

## Prevalence of Depression in Adults in Constanta County, Romania, Before and During the Covid-19 Pandemic

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### Abstract

*The COVID-19 pandemic and its management measures were a priority in 2020 with unknown effects on the mental health of the population. The study aims to estimate the evolution of the prevalence and risk factors associated with depressive symptoms among adults in Constanta before and during the COVID-19 pandemic, using data gathered from Health Insurance House of Constanta County. We also analyze some effects of the pandemic on adults suffering from depression and other mental disorders, as well as on the costs supported by the healthcare system, and we suggest some actions to be taken by public policies.*

**Key words:** Covid-19, depression prevalence, associated costs

**J.E.L. classification:** I130, I180

### 1. Introduction

The 2019 coronavirus pandemic (COVID-19) and the policies to contain it affected almost all Romanian population in 2020. Being a situation with a negative impact in all physical, emotional and psychological aspects, COVID-19 pandemic can be, per se, considered as a traumatic event. As recently underlined in a paper by Druss (2020), a medical field that experienced significant consequences associated to the pandemic and the accompanying society changes is the one of the psychiatry. There are indeed studies suggesting that there could be a general decline in the health state of the population affected by the pandemic.

### 2. Literature review

A study involving 1210 participants from 194 cities in China at the beginning of 2020 found that 54% of the subjects considered as moderate or severe the psychological impact of the COVID-19 outbreak, 29% reported moderate to severe anxiety symptoms and 17% reported depressive to severe symptoms (Wang et al, 2020). A similar tendency was noticed in a study conducted in the USA by the American Psychiatric Association (2020). Other recent proofs from published studies suggest that COVID-19 pandemic is associated with mental disorders. Among the workers in the public health system in China that were exposed to COVID-19 patients, 50.4% reported depressive symptoms (Lai J, Ma S, Wang Y, et al., 2020), while another research discovered that reduced sleeping and rest time have been associated with higher levels of anxiety and stress (Xiao H, Zhang Y, Kong D, Li S, Yang N). A study on students from medical schools in China identified a high prevalence of anxiety (Cao W, Fang Z, Hou G, et al). Most studies in the field of COVID-19 effects on mental health have been conducted in Asia and targeted reduced sub-populations such as health workers or medicine students. More relevant for the current research is a study conducted by Nelson et al (Nelson LM, Simard JF, Oluyomi A, et al.) about COVID-19, symptoms and answers to the pandemic over 9009 social-media questionnaires. They found out that 67.3% of the participants had been very or extremely concerned about COVID-19 and that 48.8% of the respondents self-isolated most of the time to avoid the contamination with the virus. As far as we know, there is no relevant

study on mental health during the pandemic, for the population in Constanta County, Romania. Moreover, there is no such study conducted prior the pandemic, to allow reference comparison. Aiming to address this knowledge gap, we assessed the prevalence of the symptoms associated with depression and the costs involved within the population from Constanta County, during COVID-19 pandemic and we compared it with data gathered before the pandemic through the same instruments. We also tried to understand the factors associated to depression symptoms before and during COVID-19.

### **3. Research methodology**

This cohort study has been conducted by analyzing the data offered by Constanta County Health Insurance Body, for patients over 18 years old, that received health services for different depressive forms and associated symptoms.

All instruments to gather and analyze the data took into consideration the protection of patients personal data, as stipulated by the national and European legislation.

To study in dynamic the effects of the COVID-19 pandemic on the mental health state of the population with depressive symptoms and the costs associated to the disease, data for 2016-2020 period were analyzed.

The patients have been grouped in categories by age and sex, the under-18 years old being removed from the research sample. Also, the data regarding costs, have been grouped around the main categories of health services paid by Constanta County Health Insurance Body, for patients with depression and associated symptoms, during January 1<sup>st</sup> 2016-December 31<sup>st</sup> 2020.

Gathered data have been compared and analyzed afterwards in order to understand the impact generated by COVID-19 upon Constanta County population, on one side, and the effects that the pandemic had on public healthcare system, on the other hand and to try identifying some measures that could improve these effects.

