

# The Effects of Infodemic During Covid-19 On Mental Health

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## Abstract

**Background:** The large volume of unprofessional information, misinformation, false news and the spread of conspiracy theories through social networks, has affected the distraction of the public, causing the appearance of psychological symptoms such as: anxiety, depression, stress, fear, insomnia, panic, etc. The purpose of this study is to identify the negative effects of infodemic on mental health, disseminated on social media during the COVID-19 pandemic.

**Methods:** Systematic literature search was performed, conducted in freely accessible databases at PubMed, PsycINFO, ScienceDirect and Google Scholar, from January 2020 to April 2022. To avoid the possibility of risk of bias, the study followed structure based on the guidelines of Transparent Reporting Systematic Review and Meta-Analysis (PRISMA 2021).

**Results:** The study included 13 scientific studies with a total sample size of 1709283 participants, spread across 45 countries and aged  $\geq 10$  years. Also 3 more study reports were included distributed in 35 states with more than 2520 participants over the age of 18 and 8 media articles.

**Limitations:** The study of infodemic is relatively new, has little data on negative psychological effects and has heterogeneity in the methodologies used.

**Conclusions:** The literature used supports the link that infodemic information and long navigation on social media affect the deterioration of mental health. In Albania, no specific study has been conducted on the psychological effects of infodemic, but based on the analysis of several study reports, media publications and public statements, they conclude that the pandemic period has affected the deterioration of mental health in a part of the population. Based on the cited research, there is still no exhaustive and lengthy explanation for the negative effects of infodemic and social media on mental health during epidemics or pandemics.

**Keywords:** COVID-19; misinformation; infodemic; fake news; social media; mental health; conspiracy theories

## Introduction

The worldwide mass use of smartphones opens up numerous opportunities for people to have instant access to information about health. Health communication is a research field that emerged in the 1980s and focuses on the impact of communication on the health aspects of a given population. The Ministry of Health and Social Protection and the Institute of Public Health drafted the action plan for the management of the COVID-19 pandemic, in which the risk communication was included. The risk communication plan included authorities and sectors from different organizational levels of health. The main principles that will be applied in all communication activities are: transparent use of information, clarification of communication risk, use of existing communication channels and protocols, use of clear and consistent messages, provision of relevant information at the moment proper and occasionally. The period of the COVID-19 pandemic was accompanied by a wide complexity of scientific knowledge and methods, where the degree of difficulty in communicating to a wide audience increased, especially in light of the numerous channels of information transmission (Ruths, 2019). At the same time, constant reviews of evidence and an oversized and changing

information landscape can cause confusion for policymakers and civil society (Gallotti et al., 2020). The rapid spread of information on social media, in the form of fake news, misinformation and conspiracy theories, has affected the psychological well-being of the population.

The study aims to review the existing literature of the last two years focusing on the psychological effects of infodemia. Based on research and media reports, the paper will reflect the effect of fake news and conspiracy theories on the population of several neighboring countries in the region.

## 2. Methods

Systematic literature search was performed, conducted in freely accessible databases at PubMed, PsycINFO, ScienceDirect and Google Scholar, from January 2020 to April 2022. To avoid the possibility of risk of bias, the study followed structure based on the guidelines of Transparent Reporting Systematic Review and Meta-Analysis (PRISMA 2021).

