

# CONSEQUENCES OF THE COVID-19 PANDEMIC ON GREEK STUDENTS' MENTAL HEALTH: QUALITY OF LIFE AND TRAUMA STRESSFUL EVENTS CORRELATION

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## Abstract

Rapid changes in everyday life of young people due to the COVID-19 pandemic appear not only to adversely affect their quality of life and health satisfaction but also their mental health. The strict measures implemented by governments such as home restriction measures, university campuses closure and shift to online learning, restaurants, pubs, and cafes' closure and abstaining from leisure and sports activities burden them further. This research focuses on the consequences of the covid-19 pandemic on young Greek student population (18-35 years old) and measures the effect on the quality of life and functionality index of young people in relevance with demographic, social and epidemiological characteristics. 874 university students participated voluntarily on an online self-report survey accessed through social media networks. The questionnaires included demographic, social and medical characteristics and their personal experience related to covid-19. Two psychometric scales were administered for measuring quality of life index (WHOQOL-BREF) and a psychotrauma index for functionality used with kind permission from World Health Organization. Statistical analysis correlated students' perceptions about their quality of life/enjoyment of life and functionality with personal burden and stressful life events during pandemic era. The results can be useful for further research and designing mental health support policies and prevention strategies for mental health consequences on young populations after pandemics.

Keywords: Pandemic, covid-19, quality of life, psychological consequences, trauma, restriction measures.

## 1 INTRODUCTION

The emergence of the covid-19 pandemic and its profound impact on daily life, beginning with the fear of virus transmission and the quarantine lockdown measures implemented by governments worldwide, have had a series of negative consequences for the population's quality of life and short- and long-term mental health (Algahtani et al., 2021; Torales et al., 2020). Numerous studies have attempted to quantify the magnitude of such frequently overwhelming consequences for individuals and to connect them to sociodemographic and medical history, as well as other stressor factors, as well as vulnerable and other subgroups of the population and their mental health (Algahtani et al., 2021; Carvalho et al., 2020; Killgore et al., 2020; Xang et al., 2020; Zhang & Ma, 2020; Odriozola-González et al., 2020).

The purpose of this research has two main directions. Initially, the purpose of this study was to ascertain the quality of life and functioning (Gkintoni, et al., 2017) of the student population in combination with other aggravating variables on a personal level. The second objective is to examine the consequences and relevant stressor factors, as well as the restriction measures implemented in Greece, in comparison to research from other countries, and to make recommendations to health policymakers regarding pandemic-specific strategies that can be established for the Greek population while taking cultural considerations and differentiation into account.

## 2 METHODOLOGY

To our knowledge, this is one of the few forms of study that included a diverse group of participants, including university students and teens, elderly and middle-aged adults, chronic illness patients, and health care professionals. This was a quantitative study carried out in Greece. The questionnaire was created in an online format using Google Forms and was mostly circulated via social media. The respondents were Greeks who agreed to participate in the poll willingly and anonymously via a yes-no consent question. A parent's yes-no permission was necessary for minors. For individuals above the age of 65 and those unfamiliar with technology, the questionnaire was delivered in a printed format. The Ethics, Research, and Morality Committee of the General Hospital of Patras "Saint Andrews" and the

6th Health Regional District of Greece authorized the research. The current study adhered to the Declaration of Helsinki's ethical guidelines for research with human participants. The questionnaire's first section asked about demographic and socioeconomic factors such as gender, age, educational attainment, and job position.

The participants' medical features included their health status with regard to chronic illness (e.g., heart disease, neurological difficulties, pulmonary disease, etc.) or a history of physical or mental illness. Additionally, there were questions about other stressors in the year preceding the pandemic, as well as a person's personal experience of the pandemic; whether they/or members of their family were ill or hospitalized; the measures implemented; their concept of illness disclosure and stigmatization; their fear of transmitting or being affected by the new virus; and their attitudes toward vaccination. Additionally, the WHOQUOL-BREF, a 26-question scale for assessing life quality, was employed. It rates participants' perceptions on a 1-5 scale. It evaluates a person's quality of life, enjoyment with life, physical health, social relationships, environmental circumstances / living conditions (Tzanos et al., 2019).

