

## **Confidence and attitudes of the citizens of the Republic of Croatia towards the sources and information about the COVID-19 virus**

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### Abstract

In the first part an overview of initial studies on the topic of the pandemic caused by the spread of the COVID-19 virus was presented. These studies were conducted in the early stages of the pandemic and they address various aspects of the impact of pandemic: knowledge and information assessments, risk perception, assessments of citizens' willingness to adapt and change their lifestyle to prevent the spread of the virus, and the impact of the pandemic's social implications on the mental health and well-being of citizens. The review of several studies was also presented, on several key points: social media as communication channel, impact of political discourse when informing on COVID-19 and problem with fake news and misinformation. In the second part, the results of our research were presented. The research was based on a questionnaire conducted on a sample of 1,010 adult citizens of Croatia. The aim was to determine which sources of information about the COVID-19 virus citizens trust the most, what kind of information they trust and what the indications are for long-term mental adjustment to life with the virus. The results showed that citizens are most inclined to trust their family and friends and to a lesser extent, doctors and experts. The citizens of the Republic of Croatia are generally not inclined to relativize the danger of the virus. They are also not inclined to believe that COVID-19 is merely a fabrication by the Government or the pharmaceutical industry. We also found very low confidence in media information about the virus. Citizens are still inclined to seek out information about the virus and show willingness for mental adaptation.

Keywords: COVID-19 virus, pandemic, risk perception, trust, information sources, social media, mental health, fake news and misinformation.

### **Introduction**

The emergence of the pandemic caused by the COVID-19 virus in early 2020 was followed by a global crisis that affected most national economies throughout the world, caused major problems for health systems, and triggered various social problems accompanied by adjustments at all levels. Although the reactions of governments around the world varied, there were mostly similar measures introduced, which were essentially the measures of social distancing, restricting the mobility of residents inside and outside the country (lockdown), preventative health measures (wearing protective masks), enhanced personal hygiene, educational and economic system adjustments (enabling work and schooling from home, with state aid to vulnerable industries), closure or special regulation of catering, service and entertainment activities such as cinemas, theatres, shopping malls and similar facilities and activities.

In this sense, Croatia is no exception, so due to the aforementioned new problems, the Government of the Republic of Croatia has established a national Headquarters that makes recommendations to citizens, employers and state institutions in order to prevent the spread of the virus. As expected, the recommendations of the Headquarters called for a series of adjustments at all levels - institutional, social and individual, and the consequences on the daily life and psychology of the individual were yet to be seen. In addition, it should be noted that compliance with the recommendations and the so-called. "Lockdown" before the summer months of 2020 led to a complete halt to the spread of the virus in Croatia and that with the gradual abolition of these measures, the virus began to spread again, which by the time of writing this paper has not changed. It is significant that parliamentary elections were taking place during this period, and the easing of measures was primarily intended to mitigate the decline in the tourist season. In general, the prevailing view is that long-term lockdown is unsustainable for society and the economy. This is important to point out because most of the available literature and research on this topic in the field of social sciences was conducted in the first wave of the pandemic (March and April 2020), while the research whose results this paper deals with was conducted in July 2020. This must be taken into account when comparing and interpreting the findings, because the crisis caused by the COVID-19 virus is still ongoing, so it is expected that citizens' attitudes, risk assessment, level of trust in institutions and individual psychological adjustment to the situation will also change over time.

Because of all of the above, it is important to systematically monitor the impact of the COVID-19 virus pandemic. Since this is not just a health, political or economic problem, it is certainly important to monitor the attitudes and behaviour of citizens about the crisis caused by the COVID-19 virus. This paper will deal primarily with citizens' trust in information about the virus and the communication channels that transmit it, and in general with citizens' attitudes and beliefs about the nature of the virus and the implications of the pandemic for everyday life.

## **Literature review**

### **Studies on social and psychological aspects of Covid-crisis**

As mentioned earlier, by reviewing available social science research papers dealing with the social and psychological aspects of the crisis caused by the COVID-19 virus, we found that they were mainly conducted in the first wave of virus spread (March and April 2020). Dryhurst et al. (2020) in that period conducted a survey on 10 national samples (N=700 in each country) - the United Kingdom, the United States, Australia, Germany, Spain, Italy, Sweden, Mexico, Japan and South Korea - in order to determine how much citizens of these countries are concerned about the risk of a pandemic and what psychological factors determine the level of concern. By measuring the affective, cognitive, and temporal-spatial dimensions of risk, they express the main measure as a risk perception index (Dryhurst et al., 2020). From the findings relevant to our research, we highlight that the results in a total sample of all 10 countries showed that those respondents who received information about the virus from family and friends perceive a higher risk of the virus compared to those who received information from other sources. Furthermore, trust in science, physicians, and

personal knowledge are positively correlated with increased risk perception, that is, respondents have, on average, a higher perception of risk the greater their confidence in science and physicians and the greater their awareness of the virus. On the other hand, trust in governments is negatively associated with risk perception, i.e., respondents have, on average, a lower perception of risk the higher their trust in government (Dryhurst et al., 2020). Furthermore, the regression model showed several predictors of risk perception both in the unified model and by individual countries, and we single out the results relevant to our research. In their research, the so-called the level of individualistic attitudes proved to be the strongest predictor of risk in all countries except South Korea, followed by prosociality, that is, altruistic or socially desirable action in terms of sharing with others, cooperation, helping, comforting and caring for others. This is followed by direct exposure to the virus as the third predictor of risk perception in all countries, but still the least in Australia and Sweden, as the authors explain - due to the low number of infected in those countries at the time of the survey (Dryhurst et al., 2020). Of particular interest to our research is the finding that various forms of trust in institutions (medical staff, science and governments) have proven to be good predictors only in Korea in terms of trust in government and medical staff, and in the US in terms of trust in medical staff (Dryhurst et al., 2020). The authors conclude that although trust in governments was significant in the overall model, according to individual countries it played a significant role only in South Korea. Higher levels of trust in governments are associated with lower levels of risk perception, and the authors conclude that in other countries, how much people trust their government and politicians is clearly not strongly associated with COVID-19 at the perceptual level (Dryhurst et al., 2020). These results are also interesting because of the construction of the samples. Namely, as in our research, the samples were balanced according to national quotas, but they were not random probabilistic samples and therefore they are not fully representative of the population in each country. Most importantly, however, the above research reveals the strong social nature of virus risk perception. Since our research dealt with, among other things, trust in information obtained from family, friends, but also doctors and the Government, it is interesting to find in the total sample of all 10 countries that those who received information about the virus received from friends and family, as well as those who felt that governments were not effective enough in controlling the pandemic - all perceived an increased level of risk of the COVID-19 virus compared to other respondents (Dryhurst et al., 2020).

