Ebrahimi, 2022), cross-cultural communication (Luo & Jiang, 2023), and information and communication technologies (Vidal-Serrano et al., 2022).

After the COVID-19 pandemic, there were still studies on health communication (Bardus, Kabakian-Khasholian, & Kanj, 2024; Li, 2024). However, other studies have begun to address broader communication topics without specifically linking them to the COVID-19 pandemic (Saravanan, Thomas, & Ashikho, 2024; Suciati, 2024; Wan Noordin, Sukmayadi, & Christi, 2025).

This research differs from previous bibliometric analyses of communication research in terms of data sources and periods. Previous research used journal sources in communication from 2020-2021 (Kurnaz, 2021; Lei & Wang, 2023). However, more research is needed to identify communication trends during and after the COVID-19 pandemic. This research will help determine gaps, issues, and novelties in future research as the world enters the COVID-19 recovery period. This research will explore communication data sources and timeframes that have not been studied. Additionally, this research will assess the changes and challenges in communication resulting from the post-COVID-19 pandemic to provide a comprehensive overview and inform future research directions.

This study aimed to uncover innovative research topics about communication in the COVID-19 pandemic recovery phase. By utilizing bibliometric analysis to monitor trends in published articles from 2020-2023, we can identify 1) communication research topics during and after the pandemic, 2) track research trends by time and issue, and 3) formulate recommendations for further research. This study will provide

insight into the pandemic's impact on communication research. It will also provide potential solutions for leveraging communication in pandemic recovery. Finally, this research will inform and guide future communication research. It will also offer a novelty for researching communication themes in the post-pandemic era.

METHODOLOGY

The study employed bibliometric analysis as its primary methode. The research subjects consisted of articles from ScienceDirect that were selected using the keywords "communication" and "COVID-19." These articles were sourced from ScienceDirect, a platform that publishes Elsevier content and is commonly used in bibliometric analysis (Purnomo, 2022b; Purnomo, 2023a, b, c). The object of the study was the research topics found in selected articles using these keywords.

The data collection techniques were started by the data selection using "communication" and "COVID-19" keywords in ScienceDirect. The data selection included all journals and publication types. This step is undertaken in anticipation of the potential publication of research oncommunication topics that will be published in natural science, technology, or health journals. This process identified the publication of articles containing these keywords after 2019. Five articles in 2019 did not contain communication research topics. Therefore, the search mode adds advanced search with the keyword "communication" in the title, abstract, or

author-specified keywords. This change resulted in article publication data for 2020-2024, totaling 5,562 articles. The 2024 publication is not used because there are still too few articles (seven articles in the publication). The analysis focused on the 1000 most relevant articles to identify meaningful trends and patterns in the data (Purnomo, 2022b).

Data analysis using VosViewer software. VosViewer software is designed to conduct bibliometric analysis (Van Eck & Waltman, 2010).

The data from these articles was then subjected to analysis in order to determine the number of publications per year, the number of publications per subject area, and the publishers associated with these articles.

Subsequently, the research team conducted a co-word analysis, a methodological approach entailing the examination of the vocabulary employed in the title, keywords, abstract, and content of the articles (Van Eck & Waltman, 2010). It is critical to note that researchers do not only analyze keywords (Zhang & Shaw, 2020). The 2021 version of VosViewer displays the relationship between words in the title, keywords, abstract, and content. Focusing solely on keywords can limit the potential co-occurring words in the title, abstract, and content. The research selected five co-words, with "communication" appearing three times in the title, keyword, abstract, and content (Van Eck & Waltman, 2010). This process generated a list of 2,728 keywords, of which 87 matched the required criteria. The research did not

omit specific keywords or choose the most relevant ones. This step was to comprehensively understand the research on "communication" and "COVID-19" in all articles.

The post-COVID analyses were conducted using data from 2023, when the World Health Organization declared the COVID-19 pandemic period ended on May 5, 2023 (World Health Organization, May 2023). However, it is still challenging to separate extensive research data from ScienceDirect in June 2023, so post-pandemic COVID-19 research data was taken from the latest data from an overlay visualization analysis.

Three visualization types were used to identify communication research topics during and after the pandemic: network visualization, overlay visualization, and density visualization. Network visualization analyzed topic clusters and their links, while overlay visualization identified research topic trends based on publication time. Density visualization determines the density of research per topic.

