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## People's Information Security during a Pandemic and in the Post-Pandemic Period as a Systemic Phenomenon in Terms of Their Protectedness

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### Abstract

This paper shares the findings from a study that assessed the level of a person's information security during a pandemic and in the post-pandemic period. The base for the study was advertising and textual and visual content with theoretical-academic, practical-medical, cultural-educational, social, and social-political narratives containing information about COVID-19, an acute respiratory disease caused by the SARS-CoV-2 coronavirus. The authors analyzed materials from leading media outlets in Ukraine, Russia, the UK, Germany, Poland, the Czech Republic, Spain, and Italy and from the official website of the World Health Organization (WHO).

For a better insight into the ongoing processes, the following key groups of threats to one's information security were identified: another person, groups of people, collectives, masses, and social institutions; programming and technical means and information-telecommunications systems; structured channels for dissemination of mass information. The more tangible impacts on one's information security within the specialized information space segment were investigated in the third group of threats, namely at the level of analysis of structured channels for dissemination of mass information.

Based on their analysis of the latest information flows, the authors developed a special socio-communication model for ensuring a person's security in times of epidemics and crises that covers principles of informing the public such as filling the information space with various conceptual markers; ensuring proper professional-information interpretation of various phenomena and processes; undertaking the innovative enhancement of the sphere of information production and diffusion; ensuring a universal individual nature.

The authors suggest that the study of content in local, regional, statewide, and international media resources potentially can serve as a crucial knowledge base for comprehending all significant characteristics of informing the public in times of societal disruption.

The authors' exploration of information flowing across multiple media channels helped them gain a better understanding of the need for and utility of verifying and fact-checking information to ensure the meeting of information needs and proper performance of relevant roles in society, with the following key characteristics of good information identified: value, relevance, objectivity, reliability, completeness, comprehensibility, and adequacy.

**Keywords:** pandemic, information flows, information security, socio-communication model

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## 1. Introduction

Over the course of its history, humanity has experienced a time of trouble more than once (e.g., wars, natural disasters, pandemics, zoonoses, etc.). In terms of pandemics, examples from history include the spread of plague (“The Black Death”) in Europe, Asia, and Africa, cholera, the Russian, Spanish, Asian, and Hong Kong flus, and HIV/AIDS, with fatalities running into millions.

People tend to experience in such times a heightened state of mental, psychological, and emotional stress, as the foregrounding of the issue of survival leads to the prevalence of emotions such as fear, confusion, anger, despair, and hopelessness. It is in a state of this kind that people tend to have an impaired ability to critically assess facts, arguments, opinions, and speculations and differentiate between them. Consequently, by being unable to protect themselves at even the basic level people tend to expose themselves easily to information-based influence and manipulation.

People in fear for their life tend to be ready to believe just about anything, just hoping for the problem to go away. Throughout history, this has given rise to all kinds of crooks posing as scholars, professional physicians, or holistic healers. Such individuals have given medications that not only could have no curative effect but could even lead to poisoning.

The development of medicine and information technology has failed to prevent another pandemic from occurring. In November 2019, they found in the city of Wuhan (Hubei Province, China) the so-called “index case” for the then-unknown coronavirus. December 2019 witnessed the outbreak of the disease in Wuhan. The World Health Organization (WHO) recognized the disease as a pandemic in March 2020. Researchers have yet to produce a coherent explanation as to what caused it.

The Center for Systems Science and Engineering (CSSE) at Johns Hopkins University regularly monitors the situation with the spread of the pandemic around the world ([COVID-19 Dashboard](#)).

What spread faster than the disease was information about it - both official information and information founded on assumptions, rumor, speculations, and personal judgements. Structured and unstructured channels for dissemination of information were filled with stories of the “current” progress of the disease, the “right” way to diagnose it, and “efficient” ways to treat and prevent it. There appeared all kinds of theories with regard to the origins of the infection, while many people did not even believe in its existence. Just like in the Middle Ages, people would start looking for someone to blame, with many ready to go as far as mathematizing the infected, if not burning them at the stake outright.

Access to an almost infinite source of information, such as the Internet, and the possibility of disseminating information at great speed have facilitated the emergence of a new phenomenon – infodemics, i.e. filling the information space with pieces of news that are factually incorrect or are provided without being fact-checked first and are mainly of a manipulative nature.