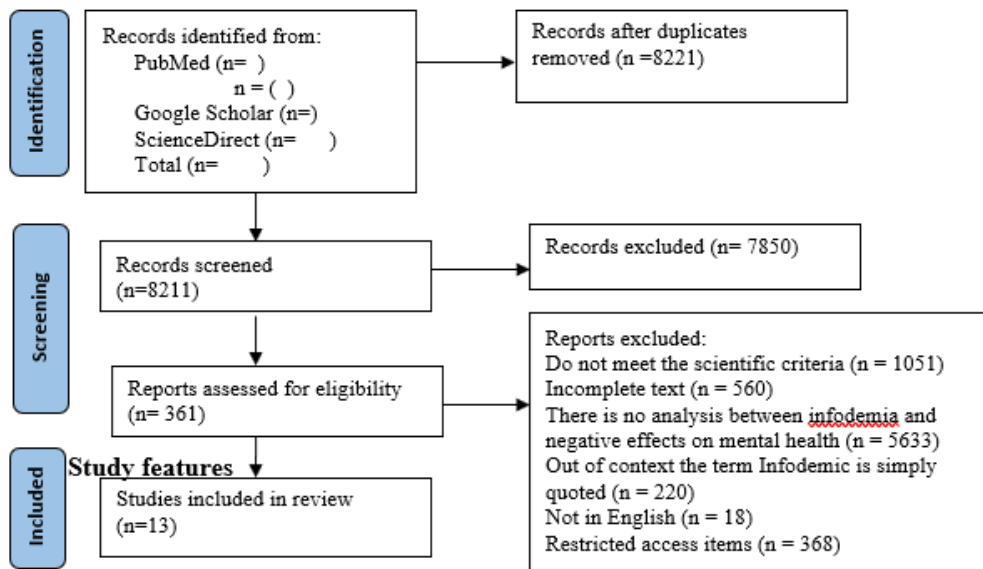
### 2.1. Research strategy

The research strategies were developed by identifying the items using the following research terms: “(infodemic and mental health) or (COVID-19 and stress) or (social media and fake news) or (misinformation and psychological distress) or (conspiracy theories and depression) or (SARS-CoV-2 and anxiety)”.

**2.2. Inclusion and exclusion criteria**

The research terms are particularly focused on cross-sectional studies that have a wide geographical scope and involve a considerable sampling number. Only complete articles written in English are included in the literature used for the original research. English and Albanian languages are included in the study reports and media articles.

**2.3. Risk assessment by the bias of the studies included**



**Figure 1:** Search strategy flowchart

The literature used is based on the quality of the journal, methodological approach, age, geographical spread, population included in the study and readability measured according to Mendeley (Table. 1). Also, in the study reports are taken into account the publishing institution, authors, methodological criteria and bibliographic data (Table 2). Media articles include publications that have used scientific methods such as: online surveys, viewership, and social media interactions (Table 3).

**3. Results**

All studies published from January 2020 to April 20, 2022, including English and Albanian studies. Based on the selective criteria 13 items were considered appropriate for use (Fig. 1). For scientific articles, the study was designed and followed the guidelines of the report for systematic review in the PRISMA process (PRISMA, 2021).

original scientific articles included, seven used cross-sectional methods, four applied quantitative methods (online surveys), and two utilized systematic literature review. The total number of samples is

1709283 participants, spread over 45 countries and aged ≥10 years. Also included were 3 study reports distributed in 35 states with more than 2520 participants over the age of 18 and 8 media articles

Year	Data source	Type of article	Sample size	Age of participants	Findings/results	Place/s	Article Metrics
2020	Science Advances	A cross-sectional study	35000	≥18 years	Exposure to daily news related to COVID-19, could manifest acute stress and depressive symptoms, in people with previous aggravated mental and physical condition.	USA	<b>241</b> readers on Mendeley
2020	PLoS ONE	A cross-sectional study	4872	≥18 years	The prevalence of depression and anxiety increased due to the long stay on social media.	China	2793 readers on Mendeley
2020	Sage Journal	A cross-sectional study	Three studies (total number = 806)	≥18 years	COVID-19, believed to be a hoax and was man-made.	USA. UK	<b>365</b> readers on Mendeley
2020	<a href="#">Journal of Medical Internet Research</a>	Quantitative survey	516	18-35 years	75%, responded that social media has a significant impact on the spread of fear, anxiety and panic.	Kurdistan of Iraq	<b>1041</b> readers on Mendeley
2020	British Journal of Health Psychology	Cross-Sectional Study	501	≥18 years	34% reported positive correlations between exposure to social media news and depressive symptoms.	USA	<b>287</b> readers on Mendeley