The findings from these visualizations can be used to identify research trends by time and issue and suggest novelty topics for future studies. These findings can serve as a valuable tool for researchers to identify and explore new research areas.

RESULTS AND DISCUSSIONS

1. Development of Publications and Publishers

Figure 1 shows an increase in Covid-19 communication issues publications from 2020 to 2023. The number of publications at the beginning of the pandemic was reasonable, but reached its peak in 2022. As the pandemic has declined, the number of publications addressing COVID-19 communication issues has increased significantly, with the most publications appearing in 2022.

However, the average number of monthly publications in 2023 has surpassed that of 2022. This data suggests that research on COVID-19 communication remains a high priority until 2023. This trend demonstrates the enduring importance of studying communication during the post-pandemic period, even after the pandemic subsided. The bibliometric analysis conducted in 2020-2021 (Kurnaz, 2021; Lei & Wang, 2023) did not reveal any significant trends for most publications. This data also indicates that communication research during pandemic and post-pandemic periods still receives attention from researchers.
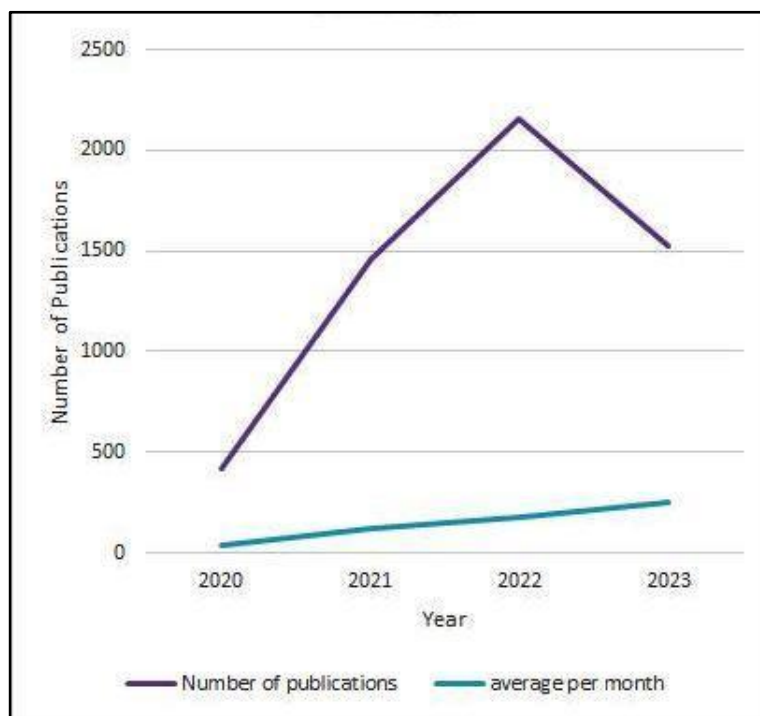
Figure 1. Development of Research on Communication and COVID-19

Source: Processed from ScienceDirect (2023 July 6)

Table 1 on ScienceDirect confirms that COVID-19 and communication research publications are primarily found within health and social sciences subjects. Communication was not the sole focus. These findings are consistent with previous studies that emphasize health communication (de Las Heras-Pedrosa et al., 2022; Lei & Wang, 2023; Makkizadeh & Ebrahimi, 2022). Most communication research is conducted by social science researchers, particularly in tourism and culture (Luo & Jiang, 2023; Molina-Collado et al., 2022; Purnomo, 2022a). These studies demonstrate that communication is just one factor that contributes to the overall health of a society. Other factors, such as psychological, economic, and environmental factors, all play a role in determining the health of a society.

Table 2 reveals the top ten journals with the most research publications on communication and COVID-19. However, it is concerning that most publishers neglect communication journals, with health sector publishers dominating the field. This data indicates that health sector scientists prioritized COVID-19 and communication research over their general communication practices. This finding aligns with previous findings by Lei & Wang (2023). Nevertheless, the International Network of Government Science Advice/INGSA (2020) and Zhang & Communication scientists must pay attention to the research suggestions

related to COVID-19 and communication to ensure they explore the topic properly (Shaw, 2020).