Atchison et al. (2020) in turn examine the perception of risk and behavioural response of the adult population in the UK during the early phase of the COVID-19 epidemic in the UK. Specifically, 48 hours after the UK Government advised the public to suspend unnecessary social contacts and all unnecessary travel (N=2,208 adults living in the UK aged 18 and over / data collected between 17 and 18 March 2020). The survey found that the vast majority of respondents (94%) claimed to have taken at least one preventative measure to protect themselves and others from COVID-19 infection, whether it was washing their hands more often with soap, avoiding crowds, avoiding social events or avoiding public transport. In addition, 71% of respondents claimed that this change in their behaviour was a direct response to Government guidelines (Atchison et al., 2020). Since this research was also conducted in the early phase of the pandemic (March 2020), the findings are interesting compared to the findings of our research relating to trust in government, institutions, the profession, as well as the media, especially because our research was conducted in the months after the suspension of lockdowns, so the results provide insight into the attitudes and beliefs of citizens who have been living in the changed living conditions caused by the virus for some time. Thus, in

Britain in March, 45% of respondents claimed that they had adopted measures of social distancing, 44% claimed that they had the option, ability and will to work from home, and as many as 87% showed readiness to do so, while 87% showed the ability to self-isolate for 7 days if it were requested by a healthcare professional (Atchison et al., 2020). The authors conclude that the adult population in the UK showed a high level of (willingness for) behaviour change within two days of the Government's introduction of social exclusion recommendations due to the COVID-19 pandemic. However, the authors also found some significant differences between demographic and socio-economic strata in social distancing, ability to work from home and ability and willingness to self-isolate: 1) adoption of social distancing measures was almost twice as likely in people over 70 as to adults aged 18 to 34, 2) singles were less likely to practice social distancing and 3) although the willingness to self-isolate was generally high, those from more socio-economically disadvantaged backgrounds were less likely to have opportunities to work from home or self-isolate, which points to the existence of structural barriers to the adoption of preventive behaviours in these groups (Atchison et al., 2020).

Geldsetzer (2020) also conducted research at an early stage of the pandemic to assess knowledge and perception of COVID on a sample of the general population in the United States and the United Kingdom. It was an online survey with a total of N=80,000 available respondents on the Prolific platform. The platform generated samples of N=3,000 participants residing in the United States and N=3,000 participants residing in the United Kingdom that were structured so that both samples had approximately equal distribution by age, gender, and nationality (Geldsetzer, 2020). Such a quota system is also comparable to our sampling system, and the results may also be partially related to some of our findings, especially regarding respondents' attitudes about information and misinformation about the virus. Thus, in our research, we examined, among other things, attitudes about whether the virus only affects the elderly, the belief in the safety of the virus and the belief in the virus as a fabrication of the pharmaceutical industry or the Government. That is to say, aspects that fall into the sphere of so-called conspiracy theory. Research on U.S. and UK population samples has shown, among other things, that respondents, despite a generally good knowledge of the main modes of disease transmission and common symptoms, are still prone to some misconceptions about how to prevent COVID acquisition, including believing lies circulated on social networks (Geldsetzer, 2020).

Research conducted by Fetzer et al. (2020) deals with the mental health of citizens. The objectives of the study were to determine whether respondents believe that their fellow citizens and governments have done enough to prevent the crisis caused by the COVID-19 virus, further how these beliefs and opinions about the actions of fellow citizens and the Government reflect on the mental well-being of respondents and what the impact of government actions in attempting to prevent a crisis in the mental well-being of respondents. The survey was conducted in 58 countries on a total sample of N=108,075 respondents, in March and April 2020. Mental well-being was measured by a scale called the "Depression Index" (Fetzer et al., 2020), and the results showed that a significant number of respondents felt that the reaction of fellow citizens and the government at the time of the pandemic spread was insufficient with a positive correlation between pessimistic perceptions actions of fellow citizens and government and the index of depression, i.e. mental well-being: a higher level of pessimism towards the actions of fellow citizens and government also means a lower level of mental well-being in terms of uncertainty, concern, stress, discomfort and anxiety (Fetzer et al., 2020). In addition, the results showed that lockdown at the national level was positively correlated with

mental well-being, that is, intensified reactions, and thus governments increased the feeling of mental well-being. The authors conclude that with strong intervention, governments are in this way most likely to reduce respondents' sense of concern for fellow citizens (Fetzer et al., 2020). This research showed that the problem of the pandemic caused by the COVID-19 virus is far more than a political, economic or health crisis. The implications are also evident at the individual level. Of course, at the time of conducting this research, it was not possible to talk about the lasting effect of these decisions by states and governments. But the results showed that the decisions of official authorities greatly affect the mental well-being of citizens, a sense of security, a reduction in worry and anxiety. It is all the more interesting to observe these results in the context of our findings relating to the post-lockdown period, a few months after the first reactions of the state.

We also reviewed several papers dealing with various communication tools used during pandemic. Source reliability is crucial in public confidence towards information about the COVID-19 and as such, directly related to both of our research objectives. Research conducted by Gottlieb and Dyer (2020) deals with using social media by the authorities when communicating key information to the public. They pointed out several key benefits of social media in that context stating that social media can be used for: 1) shortening the time from publication to dissemination and application of information, 2) social media can allow health care leaders to directly communicate with the public and 3) social media can also allow health care systems to identify trends and prepare for surges in acuity (Gottlieb and Dyer, 2020). Based on their findings the authors proposed several strategies to improve the role of social media during COVID-19 and future emergencies: 1) to train both providers and the general public how to properly evaluate social media resources, 2) to identify and expand the reach of reliable health care experts on social media and 3) to create centralized locations for medical professionals to share and disseminate reliable information and engage in discussion as well as post publication peer review of the literature in a sustainable centralized database (Gottlieb and Dyer, 2020).

Román-San-Migue et al. (2020) conducted research on fake news analyzing 229 texts in Spanish media by mixed qualitative and quantitative methodology with the support of the MAXQDA 2020 tool (Román-San-Migue et al., 2020). The results showed that different social actors have used social networks to spread hoaxes in favor and against the government's management of the crisis (Román-San-Migue et al., 2020). Various parties have accused each other of spreading hoaxes and fake news have reached the traditional media. The Government reacted to end the hoaxes but the unfortunately formed statement by the Chief of Staff of the Civil Guard caused ideologically driven discussions on freedom of expression vs Governments intention to stop the fake news because right-wing ideological media have published more information about hoaxes related to politics, the controversial statements of the General and about the dissemination through social networks and have followed up a greater number of days (Román-San-Migue et al., 2020). Pérez-Curiel et al. (2020) conducted very similar research in Spain on political communication and increase in fake news and hoaxes on social networks during Covid-19 pandemic crisis. The authors concluded several points: 1) all of the analyzed political Twitter profiles (Donald Trump, Boris Johnson, Giuseppe Conte and Pedro Sánchez) showed disinformation as main characteristic of institutional political discourse, 2) viralization of false news linked to politics and politicians also exposed the role of the social audience as the main axis of the production and dissemination of rumors and hoaxes about the coronavirus with growing distrust of the public towards politics and the traditional media that are losing their preeminence as the main sources of

