

MENTAL HEALTH AND THE PERCEIVED CONSEQUENCES OF THE SARS-CoV-2

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Summary

Objective: The main goal of the study was to compare frequency of psychosocial consequences of the SARS-CoV-2 virus pandemic as well as government restrictions related to pandemic between group of people without diagnosis and group of individuals that declared they have been diagnosed with mental illness.

Materials and methods: 760 people participated in this study voluntarily, out of which 380 declared to be diagnosed with at least one mental disorder and the remaining 380 claimed to be mentally stable. The research was carried out using an online survey. All the data were collected throughout 2 weeks (from April 6, 2020 to April 24, 2020), when the most serious restrictions following the COVID-19 pandemic were introduced.

Results: In this research it was verified if there is any relationship between mental health and perceived consequences of the pandemic in 760 subjects. Obtained results indicate that $\frac{4}{5}$ of the subjects are concerned about the death of their close one, $\frac{3}{5}$ of them experience anxiety due to potential insufficiency of medical services and getting infected. The in-depth data analysis with subjects divided into those with and without diagnosis demonstrated that people diagnosed with mental illness more often declare concern about different consequences of the pandemic, excluding a close one getting diagnosed with COVID-19. The *Chi*-squared test was performed. The majority of subjects diagnosed with mental illness displayed higher concern about their own death, the tightening of restrictions on self isolation, the insufficiency of medical services, social isolation and loneliness, the worsening of family relationships and working remotely while taking care of their children. Half of the subjects diagnosed with mental illness experienced worsening of their symptoms during the pandemic.

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Conclusion: The high prevalence of the declared anxiety, including the fear of mental deterioration, indicates the need to take preventive measures in order to protect mental health.

Key words: COVID-19, mental disorders, mental health

Introduction

SARS-CoV-2 is the seventh strain of coronavirus known to cause human disease. It's built from a single positive strand of ssRNA(+) and it can cause the severe acute respiratory syndrome COVID-19 (Current government recommendations, 2019). The first infections were identified in December 2019 in Wuhan, China (Centers for Disease Control and Prevention, 2019; Baud et al., 2020). Due to the fast spread of the virus, extending to different continents, on March 11, 2020 WHO officially announced the SARS-CoV-2 pandemic (Centers for Disease Control and Prevention, 2019). The most common symptoms of the coronavirus are fever, dry cough, difficulty breathing, or shortness of breath accompanied by muscle aches and tiredness (Curtin, Presser, Singer, 2000; Davoodi et al., 2018). The death rate estimates caused by COVID-19 varies from .7% to 3.4%, depending on the region, the access to tests and possibly other environmental, medical, and social factors, which are subjected to current scientific verification (George et al., 1989; Garcia-Lizana, Munoz-Mayorga, 2010). At the same time, it is presumed that a significant percentage of infected people might not show any symptoms of the disease. This lack of accurate data makes it very difficult to develop a credible epidemiology and thus it is harder to control the expansion of bacterial pathogens (Huang et al., 2020). The researchers have demonstrated that the mortality risk rises simultaneously with the age of the infected. The underlying cause of this tendency might be the higher prevalence of chronic diseases in those of 65 years old and older. Diseases and other conditions such as a weak immune system, asthma, liver disease, diabetes, chronic respiratory disease, chronic kidney disease, serious cardiological disorders and obesity are common risk factors leading to serious complications and death (Kessler, Bromet, 2014).

In order to avoid a sudden rise of infections and to limit the spread of the virus within a short timespan in Poland, the Polish government took actions to limit economic activities and encourage social distancing. New restrictions were introduced, such as keeping an accurate distance from other people in public, the shutdown of schools, kindergartens and nurseries, temporary restrictions on recreational activities and the prohibition of social gatherings. Those who are ill or potentially infected (having direct contact with an infected person) are obliged to undergo quarantine for 2 weeks, assuming there is no need for hospitalization. High fines are imposed to everyone who ignores the guidelines to stop the spread of coronavirus (Mizumoto et al., 2020).

The next important feature that contributes to the social context of the pandemic is the media coverage that centers around different aspects related to COVID-19 and the contradiction between the attitudes and viewpoints of different country leaders. Scientists' recommendations and opinions also tend to disagree with each other (Onder, Rezza, Brusaferro, 2020).

The current situation is challenging the society to meet multiple requirements, for instance taking care of kids when working from home, protecting the family members and taking necessary actions in order to maintain financial stability. At the same time it is highly probable that many people are experiencing distress due to the risk of infecting themselves or their loved ones. Therefore, it is assumed that the culmination of those different aspects of the pandemic described above may lead to significant deterioration in the functioning of society. The negative consequences of the ongoing situation can affect the mental health of both the people without prior diagnosis of mental illness, as well as patients who were previously diagnosed with at least one mental disorder. It is scientifically proven that there is a link between the diagnosis of mental disorders and lower capability of dealing with stressful situations (Ragan et al., 2016). According to Lazarus' transactional theory of stress and coping, the coping strategies can be defined as either adaptive or maladaptive (Lazarus, Folkman, 1984). Maladaptive strategies of dealing with stress can result in progression of mental problems. Due to ineffective coping mechanisms the mental state of a subject can worsen and the situation can be perceived as even more overwhelming. Moreover, it is possible that the diagnosis of mental illness can have a negative effect on patients' psychological resources and their effective coping with stressful situations (Turner, Roszell, 1994; Ogińska-Bulik, Juczyński, 2008; Heszen-Celińska, Sęk, 2020). Therefore it is reasonable to examine how the consequences of the pandemic can be perceived differently by the subjects diagnosed with mental illness, and those without the diagnosis.

As it is also stated in the transdiagnostic model, the Self-Regulatory Executive Function (S-REF) proposed by Wells & Matthews (1996), coping and thought-control strategies can result in mental and psychiatric disorders (Wells, 2011), so the stress-inducing situations can be especially overwhelming for those struggling with mental illness.

This research was carried out for the reasons above, as part of a bigger project: "The psychological consequences of the pandemic among society", in which PTSD and current well-being was also analysed. One of its objectives is to verify the socially perceived consequences and potential threats that occur as a result of SARS-CoV-2 and the government actions taken accordingly, aimed towards limiting the economy and enforcing social distancing. The main premise of the research is based on the hypothesis that depending on different medical factors, primarily mental health, people will define the situation of the pandemic as more or less threatening, which can be demonstrated in the perceived psychophysical condition.