Table 1. Number of Publication in Subject Area in 2020-2023

No.	Subject Area	Number of Publications
1	Medicine and Dentistry	2,756
2	Social Sciences	1,164
3	Nursing and Health Professions	824
4	Computer Science	555
5	Business, Management and Accounting	464
6	Psychology	449
7	Engineering	373
8	Environmental Science	343
9	Neuroscience	310
10	Immunology and Microbiology	308

Source: Processed from ScienceDirect (2023 July 6)

Table 2. Number of Publication and Publisher in 2020-2023

No.	Journal Name	Number of Publication
1	Patient Education and Counseling	160
2	Journal of Pain and Symptom Management	113
3	Vaccine	104

No.	Journal Name	Number of Publication
4	International Journal of Disaster Risk Reduction	77
5	Heliyon	78
6	International Journal of Disaster Risk Reduction	77
7	Procedia Computer Science	74
8	Social Science & Medicine	54
9	Technological Forecasting and Social Change	51
10	Computers in Human Behavior	46

Source: Processed from ScienceDirect (2023 July 6)

2. Visualization communication and COVID-19 topic area using VOSviewer

Figure 2 shows a network visualization analysis that found clusters of 12 communication and COVID-19 research topics. Each cluster has a particular focus. Cluster 1 (marked in red) focuses on communication topics. Cluster 1 contains 16 items, namely communication, communication skills, content analysis, dementia, information and communication technology, intensive care unit, mechanical ventilation, medical students, mental health, nursing students, older adults, patient care, patient-centered care, patient-clinical communication, qualitative research, and systematic review.

Cluster 2 (marked in green) concentrates on COVID-19. Cluster 2 has 12 items consisting of COVID-19, education, health equity, infodemic, media, pandemic, public health, public health communication, science communication, telehealth, telemedicine, and videoconferencing. Cluster 3 (marked in dark blue) focuses on vaccination. Cluster 3 has 11 items: COVID-19 vaccine, COVID-19 vaccines, health policy, immunization, misinformation, public opinion, sentiment analysis, vaccination, vaccine acceptance, vaccine hesitancy, and vaccines. Cluster 4, highlighted in yellow, focuses on anxiety. Cluster 4 has ten items: anxiety, cancer, depression, family, intensive care, nursing, patient-provider communication, quality improvement, SAR-cov-2, and stress.

Cluster 5 is purple, focusing on crisis communication. Cluster 5 has seven items: crisis communication, internal communication, machine learning, public relations, situational

crisis communication theory, social media, and Twitter. Cluster 6 is marked in light blue and centered on children. Cluster 6 has seven items: children, the COVID-19 pandemic, Italy, Nigeria, surveys, technology, and vaccine. Cluster 7 is highlighted in orange and centered on crisis management. Cluster 7 has six items: crisis management, health disparities, health literacy, lockdown, risk communication, and trust.

Cluster 8 is outlined in brown and centered on China. Cluster 8 has five items: China, crisis, health communication, pandemic, and risk. Cluster 9 is outlined in light purple, centered on critical care topics, and has four items: critical care, leadership, medical education, and palliative care. Cluster 10 is marked pink, centered on pregnancy, and has three items: COVID-19, pregnancy, and qualitative. Cluster 11 is

highlighted in light green, centered on information and communication technologies, and has three items: information and communication technologies, the internet, and students. Cluster 12 is marked in a pale pink, centered on resilience, and has three items: Coronavirus, resilience, and risk perception.

Figure 2 illustrates three communication research topics as the center topics: communication, information and communication technologies, and crisis communication. Other communication study topics are clustered. These topics are public relations, communication skills, internal communication, communication theory, social media, risk communication, health communication, science communication, misinformation, and public opinion
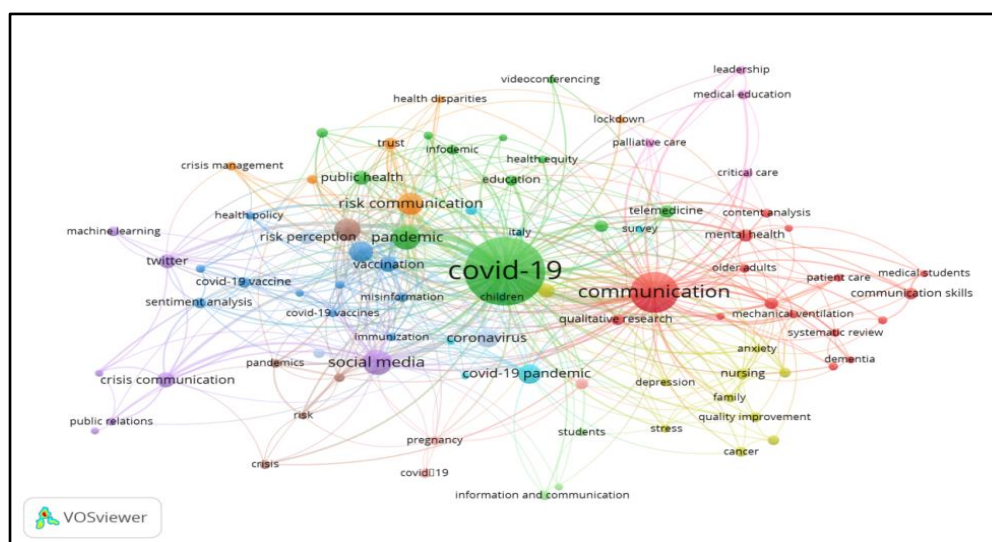