information on public affairs and 3) the authors confirmed the role of citizens as producers and consumers of hoaxes about the pandemic, actively cooperating with the information disorder that politicians have already caused with their appearances to inform about the Covid-19 and later with its dissemination on Twitter (Pérez-Curiel et al., 2020). In addition, Aaron Clark-Ginsberg and Elizabeth L. Petrun Sayers in their commentary on communication missteps during COVID-19 in USA emphasized the importance of the emergency risk communication as a crucial part responding to crises with the ability to reach vulnerable groups (Clark-Ginsberg et al., 2020). In order to reduce the COVID-19 infodemic for vulnerable populations across the globe the authorities and experts need: 1) to develop differential strategies to fit the various needs of different populations, 2) more knowledge on how civil society organizations are working to disseminate critical information and 3) more knowledge how information and misinformation are spread to different populations during this crisis meaning additional research is needed related to COVID-19 communication (Clark-Ginsberg et al., 2020). Zhang et al. (2020) also highlighted the importance of studying misinformation about Covid-19 on social media and its impact stating that fake news on Covid-19 on social media even caused several deaths in USA. Although WHO launched a "MythBusters" page to prevent such events, these countermeasures faced challenges with the fast-paced evolution and spread of news on social media (Zhang et al., 2020). The authors strongly suggested that developing effective approaches to identifying misinformation on social media automatically is essential and can have significant impact on the public by promoting healthy and safe behaviors (Zhang et al., 2020). They pointed out 3 key challenges in automatic detection of misinformation on social media: 1) misinformation can come in different forms (rumors, conspiracy theories, and falsified facts) so each may require different types of detection models, 2) misinformation on social media can spread very rapidly with timely detection being an effective strategy for curbing the spread and 3) the development of misinformation detection models faces the challenges of lacking training or labeled data with understand why people believe and share misinformation related to COVID-19 being crucial for researchers. One of the key points in our research was to show the level of trust in the sources of information on the COVID-19 and as such partially relies on these studies which point to problems of misinformation and fake news spreading from social media to other sources of information. Finally, Cinelli et al. (2020) performed a comparative analysis of users' activity on five different social media platforms (Twitter, Instagram, YouTube, Reddit and Gab) during the COVID-19 health emergency and assessed user engagement and interest about the COVID-19 topic and characterize the evolution of the discourse over time (Cinelli et al., 2020). The authors model the spread of information using epidemic models and provide basic growth parameters for each social media platform, analyzed the diffusion of questionable information for all channels and concluded that information spreading is driven by the interaction paradigm imposed by the specific social media by the specific interaction patterns of groups of users engaged with the topic (Cinelli et al., 2020). This study offered somewhat different research model to shed a light social media dynamics and social media infodemic on COVID-19.

## Research results

The research used the survey method (telephone), and as a measuring instrument, we used a questionnaire with 9 questions about the attitudes and trust of citizens in information about the COVID-19 virus, and 4 socio-demographic indicators: gender, age, education and region. The results were processed using

appropriate statistical tests, which we used to check the statistical significance of the obtained differences in the results. We used the  $\chi^2$ -test to check the statistical significance of the frequency differences of the obtained results (at the significance level of 1% and 5%, respectively) and the t-test for independent samples and the ANOVA test to check the differences in the average results (at the significance level of 1% and 5%, respectively), and those results are presented in which the differences in the obtained results proved to be statistically significant, after the application of the tests. These differences then really point to some significant trends and can be further interpreted and explained.

## **Methodology**

### *Objectives*

The main objectives of this study were to determine:

- 1) level of trust in the sources of information on the COVID-19 virus: the National Headquarters and the Government, the media (radio, television, newspapers and Internet portals), family, friends and acquaintances, neighbors, and doctors and health professionals
- 2) level of agreement/disagreement of respondents with 7 statements about the COVID-19 virus: a) media as spreaders of fear, panic and conflicting information about the COVID-19 virus, b) cessation of monitoring information related to COVID-19, c) COVID-19 as a mutation of ordinary influenza, d) COVID-19 as a virus that affects only the elderly, e) COVID-19 as a fabrication of the rulers to keep us in subjection, f) COVID-19 as a fabrication of the pharmaceutical industry to vaccinate and earn money, g) the belief that COVID-19 will forever remain, with adaptation to a new way of life.

### *Hypotheses*

By reviewing the available literature and similar research conducted in the initial phase of a global pandemic, we can base some expectations on the results of our research. Although in our case it is not a repetition of these studies, some points of contact are present and should be referred to when defining hypotheses, namely: the connection of risk perception with specific sources of information about the virus, a high level of trust in information from official sources, social sensitivity of citizens with a high level of willingness to cooperate, low propensity to exaggerate and believe in the so-called conspiracy theories (with the exception of sporadic trust in misinformation from social networks), and finally a tendency to change behaviour and mentality toward practical adaptation to the new situation. Therefore, our expectations of research results in Croatia are partly based on these findings:

H1: Respondents are more likely to trust information about the COVID-19 virus if they come from family, friends, scientists and doctors, compared to the National Headquarters, the Government of the Republic of Croatia and the media.

H2: Respondents are generally not prone to beliefs based on distrust in professional and official sources of information such as that the virus is just a mutation of the common flu that attacks only the elderly population

H3: Respondents are generally reluctant to believe beliefs based on the idea that the virus is a fabrication of rulers or pharmacists who faked a pandemic for profit or political control

H4: Respondents are generally reluctant to stop monitoring virus information

H5: Respondents were mostly reconciled to the idea that the virus would forever remain present with our adaptation to a new way of life.

### *Sample*

The research was conducted on a sample of N=1,010 respondents from the general adult population of the Republic of Croatia aged 18 to 74 years. It is a quota non-probabilistic sample stratified according to the size of counties and settlements within counties with quota selection of age and groups according to gender. The sample does not guarantee representativeness, but it gives a good insight into possible trends and the direction in which the citizens of the Republic of Croatia are forming their attitudes and behaviours related to the COVID-19 virus.

## **Results discussion**

### *Trust in the sources of information about the COVID-19 virus*

Respondents were asked how much they believed the information they received about the COVID-19 virus from the 6 listed sources: family, friends, doctors, Government/Headquarters, neighbourhood and media (press, internet, radio and television). We examined the level of trust for each listed source separately, on a scale of 1 - 5 (1=I do not believe at all / 5=I completely believe). A higher average score indicates a higher level of confidence in a particular source. The results (Table 1) show that respondents trust families the most when they are informed about the COVID-19 virus, followed by friends, doctors, the Government and the Headquarters, while they trust the neighbourhood and the media the least. Table 1 shows the sources ranked according to the average trust rating from the most trusted source, to the least trusted. Mutual comparisons and differences between individual sources are presented later in the report

Table 1: Average ratings of trust in sources of information about the COVID-19 virus.