2021	Front Psychiatry	Quantitative survey	1483	≥18 years	Excessive exposure to pandemic-related media was a predictor of acute stress.	China	46 readers on Mendeley
2021	Springer Link	A systematic review	14 studies (Total number = 571729)	≥18 years	36% of the authors reported that exposure to infodemic information generated fear, panic, depression, stress and anxiety.	Palestine, Spain, India Bangladesh, Iraq, Mexico, USA, UK, Ireland, Jordan, China, South Africa, Poland, Romania	66 readers on Mendeley
2021	Front in Psychology	Quantitative survey	3123	≥18 years	Presence of anxiety in students who navigated longer on social media.	Shanghai	176 readers on Mendeley
2021	<i>Int. J. Environ. Res. Public Health</i>	Quantitative survey	3621	18 and 63 years,	1/3, reported difficulties in selecting information that was important to them	Slovenia	90 readers on Mendeley
2022	Journal of Medical Internet Research	Cross-National Survey	10063	≥18 years	Perceived information overload on social media tended to increase psychological concerns.	Hong Kong, Taiwan, Japan, South Korea, Singapore, and Thailand	4 readers on Mendeley
2022	Elsevier B.V.	Cross-Sectional Study	1102	from 18 to 84 years	People who stayed longer on social media were 93.3% more likely to develop depressive symptoms.	Paraguay	29 readers on Mendeley
2022	Journal of Multidisciplinary Healthcare	A Cross-Sectional Study	993	≥18 years	49% reported poor psychological well-being as a result of long navigation on social networks.	Saudi Arabia Lebanon, Egypt Australia, USA, Canada, Europe.	13 readers on Mendeley
2022	ScienceDirect	<b>A systematic review</b>	13 studies (Total number=760474)	From 10 to 24 years	Misinformation and low trust of information on social media affect the deterioration of mental health.	USA, China Iraq, Palestine, Egypt, Canada, Brazil	21 readers on Mendeley

Table 1: Original research article

Year	Data source	Type of article	Methodology	Sample size	Age of participants	Findings/results	Place/s
2021	Indexof Media Literacy	Study report	Quantitative study	Unspecified	Unspecified	Albania in 33rd place in terms of media education.	35 states
2021	Albanian Media Institute	Study report	Quantitative study	Unspecified	≥18 years	"33% believe in conspiracy theories about vaccination.	Albania
2021	UNICEF	Study report	Quantitative study	821	≥18 years	20% believe in conspiracy theories about vaccination.	Montenegro

Table 2: Study reports

Year	Source	Type of article	Findings/results	Place/s
2020	Faktoje.al	Articles from the Media	False news about coronavirus cure.	Albania
2020	Psycom	Website article	False or misleading news is intended to cause feelings of anger, doubt, anxiety and even depression by distorting thinking.	USA
2021	Reporter.al	Articles from the Media	2.95 million Views and 85,000 news interactions about anti-vaccination.	Albania
2021	<a href="#">Euronews Albania</a>	Articles from the Media	20%, are reluctant to be vaccinated.	Albania
2021	Penn Medicine News	Website article	Four in 10 adults reported symptoms of anxiety or depressive disorders.	USA
2022	Gazeta Shqip	Articles from the Media	2200 people from professional's health worker and higher education sector, 25% reported moderate to severe anxiety, 30% were classified as moderate depression, and over 50% had signs of insomnia.	Albania

2022	Revista Monitor	Website article	In 2021, there was an increase of patients admitted to psychiatric hospitals by 40%, compared to 2020.	Albania
2022	NewsGuard	Website article	547 websites that published misinformation.	6 countries

**Table 3:** Articles from the Media and Websites

#### 4. The spread of infodemic on social media

The term infodemic, which means "information epidemic", was coined by Rothkopf in 2003 to describe the amplifying news effect of severe acute respiratory syndrome (SARS) due to information technology. A more recent definition of infodemic highlighted the element of misinformation that is rapidly spreading through social media platforms and other media (Zarocostas, 2020). In this context, "infodemic" was redefined as an "abundance of information, a true part and an incorrect part, which occurs during an epidemic" (Tangcharoensathien et al., 2020). During the pandemic, government services were transferred to government online portals, and educational institutions began to use digital platforms. According to the World Vision Albania (2020) study report, about 81% of households reported having a smartphone and confirmed that 82% of Albanian households had internet access. In Albania, the average monthly consumption per active user of mobile internet services in 2020, increased by 12.4%, compared to the fourth quarter of 2019, and during the first quarter of 2021, the amount of internet traffic increased by 15.5% compared to the fourth quarter of 2020. A study conducted during the earthquake period for fake news and misinformation in Albania by the Institute for Democracy, Media and Culture (2019), where the online media were monitored, in the period from January 2019 to November 2019, have identified 132 fake news items considered problematic.