Figure 2. Network Visualization in Communication and Covid-19 Research Topic in 2020-2023

Source: Processed from ScienceDirect, 2023, July 6, 2023

3. Novel Opportunities for Further Research

Several communication research topics have yet to be explored further. Previous research discussed health communication (de Las Heras-Pedrosa et al., 2022; Lei & Wang, 2023; Makkizadeh & Ebrahimi, 2022), social media (Mohammed & Ferraris, 2021; Rahmanti et al., 2021), communication skills (Back, Tulsky, & Arnold, 2020), risk communication (Noar & Austin, 2020; Yu et al., 2021). Topics that have not been researched have the opportunity to build novelty for further research (Mulyawati & Ramadhan, 2021). These topics are public relations, internal communication, communication theory, science communication, misinformation, and public opinion. By researching topics that have not previously been explored, researchers can contribute to advancing knowledge about those topics.

Figure 3 presents research trends and issues. The overlay visualization map displays the latest topics in bright yellow. In the 2022.6 period, the latest topics are content analysis (cluster 1), COVID-19 vaccines, COVID-19 vaccines (cluster 3), family, nursing (cluster 4), pregnancy, qualitative (cluster 10), and students (cluster 11). These topics were studied during the COVID-19 vaccination period (2022) and the non-pandemic period in May 2023. According to the data, the latest topic does not include communication research topics. The absence of a communication topic in the most recent COVID-19 research has the opportunity to build novelty in communication research (Mulyawati & Ramadhan, 2021). To further extend the findings of Mulyawati and Ramadhan (2021), communication research topics must be included in future COVID-19 research as this could open new avenues of exploration.
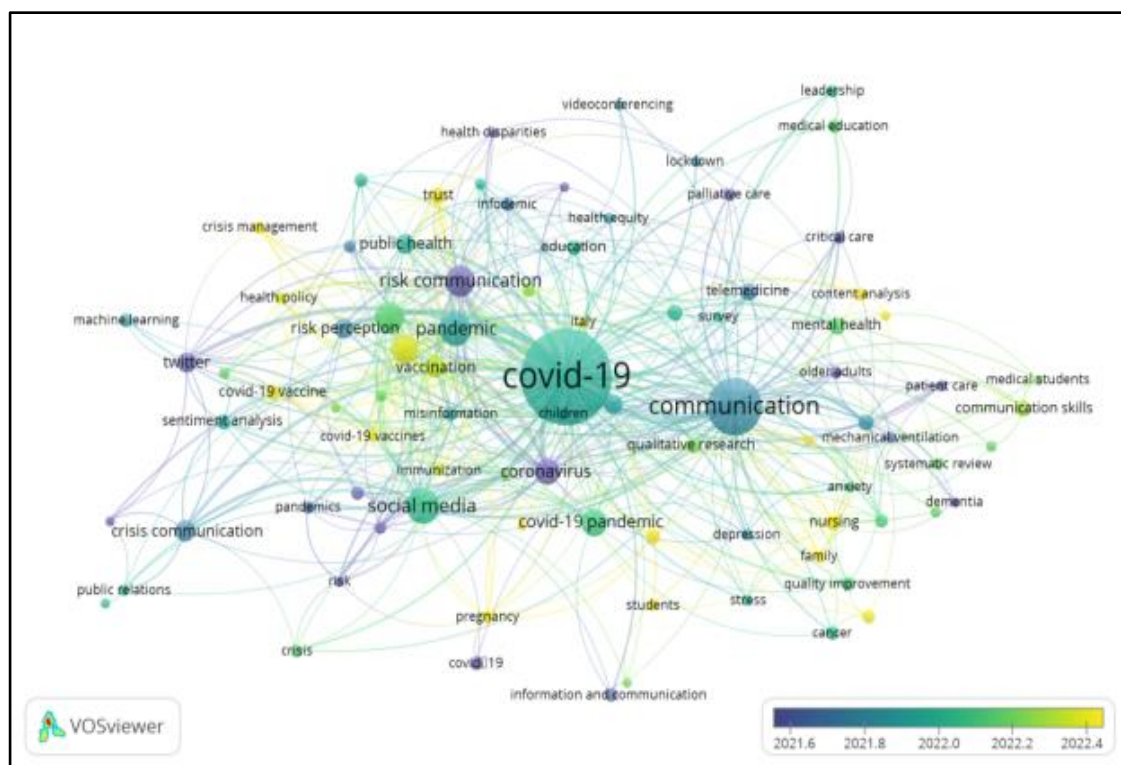
Figure 3. Overlay Visualization in Communication and COVID-19 Research Topic in 2020-2023