Methods

Participants

In this research took part 760 participants. Snowball sampling was used. This research was approved by the ethics committee at the University of Gdansk (number of approval: 30/2020). The first group consisted of healthy individuals, who self-declared not to be diagnosed with any mental disorders, whereas the second group consisted of people who were diagnosed with a mental disorder, based on a previous psychiatric examination. In this research none of the classical psychological mood assessment methods were used, because they are not sufficient in the diagnosis of depression or anxiety disorders without further psychiatric opinion. Those types of methodological issues can be observed in many publications on mental health during the COVID-19 pandemic (Hyland et al., 2020; Islam et al., 2020). The actual impact the pandemic has on the functioning of our society is especially difficult to analyse with research only based on declarative methods. Such obtained results on the spread of depressive disorders can not be assigned only to the pandemic, due to its frequent occurrence before the breakout of the virus. That is why in this study it was decided to ask the subjects one simple question: Are you suffering from any mental disorders approved by a psychiatrist?

The participants were divided into two equal groups, whose average age did not differ significantly.

The characteristics of healthy individuals, without stated mental disorders.

This group consisted of 331 women and 49 men. The average age in this group was $M = 32.12$ years old; $SD = 9.8$ years old. 55% of those subjects reside in a large or medium size city, 27% in a small one, and 18% live in rural areas. 70% of participants were involved in a relationship (partner or spouse); and 29.5% considered themselves single. 58% declared to have higher education, 34% secondary education and only 3% had vocational training. More than half of measured individuals were currently employed (59%). None of the subjects of the study was tested for COVID-19, but 6% of them had to go through compulsory quarantine.

The characteristics of individuals with stated mental disorders.

The study group consisted of 356 women and 24 men. The age average was $M = 33.96$ years old; $SD = 10.11$ years old. 57% of those subjects reside in a large or medium size city and only 12% of them live in rural areas. 68% of participants were involved in a relationship (partner or spouse). 58% declared to have higher education, 35% secondary education and 3.2% had vocational training. As was the case with the group of individuals without mental disorders, more than a half of

the measured individuals were in current employment (52%). 2 individuals within this group tested negative for coronavirus SARS-CoV-2 and 4% of all trial subjects went through compulsory quarantine, imposed by the government. The detailed characteristics of both study groups is presented in the table below (Table 1).

Measures

Due to restrictions on social distancing and other limitations introduced by the Polish government, the research was carried out as an online survey. Socio-demographic variables (9 questions) (detailed data presented in Table 1), medical data collected with the help of International Classification of Diseases ICD-11 (with multiple choice option) (12 mental diseases). One-item question was used in order to obtain information regarding mental disorders. This method is considered to be a quick and complex measure for many types of mental illnesses. Considering pros and cons of this method, we need to emphasize that traditional research questionnaires focus on the assessment of subject’s one specific mental disorder and as a declarative method it is prone to gather dishonest answers. More disadvantages of this measurement method are described in the last part of this research paper. Perceived consequences of the pandemic was assessed with the help of self-made list (with multiple choice option) – 13 options. The severity of mental disease symptoms was measured with the use of a five-point scale (1 – the symptoms decreased significantly; 5 – the symptoms increased significantly). The impact of negative consequences the pandemic had on mental and physical health of the participants and their close ones was measured with a five-point Likert Scale (1 – I am not concerned at all; 5 – I am very concerned). The subjects were asked 5 questions. Every subject had to sign an online consent before being tested. The research was made available on social media. In order to obtain subjects with psychiatric diagnosis, the link to access the research was placed in social media forums which target people with mental disorders.

Google Forms was used accordingly, as it is known to be a safe, free tool that facilitates preparation and execution of the research. All the data were collected throughout 2 weeks (from April 6, 2020 to April 24, 2020), when the most serious restrictions due to COVID-19 pandemic were introduced.

All the participants had to meet the age criteria (18 or above).

Table 1. The characteristics of tested individuals (N = 380 in each group)

Sex	Individuals without mental disorders N (%)	Individuals with mental disorders N (%)
Women	331 (88%)	356 (94%)
Men	49 (12%)	24 (6%)

cont. table 1

Sex	Individuals without mental disorders N (%)	Individuals with mental disorders N (%)
Educational Background		
Elementary Education	0 (0%)	2 (.5%)
Middle School Education	8 (2.1%)	7 (1.8%)
Vocational Education	11 (3%)	12 (3.4%)
Secondary Education	130 (34.2%)	135 (35.5%)
Higher Education	221 (58.2%)	221 (58%)
PhD	10 (2.5%)	3 (.8%)
Habilitation Degree	0 (0%)	0 (0%)
Marital Status		
Single	115 (30%)	115 (30.3%)
Partnership	134 (35%)	140 (36.8%)
Marital Union	128 (34.5%)	121 (31.8%)
Widower/ widow	3 (.5%)	4 (1.1%)
Place of Residence		
Village	66 (18%)	45 (11.8%)
City with population	of up to 10,000 inhabitants	20 (5%)
	from 10 to 100,000 inhabitants	83 (22%)
	from 100 to 500,000 inhabitants	116 (30%)
	above 500,000 inhabitants	95 (25%)
133 (35%)		
Type of Employment		
Current employment contract	224 (59%)	199 (52.4%)
Part-time job under contract for a specified service	31 (8.2%)	19 (5%)
Full-time job under contract for a specified service	22 (5.8%)	26 (6.8%)
Self-employment (work as a single employee)	18 (4.9%)	39 (10.3%)
Owner of their own company, in charge of hiring employees	10 (2.5%)	9 (2.4%)
Student	43 (11%)	27 (7.1%)
Retired	2 (.6%)	7 (1.8%)
Unemployed	30 (8%)	54 (14.2%)

cont. table 1

Sex	Individuals without mental disorders N (%)	Individuals with mental disorders N (%)
Were you tested for coronavirus SARS-CoV-2?		
Yes	0 (0%)	2 (.5%)
No	380 (100%)	378 (99.5%)
I am currently undergoing testing	0 (0%)	0 (0%)
What was the result of the conducted test for SARS-CoV-2?		
Positive	0 (0%)	0 (0%)
Negative	0 (0%)	2 (.5%)
In case of confirmed diagnosis		
I am/was under compulsory quarantine	0 (0%)	2 (.5%)
I am/was hospitalized	0 (0%)	0 (0%)
Were you put under compulsory quarantine?		
Yes	22 (6%)	15 (3.9%)
No	358 (94%)	365 (96.1%)

The subjects suffering from at least one mental disorder were asked to specify their diagnosis. The most commonly declared mental illness was depression (70% of participants) and co-occurring anxiety disorders (33.6%), as well as anxiety disorders without further symptoms of depression. 15% of subjects were previously diagnosed with eating disorders. The summary of the results above can be found in the table below (Table 2).