<b>Information sources</b>	<b>Average trust rating</b>	<b>STD. Dev. %</b>	<b>N</b>
Family	3.98	0.926	1,010.00
Friends	3.75	0.983	1,010.00
Doctors	3.65	1.013	1,010.00
Headquarters/Government	3.49	1.103	1,010.00
Neighbourhood	3.29	1.031	1,010.00
Media	3.25	1.110	1,010.00

Source: Research findings

In accordance with these findings, the shares of responses according to sources (frequency results) also show that respondents show the greatest trust in family (82.1%), friends (71.7%), and the Headquarters and the Government (63.8%) are the sources with the largest shares of full or partial trust, that is, the responses "I believe" or "I completely believe". On the other hand, they express the greatest distrust towards



the media (25.9%) and the neighbourhood (20.8%) - these are the sources with the largest shares of complete or partial distrust, that is, the responses "I do not believe" or "I do not believe at all". The neighbourhood (31.7%) and the media (23.1%) also have the largest share of indecisive responses ("I don't know"). The results are presented in Table 2. Such findings partially confirm the hypothesis which we assumed, that respondents would be more inclined to trust information coming from family, friends and scientists and doctors, compared to the National Headquarters, the Government of the Republic of Croatia and the media.

Table 2: Shares of answers - partial or complete trust, distrust and indecisive according to sources.

<b>Information sources</b>	<b>Share of full and partial trust</b>	<b>Proportion of undecided</b>	<b>Share of total or partial distrust</b>
Family	82.1	9,7	8.2
Friends	71.7	16.4	11.9
Doctors	65	21.5	13.5
Headquarters/Government	63.8	16.2	20
Neighbourhood	47.5	31.7	20.8
Media	51	23.1	25.9

Source: Research findings

Family achieves the highest average trust rating ( $m=3.98$ ;  $std. dev=0.926$ ), and additional statistical tests (t-test for dependent samples) found that the average trust in the family as a source of information about the COVID-19 virus was significantly higher than all other listed sources. Furthermore, as many as 82.1% of respondents express partial or complete trust in the family as a source of information about the COVID-19 virus (grades 4 and 5). 9.7% responded "I don't know", i.e. indecisive respondents (grade 3), and only 8.2% expressed partial or complete distrust in the family as a source of information about the COVID-19 virus (grades 1 and 2).

Friends are the second largest source of information about the Covid-19 virus which respondents trust the most ( $m=3.75$ ;  $std. dev=0.983$ ). By additional statistical tests (t-test for dependent samples), we found that the average trust in friends as a source of information about the COVID-19 virus is significantly higher than all other listed sources, except for family, with the highest level of trust. 71.7% of respondents express partial or complete trust in friends as a source of information about the COVID-19 virus (grades 4 and 5). 16.4% are those with a "don't know" answer, i.e. undecided respondents (grade 3), and 11.9% express partial or complete distrust of friends as a source of information about the COVID-19 virus (grades 1 and 2).

Doctors are the 3rd largest source of information on the Covid-19 virus which respondents trust the most ( $m=3.65$ ;  $std. dev=1.013$ ). Additional statistical tests (t-test for dependent samples) found that the average trust in doctors as a source of information about the COVID-19 virus is significantly higher than the trust in the Government and Headquarters and the media and neighbourhood, but less than the trust in family and friends, which are in 1st and 2nd place according to the degree of trust. 65% of respondents expressed

partial or complete trust in doctors as a source of information about the COVID-19 virus (grades 4 and 5). 21.5% are those with an "I don't know" answer, i.e. undecided respondents (grade 3), and 13.5% express partial or complete distrust of doctors as a source of information about the COVID-19 virus (grades 1 and 2).

The Headquarters and the Government are the 4th largest source of information on the Covid-19 virus which respondents trust the most ( $m=3.49$ ;  $std. dev=1.103$ ). Additional statistical tests (t-test for dependent samples) found that the average trust in the Government and the Headquarters as a source of information about the COVID-19 virus is significantly higher than the trust in the neighbourhood and the media, but significantly lower than the trust in family, friends and doctors as sources of information about the COVID-19 virus. 63.8% of respondents expressed partial or complete trust in the Headquarters and the Government as a source of information about the COVID-19 virus (grades 4 and 5). 16.2% responded "I don't know", i.e. indecisive respondents (grade 3), and 20% expressed partial or complete distrust in the Headquarters and the Government as a source of information about the COVID-19 virus (grades 1 and 2).

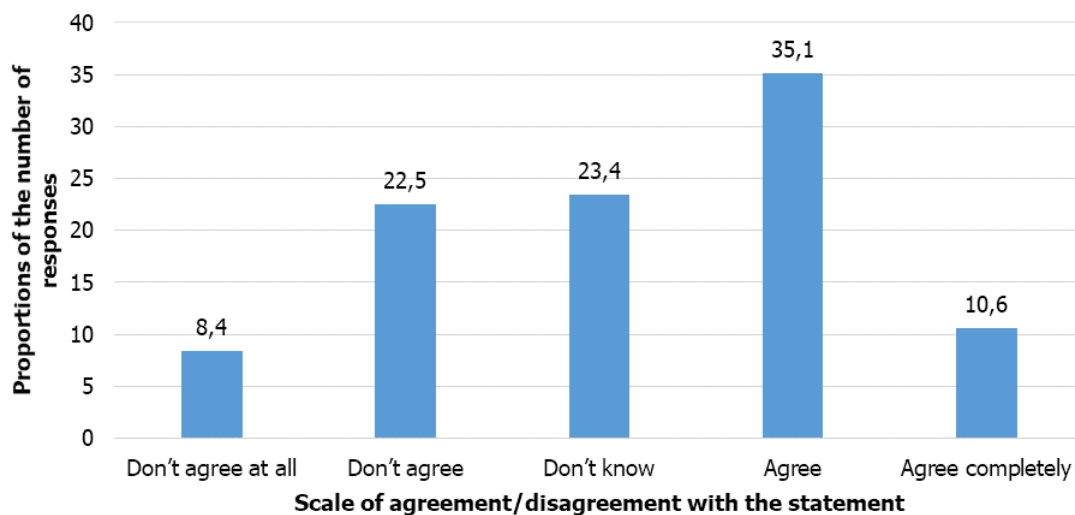
The neighbourhood is the 5th largest source of information on the Covid-19 virus which respondents trust the most ( $m=3.29$ ;  $std. dev=1.031$ ), and the t-test for dependent samples shows that the average trust in the neighbourhood is significantly less than the trust in family, friends, doctors, and the Government and Headquarters as sources of information about the COVID-19 virus. However, there are no significant differences between trust in the neighbourhood and trust in the media, so respondents trust neighbours as little as they trust the media as a source of information about the COVID-19 virus. 63.8% of respondents expressed partial or complete trust in the Headquarters and the Government as a source of information about the COVID-19 virus (grades 4 and 5). 16.2% responded "I don't know", i.e. indecisive respondents (grade 3), and 20% expressed partial or complete distrust in the Headquarters and the Government as a source of information about the COVID-19 virus (grades 1 and 2).