Source: Processed from ScienceDirect, 2023, July 6, 2023

Figure 3 displays the topics recently reviewed concerning other topics. Content analysis has been jointly studied with COVID-19, social media, risk communication, and patient-clinical communication. Pregnancy has been researched through social media, COVID-19, qualitative risk, Coronavirus, immunization, vaccine hesitancy, and health communication. Qualitative topics have been examined alongside family, nursing, intensive care, COVID-19, children, public health, telehealth, and pregnancy. The topics of students have been explored, including COVID-19, communication, the internet, education, and nursing. The COVID-19 vaccine has been examined through sentiment analysis, public opinion, China, social media, the pandemic, COVID-19, trust, vaccine acceptance, communication, vaccine hesitancy, and vaccination.

The topic of COVID-19 vaccines has been studied together with sentiment analysis, social media, pandemic, vaccines, COVID-19, vaccine hesitancy, misinformation, health communication, Nigeria, risk communication, health policy, and vaccination. The topic of family has been researched in terms of nursing, qualitative, cancer, COVID-19, communication, critical care, intensive care, and stress. Nursing has been jointly researched with COVID-19, qualitative, students, stress, communication, anxiety, depression, communication skills, Coronavirus, quality improvement, patient care, telemedicine, mental health, dementia, and patient-centered care.

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Qualitative topics related to COVID-19, nursing, family, pregnancy, telehealth, and public health have been studied.

This data demonstrates that among the communication research topics related to COVID-19, topics that have yet to be studied together with the latest topics are information and communication technologies, crisis communication, public relations, internal communication, communication theory, science communication, and public opinion.

These topics have novelty opportunities for further research. Linking communication topics to the latest topics that have never been researched is an opportunity for novelty (Yanuarti & Suprapto, 2021), for example, between family and risk communication. For instance, exploring the relationship between family dynamics and risk communication provides a unique avenue for further research.