## **2.1 Statistical Methods**

SPSS ver. 27.0 was used for statistical analysis (IBM, Chicago, IL, USA). All quantitative factors were expressed as mean SD or frequency (percentage). The Chi-square test was used to determine whether or not there was a significant relationship between category variables. To examine if there was a difference in WHOQUOL-BREF scores between categorical factors between genders, an unpaired test was performed. The difference between dependent and independent variables, including age groups, was determined using a general linear model (GLM) multivariate analysis. P-values less than  $p < 0.05$  were regarded statistically significant.

## **2.2 Data Analysis**

The data analysis step involved pre-processing and coding the questionnaire responses and entering them into a database created using the statistical program SPSS 27. Each category of variables is analyzed using a different type of statistical analysis, both descriptive and inductive. For categorical variables, the following formulas were used:

- Frequency tables - percentages, percentage bar charts, and pie charts are all descriptive approaches.
- Fisher's exact test is used to explore the possibility of a connection between two category variables.

The Pearson linear correlation coefficient was used to examine the probable correlations between the various ordinal variables. Additionally, the probable dependence between the various operational variables was examined using simple linear regression. The Cronbach's Alpha Credibility Index was used to determine the reliability of several scales of questions. Index values more than 0.7 (or, according to other studies, greater than 0.6) imply good dependability. A significance threshold of  $\alpha = 0.05$  was utilized for all hypothesis tests, correlations, and linear regressions.

For continuous variables, mean and standard deviation were computed; for categorical variables, frequencies and percentages were calculated. All variables and WHOQUOL-BREF scores were examined using the t-test, analysis of variance (ANOVA), and nonparametric statistics (Mann-Whitney U test or Kruskal-Wallis test).

The proportion of respondents in each dimension was computed, and  $\chi^2$  tests were used to determine the statistical significance of the difference in the percentage of reported issues across groups. When the exact theory frequency was less than one, Fisher's exact test was performed. The four (4) dimensions health aspects were utilized as dependent variables in a logistic regression model (0 = no problem, 1 = some/extreme difficulty). Using two-sided tests, statistical significance was established at  $p < 0.05$ .

## **3 RESULTS**

### **3.1 Participant Characteristics**

A total of 874 participants completed the questionnaires of which  $N = 284$  (32,5%) were males and  $N = 579$  (66,2%) were females. The age range of the participants between 18-25 years was 49,08% and between

25-35 was 50,92%. Of the total sample, 52.2% (N = 456) of the students had Humanities and Social Sciences, while 47.8% (N = 418) belonged to the Positive Sciences.

The whole sample was asked to answer questions regarding whether they had undergone a covid test (Yes, N = 517; No, N = 357) and whether they had received a positive or negative diagnosis (Positive, N = 457; Negative, N = 417) (Table 1).

Table 1: Demographic characteristics (N=874)

Demographic characteristics	Frequency (N)	Percentage (%)	
Sex	Male	284	32,5
	Female	579	66,2
	Other	11	1,3
Age	18-25	445	50,92
	26-35	429	49,08
Covid-Exam	Yes	517	59,2
	No	357	40,8
Covid-Diagnosis	Positive	457	52,3
	Negative	417	47,7
Subject Field	Humanities and Social Sciences	456	52,2
	Natural and Applied Sciences	418	47,8
Medical Insurance	Yes	760	87
	No	114	13

The following table lists the descriptive statistics measures regarding the four (4) dimensions of the quality-of-life scale:

- Physical Health: N=874 [68,3 ±17,4]
- Psychological Health: N=874 [63,3±17,8]
- Social Relationships: N=874 [68,38±24,3]
- Environment: N=874 [ 63,4±15,6]
- Total Score N=874 [65,8±15,4]

The following are the aggravating factors that received categories 1-5 [1: pandemic, 2: unemployment, 3: death of a loved one, 4: physical/mental illness, 5: divorce/separation]

We observe that our sample shows an average Mean = 1.42, SD = 1.11], according to which the pandemic seems to be reduced as the main aggravating factor.

Respectively for the variable of psychodrama index functionality, the functionality index was evaluated on a ten-point scale (1: lowest degree of functionality, 10: highest degree of functionality) as formed under the influence of various stressful conditions reported [1-10, 1 = Min, 10 = Max] appears to be relatively loaded [Mean = 6.72, SD = 2.07].

The question asked to the participants for the evaluation and recording of the functionality index regarding the mental trauma/stress factor was the following: How would you evaluate your functionality during this period (during the pandemic? (Work / home) with prices from 1 = Poor to 10 = Excellent (Table 2).

