

## DETERMINANTS OF THE COVID-19 PANDEMIC IN THE WEST HERZEGOVINA CANTON

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### SUMMARY

A study of COVID-19 infected patients was conducted regarding to organic and psychological characteristics. The findings of the study indicate that in the period of the pandemic in 2020, a total of 78 infection cases were confirmed in West Herzegovina Canton. Of the total number of infected, 55.1% are women and 44.9% are men. Of the infected population, 16.7% were hospitalized. By monitoring the COVID-19 disease in West Herzegovina Canton, we conclude how all manifestations of the disease were represented, from asymptomatic, through mild respiratory to the most severe clinical picture with fatal outcomes. The mortality rate in West Herzegovina Canton is 5.1%. The study showed that a total of 28.2% of COVID-19 positive patients before infecting with virus, were most likely to suffer from hypertension, diabetes and malignancies. Furthermore, it is important to emphasize that a total of 71.9% of those infected are without underlying diseases. Also, the results indicate that people with COVID-19 in addition to the characteristic symptoms of the disease (fever, fatigue, cough, etc.) had certain mental ailments such as decreased general mood, increased anxiety, panic attacks, acute stress disorder and others.

**Key words:** coronavirus - COVID-19 - epidemiological surveillance – pandemic - psychoorganic symptoms

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### INTRODUCTION

The COVID-19 pandemic is the third major coronavirus outbreak in two decades (SARS 2002-2003 and MERS 2012). We currently have over 4 million confirmed cases and 278,000 deaths, mostly in immunocompromised patients (who.int (2020). Coronavirus disease, Situation Report. Available from: [https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200511-covid-19-sitrep-112.pdf?sfvrsn=813f2669\\_2](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200511-covid-19-sitrep-112.pdf?sfvrsn=813f2669_2). cited: May 12, 2020). Person-to-person transmission is a major mode of infection spread among the patients during the incubation period (Rothe et al. 2020). The virus was detected even in the feces of the first COVID-19 patient in the United States (Holshue et al. 2020).

It is assumed that severe acute respiratory syndrome coronavirus (SARS-CoV-2) have spread primarily through respiratory droplets and close contact (Cai 2020). It is important to point out that except of transmission from sick people, the virus is also transmitted from asymptomatic patients and from persons in the incubation phase. Based on current epidemiological studies, the incubation period lasts 3-7 days, with a maximum of 14 days. The median time from appearance of symptoms to first hospital admission was 7.0-9.0 days, while symptoms of COVID-19 infection appear after an incubation period of approximately 5.2 days (Li 2020). Declaration of the pandemic by the World Health Organization on March 11, led to a reorientation of

scientific focus to coronavirus. Scientists are looking for a vaccine, which represents a big challenge. It is important to emphasize that almost 20 years after SARS, we still do not have a vaccine. It is not proved that animal virus is a source of infection among the human population (Daszak 2020). The period from appearance of COVID-19 symptoms to death ranged from 6 to 41 days, with a median of 14 days (Bai 2020). This study shows the movement of COVID-19 virus in the West Herzegovina Canton with regard to organic and psychological characteristics. The aim of this study is to show the incidence of COVID-19 infection regarding to organic and psychological characteristics.

### SUBJECTS AND METHODS

The article presents the movement of COVID-19 virus in the West Herzegovina Canton. Data used in this study are taken from the Institute of Public Health of the West Herzegovina Canton by the May 4, 2020. For this descriptive study, data were collected from the WHO internet platform and from the Institute of Public Health of the West Herzegovina Canton. Data related to mental status were collected through surveys and self-assessment of patients due to the specifics of the situation. The data of patients who are virus positive are confirmed with rt-PCR method. The survey itself consisted of a set of questions that focused on a patient's previous conditions and illnesses unrelated to COVID-19 disease.