Table 2. Mental disorders

Declared mental disorders	N (%)
Depressive Disorders	267 (70%)
Anxiety Disorders	195 (51%)
Eating Disorders	57 (15%)
Psychosomatic Disorders	44 (11%)
Personality Disorders	35 (9%)
Obsessive-Compulsive Disorders	30 (8%)
Addiction to psychoactive substances	17 (4.5%)

cont. table 2

Declared mental disorders	N (%)
Behavioral Addiction	9 (2%)
Developmental Disabilities (Autism spectrum/ Asperger's syndrome)	5 (1%)
ADHD	4 (1%)
Bipolar Disorder	2 (.5%)
Schizophrenia	2 (.5%)

Results

IBM SPSS Statistics 25 programme was used for statistical analysis of the results. To verify the hypothesis in this research the following statistical procedures were performed: descriptive statistics were used to describe the basic features of this study's data (arithmetic mean, standard deviation, percentage); to observe relationships between variables *Chi*-squared test and correlation test between two variables were performed, with Spearman's *r* as the linear relationship indicator.

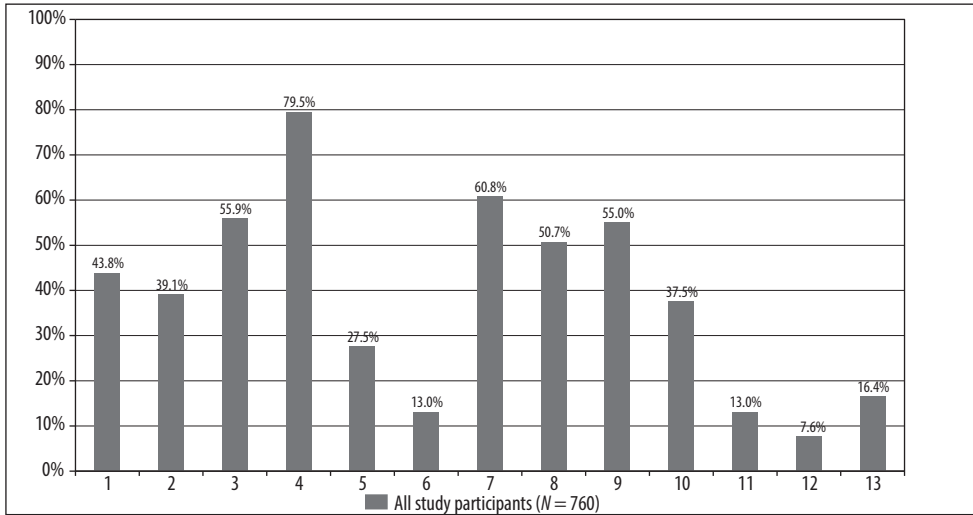
Both study groups were compared in terms of perceived consequences and potential threats related to COVID 19 pandemic with regard to the psychophysical condition of the subjects. Initially the data collected from all participants was verified and then subsequently divided into two samples. The achieved results can be verified in the graphs below (Graphs 1–2).

About 80% of subjects are experiencing fear of losing their loved ones and 55.9% are afraid of a relative getting infected with COVID-19. 43.8% are anxious about getting infected with the virus themselves. 60% are afraid of how ineffective the public health care can be with the treatment of diseases other than coronavirus. The study participants often declared uncertainty about their employment followed by deterioration of their socioeconomic situation (approximately half of the subjects).

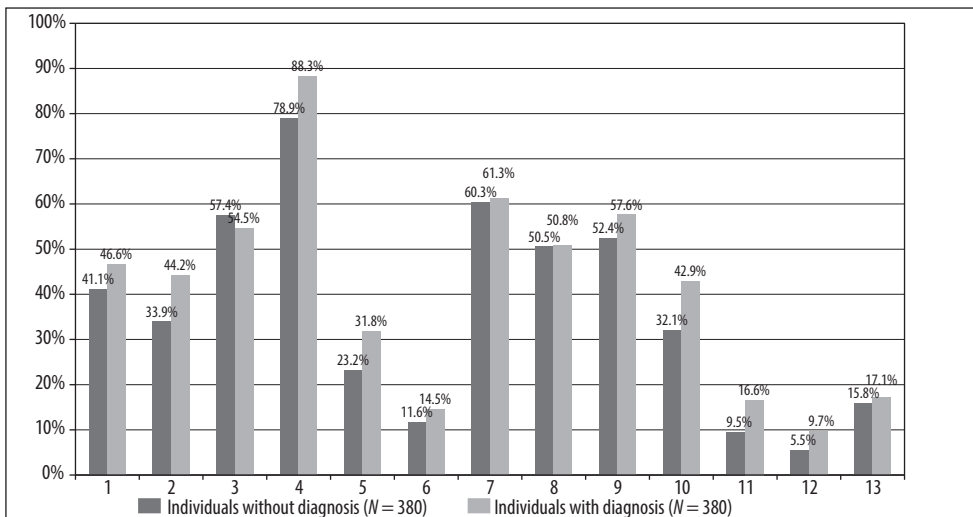
The summary illustrated above, which represents the differences in perception of the consequences of the pandemic by each study group, leads to a very interesting observation. The participants of the study who declared a mental illness diagnosis experience the fear of different consequences more often, with the exception of their relative testing positive for COVID-19. The biggest differences apply to the fear of their own death (10.3%), the death of a loved one (9.4%), the tightening of restrictions on isolation (8.6%) and the isolation and loneliness itself (10.6%), which is experienced more intensively by those diagnosed with mental disorder.

The additional detailed analysis of concerns within the group of people without diagnosis and those diagnosed with mental illness divided into sociodemographic variables can be observed below (Tables 3–5).

The in-depth analysis of perceived consequences of the pandemic within specific groups of mental disorders was presented in Table 6.



Graph 1. Perceived consequences of the pandemic by all study participants



Graph 2. The summary of perceived consequences of the pandemic in both samples

Legend to Graph 1 and Graph 2: 1 – the possibility of getting infected with coronavirus; 2 – own death; 3 – a loved one testing positive for COVID-19; 4 – the death of a loved one; 5 – tightening of restrictions on isolation; 6 – the necessity to undergo compulsory quarantine; 7 – inefficiency of public health care to treat diseases other than coronavirus; 8 – getting laid off/ unemployment; 9 – significant deterioration of socioeconomic situation; 10 – social isolation/ loneliness; 11 – worse family relations; 12 – working from home and taking care of kids; 13 – the overload of responsibilities after going back to everyday life/ work.