All this has had an impact on people’s consciousness, affecting their information security.

## 2. Materials and methods

The base for the study was advertising and textual and visual content with theoretical-academic, practical-medical, cultural-educational, social, and social-political narratives containing information about COVID-19, an acute respiratory disease caused by the SARS-CoV-2 coronavirus.

The authors drew upon relevant materials from newspapers, magazines, and online media, including discipline-specific medical, official, social-political, and advertising-information content. They analyzed content from leading media outlets in Ukraine, Russia, the UK, Germany, Poland, the Czech Republic, Spain, and Italy and from the official website of the World Health Organization. The primary focus was on specialized information, namely medical information, considering that people’s need to obtain information on health and illness prevention and treatment is governed by the basic self-preservation instinct. The criteria for selection were the thematic content of information and its orientation toward the masses.

In exploring the visual and textual content selected as the study’s material, the authors employed the methodological principle of scholarly inquiry, more specifically the information-based approach, which involves examining the phenomena under study through the prism of information as a category.

In addition, the authors made use of a methodology for the qualitative-quantitative study of the content of texts via content analysis.

Worthy of particular note is the use of the material selection and systematization general research method, which was implemented by way of techniques and procedures from the register of media resources. Certain qualitative and quantitative samples of material related to information-based influence on people were obtained using content monitoring.

Specifically, the authors monitored the following media outlets: British Medical Journal, The Lancet, Frankfurter Allgemeine Zeitung, Arztezeitung, Spiegel, Die Welt, Die Zeit, La Stampa, Českýnoviny, Lidovénoviny, Fakt, Rai News 24, Rzeczpospolita, The Sunday Times, El País, The Observer, Marketing Media Review, Sostav.ua, The Village Ukraine, and a few others. The monitoring of media content from the above sources helped summarize information relating to COVID-19 and information that has all attributes of an infodemic.

### 3. Discussion

Issues related to facilitating effective communication within the systems of specialized medical awareness raising and ensuring people's security have been on the agenda for quite a long time. This figures, as historically people's attitude toward medical information has not changed – it is all about seeking help in fighting a disease. Research indicates ([Sadivnychi, 2015](#)) that the provision of medical information tends to have greater relevance in times of epidemics, pandemics, and zoonoses, which are common to both humans and animals. This was the case throughout the period of the first 20 years of the 21<sup>st</sup> century, with the world fighting epidemics such as SARS, MERS, Ebola, bird flu, and swine flu.

The current situation with COVID-19, an acute respiratory disease caused by the SARS-CoV-2 coronavirus, has brought into clear view the need for an effective, scientifically well-founded model of communication in the systems of specialized informing of the public and ensuring people's information security.

In the scholarly environment, research on people's information security is conducted in several interrelated areas, including the following: journalism, communication science, philosophy, sociology, psychology, history, pedagogy, jurisprudence, and the security sciences. In different years, researchers have addressed the issue from several viewpoints, which are as follows: issues of the global information society ([Bangemann, 1994](#); [Bell, 1999](#); [Castells, 2019](#); [Drucker, 1969](#)); laws governing the development of media and information technology in their projection on mass and individual consciousness ([Blumer, 1980](#); [Blumer, 1986](#); [Kara-Murza, 2015](#); [McLuhan, 1992](#); [Mikhaylov, Skudalova, 2017](#)); transformation of consciousness under the influence of information campaigns and impacts ([Levitskaya, Fedorov, 2020](#); [Pocheptsov, 2020](#); [Saridakis, Tuninga, 2017](#); [Volianska, 2020](#); [Zharkov, Onischuk, 2015](#)); general issues of information and media literacy in the context of the development of systems and critical thinking skills ([Lebid, Shevchenko, 2020b](#)); issues of people's information security ([Zolotar, 2018](#)).

Over the years, researchers exploring databases and databanks, information flows, and structural elements in information dissemination have come to understand that the information space is an environment where there takes place the production and circulation of information and interaction as part of joint activity. That is, it can be viewed as an aggregate of information, information infrastructure, entities engaged in the production, collection, storage, dissemination, and use of information, and territory across which information is disseminated, i.e. a collection of information resources.

Today's realities relating to the pandemic have spurred extensive research on the information and media component of our understanding of global and national focuses in fighting against the coronavirus and combating manipulations associated with it ([Alemayehu, 2020](#); [Anumudu, Ibrahim, 2020](#); [Cifuentes-Faura, 2020](#); [Sarfo, Ansah, 2020](#)).