According to data analyzed by BIRN through "Crowdtangle", an application on Facebook, a public activist who opposes vaccination and spreads conspiracy theories has appeared in more than 700 news or videos posted on Facebook by Albanian media on the topic of "vaccines COVID-19". The videos have generated more than 2.95 million views and the posts more than 85 thousand interactions on the most popular social network in the country (Likmeta, 2020). The Media Literacy Index (2021), which addresses issues of media education, vulnerability to fake news and misinformation, ranks Albania 33rd with 22 points, BiH 34th with 19 points and Northern Macedonia 35th with 15 points. Analysis of a sample of 38 million English-language media reports, through Cision's Next Generation Communications Cloud (2020) platform, from January 1 to May 25, 2020, shows that over 1.1 million individual articles were misinformation about COVID-19. NewsGuard Technologies (2022), an American company that checks news sites and their authenticity, has focused in particular on information circulating on COVID-19 and vaccination during the pandemic. The network has identified 547 websites that published misinformation about COVID-19 in countries such as: USA,

UK, Canada, France, Germany and Italy. A cross-sectional survey conducted with 3621 students in Slovenia (2022) showed that, although the level of digital health education among students is sufficient, assessing the reliability of information remains problematic for half of the study participants. (Vrdelja et al., 2022).

#### 5. The formation of false beliefs through conspiratorial theories

False news can be defined as "false information, often sensational, disseminated under the guise of news reporting" (Collins-Dictionary, 2017). Analyzes of Google searches show that, before 2016, the term was used to localize satirical news. In late 2016, usage had shifted to research related to the US presidential election, Donald Trump, Twitter and CNN (Cunha et al., 2018).

By March 2020, 31% of Americans believed that COVID-19 was deliberately created and disseminated, despite the lack of any credible evidence (Ecker et al., 2022). There is a fundamental disconnect between what people believe and what they share on social media. This division is largely driven by inattention, rather than the deliberate dissemination of misinformation. The scholar Joseph E. Uscinski states that "conspiracy is a secret agreement between two or more actors to usurp political or economic power, to violate established rights, to collect vital secrets or to change illegally government institutions for personal gain at the expense of the common good" (Uscinski, 2019). For example, French Health Minister Olivier Véran shared inaccurate information saying the use of anti-inflammatory drugs (e.g., ibuprofen and cortisone) could exacerbate the infection. At a press conference in April 2020, US President Donald Trump incorrectly suggested that disinfectants could be used to treat COVID-19 (Ying & Cheng, 2021). Three studies conducted in the US, around conspiracy theories showed a positive correlation that COVID-19, believed to be a hoax and SARS-CoV-2 was man-made. Since the announcement of the austerity measures, fake news, photos and videos have been circulating in Albania, which have been widely shared on social networks. The information contained such recommendations: how to cure the virus only with home ingredients such as garlic, brandy, paracetamol (Hasanalaj, 2020). A survey published in early 2021 by "Biepag" on the spread of conspiracy theories about coronavirus in the Balkans showed that approximately 80 percent of Balkans believe in one or more conspiracy theories. While the number of those who believe more in one of the theories varies from 41.5% in Serbia to 59.4% in Albania. (Cela, 2021). Meanwhile, according to another survey conducted by the Institute for Development, Research and Alternatives, in Tirana, found that "33% of respondents believed that the 5G internet coverage network is one of the factors for the rapid spread of the virus, while "29% of respondents believed that through the vaccine will be placed microchips in humans to track them" (Idra, 2020). According to a survey published by Euronews Albania and MRB television (2021), about vaccination, approximately 46% of citizens answer that they would not get such a vaccine. Of those surveyed, 32.5% said they will be vaccinated as soon as possible, while 19.9% said they would wait several months to see if it has side effects and then take the injection. Some of the main statements made in some major television media about vaccination were: "the vaccine causes genetic changes", "the COVID-19 vaccine is a form of euthanasia", "those who are vaccinated will die after a year", "vaccines increase the number of homosexuals, as they deviate genes", "the vaccine causes sterility and prevents you from having children." According to a survey conducted by the research agency Ipsos in collaboration with Unicef (2021) on a national representative sample of 821 participants over the age of 18, every fifth Montenegrin citizen, so 20 percent of the population, believed in conspiracy theories related to vaccines.