The media is the 6th largest source of information about the Covid-19 virus which respondents believe ( $m=3.25$ ;  $std. dev=1,110$ ), that is, respondents have the least trust in the media and the neighbourhood as sources of information about the COVID-19 virus. T-test for dependent samples found that the average trust in the media as a source of information about the COVID-19 virus is significantly less than the trust in family, friends, doctors and the Government and Headquarters. There are no significant differences between trust in the neighbourhood and trust in the media, so respondents trust neighbours just as little as the media as a source of information about the COVID-19 virus. 51% of respondents expressed partial or complete trust in the media as a source of information about the COVID-19 virus (grades 4 and 5). 23.1% replied "I don't know", i.e. indecisive respondents (grade 3), and 25.9% express partial or complete distrust in the media as a source of information about the COVID-19 virus (grades 1 and 2).

#### *Attitudes, opinions and beliefs about information related to the COVID-19 virus: Degree of agreement and disagreement with COVID-19 virus claims*

In this section, we present the results of the attitudes and opinions of the respondents expressed on the scale of agreement/disagreement with several statements about the virus. Respondents rated their agreement/disagreement with the statements on a scale of 1 - 5 (1=strongly disagree / 5=strongly agree). Thus, a higher average score indicates a higher degree of agreement with the statement.

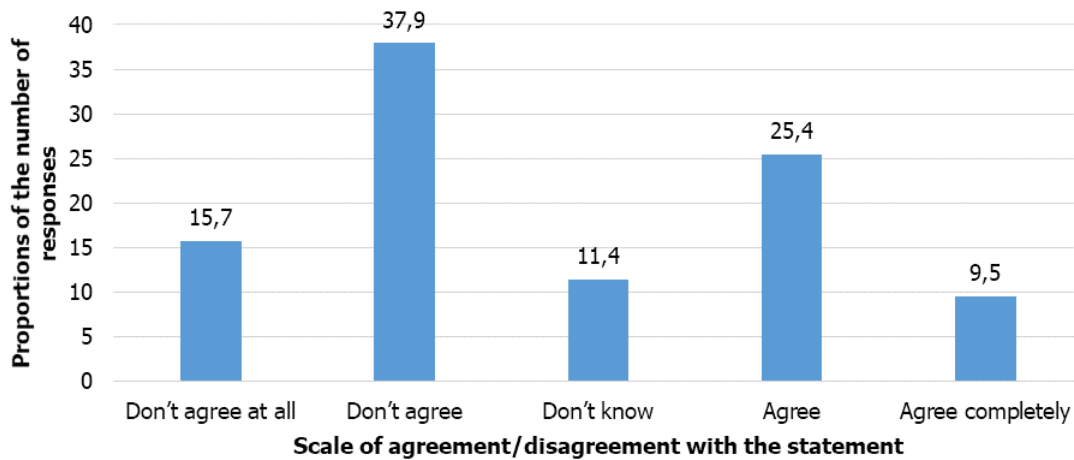
Figure 1: The media spreads fear, panic, and conflicting information: the distribution of frequency scores by shares



Source: Research findings

The average rating of agreement/disagreement with this statement how "Media spreads fear and panic with too much conflicting information about COVID-19" is  $m=3.17$  with a standard deviation of 1.144. 45.7% of respondents expressed partial or complete agreement with the statement. These are the total share of answers "I agree" (35.1%) and "I completely agree" (10.6%). Furthermore, 23.4% are undecided ("I don't know"). 30.9% of respondents expressed partial or complete disagreement with this statement. The total share of responses "I do not agree" (22.5%) and "I do not agree at all" (8.4%). For results, see Table 8. Such results indicate a relative distrust of the media: the number of respondents who partially or completely agree with this statement is significantly higher than the number of those who partially or completely disagree with the statement ( $hi^2=237.149$ ;  $df=4$ ;  $p=.000$ ). The results also correspond to the findings from the first question, where the media are ranked in last place according to the average rating of trust in information sources on the COVID-19 virus. These findings are, therefore, in line with the first hypothesis by which we assumed a lower level of trust in the media, that is, all sources outside the circle of family and friends and the profession and physicians. Respondents apparently largely believe that the media does not report objectively on the virus.

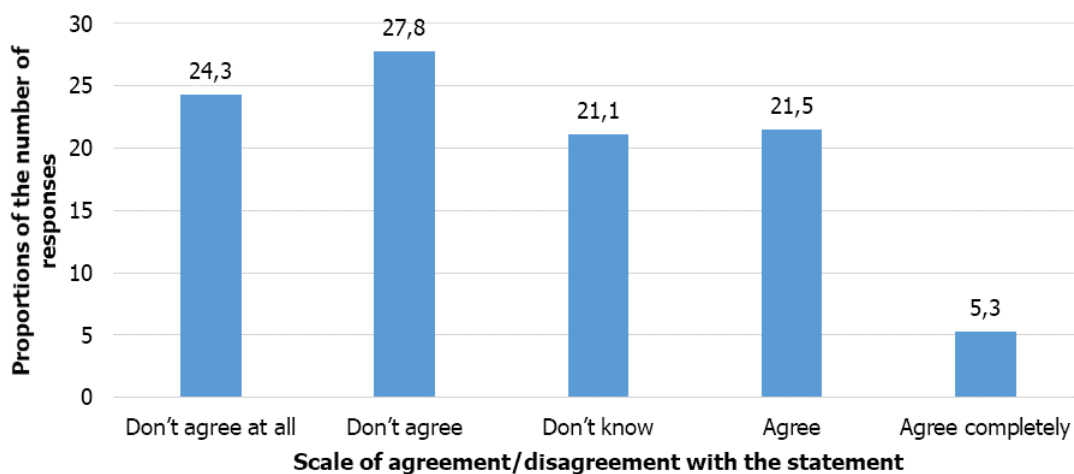
Figure 2: I mostly stopped reading/watching information related to COVID-19: distribution of frequency results by shares



