

Mental Disorders after Hospitalization for Covid-19

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Summary

The purpose of this study was to investigate possible mental disorders in patients who contracted Covid-19 during the 2020 pandemic and were hospitalized in a Greek hospital - outside the intensive care unit - and their comparative evaluation with those who were admitted quarantine without the onset of severe symptoms covid-19.

Method: The study involved 348 adults from Greece, namely 166 patients who were discharged after hospitalization in a pandemic reference hospital, and 182 asymptomatic and unpatrolled individuals who were quarantined in a familiar environment during the event. pandemic.

Results: People who were hospitalized in the country due to COVID-19 symptoms, present the period after their discharge mental disorders mainly depression and post-traumatic stress. Those who were placed in compulsory quarantine did not show similar symptoms.

Conclusions: The nature and characteristics of COVID-19 disease as well as simple hospitalization seem to create, among other things, post-traumatic stress disorder and depression that manifest and follow patients in the time period after their discharge. Symptoms of depression and feelings of intense anger also appear to manifest. These results show a part of the disorders and psychopathology of patients with covid-19 after their treatment. The manifestation of these mental disorders seems to be related to the specific conditions of the pandemic disease, its extent, intensity, as well as its characteristics such as social isolation, mortality and contagion. The investigation as well as the timely and appropriate treatment of the context of mental disorders - especially post-traumatic stress and depression - should receive special attention and be the subject of broader research over time.

Keywords: Mental Disorders; Hospitalization; Covid-19

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Introduction

Post-Traumatic Stress Disorder (PTSD) is a stress disorder that can occur in a person who has had a dangerous traumatic experience, in which there has been actual or threatened death, serious injury, or threat to his or her own or others' physical integrity. This traumatic event is accompanied by intense fear, helplessness or horror. The disorder can affect survivors of rape, physical abuse, war, torture, natural disasters, car or air accident, hostage situation or death camp. Whatever the traumatic event, the person has lived through a period of intense fear, despair and loss of control.

Among Vietnam veterans, 14% reported developing a severe form of PTSD and among survivors of an accident at work in 1988 at an oil rig in the North Sea where 75% of men died in the blast, the remaining 25% did not develop excluding. Very young and elderly people who suffer significant trauma seem to be particularly prone to post-traumatic stress, probably because young children do not have sufficiently developed defense mechanisms to cope, and the elderly because they may have less social support. An important aspect of the disorder is that not all people who witness the same event suffer from post-traumatic stress disorder. This leads us to conclude that there are

factors that influence the genesis or not of the disorder.

Gender is an important element in post-traumatic stress disorder. Twice as many women as men suffer from the disorder. The personality of each person is an important factor, the attitude towards life, how each one interprets and evaluates the experiences and events of life in combination with the psychological problems that the person may face (depression, anxiety disorders). The support that the individual can receive from his environment, family or friend is a catalyst for the healing of the wound [1].

Post-Traumatic Stress Disorder (PTSD)

Post-traumatic stress disorder (PTSD) was first described in World War I veterans as "bombing shock" and was originally described as "nervous shock", "traumatic neurosis" or "phobic neurosis". Symptoms included feelings of extreme hostility to others, intense and unwarranted outbursts of anger, and fixation on traumatic events. The specific name PTSD first appeared in the late 1970s and concerned the long-term effects of exposure to traumatic war events. Typical symptoms of the disorder include emotions of war veterans who seem to relive traumatic events and exhibit avoidance behaviors as well as physical symptoms. Today it is also used to convey a broader context



of mental phenomena such as drug addiction, or immigration and hospital emergencies [1].

Post-traumatic stress is one of the most common and debilitating psychological consequences of a disaster. It refers to situations in which traumatic events are experienced outside the context of everyday life and which cause discomfort or despair. An important predictor of developing this disorder is the inability to react in combination with feelings of fear, physical arousal and a sense of helplessness [2]. People who develop PTSD show permanent changes in their brain (hypothalamus - pituitary gland - adrenal gland - amygdala) [1]. An example that shows the strong impact of the catastrophic events of life is the case of the volcano of Saint Eleni, when a few months after its eruption in the nearby town of Othello there was an increase in deaths of 18.6%, an increase in diseases aggravated by stress 19.8% and twice the number of people seeking mental health services [2].