#### 6. Psychological effects of infodemic

A study where participated 410 individuals, in Albania, found the presence of moderate symptoms of anxiety, depression and risk perception in health personnel (Kamberi et al., 2021). According to public health expert Alban Ylli, based on an online questionnaire in 2020, in a group of 2200 health and higher education professionals, data showed that about 25% of respondents presented moderate and severe anxiety, 30% were classified as moderate and severe depression, 6% presented with

clinical insomnia, while over 50% had signs of non-clinical insomnia (Gazeta Shqip, 2022). Also in 2021 according to the indicators of the public hospital service, there has been an increase of patients admitted to psychiatric hospitals by 40%, compared to 2020 (Monitor Magazine, 2022). A conducted survey by IDRA (2020) on March 19, suggested that about 76% of participants were concerned about the situation of COVID-19 in Albania, respectively 40% were extremely worried and 36% of them were worried (World Vision Albania, 2020). Findings of another study on the effects of COVID-19 pandemic on the mental health of Albanian employees, showed that for 51 percent of employees, pandemic has negatively affected psychological well-being (Gega, 2021) In Albania, five patients infected with SARS-CoV-2, committed suicide by jumping from the windows of the hospital where they were receiving treatment. Four of these died immediately, while the other died a day later (Nela, 2021). An online survey distributed between June 10 and July 31, 2020 through various social media platforms in the UAE and other Arabic-speaking countries, concluded that 49% of the participants reported poor well-being. Low trust in information about COVID-19, long stay on social networks and poor knowledge in general, was associated with deterioration of psychological well-being (Elbarazi, et al., 2022). According to a study conducted at the University of California, people with a previous severe mental and physical condition, after exposure to daily news related to COVID-19, were more likely to exhibit acute stress and depressive symptoms (Holman et al., 2020). Moreover from cross-sectional data collected from the University of Illinois and Chicago, found positive correlations between exposure to COVID-19 news and depressive symptoms in 34% of participants (Olagoke et al 2020). Based on a systematic review of the literature which reviewed 14 studies, the results showed that 36% of authors reported that exposure to infodemic information on social media generates fear, panic, depression and stress (Rocha, et al., 2021). A study in China, revealed that the prevalence of depression and anxiety, increased due to frequent follow-up to social media (Gao et al., 2020). Similar findings were reflected in another Chinese study, which revealed that overexposure to pandemic-related media was a predictor of acute stress (He et al., 2020). TikTok's popularity grew rapidly at the onset of COVID-19 pandemic, rising up to 180% among users aged 15-25 by 2020. During this time period, the Kaiser Foundation reported an increase in mental health concerns, approximately four in 10 adults in the United States, reported symptoms of anxiety or depressive disorder (Wood, 2021). In a study reporting on health workers in Egypt and Saudi Arabia, a link was found between exposure to news about COVID-19, for at least two hours a day, and symptoms of depression, anxiety, stress, and sleep disturbances (Arafa et al., 2021). According to an online survey conducted in Iraqi Kurdistan, 75.7% of participants reported that social media has an impact on spreading fear, anxiety and panic during the outbreak of the COVID-19 pandemic. A study conducted with students at the University of Shanghai, concluded that the part that used the most social media during the COVID-19 pandemic, had the highest presence of anxiety symptoms (Jiang, 2021). According to a systematic analysis based on 13 studies, the findings revealed that misinformation and low trust in information about coronavirus published on social media, affects the worsening of mental health (Strasser et al., 2022). Vasilis K. Pozios (2020) a forensic psychiatrist and co-founder of mental health and media consulting, Broadcast Thought, states that fake or misleading news is intended to manipulate public opinion, they are formulated to provoke an emotional response from a reader / viewer, is often provocative in nature and can

cause feelings of anger, doubt, anxiety and even depression by distorting our thinking (Erdelyi, 2020).