Also, for better and more accurate data, a broad history of symptoms that preceded the disease was taken. The second set of questions focused on the mental health of patients during a pandemic. Self-assessment of mild or severe forms of depression, anxiety and possible sleep disorders. The last set of questions referred to the consumption of cigarettes and alcohol.

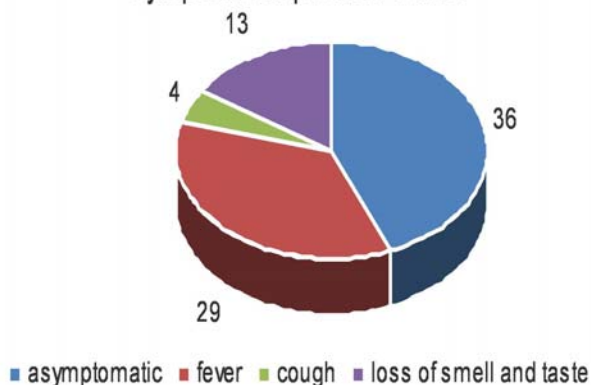
## RESULTS

From March 23 to May 1, 2020, 78 cases were confirmed in West Herzegovina Canton. Among the confirmed cases, 55.1% were women and 16.7% of those infected were hospitalized. The majority (52.6%) of cases are between 25-65 years old. The lowest number of cases is in the age group of 65+ years, a total of 15 people, that can be explained by movement restrictions for stated age group. The age range of infected people is from 1 to 84 years, and the average age is 43 years. In the period from 18/3/2020 to 1/5/2020, 746 people were tested. A total of 4 deaths occurred among the confirmed cases with a total mortality of 5.1%. All the dead were hospitalized. Data on the structure of positive cases are shown in Table 1.

**Table 1.** Structure of positive cases

First case in West Herzegovina Canton	March 23, 2020
Number of tested	746
Number of positive cases	78 (10.4%)
Number of deaths	4 (5.1%)
Number of recovered	73 (93.6%)
Gender structure of positive cases	
Female	43 (55.1%)
Male	35 (44.9%)
Average age of positive cases	43
Age range of positive cases	1-84 years
Age structure of positive cases	
0-24	22
25-64	41
65+	15

**Symptoms of positive cases**

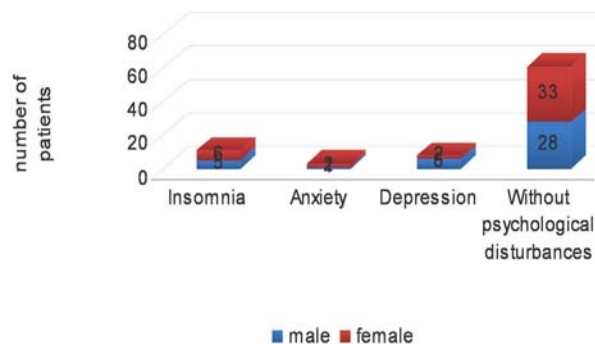


**Figure 1.** Review of symptoms of positive cases

The clinical picture ranged from asymptomatic conditions, 40 of them (51.3%) to patients with mild fever, a total of 29 (37.2%) and 4 of them (5.1%) developed cough. Specific expressed symptom is the loss of smell and taste that occurred in 13 patients (16.6%), as seen in Figure 1.