Table 3. The summary of perceived consequences of pandemic based on education background

Consequences of the pandemic	Educational Background											
	Elementary		Middle School		Vocational		Secondary		Higher		PhD	
	Diag- nosis	No diag- nosis	Diag- nosis	No diag- nosis	Diag- nosis	No diag- nosis	Diag- nosis	No diag- nosis	Diag- nosis	No diag- nosis	Diag- nosis	No diag- nosis
1	2 (100%)	0 (0%)	4 (57%)	2 (25%)	6 (46%)	5 (45%)	60 (44%)	58 (44%)	99 (45%)	87 (39%)	0 (0%)	4 (40%)
2	0 (0%)	0 (0%)	5 (71%)	4 (50%)	4 (30%)	3 (27%)	49 (36%)	48 (37%)	103 (47%)	73 (33%)	0 (0%)	1 (10%)
3	1 (50%)	0 (0%)	5 (71%)	7 (87%)	6 (46%)	6 (54%)	76 (56%)	81 (62%)	116 (53%)	120 (55%)	3 (100%)	4 (40%)
4	2 (100%)	0 (0%)	5 (71%)	6 (75%)	9 (70%)	9 (82%)	106 (78%)	101 (78%)	176 (80%)	178 (80%)	3 (100%)	6 (60%)
5	2 (100%)	0 (0%)	2 (28%)	3 (37%)	1 (8%)	4 (36%)	46 (34%)	29 (22%)	79 (36%)	48 (22%)	2 (67%)	4 (40%)
6	0 (0%)	0 (0%)	7 (100%)	3 (37%)	1 (8%)	1 (9%)	31 (23%)	10 (8%)	24 (11%)	27 (12%)	1 (33%)	3 (30%)
7	1 (50%)	0 (0%)	4 (57%)	5 (62%)	7 (54%)	6 (54%)	85 (63%)	82 (63%)	133 (60%)	128 (58%)	2 (67%)	7 (70%)
8	0 (0%)	0 (0%)	4 (57%)	4 (50%)	8 (61%)	6 (54%)	68 (50%)	72 (55%)	114 (52%)	106 (48%)	0 (0%)	4 (40%)
9	0 (0%)	0 (0%)	0 (0%)	3 (37%)	11 (85%)	6 (54%)	79 (58%)	71 (54%)	122 (56%)	115 (52%)	1 (33%)	4 (40%)
10	0 (0%)	0 (0%)	0 (0%)	5 (62%)	4 (31%)	5 (45%)	79 (58%)	45 (35%)	82 (37%)	66 (30%)	2 (67%)	1 (10%)
11	0 (0%)	0 (0%)	2 (28%)	1 (12%)	2 (15%)	3 (27%)	26 (19%)	17 (13%)	32 (15%)	15 (7%)	0 (0%)	0 (0%)
12	0 (0%)	0 (0%)	4 (57%)	0 (0%)	1 (8%)	0 (0%)	8 (6%)	8 (6%)	27 (12%)	13 (6%)	2 (67%)	0 (0%)
13	0 (0%)	0 (0%)	4 (57%)	4 (50%)	2 (15%)	3 (27%)	28 (21%)	28 (21%)	30 (14%)	24 (11%)	1 (33%)	1 (10%)

Legend: 1 – the possibility of getting infected with coronavirus; 2 – own death; 3 – a loved one testing positive for COVID-19; 4 – the death of a loved one; 5 – tightening of restrictions on isolation; 6 – the necessity to undergo compulsory quarantine; 7 – inefficiency of public health care to treat diseases other than coronavirus; 8 – getting laid off/ unemployment; 9 – significant deterioration of socioeconomic situation; 10 – social isolation/loneliness; 11 – worse family relations; 12 – working from home and taking care of kids; 13 – the overload of responsibilities after going back to everyday life/ work.

Table 4. The summary of perceived consequences of pandemic based on type of employment

Consequences of the pandemic	Type of Employment											
	Employment contract		Contract for specified service		Own company		Student		Retired		Unemployed	
	Diag-nosis	No diag-nosis	Diag-nosis	No diag-nosis	Diag-nosis	No diag-nosis	Diag-nosis	No diag-nosis	Diag-nosis	No diag-nosis	Diag-nosis	No diag-nosis
1	92 (46%)	103 (46%)	17 (38%)	17 (32%)	20 (43%)	10 (38%)	12 (42%)	17 (39%)	5 (84%)	0 (0%)	26 (48%)	9 (30%)
2	84 (42%)	81 (36%)	18 (40%)	14 (26%)	23 (50%)	9 (35%)	11 (39%)	14 (33%)	4 (66%)	0 (0%)	20 (37%)	11 (37%)
3	109 (54%)	130 (57%)	27 (60%)	34 (64%)	24 (52%)	15 (58%)	16 (57%)	22 (51%)	5 (84%)	0 (0%)	27 (50%)	17 (57%)
4	164 (82%)	181 (80%)	35 (78%)	41 (77%)	39 (85%)	19 (73%)	20 (71%)	35 (81%)	7 (100%)	0 (0%)	37 (68%)	24 (80%)
5	69 (34%)	51 (23%)	18 (40%)	15 (28%)	17 (37%)	4 (15%)	3 (11%)	8 (19%)	1 (16%)	0 (0%)	22 (40%)	9 (30%)
6	26 (13%)	30 (13%)	7 (15%)	7 (13%)	9 (20%)	2 (8%)	3 (11%)	1 (2%)	7 (100%)	0 (0%)	13 (24%)	4 (13%)
7	119 (59%)	136 (60%)	25 (56%)	35 (66%)	30 (65%)	16 (61%)	20 (71%)	23 (54%)	4 (66%)	0 (0%)	36 (6%)	17 (57%)
8	119 (59%)	110 (49%)	30 (67%)	35 (66%)	13 (18%)	13 (50%)	10 (36%)	22 (51%)	1 (16%)	0 (0%)	21 (39%)	12 (40%)
9	111 (55%)	115 (51%)	26 (58%)	26 (49%)	31 (67%)	13 (50%)	16 (57%)	27 (63%)	4 (66%)	0 (0%)	31 (57%)	17 (57%)
10	86 (43%)	61 (27%)	27 (60%)	18 (34%)	15 (33%)	6 (23%)	13 (47%)	22 (51%)	2 (33%)	0 (0%)	28 (52%)	14 (47%)
11	26 (13%)	17 (7%)	9 (20%)	7 (13%)	7 (15%)	0 (0%)	5 (18%)	8 (19%)	1 (16%)	0 (0%)	12 (22%)	4 (13%)
12	23 (11%)	12 (5%)	3 (7%)	1 (2%)	7 (15%)	3 (11%)	3 (11%)	4 (9%)	7 (100%)	0 (0%)	2 (4%)	1 (3%)
13	28 (14%)	24 (11%)	9 (20%)	8 (15%)	12 (26%)	5 (19%)	7 (25%)	18 (42%)	1 (16%)	0 (0%)	6 (11%)	5 (17%)

Legend: 1 – the possibility of getting infected with coronavirus; 2 – own death; 3 – a loved one testing positive for COVID-19; 4 – the death of a loved one; 5 – tightening of restrictions on isolation; 6 – the necessity to undergo compulsory quarantine; 7 – inefficiency of public health care to treat diseases other than coronavirus; 8 – getting laid off/ unemployment; 9 – significant deterioration of socioeconomic situation; 10 – social isolation/loneliness; 11 – worse family relations; 12 – working from home and taking care of kids; 13 – the overload of responsibilities after going back to everyday life/ work.