Source: Research findings

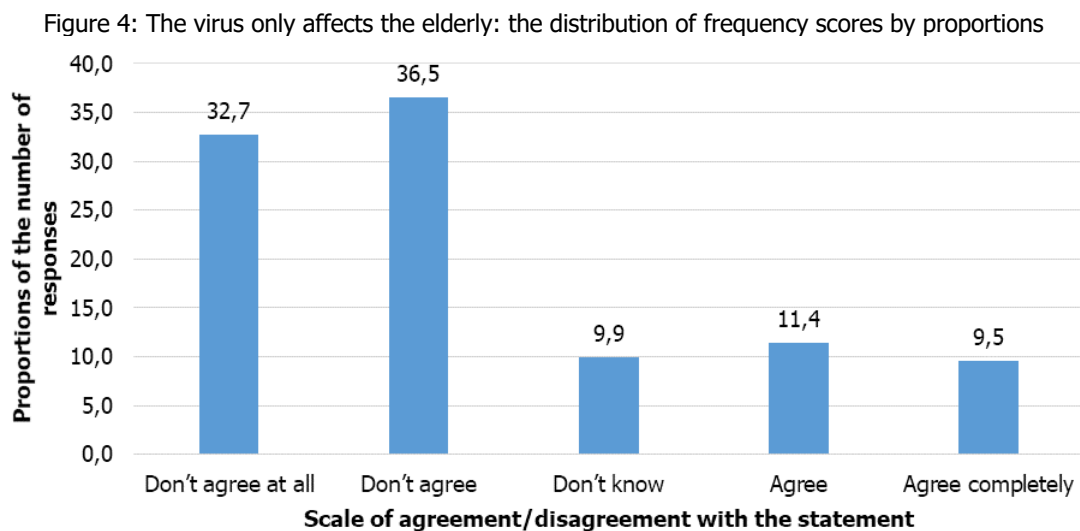
The average grade of agreement/disagreement with the statement "I mostly stopped reading/watching information about COVID-19" is  $m=2.75$  with a standard deviation of 1.258. 34.9% of respondents express full or partial agreement with the statement. These are the total share of responses "I agree" (25.4%) and "I completely agree" (9.5%). 11.4% are undecided ("I don't know"). 53.6% of respondents express partial or complete disagreement with this statement. The total share of responses "I do not agree" (37.9%) and "I do not agree at all" (15.7%). The results are presented in Table 2. The results, therefore, indicate relative disagreement with the statement: the number of respondents who express partial or complete disagreement with this statement is significantly higher than the number of those who partially or completely agree with the statement ( $h^2=279,406$ ;  $df=4$ ;  $p=.000$ ). This means that respondents in the general adult population of the Republic of Croatia between the ages of 18 and 74 are still more inclined to monitor information related to the virus than not, which confirmed the fourth hypothesis.

Figure 3: The virus that causes COVID-19 is just a mutation of the common flu: the distribution of frequency results by proportions



Source: Research findings

The average rating of agreement/disagreement with the statement that "The virus that causes COVID-19 disease is only a mutation of the common flu" is  $m=2.56$ , with a standard deviation of 1.218. 26.8% of respondents expressed full or partial agreement with the statement. The total share of responses "I agree" (21.5%) and "I completely agree" (5.3%). 21.1% are undecided ("I don't know"). 52.1% of respondents expressed partial or complete disagreement with this statement. The total share of responses "I do not agree" (27.8%) and "I do not agree at all" (24.3%). For results, see Table 8. The results here also indicate relative disagreement with the statement. The number of respondents who expressed partial or complete disagreement with this statement is significantly higher than the number of those who partially or completely agreed with the statement ( $hi^2=150.198$ ;  $df=4$ ;  $p=.000$ ). This means that respondents in the general adult population of the Republic of Croatia aged 18 to 74 are not inclined to claim that COVID-19 is just a mutation of the common flu.

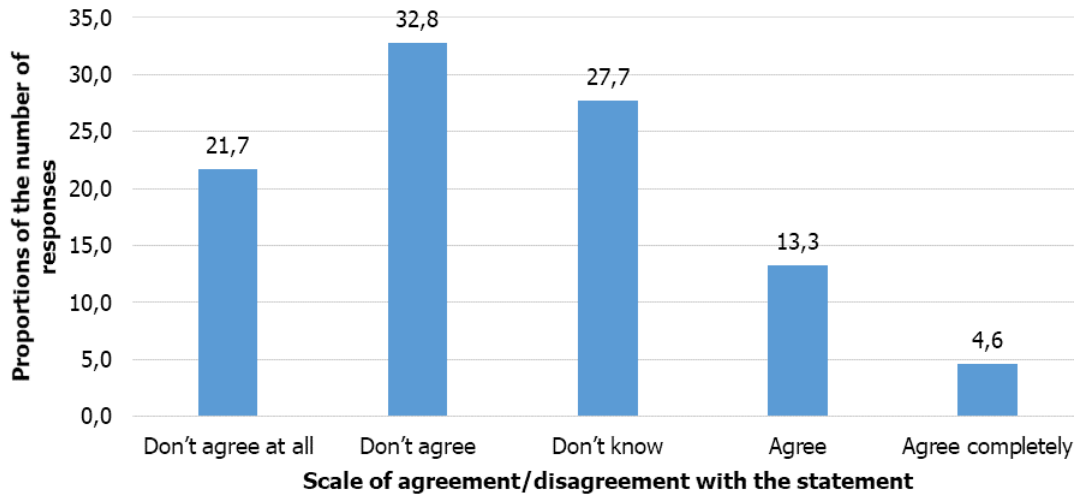


Source: Research findings

The average grade of agreement/disagreement with the statement "the virus only affects the elderly" is  $m=2.29$  with a standard deviation of 1.287. 20.9% of respondents expressed full or partial agreement with the statement. The total share of answers "I agree" (11.4%) and "I completely agree" (9.5%). 9.9% were indecisive ("I don't know"). 69.2% of respondents express partial or complete disagreement with this statement. These are the total share of answers "I do not agree" (36.5%) and "I do not agree at all" (32.7%). Results are shown in Table 4. The results here also indicate a relative disagreement with the statement: the number of respondents who express partial or complete disagreement with this statement is significantly higher than the number of those who partially or completely agree with the statement ( $hi^2=363,772$ ;  $df=4$ ;  $p=.000$ ), and with this statement also not a relatively low share of undecided (9.9%). This means that respondents in the general adult population of the Republic of Croatia aged 18 to 74 are generally not inclined to believe that COVID-19 only affects older people.

With these findings, we confirm the second hypothesis that respondents are generally not prone to beliefs based on distrust in professional and official sources of information such as that the virus is just a mutation of the common flu that attacks only the elderly population.