The symptoms of Post-Traumatic Stress are categorized into three categories. The first context includes reliving the traumatic experience, flashbacks, nightmares, and psychosomatic stress. The second set of symptoms includes persistent avoidance of thoughts, persons, or situations experienced as reminders of the traumatic experience, inability to retrieve information about the traumatic event or withdrawal from activities or specific individuals, and lack of plans for the future [2]. The third context includes symptoms of particular intensity such as sleep disturbances, irritability, hyperexcitability, difficulty concentrating, sudden reactions as well as physical symptoms [3].

The Present Study

The aim of this study was to investigate the manifestation of mental disorders in patients with COVID-19 coronary after their discharge from hospital. Specifically, an attempt was made to investigate the presence of symptoms of post-traumatic stress, depression or other mental disorders that could be caused by the disease and the special conditions of treatment related to social isolation, the possibility of worsening and death, transmission, etc.

Specifically, the main goal of this research study was to detect the post-traumatic psychosocial issues of people who became ill and were treated by covid-19 during the period from March to June 2020 in Greece.

A comparison was made between the group of patients who contracted coronary heart disease and were admitted to a hospital in any area of Greece and the individuals who were placed (as carriers of the disease) in mandatory quarantine.

Sample

The study involved 348 adults from Greece, namely 166 patients who were discharged after hospitalization in a pandemic reference hospital (77 men, 89 women), and 182 asymptomatic and unpatrolled individuals (109 men, 73 women) who were quarantined in a familiar environment during the pandemic. The mean age of the participants was 40.2 years with a standard deviation of 8.3 years. The conditions for the participation of the individuals in the study were: their hospitalization in a health unit, but not in an intensive care unit, or their stay in quarantine for a period of at least fourteen days. The desire of individuals to participate in the present study voluntarily and to have no previous history of any mental disorder. The people who participated in the study were informed about the anonymity and protection of their data as well as about its purpose.

Procedure

The research was carried out through the response of the participants to the research tools which were posted on the configured response platform of Google drive. The demographics of the participants were recorded for the research, such as: gender, age, place of residence, level of education, and previous medical history of mental illness or hospitalization in a clinic or hospital. The following research tools were used in the platform configured in the Google drive:

Psychopathology Scale (SCL-90)

The Psychopathology Scale (SCL-90), concerns the recording of existing psychopathology. It consists of 90 questions, which describe psychological, behavioral and physical objections in the base of 9 subscales: incarnation, obsessive compulsive, interpersonal sensitivity, depression, aggression, phobic anxiety, paranoid ideation, psychosis and various objections. The evaluation is performed according to a five-point Likert scale (0-1-2-3-4). In addition to the export index for each sub-scale, there are an additional 3 total indicators, which relate to the general symptom index, the total of positive symptoms and the positive symptom annoyance index respectively. The adjustment of the scale to the Greek population presented satisfactory criterion validity and convergent validity, as well as significant correlations of its subscales with related subscales of the MMPI.

PTSD Scale Checklist Civilian Version (PCL)

The PCL Scale is a tool for assessing post-traumatic stress. Built in 1994 by Weathers, Litz, Huska & Keane at the National Center for PTSD. It is a self-report questionnaire that includes 17 questions and statements, which explore the three categories of symptoms that occur during the development of post-traumatic stress, rejuvenation of the trauma, emotional numbness and anxiety and depressive symptoms. The statements are answered on a five-point frequency scale (where 1 = not at all, 2 = little, 3 = sometimes, 4 = enough and 4 = too much).

Aggression and Direction of Aggression Questionnaire (HDAQ)

HDAQ is a self-administered questionnaire that measures aggression as an attitude. It is a test of measuring a wide range of possible manifestations of aggression. It reflects a willingness to respond with hostile behavior and a tendency to value people, including oneself, in an unfavorable and negative way. Aggression measured by HDAQ has nothing to do with physical aggression and physical violence. HDAQ consists of 5 subscales in the 52 items on the University of Minnesota Multiphasic Personality Inventory (MMPI). Three subscales, Impulsive Aggression (Acting out Hostility, AH), Criticism of Others (CO) and Paranoid Hostility (PH), refer to extroverted aggression. Two subscales, Self-Criticism (SC) and Delusional Guilt (Guilt, G), address introverted aggression and measure self-punishment. The sum of all five subscales reflects the overall aggression. Acceptable standards for total aggression in the normal population are between 12 and 14.

Statistical Analysis

To analyze the demographic and psychometric characteristics of the sample, descriptive data of the distributions (mean and constant deviation (SD)) were used for their responses at each scale as well as at each subscale. The t-test was used to compare the two distributions because the tests for the regularity of the distributions through the Kolmogorov-Smirnov test but also through the regularity diagrams confirmed that the hypothesis of the regularity of the variables is acceptable.