Table 5. The summary of perceived consequences of pandemic based on marital status

The consequences of the pandemic	Marital Status									
	Single		Partnership		Marital Union		Widower/ Widow			
	Diag-nosis	No diag-nosis	Diag-nosis	No diag-nosis	Diag-nosis	No diag-nosis	Diag-nosis	No diag-nosis	Diag-nosis	No diag-nosis
1	41 (36%)	45 (39%)	65 (46%)	47 (35%)	65 (54%)	62 (48%)	1 (2.5%)	2 (67%)	1 (2.5%)	2 (67%)
2	42 (37%)	37 (32%)	60 (42%)	38 (28%)	57 (41%)	53 (41%)	2 (50%)	1 (33%)	2 (50%)	1 (33%)
3	52 (46%)	65 (56%)	80 (56%)	81 (60%)	73 (60%)	70 (55%)	3 (75%)	2 (67%)	3 (75%)	2 (67%)
4	80 (71%)	93 (81%)	117 (82%)	103 (77%)	101 (83%)	102 (78%)	4 (100%)	2 (67%)	4 (100%)	2 (67%)
5	40 (35%)	26 (23%)	44 (31%)	30 (22%)	46 (38%)	31 (24%)	0 (0%)	1 (33%)	0 (0%)	1 (33%)
6	19 (17%)	9 (8%)	23 (16%)	13 (10%)	16 (13%)	22 (17%)	2 (50%)	0 (0%)	2 (50%)	0 (0%)
7	61 (54%)	68 (59%)	94 (66%)	84 (63%)	78 (64%)	76 (59%)	2 (50%)	0 (0%)	2 (50%)	0 (0%)
8	65 (57%)	63 (55%)	81 (57%)	70 (52%)	46 (38%)	58 (45%)	2 (50%)	1 (33%)	2 (50%)	1 (33%)
9	73 (65%)	65 (56%)	79 (55%)	71 (53%)	65 (54%)	62 (48%)	2 (50%)	1 (33%)	2 (50%)	1 (33%)
10	65 (57%)	50 (43%)	61 (43%)	46 (34%)	44 (36%)	24 (19%)	1 (25%)	2 (67%)	1 (25%)	2 (67%)
11	20 (18%)	14 (12%)	25 (18%)	12 (9%)	14 (12%)	10 (8%)	1 (25%)	0 (0%)	1 (25%)	0 (0%)
12	10 (9%)	5 (4%)	12 (8%)	7 (5%)	16 (13%)	9 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
13	20 (18%)	21 (18%)	29 (20%)	23 (17%)	14 (12%)	16 (12%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Legend: 1 – the possibility of getting infected with coronavirus; 2 – own death; 3 – a loved one testing positive for COVID-19; 4 – the death of a loved one; 5 – tightening of restrictions on isolation; 6 – the necessity to undergo compulsory quarantine; 7 – inefficiency of public health care to treat diseases other than coronavirus; 8 – getting laid off/ unemployment; 9 – significant deterioration of socioeconomic situation; 10 – social isolation/loneliness; 11 – worse family relations; 12 – working from home and taking care of kids; 13 – the overload of responsibilities after going back to everyday life/ work.

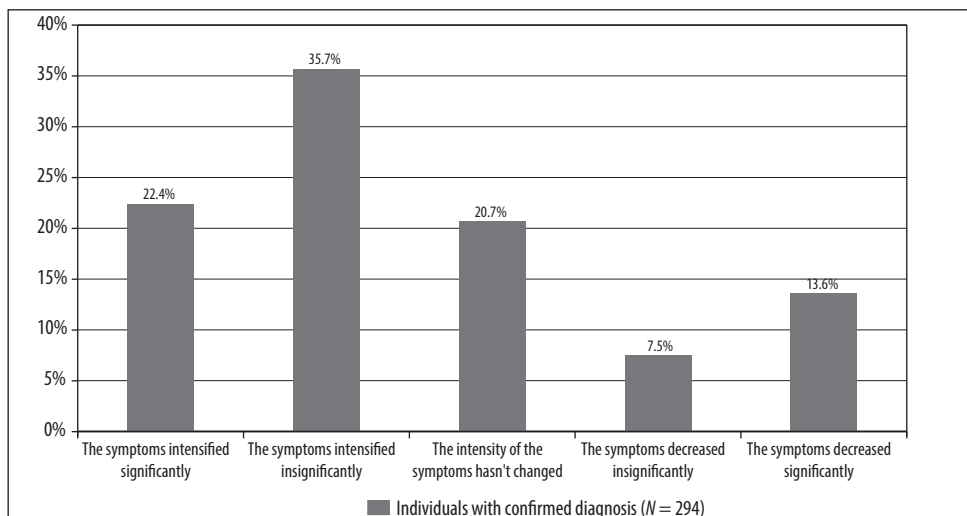
Table 6. The perceived consequences of the pandemic and the diagnosis of mental illness

Percieved consequences of the pandemic	Depressive Disorders	Anxiety Disorders	Eating Disorders	Psychosomatic Disorders	Personality Disorders	Obsessive-Compulsive Disorders
1	127 (47.6 %)	100 (51%)	31 (54.4%)	25 (56.8%)	16 (45.7%)	17 (56.7%)
2	108 (40.4%)	99 (50.8%)	26 (45.6%)	23 (52.3%)	17 (48.6%)	10 (33.3%)
3	161 (60.3%)	116 (59%)	41 (71.9%)	24 (54.5%)	22 (62.9%)	21 (70%)
4	216 (81%)	159 (81%)	50 (87.7%)	37 (84.1%)	26 (74.3%)	28 (93.3%)
5	95 (36%)	59 (30.3%)	19 (33.3%)	12 (27.3%)	15 (42.9%)	16 (53.3%)
6	49 (18.4%)	28 (14.4%)	12 (21.1%)	12 (27.3%)	9 (25.7%)	7 (23.3%)
7	167 (62.5%)	124 (63%)	44 (77.2%)	31 (70.5%)	27 (77.1%)	20 (66.7%)
8	145 (54.3%)	103 (53%)	31 (54.4%)	26 (59.1%)	22 (62.9%)	15 (50%)
9	167 (62.5%)	106 (54%)	37 (64.9%)	27 (61.4%)	25 (71.4%)	22 (73.3%)
10	127 (47.6%)	79 (40.5%)	31 (54.4%)	15 (34.1%)	20 (57.1%)	14 (46.7%)
11	46 (27%)	29 (14.9%)	11 (19.3%)	9 (20.5%)	7 (20%)	7 (23.3%)
12	37 (20.3%)	20 (10.3%)	5 (8.8%)	5 (11.4%)	2 (5.7%)	3 (10%)
13	42 (15.7%)	27 (13.8%)	12 (21.1%)	6 (13.6%)	8 (22.9%)	6 (20%)

Legend: 1 – possibility of getting infected with coronavirus; 2 – his/her death; 3 – a relative getting infected with COVID-19; 4 – death of a relative; 5 – tightening of social distancing restrictions; 6 – obligatory quarantine; 7 – inefficiency of a health care system in treatment of diseases other than coronavirus; 8 – unemployment; 9 – significant worsening of socioeconomic situation; 10 – social isolation/ loneliness; 11 – worsening of family relations; 12 – homeschooling and working remotely; 13 – the overflow of responsibilities after getting back to standard lifestyle/ work.