At the same time, it is to be noted that issues of information security and security within the information environment tend to be a concern mainly among lawyers, economists, and IT specialists. The primary focus is on the security of the state, companies, and organizations. There is keen interest in issues of protection of information in the cyberspace, with the focus on the latter being so substantial that some have substituted the latter for the general concept of 'information space'. Research is also conducted into issues of creation and dissemination of source and derived information, regulatory-legal support for the operation of the information sphere, religion and religiousness in the present-day information space, etc.

There is currently a lack of research that addresses in a broad, comprehensive, and fundamental way issues of protecting people from information-based impacts as a whole and such impacts within the medical information segment in particular. This is why any social disruption is fraught today with unstructured information dissemination and a large amount of fake news, which may be conducive to infodemics.

A significant role in the conduct of the present study was played by the authors' personal and professional experience. In addition, the authors drew upon works by the scholars mentioned in this paper as its theoretical-methodological base and a source base that can help gain a better insight into the issue of people's information security during a pandemic and in the post-pandemic period.

#### 4. Results

Based on the findings from research by the scholars mentioned in this paper and their own research, the authors suggest viewing a person's information security as a systemic phenomenon in terms of their protectedness, one that implies safeguarding their vital interests. This also includes learning to withstand information-based manipulative impacts – information-based influence through the organized and purposeful use of information means and technologies fraught with destructive alterations in consciousness.

For a better insight into the ongoing processes, the authors identified several groups of threats to a person's information security. Group 1 can be termed 'living sources' – another person, groups of people, collectives, masses, and social institutions. Group 2 includes programming and technical means and information-telecommunications systems. Group 3 includes structured channels for dissemination of mass information – mass media, social media, and means of mass communication. Each group has its own essential and qualitative features and typological characteristics, functional parameters, forms of influence, categories, and properties.

Worthy of particular note is that impacts on one's information security during a pandemic and in the post-pandemic period tend to occur for the most part at the level of the specialized medical information space. This segment of the information environment can be defined as an environment in which there takes place the production, collection, storage, and dissemination of thoroughly checked, documentarily confirmed, reliable, accessible, and valid medical-biological information, as well as information interaction between agents of information exchange for the purposes of meeting people's individual information needs and informing epidemiological research, statistical measurements, medical-preventive activities, or scientific inquiry ([Sadivnychyi, 2015](#)).

To explore some of the more substantial impacts on a person's information security within the specialized information space segment, the authors introduced a third group of threats - structured channels for dissemination of mass information. It is these channels that "impose stereotypical thinking and preprogrammed decision making" ([Zolotar, 2018](#)). Furthermore, scholars V. Mikhaylov and O. Skudalova view "infrastructure for the functioning of social information" as a crucial characteristic of mass media. The two researchers argue that "only the media are capable of reaching each and every person, thus performing the key function of mediating between information-communications flows: an ordinary person may not read scholarly journals but somehow still knows about a new scientific discovery... The language of the media is a commonly used and commonly comprehensible language for mass public communication (which is its key merit), while at the same time some of it may be viewed as too light and simple (which is a downside)" ([Mikhaylov, Skudalova, 2017](#)).

All this leads to news related to COVID-19 being spread faster and with a greater degree of consumer loyalty by structured channels for dissemination of mass information (mass media, social media, and means of mass communication).

However, not all information that is circulated by these channels is useful. Infodemics have gained so much momentum that even the WHO has joined the fight against them – in March 2020, the organization has started to work with major companies that provide information to Internet users, including Facebook and Google. There have come out communication recommendations regarding the monitoring of social media and reacting to fake news.

The danger of information threats lies, above all, in that people tend not to realize that they are being faced with one. And even later on, when the consequences become obvious, they are not always able to establish clearly what kind of information impact they were exposed to. In this regard, what takes on added importance is issues related to conscious consumption of information,

the ability to critically assess information flows, and the ability to assess facts at the level of consciousness rather than emotions (Lebid, Shevchenko, 2020; Levitskaya, Fedorov, 2020).

The authors' exploration of information flowing across multiple media channels helped them gain a better understanding of the need for and utility of verifying and fact-checking information to ensure the meeting of information needs and proper performance of relevant roles in society (Lebid et al., 2020), with the following key characteristics of good information identified: value, relevance, objectivity, reliability, completeness, comprehensibility, and adequacy.