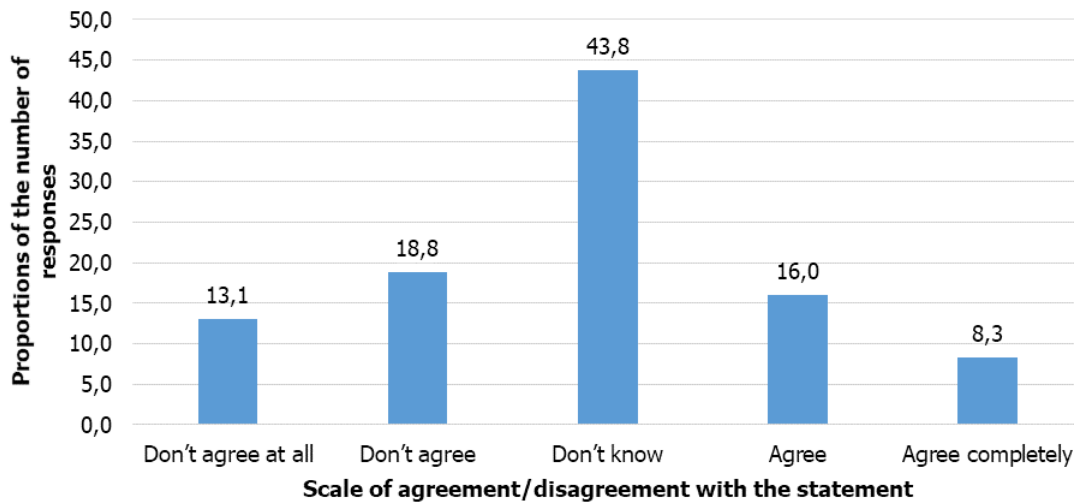
Figure 5: The virus as a fabrication by the ruling class to keep us in subjection: the distribution of frequency results by shares



Source: Research findings

Average rating of agreement/disagreement with the statement "the virus is just a fabrication by the ruling class to keep us in subjection" is  $m=2.46$  with a standard deviation of 1.105. 17.9% of respondents express full or partial agreement with the statement. The total share of answers "I agree" (13.3%) and "I completely agree" (4.6%). 27.7% undecided (answer "I don't know"). 54.5% of respondents express partial or complete disagreement with this statement. The total share of answers "I do not agree" (32.8%) and "I do not agree at all" (21.7%). For results see Table 8. The results here also indicate a relative disagreement with the statement: the number of respondents who expressed partial or complete disagreement with this statement is significantly higher than the number of those who partially or completely agreed with the statement ( $\chi^2=257,297$ ;  $df=4$ ;  $p=.000$ ), and with this statement we find a relatively high share of undecided respondents (27.7%). This means that respondents in the general adult population of the Republic of Croatia between the ages of 18 and 74 are generally not inclined to believe that COVID-19 is a fabrication of the ruling party to keep us in subjection.

Figure 6: The virus as a pharmacist's invention: distribution of frequency results by proportions

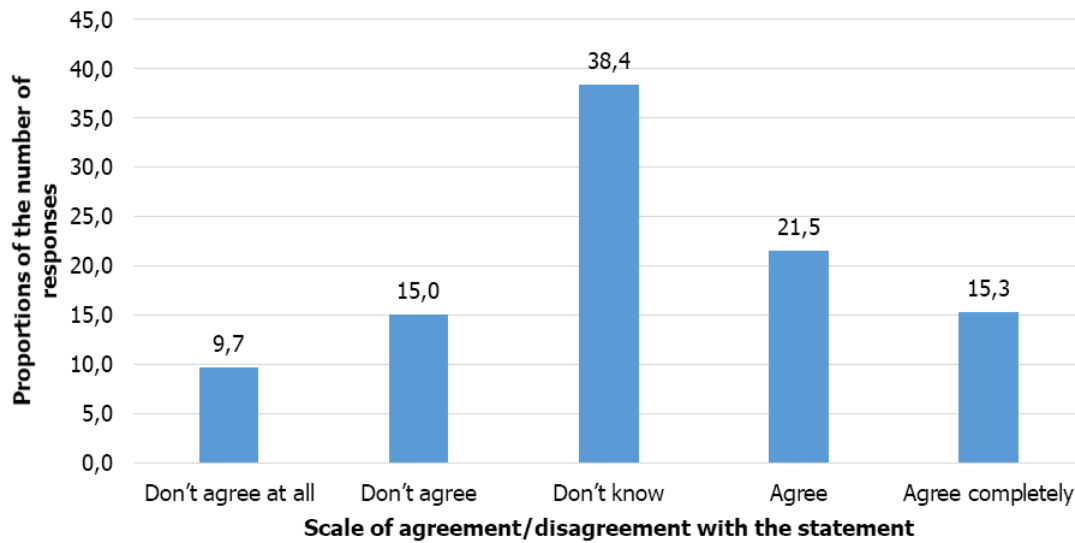


Source: Research findings

Average rating of agreement/disagreement with the statement "Corona was devised by the pharmaceutical industry to vaccinate and earn money from us all" is  $m=2.88$  with a standard deviation of 1.091. 24.3% of respondents expressed full or partial agreement with the statement. The total share of responses "I agree" (16.0%) and "I completely agree" (8.3%). 43.8% were undecided ("I don't know"). 31.9% of respondents expressed partial or complete disagreement with this statement. The total share of responses "I do not agree" (18.8%) and "I do not agree at all" (13.1%). For results see Table 6. The results here also indicate relative disagreement with the statement with a very high share of undecided respondents (those who do not know): the number of respondents who expressed partial or complete disagreement with this statement is higher than the number of those who partially or completely agreed with the statement;  $h^2=386,970$ ;  $df=4$ ;  $p=.000$ ), and for this statement we find a relatively high share of undecided respondents (43.8%). This means that respondents in the general adult population of the Republic of Croatia between the ages of 18 and 74 are not inclined to believe that COVID-19 is a pharmacist's invention to increase earnings, with a very high proportion of undecided people.

With these findings, we confirm the hypothesis by which we assumed that the respondents would generally not be inclined to beliefs that can be classified in the category of so-called "Conspiracy theories" according to which the virus is a fabrication, either of the ruling class for political control, or of the pharmaceutical industry for profit.

Figure 7: The media spreads fear, panic, and conflicting information: the distribution of frequency scores by shares



Source: Research findings

Finally, the average score of agreement/disagreement with the statement *"I believe that the virus will be with us forever and that we will have to get used to a new way of life"* is  $m=3.18$  with a standard deviation of 1.156. 36.8% of respondents express full or partial agreement with the statement. These are the total share of answers "I agree" (21.5%) and "I completely agree" (15.3%). 38.4% are undecided (answer "I don't know"). 24.7% of respondents express partial or complete disagreement with this statement. The total share of responses "I do not agree" (15.0%) and "I do not agree at all" (9.7%). For results see Table 7. The results here indicate a relative agreement with this statement, with a very high proportion of undecided respondents (those who do not know): the number of respondents who expressed partial or complete disagreement with this statement is significantly lower than the number of those who partially or completely agreed with the statement ( $h_i^2=249,238$ ;  $df=4$ ;  $p=.000$ ), with a relatively high share of undecided respondents (38.4%). This means that among the respondents of the general adult population of the Republic of Croatia aged 18 to 74, there are more people who are inclined to the attitude that COVID-19 will stay with us forever and that we will have to adapt to a new way of life in relation to those who are not inclined to that attitude, with a high share of those who do not know/express an indecisive attitude towards this statement. This confirms the fifth hypothesis, in which we assumed that the respondents would generally be inclined to an attitude of personal reconciliation, with the virus remaining forever present, while we adapt to a new way of life.