This research also investigated if there is a link between the perceived consequences of the pandemic in those with and without the diagnosis of mental disorder. For this purpose the *Chi-squared* test was applied. This research also included the analysis of the relationship in perceived consequences of the pandemic between subjects with and without diagnosis of mental disease. For this purpose *Chi-squared* test was performed which obtained the following results: the majority of subjects with the diagnosis of mental illness were recognized with higher concern about their own death $\chi^2(1, N = 290) = 5.710, p = .017$, the tightening of self-isolation restrictions $\chi^2(1, N = 218) = 11.346, p = .001$, the insufficiency of healthcare premises $\chi^2(1, N = 463) = 1.227, p = .036$, social isolation and loneliness $\chi^2(1, N = 293) = 13.336, p = .000$; worsening of the family relationships $\chi^2(1, N = 96) = 6.867, p = .009$; and taking care of their children when working remotely $\chi^2(1, N = 59) = 5.311, p = .021$. The remaining patterns were not statistically significant. The possibility of coronavirus infection $\chi^2(1, N = 328) = 1.373, p = .241$; the possibility of a close one getting infected $\chi^2(1, N = 426) = .534, p = .465$; death of a close one $\chi^2(1, N = 602) = .063, p = .820$; the necessity to undergo obligatory quarantine $\chi^2(1, N = 102) = 2.219, p = .136$; becoming unemployed $\chi^2(1, N = 386) = .021, p = .885$; significant worsening of one's socioeconomic situation $\chi^2(1, N=418) = 2.127, p = .145$; the excess of responsibilities after returning to normal lifestyle and work $\chi^2(1, N = 123) = .087, p = .768$.

The participants who declared to be diagnosed with a mental disorder were asked to determine how strongly their symptoms have intensified due to pandemic. This question was applied to those who are currently undergoing psychological treatment. 22% of the diagnosed subjects claimed to be cured from their mental illness. The obtained results can be observed in the graph below (Graph 3).



Graph 3. The intensification of mental disease symptoms caused by the pandemic

Approximately 51% of tested individuals have declared experiencing intensified symptoms throughout the course of the pandemic.

The thorough data are presented below (Table 7).

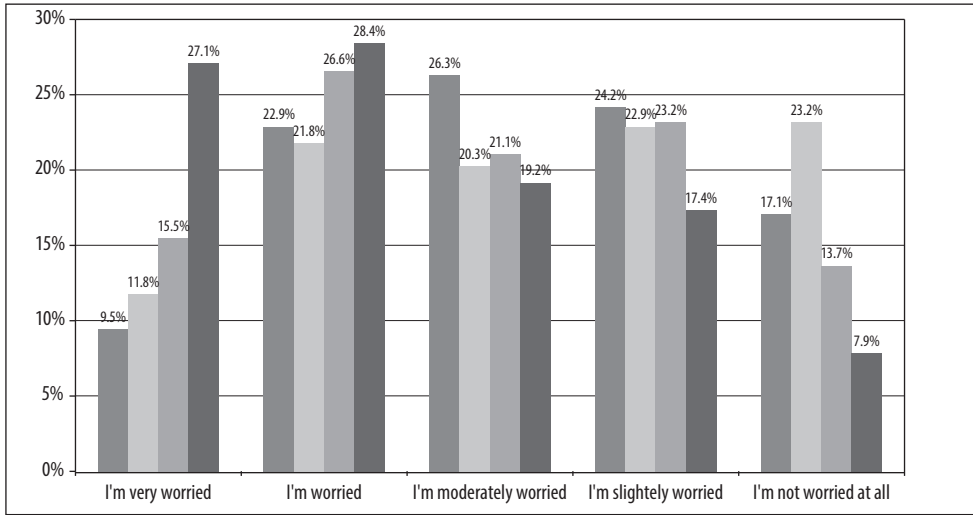
Table 7. Intensification of mental disease symptoms caused by the pandemic

Diagnosis	Severity of symptoms				
	Increased significantly	Increased insignificantly	Hasn't changed	Decreased insignificantly	Decreased significantly
Depressive Disorders (N = 229)	58 (25.3%)	81 (35.4%)	39 (17%)	18 (7.9%)	33 (14.4%)
Anxiety Disorders (N = 162)	42 (25.9%)	60 (37%)	27 (16.7%)	13 (8%)	20 (12.3%)
Eating Disorders (N = 38)	11 (28.9%)	11 (28.9%)	5 (13.2%)	6 (15.8%)	5 (13.2%)
Psychosomatic Disorders (N = 38)	6 (15.8%)	20 (52.6%)	4 (10.5%)	3 (7.9%)	5 (13.2%)
Personality Disorders (N = 34)	12 (35.3%)	12 (35.3%)	3 (8.8%)	2 (5.9%)	5 (14.7%)
Obsessive Compulsive Disorders (N = 30)	7 (23.3%)	7 (23.3%)	8 (26.7%)	6 (20%)	2 (6.7%)

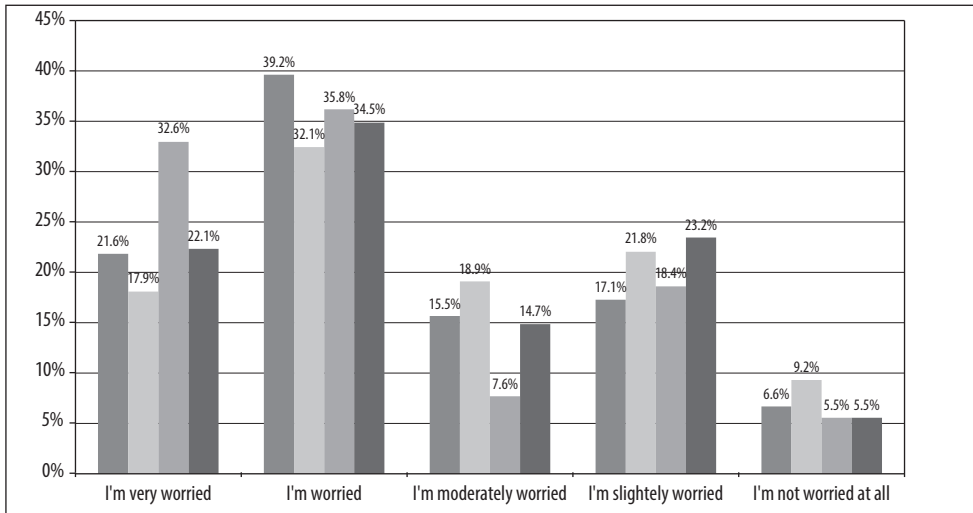
The participants of the study were also asked to determine the negative consequences of the COVID-19 pandemic on their physical and mental health. The results can be found below, with both indicated study groups (Graph 4).