The density visualization's light color indicates that much research has been conducted on the topic (Al Husaeni & Nandiyanto, 2022; Donthu et al., 2021; Van Eck & Waltman, 2010). Figure 4 shows that most communication research and COVID-19 is on COVID-19, communication, pandemic, risk communication, risk perception, social media, and vaccination. Figure 4 shows that previous research discussed communication topics like communication, risk communication, and social media. Other communication research topics still have the opportunity to develop novelty in further research (Mulyawati & Ramadhan, 2021; Stefani et al., 2020; Yanuarti & Suprapto, 2021). In contrast to existing research, there is still a need to explore further topics such as information and communication technologies, crisis communication, public relations, internal communication, communication theory, science communication, and public opinion in order to gain a more comprehensive understanding of the impact of COVID-19 on communication. Research on these topics has the potential to produce novelty.
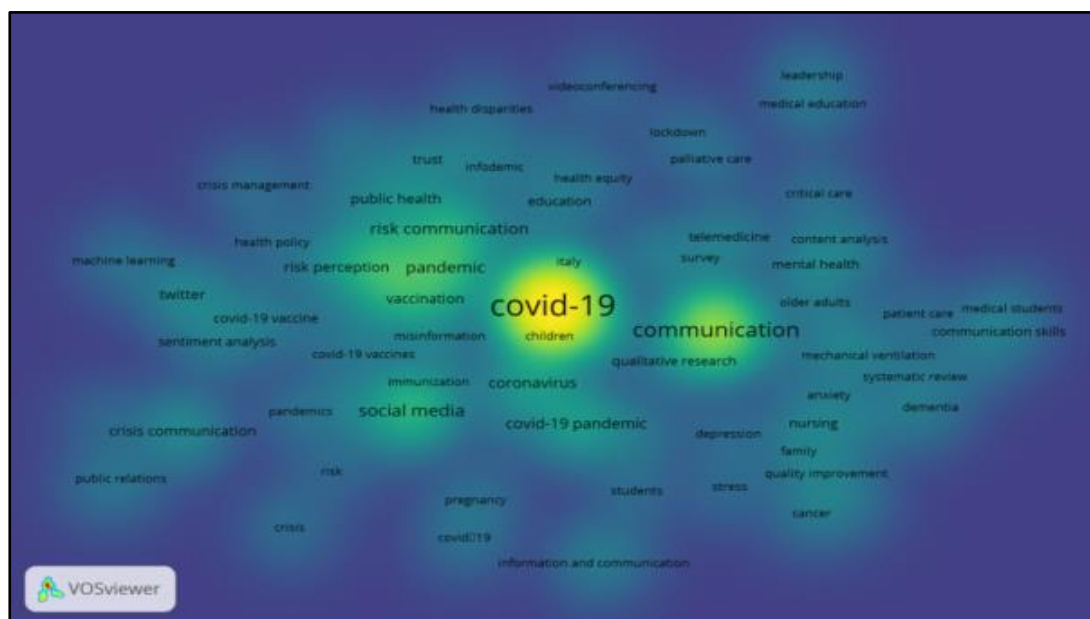
Figure 4. Density Visualization in Communication and COVID-19 Research Topic in 2020-2023

Source: Processed from ScienceDirect, 2023, July 6, 2023

CONCLUSION

This study explored a fundamental question: In the post-pandemic era, what novel directions can communication research pursue? Using bibliometric analysis of 1,000 relevant articles from ScienceDirect published between 2020 and 2023. The study revealed the evolution of communication scholarship during and following the pandemic, with a focus on its future directions

The network visualization identified three core themes that dominated the field: communication, information and communication technologies, and crisis communication. Meanwhile, other potentially rich topics, such as public relations, internal communication, communication theory, science communication, misinformation, and public opinion, were less developed or peripheral in the research landscape.

The overlay visualization revealed that while recent publications have increasingly addressed topics such as content analysis, COVID-19 vaccination, and broader social or educational issues, communication has not been the central lens in many of these studies. Conversely, the density visualization reveals that scholarly attention continues to be concentrated on a limited number of familiar themes, including social media, pandemic response, and risk communication. This pattern suggests that other equally significant areas remain relatively untouched.

This study attempts to bridge that gap by offering a more expansive and forward-oriented view of communication

research in the post-pandemic context. Whereas earlier bibliometric studies primarily emphasized health-related communication or social media usage during the height of the pandemic, this research moves beyond those boundaries to highlight underrepresented yet increasingly relevant topics.

From a theoretical standpoint, the study opens up new directions for developing conceptual frameworks that better reflect the evolving nature of communication in a post-crisis world. Practically, it provides a foundation for scholars, research institutions, and policymakers to pursue research agendas that are both contemporary and impactful, especially in areas that have not yet received sufficient scholarly attention.

The analysis points to several promising areas for future exploration, including information and communication technologies, crisis communication, internal communication, public relations, communication theory, science communication, and public opinion. These subjects have the potential to contribute to academic advancement and offer practical relevance in navigating communication challenges during recovery and future disruptions.

This study relied exclusively on ScienceDirect as the sole data source. Future studies should consider including additional sources such as Scopus or Google Scholar to better understand the communication research landscape. Comparative and cross-cultural analyses also enrich our understanding of how communication adapts under different social and institutional conditions during global transformation.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

I did the entire process of collecting and processing data as well as writing scripts.

DECLARATION OF COMPETING INTEREST

I certify that there is no conflict of interest with any financial, personal, or other relationships with other people or organizations related to the material discussed in the manuscript.

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