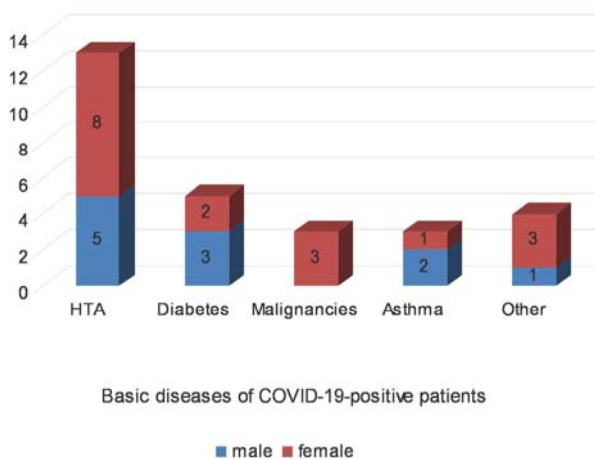
Considering the aspect of mental state, various forms of depression have been observed, from mild to severe. Such a condition is associated with anxiety periods, which is justified by the pandemic. Fear of the unknown, uncertainty and the constant flow of new, questionably accurate information. Smokers make up 16.7% of those infected. The most common conditions that were present in positive respondents were: insomnia (12.8%), depression (10.3%) and anxiety (1.2%), as seen in Figure 2.

**Presentation of patients' psychological disturbances according to sexual structure**



**Figure 2.** Review of psychological disorders of patients according to gender structure

The most common underlying diseases of infected patients are: hypertension HTA (15.4%), diabetes (6.4%), malignant diseases (3.9%), while 56 infected patients do not have any underlying disease. In total, there are currently 73 recovered persons (93.6%) (Figure 3).



**Figure 3.** Overview of underlying diseases by gender in COVID-19 positive patients

## DICUSSION

The National Crisis Staff and the Crisis Staff of the Ministry of Health on February 25, 2020 informed that the first case of the new coronavirus disease was diagnosed in the Republic of Croatia (RH), and in Serbia on March 6, 2020 (anon. COVID-19 – Priopćenje prvog slučaja. Available from: <https://www.hzjz.hr/priopcenja-mediji/covid-19-priopcenje-prvog-slucaja/>. Accessed on May 19, 2020) (anon. Bolest koronavirusa 2019: COVID-19. Available from: <https://javniservis.net/sekcije/nauka/bolest-koronavirusa-2019-covid-19/>. Accessed on May 14, 2020). The first case of coronavirus in West Herzegovina Canton appeared on March 23, 2020, which is expected because the virus appeared in the Republic of Croatia and Serbia, that are neighboring countries of Bosnia and Herzegovina. Within the Federation of Bosnia and Herzegovina, the majority of people infected were women, as in West Herzegovina Canton, while other studies show an equal number of infected female and male patients (Zhang et al. 2020). Data sorted by gender in Spain show differences in mortality between men (46.3%) and women (53.7%). Surprisingly, although men (51%) and women (49%) become infected with COVID-19 at similar rates, men die from COVID-19 at much higher rate (4.4%) than women (2.5%), while in West Herzegovina Canton this ratio is equal for gender structure (Vazquez & Redolar-Ripoll 2020). In the Republic of Croatia, total number of deaths is 94, compared with West Herzegovina Canton, where four people died and all of them were hospitalized (anon. Koronavirus – najnoviji podatci. Available from: <https://www.hzjz.hr/priopcenja-mediji/koronavirus-najnoviji-podatci/>. Accessed on May 19, 2020). There is still no vaccine available with many trials under clinical evaluation (Amawi et al. 2020). The spectrum of symptoms ranges from asymptomatic infections to mild respiratory symptoms to a fatal form associated with severe pneumonia, acute respiratory distress, and fatality (Uddin et al. 2020). In this study, the most common symptom among the patients was fever (37.2%) and then in the minority loss of smell and taste (16.6%). The most common clinical symptom in other studies was fever (91.3%), followed by cough (67.7%), fatigue (51.0%) and dyspnea (30.4%) (Yang et al. 2020). The most common finding of chest image among patients with pneumonia was the opacity of glass with bilateral participation (Lai et al. 2020). Hypertension proved to be the most common underlying disease of infected patients (15.4%), which is also visible in others, where the most common comorbidities are hypertension (21.1%) and diabetes (9.7%), followed by cardiovascular disease (8.4%) and respiratory diseases (1.5%) (Yang et al. 2020). There are currently 75 recovered persons (96.2%). Although no significant correlation could be established between active smoking and the severity of COVID-19, in time when data from