We observed, that 55% of the individuals with the diagnosis show concern about their own mental health as a consequence of the pandemic. The distress within this study group is experienced twice more often than in the case of individuals without diagnosis of mental illness. The participants belonging to the group with diagnosis declared concern about their physical health more often.

Last but not least, the subjects of the study determined the negative impact of COVID-19 on the mental and physical health of their close ones. The obtained results are presented in the graph below, with both indicated study groups (Graph 5).



Graph 4. The layout of perceived negative consequences of the pandemic based on evaluation of the physical and mental health of the subjects



Graph 5. The perceived negative impact of the pandemic based on evaluation of the physical and mental health of their close ones

Legend to Graph 4:

- Physical health of the subjects without diagnosis (N = 380)
- Mental health of the subjects without diagnosis (N = 380)
- Physical health of the subjects with diagnosis (N = 380)
- Mental health of the subjects with diagnosis (N = 380)

Legend to Graph 5:

- Physical health of your relatives – people without diagnosis (N = 380)
- Mental health of your relatives – people without diagnosis (N = 380)
- Physical health of your relatives – people with diagnosis (N = 380)
- Mental health of your relatives – people with diagnosis (N = 380)

The fear related to the physical and mental health of loved ones is similarly common in the study group with and without diagnosis of mental illness.

In the last step of the analysis the researchers verified the link between severity of the mental disease symptoms throughout the pandemic and the concern of the subjects about their own health and the health of their relatives. The obtained Spearman correlation coefficients can be observed in the table below (Table 8).

Table 8. Spearman correlation coefficients

	Physical health of the subjects	Mental health of the subjects	Physical health of the subjects' relatives	Mental health of the subjects' relatives
Depressive Disorders (N = 229)	.349 **	.608 **	.200 **	.296 **
Anxiety Disorders (N = 162)	.199 *	.490 **	.116	.253 **
Eating Disorders (N = 38)	.292	.579 **	.248	.443 **
Psychosomatic Disorders (N = 38)	.284	.424 **	.303	.207
Personality Disorders (N = 34)	.009	.484 **	-.005	.279
Obsessive Compulsive Disorders (N = 30)	.584 **	.576 **	.332	.564 **

The obtained Spearman correlation coefficients indicate positive correlation between the severity of symptoms and the concern about the mental health of subjects from all groups and mental health of the subjects' relatives withing the group of depressive, anxiety, eating and obsessive compulsive disorders. The results withdrawn from subjects with depressive disorders show a positive correlation between the severity of symptoms and concern about their own physical health and the physical health of their relatives. That positive correlation between the severity of symptoms and concern about subjects' own physical health was also observed in individuals with obsessive-compulsive and anxiety disorders. Other correlations were not statistically significant.

Discussion

SARS-CoV-2 pandemic caused the government to impose some radical restrictions. The purpose of this study was to compare the frequency of psychosocial consequences of the pandemic between healthy subjects and those that declared to be diagnosed with mental illness.

The most commonly declared mental illness was depression, which often is accompanied by different anxiety disorders as a separate diagnostic unit, which coincides with the epidemiological data indicating its high prevalence within society (Taylor, Stanton, 2007). It was assumed that people suffering from mental disorders might have fewer resources, which can result in higher prevalence of their symptoms in particularly difficult situations, such as the current global pandemic (Wang et al., 2010). The pandemic itself can be an especially incriminating event that can easily exceed one's coping resources. Any type of life transition in people suffering from depression can result in a higher tendency to withdraw (Benedysiuk, Tartas, 2006). Those people are especially vulnerable in dealing with current situation due to their cognitive distortions, characterized by cognitive errors typical for people with depression (catastrophic thinking, excessive criticism, negativism, overgeneralization, dichotomous thinking). The cognitive aspects of symptoms in people with depression can lower their chances to cope (Beck, 1976).

The sociodemographic variables draw attention to the disproportion of frequency in declared anxiety due to the financial situation and potential job loss between singles and those in marital union. For those subjects who support only themselves such possibility can have more severe consequences, because as a result they can become destitute. In this case the division of subjects into those with and without diagnosis of mental disorders was irrelevant. Another disproportion observed in this study is the difference in anxiety due to social isolation between subjects with secondary and higher education. The diagnosis did not play a significant role in this case either. Those differences require further exploration.

Among 58.1% of the tested subjects indicated that their disease symptoms have intensified in the time of highest restrictions. The diagnosed individuals often declared fear of dying and further tightening of restrictions, which could be caused by the dread of isolation and loneliness. One of the key resources that can facilitate dealing with stressful situations is social support, however the possibility of socializing is currently limited by the restrictions imposed by the government (George et al., 1989). The access of social support and capability to share your emotions with other people is very important in the process of dealing with difficult situations. The social support can be understood as a personal resource, according to Hobfoll's Conservation of Resources (1989, 2018). Studies show that social support, especially in its emotional aspect, can be acting as a buffer from negative consequences that catastrophes can have on mental health (Birkeland et al., 2017).

Social distancing can have a significant impact on the intensity of experienced symptoms in different mental disorders, particularly anxiety. The diagnosed individuals were often concerned about their family relations and working from home while taking care of their kids. The reasons mentioned above are of a social nature, emphasising the relationship between family members.

The individuals with diagnosed mental illness frequently experience anxiety over their own physical and mental health, which can be caused by higher levels of stress as well as limited access to compensatory activities that can improve their well-being, such as physical activities. Both study groups were showing similar concern about the health of their close ones. At the same time the fear of death of a close one was most commonly indicated by the subjects. The layout of frequency of declared consequences of the pandemic within the subjects of different diagnosis has not shown any specific pattern.

Nonetheless, the research has shown that the total amount of persons concerned about their own physical and mental health as well as their socioeconomic status was also high within the group of people without diagnosis of mental disease. This observation indicates that consequences of the pandemic are perceived as negative by the overall society (Wang et al., 2020). Only 5 out of 760 tested subjects, which represents 1.4% of the entire sample, claimed not to experience any impact caused by the pandemic.