#### *Attitudes About COVID-19 Virus: Pearson's Correlation Coefficient (r)*

Pearson's correlation coefficient shows the correlation of the variables - in this case 7 virus claims for which respondents expressed a degree of agreement/disagreement on a scale of 1 - 5. A high Pearson correlation coefficient ( $r$ ) would indicate the existence of a high interrelationship of variables, i.e. expressed attitudes towards virus claims, and a low coefficient would indicate the existence of a low interrelationship of variables.



Although the analysis shows the existence of low and mostly positive correlations between most of the attitudes expressed in all 7 statements, these are mostly very low coefficients ( $r=0.35$  or less). Therefore, we cannot talk about the existence of unambiguous connections between the views expressed in these statements.

Table 3: Average agreement/disagreement with COVID-19 virus claims.

<b>Allegations of a virus</b>	<b>Average stacking</b>	<b>STD. Dev. %</b>	<b>N</b>
The media spreads panic, fear and conflicting information	3,17	1.144	1010
Mostly stopped tracking information	2.75	1.258	1010
Just a common flu mutation	2,56	1.218	1010
It only affects the elderly	2,29	1.287	1010
An invention of the ruling class	2,46	1.105	1010
A pharmacist's invention	2,88	1.091	1010
It will stay with us and we will adjust our lifestyle	3.18	1.156	1010

$R=1$  is a complete correlation;  $r=0.8$  to  $1$  is high correlation;  $r=0.5$  to  $0.8$  is a medium-high correlation;  $r=0$  to  $0.5$  is low correlation;  $r=0$  means no correlation. A positive correlation means that an increase in the value of one variable indicates an increase in the value of another variable, and a negative correlation means that an increase in the value of one variable indicates a decrease in the value of another variable.

## Conclusion

The results of the research unequivocally indicate that the citizens of the Republic of Croatia are more inclined to trust information about the virus they received from family, friends and even doctors, less inclined to trust the information they received from the Government and the National Headquarters, least trusted the media and the neighbourhood. In comparison, a total sample of 10 surveyed countries (Dryhurst et al., 2020) found that those respondents who received information about the virus from family and friends and scientists and doctors perceived a higher risk of the virus compared to those who information obtained from some other sources, and on the other hand, respondents on average have a lower perception of risk the more they trust the Government (Dryhurst et al., 2020). Although we did not measure risk perception in our research, we based our first hypothesis on the expected level of confidence in these sources of virus information on these results. Namely, previous research has shown that increased risk perception correlates with specific sources of information about the virus, so we expected that our respondents would show a different level of trust in family, friends and doctors in relation to the Government and the media, which was confirmed by the results of our research.

Furthermore, the results of our research indicate the relative reluctance of Croatian citizens to believe in misinformation about the virus - they are generally not inclined to relativize the potential danger and do not perceive the virus only as the common flu nor do they consider it dangerous only for the elderly. Also, they are not inclined to believe in conspiracy theories - they do not consider the virus to be a fabrication of the

authorities and pharmacists with hidden intentions, and although they do not show high trust in the media, they still tend to continue to monitor information about the COVID-19 virus. Similarly, adult citizens in the UK at the onset of the pandemic showed a high level of (willingness for) behaviour change due to the Government's introduction of social distancing recommendations due to the COVID-19 pandemic, and most were prepared for these changes directly in response to Government guidelines (Atchison et al., 2020). These results also indicate a high level of trust in official information and partly indicate a high social sensitivity of citizens who were willing to cooperate in order to prevent the spread of the pandemic in its beginnings. In part, this is supported by the results of research on samples of the populations of the United States and the United Kingdom (Geldsetzer, 2020) which showed that respondents are generally well acquainted with the main modes of disease transmission and common symptoms. However, unlike our findings where adult citizens of the Republic of Croatia are generally reluctant to believe in misinformation, at least when it comes to believing that the virus is harmless or fabricated, research in Britain and the US has shown a tendency to some misconceptions, including belief in misinformation from social networks (Geldsetzer, 2020). It is possible that such phenomena are a product of the period in which this research was conducted, that is, a consequence of the general lack of knowledge and information about the virus. Our results show that Croatian citizens did not give up their initial caution for several months from the beginning of the crisis - they continued to monitor information about the virus, did not accept just any information about it, and still show relative confidence in official expert information that the virus is potentially dangerous for all, and that it is not just the common flu. As mentioned in the first part of this study, several studies conducted in Spain in late 2020 such as Pérez-Curiel et al. (2020) and Román-San-Miguel et al. (2020) on fake news and hoaxes spreading via social networks during Covid-19 pandemic crisis, suggest different possible scenarios also for Croatia in future stages of communication on Covid-19.

Finally, the respondents in Croatia, according to the results of this research, were mostly reconciled with the idea that the virus would remain present in the long run, with the need for adaptation to a new way of life. Since the Government of the Republic of Croatia reacted to the crisis in a similar way as the governments of most other countries, our expectation of the results of the research related to mental adaptation to the new situation proved to be justified. Namely, the initial pan-national research conducted in March and April (Fetzer et al., 2020) showed that the initial anxiety of citizens was caused by the belief in insufficient performance of fellow citizens and governments in combating pandemics, replaced by increased mental well-being and reduced anxiety and worry, due to strong reactions from governments. Since our research was conducted several months apart from this initial research, it was expected that Croatian citizens have already experienced some mental adjustment to the new conditions, which was confirmed by the results of our research.

The main methodological problem of this research is the relative methodological vagueness of the questionnaire and the non-probabilistic type of sample. As in the presented foreign surveys from March and April, our survey also does not have a probabilistically constructed sample, but it is a quota model that assumes, but does not guarantee, representativeness at the national level. In addition, the questionnaire is of an orientational (exploratory) type, without the measurement instruments used in the presented foreign studies that use regressive predictive models of behaviour and the association of changes in behaviour, attitudes and beliefs about risk levels depending on COVID-19 virus sources and information. Regardless, these results can be considered as very good guidelines for further research as they undoubtedly show some

trends at the national level. It is extremely important to monitor such trends in the context of the crisis caused by the COVID-19 virus. This is especially true for more complex future longitudinal behavioural studies following the research presented in the theoretical review. It is clear that the resulting crisis affects not only the economy, politics and society, but also the mental health and behaviour of the individual. In addition, we showed which information sources and people are most trusted by citizens when it comes to the COVID-19 virus. The research also points to the importance of good communication between professionals and the Government of the Republic of Croatia for citizens: although citizens trust family and friends the most, they express real distrust only towards the media - not towards the Government and doctors. Just as initial confidence in government measures and readiness to adapt was important to combat the pandemic, in the long run this can only be maintained through systematic monitoring of citizens' behaviour, attitudes and mental health, as well as unambiguous and clear communication between official sources (professionals and the government) with special emphasis on social media because many researches and studies already showed their strong potential impact on spreading fake news and misinformation to the general public but also offering possible communication strategies to the officials such as Gottlieb and Dyer (2020), Aaron Clark-Ginsberg and Elizabeth L. Petrun Sayers (2020) and Zhang et al. (2020).

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