*Value.* The value of information is determined by the degree to which it is useful to resolving a particular issue. Being under the influence of various information flows during a pandemic, not very many people, no matter their age, occupation, or education level, are capable of extracting valuable messages and arranging them in an integral fashion.

When it comes to pandemics, the value of information to a person depends on the role they perform or chose to do: an outside onlooker; someone a patient knows; a relative of a patient; a relative of a person who passed away from the disease; a patient; a general practitioner; an infectious disease physician; a hospital administrator; a health minister; a life scientist; a microbiologist; etc. The role and information needs are what shapes a person's indicators for the selection of valuable information. It is specifically based on this that we accept or reject as worthless information about the need to wear a medical mask, SARS-CoV-2 antibody testing, or treatment protocols. Depending on the role, in travelling from one end of the continuum to the other, all types of individuals will be encountered, from through-and-through skeptics to zealous proponents of vaccination and prevention.

*Relevance.* Information is considered relevant if it is of importance at a certain point in time. Essentially, here information is selected at the level of a person in a similar way as described in the previous section.

*Objectivity.* Information can be objective or subjective, depending on whether it is in line with one's judgements. For instance, information in the statement that all residents of Ukraine have had COVID-19 is subjective, whereas information derived from specific statistical data from the Ministry of Healthcare on the number of patients is objective.

*Reliability.* Reliability is determined by the ability of information to objectively reflect processes and phenomena taking place in the world. For instance, if during a news broadcast or a talk show an expert mentions a prediction by a well-known futurologist that by 2035 the Earth's population will have achieved great progress in treating incurable diseases, this piece of information will definitely be viewed as unreliable, as it cannot be verified.

At the same time, a study of relevant information flows indicates that for greater reliability and cogency the characteristics of creation and absorption of the text of the WHO's recommendations are governed by the special nature of the actual texts and the conditions for their operation. The creation of this kind of texts is governed by the following factors: result-orientedness; absence of two-way communication (hence, the need for a detailed parametrization of the prospective recipient); insufficient time to absorb the recommendations and space restrictions.

The main objective behind the WHO's recommendations for the population is to provide truthful information and urge the recipient thereof to perform an action. A vividly emotional type of sentence is the imperative infinitive sentence, which is aimed at urging a person toward action.

*Completeness.* Information is complete when there is enough of it for the consumer to be able to draw proper conclusions and make proper decisions. For instance, during a pandemic people are expected to analyze large arrays of media messages to be continually cognizant of the role and essence of the latest information contexts - a person will either recognize them as useful or, on the contrary, regard them as being of a manipulative nature. A person may take note of certain statements, take heed of advice from their relatives, analyze new media content on a regular basis, turn to the academic literature, or consult with specialists in an attempt to compare and conceptualize things. And only on the basis of such actions does a person develop a certain vision of the subject in order to make decisions afterwards.

*Comprehensibility.* This implies the absence of additional, clarifying information about something. For instance, first-grade students are hardly likely to comprehend formulae for biologically active substances. However, after a few years in school they should become more comfortable with this kind of information.

*Adequacy* implies an image matching a real object, phenomenon, or process. For instance, when they announce major quarantine-related activities in the country, the filling of the information space with other kinds of information may only hinder proper perception. An example of inadequacy in disseminating information is speeches by politicians on the importance of preventing COVID-19 in which they share information about their own major achievements and participation in social projects and blame others for inaction.

A good example of inadequacy are evaluative judgements from experts, analysts, officials, famous figures, and opinion leaders, i.e. well-informed people of high social status who can influence the views of others by just offering their own take on things.

When it comes to opinion leaders, it is worth noting the phenomenon of authority being used as a substitute for professionalism. Information may be provided on behalf of an anonymous authoritative source (e.g., a researcher or an analyst), a sociological company, or a social group. With that said, it is hardly possible to verify the reliability of such information.

An example of using manipulative technology in informing the public about COVID-19 is regularly covering sensationalist facts and putting together controversial topics and then having expressive politicians discuss them. In general, an information policy of this kind may engender a large amount of useless information and divert attention from really important issues during pandemics or in times of other societal disruptions.