The above findings regarding aggravating factors during health crises such as pandemics seem to be consistent with other studies which have shown that, Individuals I with a history of post-traumatic experiences, individuals (ii) who faced additional stressors in the year preceding the pandemic (e.g., unemployment, death, divorce/separation, retirement, abuse & neglect, bullying, enlisting in compulsive military service, the onset of mental disease, or the onset of acute or severe illness for the participants or their families), and individuals (iii) who were affected themselves (Algahtani et al., 2021).

Table 2. Demographics and Variables.

Descriptive Statistics					
	N	Min	Max	Mean	Std. Deviation
#Age	874	0	7	2,46	1,546
#Marital_Status	874	1	5	2,24	1,045
#Education	874	1	5	3,60	,855
#WHOQOL_Physical_Health_Transformed	874	6	100	68,30	17,443
#WHOQOL_Psychological_Transformed	874	0	100	63,30	17,773
#WHOQOL_Social_Relationship_Transformed	874	0	100	68,38	24,321
#WHOQOL_Environment_Transformed	874	13	100	63,40	15,655
#WHOQOL_Scoring	874	8,00	100,00	65,8450	15,42119
#Burden_Factors	867	1	5	1,42	1,111
#Psychotrauma_Functionality	874	1	10	6,72	2,077
Valid N (listwise)	867				

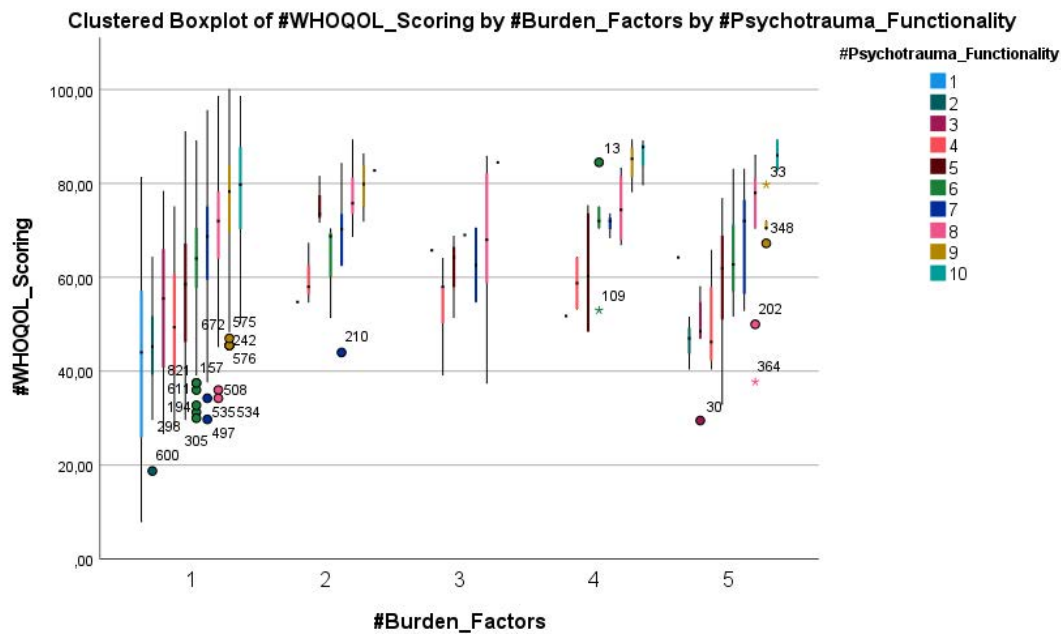


Figure 1. Gender Category.

Following the administration of scales, the student population sample was invited to respond qualitatively to questions about their personal experiences throughout the pandemic and lockdown periods. During the pandemic and lockdown period, students with a mental health problem had greater rates of depression and sleep difficulties, as well as decreased levels of life satisfaction and vitality. During the covid-19 epidemic, female students reported poorer life satisfaction, vitality, and capacity to work or study than male students. During the epidemic, single women without an intimate connection reported higher quality of life, health, happiness, and sex than married women.