In the cases of comparison of categorical data, the χ^2 test was used. Specifically, the following were used:

Pearson χ^2 for 3x2 tables in cases where less than 25% of the expected values are <5 ,

Pearson χ^2 for 2x2 tables in cases where all expected values are >10 , the Yates χ^2 for 2x2 tables in cases where even one of the expected values is between 5 and 10,

Pearson's parametric correlation coefficient (r) was used to investigate the statistical correlation of the quantitative variables between the two groups because the frequency distribution of their values was normal. The differences (P) for all indicators used were considered statistically significant from the level of 5% ($p < 0.05$). The statistical analyzes related to the descriptive characteristics of the variables were performed in Excel and SPSS programs, while the statistical analyzes related to the comparisons of quantitative and categorical variables as well as the correlations of the variables were applied to the SPSS statistical package.

Results

The results obtained from the correlation of the variables in pairs of the present study come to reinforce the results of other studies. In particular, the high correlations of post-traumatic stress, with gender, psychopathology, aggression, and hospitalization for covid-19 as measured by PTSD, are consistent with the results of studies that report a linear correlation between the experience of a natural disaster and the occurrence of PTSD, but also with the results of studies that have found that post-traumatic stress is associated with conditions of an unpleasant lived experience [3-5].

The group of people who were hospitalized presented higher averages in terms of psychopathology such as: depression, paranoid ideation and interpersonal sensitivity, as well as the general symptom index and the overall score of psychopathologies. No statistically significant differences were found between the two groups in the other subscales of the psychopathology questionnaire. These results support the hypothesis that patients with hospitalization have higher levels of psychopathology than those placed in quarantine. When a traumatic event occurs, both the fear response and the anger response can be activated simultaneously [2].

Demographic Characteristics of the Sample

The mean age of hospitalized patients was 46.3 ± 5.8 , and did not differ statistically significantly from the mean age of quarantined patients, which was 42.7 ± 6.5 , compared with the t-test ($P = 0,1$). No statistically significant difference was observed between the sex composition of the two groups compared to Pearson's χ^2 ($P = 0,2$). The highest percentages in both groups were men (54.7% hospitalization, and 62.3% simple quarantine). No statistically significant differences were observed between the two groups in the other demographic variables studied in the present study.

Psychopathology Scale (SCL-90)

The results showed that there was a significant difference between the two groups in terms of averages in depression ($t = 2.173$, $p = 0.023$) and paranoid ideation ($t = 1.763$, $p = 0.032$), while an indicative significant difference emerged in interpersonal sensitivity ($t = 1.443$, $p = 0.037$), in the general symptom index ($t = 1.770$, $p = 0.082$) and in the overall score of psychopathology ($t = 1.109$, $p = 0.059$).

PTSD Scale Checklist Civilian Version (PCL)

The results showed that there is a significant difference in the mean levels of post-traumatic stress disorder ($t = 2.235$, $p = 0.012$). The mean value of post-traumatic stress in the research sample was 33.17 ± 11.46 while the mean normal value of the levels of post-traumatic stress disorder in the general population is lower (29.4 ± 12.9) [2].

Invasion and Direction of Aggression Questionnaire

The same pattern of results is observed in the aggression questionnaire. More specifically, the results showed that there is a significant difference in terms of averages in extroverted hostility ($t = -2.010$, $p = 0.046$) and total hostility ($t = 1.844$, $p = 0.067$) while in the other dimensions no statistically significant differences between the two groups were found.

Correlation Analysis

The test for the existence of correlations of demographic factors and research questionnaires shows that gender is positively correlated with post-traumatic stress and the overall score in psychopathology. The experience of the disease in both groups is positively correlated with the symptoms of post-traumatic stress and especially aggression.

Gender Differences

The t-test for independent samples was used to investigate differences in gender and age, post-traumatic stress, overall psychopathology and overall assessment of aggression. Significant differences were observed between the sex, regarding post-traumatic stress and overall psychopathology, while no statistically significant differences were found in age and aggression between the sex, as the size of the differences in the means was very small. Specifically, in post-traumatic stress, the average of the post-traumatic stress scale, the average for men treated with covid-19, was $31.08 \pm (8.03)$, while for women treated, the average was $35.24 \pm (9.38)$, with a statistically very significant difference between the two groups in their comparison with the t-test ($p = 0.001$). In the total score of psychopathologies, the average of the total score of the psychopathology scale for men who declared that they were hospitalized was $48.57 \pm (30.82)$, while for women, the corresponding average was $67.32 \pm (14.32)$, with a statistically significant difference between the two groups in their comparison with the t-test ($p = 0.000$).