The symptoms of depression were assessed according to ICD 10, using the Hamilton 17 questionnaire MADRAS (over 7) [(Minor depression (7-19), Moderate depression (20-34), severe depression (35-60)].

We assessed 13 stressors based on prior studies conducted in US and Europe. Examples of COVID-19 stressors included change in lifestyle, losing a job, death of someone close to you owing to COVID-19, and having financial problems.

Limitations. Collected data couldn't have been segmented under some other socio-demographic aspects that could have brought a more qualitative insight to the present study. Moreover, being limited to only one county from Romania, we cannot assume correctly extrapolating the results at the national level. These two aspects, segmenting the data based on multiple criteria (professional categories, levels of income, living environment, etc) as well as collecting data for a representative sample at the national level, would constitute the subject for further research.

### **4. Results**

A total of 18,209 participants received medical services on mental health in 2020 of which 11,744 women, 6,465 men. The total number of cases with depressive symptoms in the sample group remained relatively constant during 2016-2019, with a small decrease in 2018. In 2020, after COVID-19 pandemic outburst, we can notice a sharp increase in the number of depression cases, in all its forms, as we can see in the Table 1 below.

Table no. 1. Evolution of depression cases in 2016-2020 period

<b>Depression cases during the period</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Total number of cases	17.982	18.027	17.663	18.443	21.013
Total number of cases women	11.375	11.427	11.113	11.555	13.556
Total number of women in the study	9.844	9.767	9.421	9.669	11.746
Total number of cases men	6.607	6.600	6.550	6.888	7.457
Total number of cases men in the study	5.719	5.698	5.554	5.765	6.463
Total number of case sunder 18	2.419	2.562	2.688	3.009	2.804
Total number of cases in the study	15.563	15.465	14.975	15.434	18.209

Source: Authors data compilation based on Health Insurance House of Constanta County

Analyzing the data from Table 1 we notice an increased prevalence of depression symptoms among women, compared to men during the entire period, with a sharper increase in 2020. On a cumulative basis, the prevalence increased by 18% in 2020 compared to 2019, but the evolution was different for men and women: 21.4% increase for women compared to 12.1% for men. Regarding the healthcare associated costs for patients with different forms of depression, the data presented in Table 2 show that COVID-19 pandemic led to a moderate increase of costs for associated medical services, by just 6% in 2020 compared to 2019, half the average yearly increase by 12% from 2016-2019 period.

Table no. 2 The evolution of costs with medical services associated to patients with depressive disorders during 2016-2020

<b>Depression associated costs per type of service</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Number of hospitalization days	20.188	21.339	22.398	21.008	15.682
Hospitalization costs	4.414.651,67	4.439.671,07	4.268.661,28	4.045.793,86	3.058.764,10
<b>Increase N/N-1</b>		1,00	0,96	0,94	0,75
Number of outpatient consultations	45.212	50.099	51.088	53.932	55.150
Costs for outpatient consultations	2.049.033,54	2.508.576,55	3.063.260,77	3.651.098,76	4.433.767,71
<b>Increase N/N-1</b>		1,22	1,22	1,19	1,21
Number of consultations in primary care system	46.062	47.166	45.634	46.635	51.044
Costs with the consultations in primary care system	507.409,00	591.405,30	709.633,24	844.714,50	1.016.555,75
<b>Increase N/N-1</b>		1,16	1,19	1,19	1,20
Number of consultations psychotherapy	17.632	20.972	24.308	29.409	30.850
Costs with consultations psychotherapy	1.077.397,80	1.405.507,20	1.946.656,50	2.648.968,20	3.300.685,50

<b>Increase N/N-1</b>		1,30	1,38	1,36	1,24
Number of days sick leaves	2.168	3.535	3.354	3.953	4.533
Costs days sick leaves	174.722,00	330.964,00	410.258,00	598.207,00	789.331,00
<b>Total costs healthcare services</b>	<b>8.223.214,01</b>	<b>9.276.124,12</b>	<b>10.398.469,79</b>	<b>11.788.782,32</b>	<b>12.599.104,06</b>
<b>Increase N/N-1</b>		1,12	1,12	1,13	1,06

*Source:* Authors data compilation based on Health Insurance House of Constanta County

By groups of services, we notice a sharp decrease of hospitalization costs associated to patients with depression, during 2016-2019 period, a moderate increase of outpatient consultations and primary healthcare consultations costs and a significant increase of costs for prevention (psychotherapy).