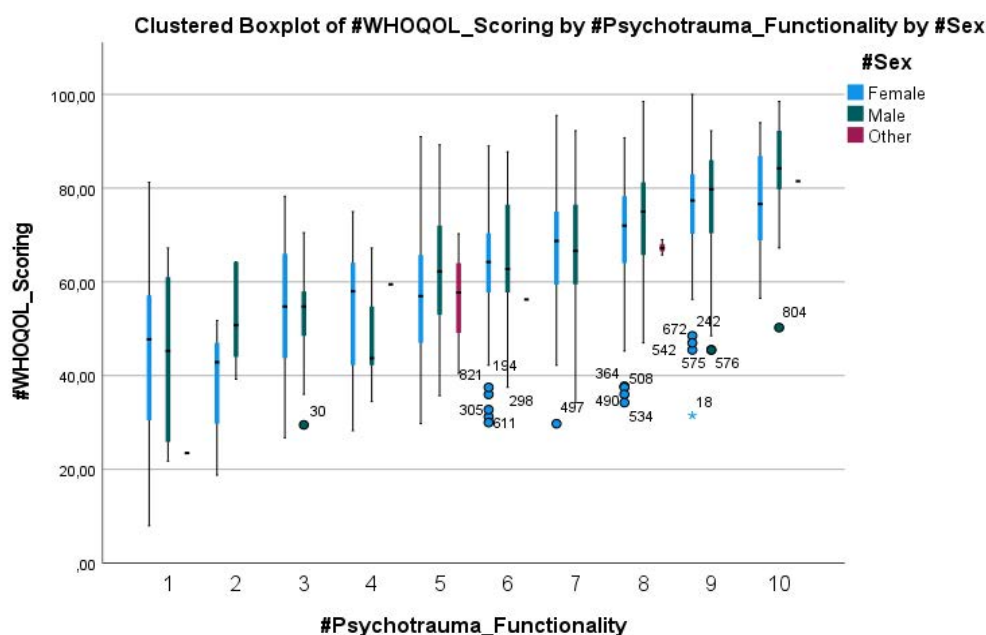


Figure 2. Boxplot of Clustering.

The characteristic of social interactions (42.0%) and environmental conditions were the most often cited problems in the dimensions of quality of life (35.0%). Male students (11.2%) were more likely than women to report mobility difficulties (6.4%). Unemployed people reported more difficulties with self-care (3.0%), routine tasks (15.6%), pain/discomfort (46.7%), and anxiety/depression (34.7%) than employed participants (Table 3 & Figures 1,2).

Table 3. Correlation Matrix.

Correlations								
	#Burden_Factors	#WHOQOL_Physical_Health_Transformed	#WHOQOL_Psychological_Transformed	#WHOQOL_Social_Relationship_Transformed	#WHOQOL_Environment_Transformed	#WHOQOL_Scoring	#Psychotrauma_Functionality	
Pearson Correlation	#Burden_Factors	1,000	-,038	-,059	,034	,016	-,010	-,082
	#WHOQOL_Physical_Health_Transformed	-,038	1,000	,673	,498	,592	,824	,547
	#WHOQOL_Psychological_Transformed	-,059	,673	1,000	,569	,551	,843	,579
	#WHOQOL_Social_Relationship_Transformed	,034	,498	,569	1,000	,497	,826	,353
	#WHOQOL_Environment_Transformed	,016	,592	,551	,497	1,000	,777	,397
	#WHOQOL_Scoring	-,010	,824	,843	,826	,777	1,000	,562
	#Psychotrauma_Functionality	-,082	,547	,579	,353	,397	,562	1,000
Sig. (1-tailed)	#Burden_Factors	.	,133	,041	,160	,323	,380	,008
	#WHOQOL_Physical_Health_Transformed	,133	.	,000	,000	,000	,000	,000
	#WHOQOL_Psychological_Transformed	,041	,000	.	,000	,000	,000	,000
	#WHOQOL_Social_Relationship_Transformed	,160	,000	,000	.	,000	,000	,000
	#WHOQOL_Environment_Transformed	,323	,000	,000	,000	.	,000	,000
	#WHOQOL_Scoring	,380	,000	,000	,000	,000	.	,000
	#Psychotrauma_Functionality	,008	,000	,000	,000	,000	,000	.
N	#Burden_Factors	867	867	867	867	867	867	867
	#WHOQOL_Physical_Health_Transformed	867	867	867	867	867	867	867
	#WHOQOL_Psychological_Transformed	867	867	867	867	867	867	867
	#WHOQOL_Social_Relationship_Transformed	867	867	867	867	867	867	867
	#WHOQOL_Environment_Transformed	867	867	867	867	867	867	867
	#WHOQOL_Scoring	867	867	867	867	867	867	867
	#Psychotrauma_Functionality	867	867	867	867	867	867	867

## 4 CONCLUSIONS

Results appear to be similar with other studies measuring quality of life and mental health during the pandemic in other countries as well (*Algahtani et al., 2021, Odriozola-González et al., 2020*).