An international survey conducted with 10063 participants over the age of 18 in 6 Asian jurisdictions, found that perceived information overload on social media tended to increase psychological concerns and people with higher economic status were more vulnerable to problems of mental health (Chen, 2022). A descriptive and cross-sectional study conducted in Paraguay with 1102 participants surveyed aged 18 to 84 years, concluded that people who stayed long while navigating around the COVID-19 news were 93.3% more likely to develop depressive symptoms (Torales et al., 2022).

## 7. Discussions

From the systematic analysis of the literature used, the data display that misinformation, the dissemination of conspiracy theories or fake news, and the large amount of information on social media, has negatively impacted psychological well-being. State services during the pandemic were digitalized and provided online to the population, as well as educational institutions began to use digital platforms, about 82% of Albanian households had access to the Internet Vision Albania (2020). A poll published in early 2021, revealed that approximately 80 percent of Balkans believe in one or more conspiracy theories. While the number of those who believe more in one of the theories varies from 41.5% in Serbia to 59.4% in Albania. (Cela, 2021). Based on an online questionnaire in 2020, among 2200 health and higher education professionals, the data showed that about 25% of respondents presented moderate and severe anxiety, 30% were classified as depressed (Gazeta Shqip, 2022). Analysis of a sample of 38 million English-language media reports showed that over 1.1 million individual articles were misinformation about COVID-19, 31% of Americans believed that COVID-19 was man-made (Ecker et al., 2022). From cross-sectional data collected from a study in the USA, they found positive correlations between exposure to news about COVID-19 and depressive symptoms (Olagoke et al., 2020). According to a Chinese study, overexposure to information about COVID-19 pandemic in media was one of the predictors of acute stress (He et al., 2020). Similar conclusions were drawn from a study in Egypt and Saudi Arabia, where excessive reading of news about COVID-19 affected the onset of symptoms of depression, anxiety, stress, and sleep disturbances (Arafa et al., 2021). A survey conducted in six Asian jurisdictions found that information overloaded on social media was likely to increase psychological distress (Chen, 2022). According to a study conducted in Paraguay, people who spent long periods of time on social media seeking information about COVID-19 were 93.3% more likely to develop depressive symptoms (Torales et al., 2022).

## 8. Conclusions

Due to digitalization, the internet has become an integral part of our daily lives. The power of social media can be understood from recent reports claiming that by the end of 2022 around 3.29 billion social media users will be available worldwide, covering about 42% of the world's entire population. The use of social media during the COVID-19 pandemic increased significantly, especially in the adult age group. The Balkan region also has the lowest level of media education and is vulnerable to false news and misinformation. According to some media reports, approximately half of the respondents were reluctant to be vaccinated.

The findings indicated that prolonged exposure to social media has effects on the onset of psychological symptoms such as depression, anxiety, stress, fear and insomnia. In Albania there are no genuine studies on the impact of social media and especially infodemic on mental health, but according to statements and media reports the large amount of information with false news, misinformation and misunderstandings has affected the psychological well-being of the population. According to several studies conducted on the effects of COVID-19 pandemic, they reported the presence of psychological distress and an increase of patients admitted in psychiatric hospitals. Affected by the pandemic, there were also suicides of hospitalized patients due to SARS-CoV-2 infection, being thrown from the windows of public hospital buildings. Albania has experience in dealing with natural disasters such as floods and earthquakes. In this context it is recommended that universities provide expertise in creating online platforms for media education, especially in risk communication. Audiovisual media authority to restrict the publication of infodemic information. Linked Ministries. create opportunities in crime for accessible and understandable information for vulnerable social groups. Although several studies have been conducted on the effects of infodemic on mental health, the number of researches is still limited both in time and geographically. The cited studies mainly focus on the age group over 18 years and the 2-year time segment. Despite the side effects social media has played a positive role in the rapid dissemination and considerable volume of information.

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