Thus, the cost with hospitalization services decreased by 31% during 2016-2020 period, due both to the reduction of hospitalization days and the decrease of average hospitalization per-diem cost.. In comparison, the outpatient consultations cost increased by 84% from 2016 to 2020, the cost of primary healthcare consultations increased by 74% and the cost for prevention (psychotherapy) increased by 128% during the same period.

While the number of consultations in primary healthcare system and the outpatient consultations had moderate increase, cumulating 10 to 20% during the analyzed period, the number of consultations in psychotherapy almost doubled, simultaneously with an increase by 75% of the average settled cost of medical intervention.

Regarding the costs with sick leaves, we notice a moderate increase trend of number of leave days ask for settlement during 2017-2020, simultaneously with doubling the settled cost per-day of sick leave.

The evolution regarding costs with psychotherapy and sick leaves suggest a tendency to shift the focus from treatment to prevention, for this diseases, which led to a tempering trend of increased general costs for associated healthcare services, during the period.

According to a study conducted by the Centre for Disease Control in the USA (CDC) (Vahratian et al, 2021), confirmed also by Romanian patients, the main causes that generated depressive symptoms and other mental disorders during the lockdown period in 2020 were the following:

- Anxiety about its own health state and about the health state of the beloved ones;
- Anxiety caused by job loss and declining income;
- Changes in sleep or eating habits, including more frequent use of tobacco and alcohol;
- Difficulties in sleeping or concentrating;
- Worsening of chronic health problems, due to insufficient access to health system services.

On another level, the most present negative effects associated with pandemic identified for patients with depression aged 18 to 69, are, according to the study, much more acutely felt, compared with the rest of the adult population:

- The general cessation of social activities is felt much more acutely by patients with depression (74% versus 59%)
- Lack of a daily structured routine affects 75% of patients with depression versus 39% common patients;
- Sedentary lifestyle – lack of physical activity (80% vs 62%) and the stay in bed more often (48% vs 21%) -is another unwanted effect with medium term implications;
- Lack of motivation and energy for the daily activities (84% versus 39% general population);
- Sleep worsening was noted by 63% of the patients with depression compared to 26% of the rest;
- Healthcare it was felt to be more precarious during the pandemic by 56% of people with depression versus 30% of the rest. Only 14% of the patients with depression said to be used digital methods for prevention and treatment and only 40% declared they would be willing to use, when there's no other options.

## 5. Conclusions

Although we cannot exclude alternative explanations, the results of the present research suggest that the mental health of the general population from Constanta County is negatively affected by the COVID-19 pandemic. The increase of depression symptoms prevalence during the pandemic is higher than the one recorded after some other major traumatic social events. Although we don't know exactly how many patients with depression included in the study have been diagnosed with COVID-19, to comment in a more relevant way the difference in mental health of those infected and those not infected, we can still assume that, while the virus spreads, the symptoms of the mental afflictions become more frequent among the population. Women are more impacted than men. The depression prevalence in Constanta County population increased by 18% on average during the first pandemic year. Among women, it increased by 21.3% while among men it increased by 12% only. Moreover, the data show an increase of costs with healthcare services associated to mental health by 7% in 2020 compared to 2019. These results confirm the data presented in other relevant international studies (American Psychiatric Association, 2020, Wang et al, 2020, Sonderskov KM, Dinesen PT, Santini ZI and Ostergaard SD, 2020). Besides that, the results suggest that the context matters, the combination between pandemic and its socio-economic consequences generated an increase of the total number of mental afflictions among the adults in Constanta County.

Offering proper healthcare services for these patients would be an useful and interesting debate for the healthcare professionals, the more so as an important number of depression cases could be assigned to situational factors. While we need more data to correctly assess the depression trajectory within adult population and the type of treatment that need to be offered, it seems important to admit the potential of COVID-19 to generate large scale mental health issues, to admit that these are long-lasting effects and it reclaims adequate prevention and treatment public policies, especially focused toward the population exposed to major risk-factors

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