Discussion

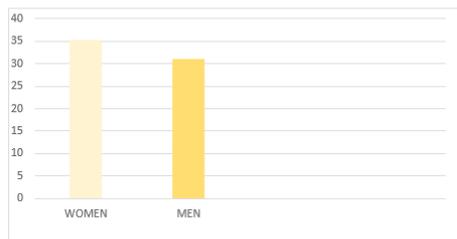
In the present research study participated only individuals who became ill with covid-19 and had simple hospitalization (not in an intensive care unit) in a Greek hospital-pandemic reference center or remained in compulsory confinement (quarantine) in a familiar environment for at least fourteen days, period of disease onset and the start of restrictive measures by the state (March - June 2020). The two groups of the sample differ in the manifestation of psychopathology, depression and mainly the appearance of symptoms of post-traumatic stress. The results show the appearance of post-traumatic stress disorder, depression and anger in patients in the period immediately after their hospitalization. People who have been quarantined do not have similar disorders, which leads us to the conclusion that the conditions and special features of the disease that lead to hospitalization seem to create, among other things, a condition of psycho-traumatic event that increases the likelihood of post-traumatic stress disorder. This is in line with studies showing that the experience of life-threatening events causes mental disorders and stress, and can lead to emotional problems



Table 1: The variables by gender - means and standard deviations.

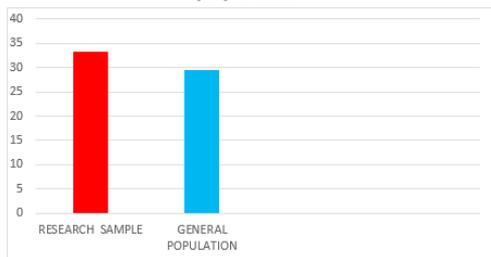
Hospitalization patients	Men		Women		
	Mean	SD	Mean	SD	
PTSD	34.52	18.03	42.85	9.38	p=0.001
PSYCHOPATHOLOGY	48.57	30.82	67.32	14.32	p=0.000

Mean values and Standard Deviations of PTSD in Hospitalitation patients(Men- Women)



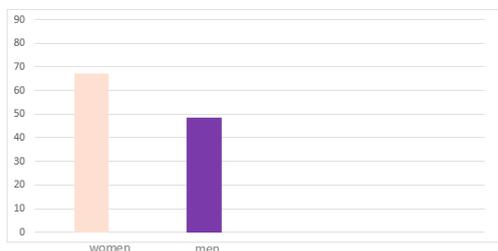
PTSD- Hospitalitation patients			
	N	Mean	SD
Men	77	31,02	18,03
Women	89	35,24	9,38

Mean values and Standart Deviations of PTSD in the research sample and in general population



PTSD		
	Mean	SD
Research sample	33,17	11,46
General population	29,4	12,09

Mean values and Standard Deviations of Psychopathology in Hospitalitation patients(Men- Women)



Psychopathology- Hospitalitation patients			
	N	Mean	SD
Men	77	48,57	30,82
Women	89	67,32	14,22

in the period immediately following their expiration [6]. Regarding the levels of post-traumatic stress disorder, it was found that women have higher levels of post-traumatic stress disorder than men, a result which is in agreement with similar studies [2]. An attempt to interpret the high levels of hostility of hospitalized individuals could be based on Foulds (1967) view that high levels of hostility reflect difficulties in interpersonal relationships caused by a traumatic event. The deeper and mutually satisfactory interpersonal relationships people have with each other, the less likely they are to resort to extroverted or introverted hostility, even in cases of stress [2]. The results of the psychopathology correlations, as measured by SCL-90, of individuals in the covid-19 group treated with sex and post-traumatic stress agree with previous research highlighting the vulnerability of the female population as opposed to men [2].

Also, the results of the correlations of aggression, as measured by HDHQ, of people treated, post-traumatic stress disorder and psychopathology are in line with studies, which indicate that one of the ways in which people experience a psycho-traumatic fact, they try to protect themselves, is the manifestation of aggressive attitudes [7]. Finally, the results of the present study agree with the findings of research that show that aggression functions as an autonomic reflex reaction and is a socialized form of post-traumatic stress disorder, associated with the manifestation of psychopathological behavior [7-10].

This research highlights a part of the special psychological profile of people suffering from coronary artery disease covid-19, which becomes particularly important in the context of developing policies to promote, prevent and manage health problems arising from the pandemic.

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