individual studies were collected (Lippi & Henry 2020). The current literature does not support smoking as a predisposing factor among men or any subgroup for SARS-CoV-2 infection (Cai 2020). Fear and anxiety, that are connected to our behavior, are often not a reflection of actual risk based on epidemiological data but a reflection of our personal experience of risk or danger (anon. Psihološki aspekti pojave koronavirusa. Available from: <https://www.hzjz.hr/priopcenja-mediji/psiholoski-aspekti-pojave-koronavirusa/>. Accessed on May 15, 2020). With the sudden increase of infected patients and the increase of fear and anxiety in the general population, accordingly there was a significant increase in demand and need for psychiatric support, both for patients and for medical staff, which is not confirmed in West Herzegovina Canton (Peitl et al. 2020). Psychodynamics places great emphasis on the defense mechanisms and the unconscious mind where disturbing feelings, urges, and thoughts are located that are too painful to be looked at directly. Although these painful feelings and thoughts are beyond our consciousness, they still affect our behavior in many ways (Marčinko et al. 2020). In their mental health, it outlines the stigmatization and embarrassment of affected persons, health professionals and officials, which is a very common occurrence during epidemics (Rubin & Wessely 2020) and unfortunately this trend still prevails during the current COVID-19 epidemic, (Organization WH. Mental health and psychosocial considerations during the COVID-19 outbreak. Available from: <https://apps.who.int/iris/handle/10665/331490>. Accessed on May 14, 2020). Therefore, for mental health is essential that health professionals, including psychiatrists and psychologists, act as an objectively voice of reasoning and assist in educating the general masses to reduce their fear and stigmatization towards affected individuals and communities. Strategies such as online psychological home help lines also provide easy access to psychologists and the masses in purpose of communication and help (Skitarelić et al. 2020). Coronavirus disease is the latest pandemic of the digital age. Considering that the Internet collects large amounts of data from the general population in real time. This study demonstrates the usefulness of digital epidemiology in providing useful outbreak surveillance data, such as COVID-19. Although certain Internet search trends about this disease have been influenced by the media, many search terms have reflected clinical manifestations of the disease and shown a strong association with actual cases and deaths (Higgins et al. 2020).

## CONCLUSION

Observing the age group of patients, we can say that the image is quite colourful and that we have a large age range (from 1 to 84 years). According to the gender structure, it can be concluded that the predominantly

female individuals are affected. Drawing a parallel with the diseases that preceded COVID-19, the most common basic diseases among the patients are hypertension, diabetes and malignant diseases. It is important to emphasize that 71.8% of patients are without underlying diseases. The most common symptoms of those infected with COVID-19 are fever, fatigue, loss of smell and taste, cough and dyspnea. From the point of view that disease has impact on mental health, imposed information supports the unknown, new situation. Accordingly, the patients understandably had pronounced fear, feelings of anxiety, panic attacks, decreased general mood, and symptoms of acute stress disorder. All this affected everyday life, which resulted in various forms of insomnia. By monitoring the COVID-19 disease in West Herzegovina Canton, we conclude how all manifestations of the disease were represented, from asymptomatic, through mild respiratory to the most severe clinical picture with fatal outcomes.

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**Conflict of interest :** None to declare.

#### **Contribution of individual authors:**

Ivan Vasilj is the project coordinator, participated in the study concept data interpretation, literature appraisal, and also critically drafted and revised the final appearance of the paper.

Ivana Čović, Marija Šantić, Marina Ćurlin, Ivona Ljevak & Andrea Bošnjak, outlined the methodological approach and were responsible for the study concept, paper composition, theoretical explanations, data interpretation, literature appraisal.

Katarina Herceg, Zdenko Šarac, Emina Kiseljaković & Romana Babić comments on the concept of article, literature searches, writing some parts of manuscript.

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