About 60% of individuals with mental disorders declared fear in relation to mental and physical health of their own and their relatives'. The correlation between the severity of psychiatric symptoms and concern about their own and their relatives' physical and mental health was the strongest in the group of individuals with depressive disorders. This result can most likely be caused by how negatively those patients are explaining reality. Negative interpretations are the main component of cognitive approach to depression (Hindash, Amir, 2012). This pessimistic perception is not only focused on themselves, but also on their surroundings. The strongest anxiety within all tested groups referred to subjects' own mental health. The conclusion can be drawn, that there is a relationship between negative consequences of the pandemic and increase of symptoms and fear of further decline of physical and mental health. Within the subjects diagnosed with anxiety disorders weaker correlation was noted between the severity of symptoms and concern about health, as well as no correlation between the severity of their symptoms and concern about the physical health of their relatives. The reason behind these results can be the patients' higher concentration on themselves. At the same time it can be assumed that a portion of declared concerns are related to the limited social situation, rather than anxiety as a general trait. The individuals diagnosed with depression seem to be the group most in risk of suffering the negative consequences of the pandemic, similarly to Iob, Frank, Steptoe, Fancourt (2020) research, in which there have been proved that people with health related factors were more vulnerable to mental negative consequences. Such patients dispose of less psychological

resources and non-adaptable cognitive schemas. Subjects with psychosomatic and personality disorders in the context of severity of their symptoms are focused mainly on fear of their own mental state, without generalization to their surroundings.

Some limitations of this research must be considered. One of them is the design of the study (electronic survey). However, it must be acknowledged that this research was running during the time of highest restrictions which made it impossible to meet the subjects in person. The fear of getting infected and the isolation caused by the quarantine were particularly experienced during this study, therefore the above results represent the perceived consequences of the pandemic when the situation was most threatening to mental health. Moreover, in this research the participants were divided into those with and without mental disorders based on a declarative question about the history of their psychiatric diagnoses.

The application of such method can affect the interpretation of the results, due to the lack of certainty whether the subjects who declared not to be diagnosed with mental illness are in fact not suffering from any. There exists a possibility that some of the subjects who declared to be mentally healthy could suffer from an undiagnosed mental illness. For this reason the authors of this research paper divided their subjects into those who declared to be diagnosed with mental illness and those without such declaration. The subjects were not directly divided into those who are healthy and those who suffer from mental disorders and that is the only limitation of this method. Similar methodological problems can be observed in classic research involving questionnaires. Those studies are capable of showing the current mental state of the patient, although mainly in the context of anxiety and depression, but they are not sufficient to make a diagnosis of mental illness, because it requires psychiatrist's validation. For this reason the authors of this research used a single-item measure consisting of a question regarding the confirmation of psychiatric diagnosis as a method for testing their hypothesis. The most optimal method would be to confirm their declaration with independent psychiatric assessment however, this was impossible due to logistical limitations and restrictions.

Another limitation, indirectly resulting from the previous one, is the significant overrepresentation of women and highly educated subjects in the study group. Women and people with higher education are more eager to participate in scientific studies (World Health Organization, 2020). This effect can be particularly observed in online research (Vieira et al., 2020). For these reasons caution should be used when generalizing the tendencies obtained in this study. Nevertheless, the high prevalence of declared anxiety indicates the need to take extensive prophylactic action in order to protect the mental health of people diagnosed with mental disorder, as well as those without such diagnosis. Psychiatric and psychological consultations with the use of modern technologies can significantly reduce the level of stress and improve the current quality of life (Zhou et al., 2020).

This research shows general dependencies between two study groups and the consequences of COVID-19. The researchers in the following studies could

focus on subjects with specific mental disorders. With the use of standardized questionnaires the results obtained from the patients (including the consequences of COVID) could be compared to the results obtained from healthy subjects. In addition, more should be done to consider psychological resources in relation to perceived consequences of the pandemic. The aim of further research could be an effective analysis of the dynamic changes in functioning of subjects with mental disease as a response to the situation caused by the COVID-19 pandemic.

Conclusions

1. About 60% of the tested subjects with different types of depressive disorders declare that the situation of the pandemic affects their mental health negatively and causes an increase of their psychiatric symptoms.
2. The severity of depressive symptoms is positively related to fear of one's own mental and physical health, as well as mental and physical health of one's relatives.

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ZDROWIE PSYCHICZNE I SPOSTRZEGANE KONSEKWENCJE SARS-CoV-2

Streszczenie

Cel: Celem badania jest weryfikacja spostrzeganych społecznie skutków i potencjalnych zagrożeń wynikających z ekspansji wirusa SARS-CoV-2 oraz związanych z nią działań ograniczających gospodarkę oraz dystansowania społecznego.

Materiał i metoda: W badaniu wzięło udział 760 osób: 380 osób deklarujących diagnozę co najmniej jednego zaburzenia psychicznego oraz 380 osób bez zaburzeń. Badanie zostało przeprowadzone w wersji online (ankieta internetowa). Dane zbierano w czasie dwóch tygodni (od 6.04.2020 do 24.04.2020) – w okresie obowiązywania najbardziej restrykcyjnych ograniczeń związanych z COVID-19.

Wyniki: Sprawdzono, czy istnieją związki między zdrowiem psychicznym a spostrzeganymi skutkami pandemii u 760 osób. Uzyskane wyniki wskazują, że 4/5 badanych osób odznacza się większą obawą o śmierć bliskiej osoby, 3/5 z nich odczuwa lęk wynikający z obawy związanej z niewydolnością służby zdrowia i własnego zarażenia. Szczegółowa analiza danych z uwzględnieniem podziału na osoby z diagnozą i bez diagnozy wykazała, że badani ze zdiagnozowaną chorobą psychiczną charakteryzują się wyższym poziomem obaw dotyczących analizowanych konsekwencji pandemii. Przeprowadzone testy chi-kwadrat wskazały, że osoby z diagnozą odznaczają się większą obawą o własną śmierć, zaostrzenie restrykcji dotyczących izolacji, niewydolnością służby zdrowia, izolacją społeczną i samotnością, pogorszeniem relacji rodzinnych oraz połączeniem opieki and dziećmi z wykonywaną pracą. Połowa badanych osób ze stwierdzonymi zaburzeniami psychicznymi wskazała na znaczące nasilenie objawów choroby w trakcie trwania pandemii.

Wnioski: Wysokie rozpowszechnienie deklarowanych lęków, w tym obaw o zdrowie psychiczne wskazuje na potrzebę podjęcia szeroko zakrojonych działań profilaktycznych w celu ochrony zdrowia psychicznego.

Słowa kluczowe: COVID-19, zaburzenia psychiczne, zdrowie psychiczne

Data wpłynięcia: 5.11.2020

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