“The diversity of variants of each aspect of life makes choosing an ever-present state in the life a present-day individual. In global civilization, nothing is predetermined and everything is subject to mandatory choice: place of residence and citizenship, form of family, form of occupation, items of consumption, and spiritual values. The only thing that comes without choice is the actual situation of choice” (Belyaeva, 2007).

In a climate of information pluralism, the choice of priorities is governed by the level of critical thinking, the need to harmonize diversities, moral behavior, qualitative characterizations of the alternatives proposed for selection, and cognizance of the quintessential aspects of quality. But above all of this is the role that a person performs or chose to do.

The pandemic period abounds in examples of destructive propaganda being employed. In particular, active use is made of the information context that the COVID-19 virus is man-made and was manufactured as a major weapon by certain military and political forces. Messages of this kind come out on a fairly regular basis and are always accompanied by facts that can hardly be checked in a few minutes’ time. There tends to be an abundance of assumptions from journalists, panoramic videos, commentaries, and negative emotions. The objective is to quickly construct for people the right ideas and visions.

As noted more than once in reports by the European External Action Service (EEAS), misinformation, myths, and content of a clearly manipulative nature continue to spread across the world, which may have and has had harmful consequences for the security, survivability, and health of people and effective crisis communications. In this context, it is important to differentiate between the various forms of malicious misinformation, including fake news, “hit pieces”, and other forms of manipulation.

Based on data from the EEAS, the spread of coronavirus infection tends to be accompanied by a rise in the quantity of misinformation and content founded on knowingly unchecked data. This includes statements like the following:

- 1) Coronavirus is just like the flu.
- 2) Alcohol-based disinfectants are enough to deactivate the virus.
- 3) Wireless 5G technology can cause COVID-19.
- 4) COVID-19 is a biological weapon designed either by the US or China.
- 5) There are currently American biological labs in Ukraine working on modernizing the virus.
- 6) There is vaccination terrorism being perpetrated around the globe at the moment.

An effective tool and source for spreading fake news and misinformation about Coronavirus is social networks. With nearly every inhabitant of our planet using today a smartphone with Internet connection, it may be argued that, in a sense, all of us are like media outlets that can convey and re-convey various ideas, including malicious ones.

An example of disseminating fake news in social networks is a video posted to Facebook showing packages with food allegedly left on the street in a Turkish town for people in need during the outbreak of Coronavirus.

One was made to believe the above was true through the following message: “In Turkey, people are leaving packages with food for the poor and those deprived of the opportunity to work during the Covid-19 lockdown”. Afterwards, the BBC established that, while the video was indeed authentic, it actually was shot and posted to the social network prior to the outbreak of the pandemic and for a different reason- the food packages were intended as aid to the victims of the earthquake that occurred in the Turkish city of Konya on January 25, 2020.

Quite a common practice is appealing to fear, with even constructive ideas being put across by way of intimidation. An example of this is disseminating information that can form in the minds of audience members exclusively negative impressions about pandemic periods in the history of humanity. In this context, one may quote historians as speaking of injudicious measures by the government of a certain country; circulate archive videos and photos depicting the dire consequences of a certain disease; make public negative comments by eyewitnesses, including doctors and ordinary people; circulate official statistics on the fatalities from a disease; etc.

## 5. Conclusion

A person facing an information threat may unknowingly jeopardize not only their information security but general security too. In this regard, it may help to bring into action an effective socio-communication model designed to ensure people’s security in times of epidemics and crises. The model proposed by the authors covers the following principles of informing the public:

1) filling the information space with various conceptual markers to enrich a person’s sense of national culture and identity; this should help ensure the proper orientation and preferences of the consumer in the information flow;

2) ensuring proper professional-information interpretation of various phenomena and processes through the engagement of top experts and professional media people capable of shedding an objective light on a particular event or phenomenon; of importance in this context is the development and enhancement of constructive and educational information technology;

3) undertaking the innovative enhancement of the sphere of information production and diffusion through the engagement of opinion leaders, institutions, or personal communicators and arming them with certain specially generated concepts designed to withstand information messages from misinformers that are “masked” as unique and are ultimately conducive to even greater delusion;

4) ensuring a universal individual nature; this implies providing the consumer through information activity with unique guideposts designed to help them set goals and achieve them; this can be getting involved in important public discussions via various feedback platforms and successful people demonstrating positive aspirations in a time of crisis.

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