Those findings were similar to those of another research in Greece which found that women during the first wave of the covid-19 pandemic were more vulnerable to anxiety, depression and PTSD, and that women's mental health was heavily affected and to those of Carvalho et al., 2020 and Killgore et al., 2020 who noted consequences such as loneliness, social isolation, anxiety, distress and insomnia; while other studies refer to stress, depression, PTSD, anger and fear (*Torales et al., 2020, Zhang & Ma, 2020*). Other stressing factors that can add to the impact and negative effects of a pandemic have been identified by *Zhang & Ma, 2020* as family and work stressors and financial problems. Satisfaction from personal relationships and support and help from friends and/or family, also had a positive effect on people's quality of life, life satisfaction rates and the severity of the psychological consequences of the pandemic.

Campaigns on hand hygiene and sanitizations, use of face mask and keeping physical distance in private and public places and in general using appropriate personal protective equipment were presented and implemented by the Greek government which were policies similar to those adapted by other countries. As far as the restrictive measures used by the Greek government are concerned and population's compliance to them varied significantly based on age, general health status, chronic disease, education, a history of mental or physical disorder and gender.

Younger people tended to be more resilient to restrictive measures and mainly complied to online schooling but were resilient to comply remaining distant from other people show as not to transmit the virus; to avoiding social contact in the form of entertainment or leisure activities.

The consequences of the restrictive measures on the population have been addressed by studies in other countries and similar results have been extracted; linking them to income loss (*Mihashi et al., 2009, Hawryluck et al., 2004*), social isolation, loneliness, boredom, stress, PTSD, sleeping problems, suicidal ideation, cognitive impairment (*Carvalho et al., 2020, Xang et al., 2020, Killgore et al., 2020, Zhang & Ma, 2020*) and eating problems (*McMenemy, 2020, Shah et al., 2020*) and tense or strenuous feelings, physical reactions/ symptoms and increased use of tobacco and alcohol.

The severe effects of the pandemic in other countries, the fear of immediate to the virus possibly lethal effect as well as the presentation of the pandemic from social media, virologists and government sources, probably strongly shaped public opinion towards covid-19, and convinced a large number of the population i) to disclose possible infection, overcoming fear of stigmatization and ii) to largely conform to health authorities' strict restrictive measures. Conformation to government measures correlated with age, general health status, chronic disease, education, a history of mental disease and sex (*Hawryluck et al., 2004, Odriozola-González et al., 2020*).

The government's restrictive measures in combination with the subsequent anxiety, loneliness and social isolation on one hand and the economic problems caused by the pandemic in the form of sudden job and income loss (*Mihashi et al., 2009*) and the continuous fear of being infected or dying from covid-19, may also be connected with the negative effects on the mental health of the population (*Hawryluck et al., 2004*).

In conclusion the severity of the consequences of the covid-19 pandemic appear to have been reported largely in similar researches and the results of the present study demonstrate the negative effect of the current pandemic on different aspects of the population's quality of life, health satisfaction and life enjoyment as well as the mental health and psychological needs of the Greek population (*Algahtani et al., 2021*).

The present research has certain limitations. The participants were mainly students from urban areas of Greece; and since it was mainly an online survey and certain age (elderly) or educational groups as well as geographical areas such as rural, may be underrepresented. It also records mainly the perception of the participants about their quality of life and aspects of their lives and their opinion about their feelings whereas at times the mental health expert's diagnostic assessment may vary significantly. Finally, other kinds of psychological consequences of the pandemic on the population have not been measured and adequate sample of high risk or vulnerable subgroups of the population could not be accessed in order to retrieve statistically significant results. A randomized prospective study could better determine correlation and causation (*Ping et al., 2020*). Different countries and cultures and subgroups of the population may score differently on the quality of life, mental health consequences, trauma and the effects may vary significantly; therefore, further research with adequate measuring instruments would be preferable.

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