




RESEARCH ARTICLE

Affective Symptoms and Traumatic Stress Among College Students at Risk for ADHD During the Second Lockdown in Greece

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Introduction: Due to the pandemic, individuals with ADHD have been facing noticeable challenges in their daily life. Prolonged quarantine and isolation may contribute to higher affective and PTSD symptoms among college students with ADHD.

Aims: The study aimed to explore the impact of COVID-19 on affective symptoms such as depression, anxiety, stress, along with loneliness and post-traumatic stress on college students at risk for ADHD in Greece during the second COVID-19 lockdown in November 2020.

Methods: A sample of 362 students completed an online survey consisting of demographic questions and four instruments: the ADHD Self-Report Scale-V1.1 (ASRS-V1.1), the DASS-21, the UCLA Loneliness Scale, and the PTSD checklist (PCL-5).

Results: Over 18% of the students met the criteria for being at risk of ADHD, which is higher than in other studies conducted prior to the pandemic. Students at risk for ADHD reported significantly higher ($p < .05$) mean scores on all scales: depression, anxiety, stress, loneliness, and post-traumatic stress. A model to predict at-risk ADHD diagnosis indicated those who presented symptoms of depression, had low GPA, who were employed, were 46% more likely to struggle with ADHD.

Conclusions: This study indicates that the pandemic may have adversely affected individuals at risk for ADHD. Recommendations for further research and implications for mental health professionals are discussed.

Keywords: attention deficit, neurodiverse, pandemic, college students, mental health, Greece

Introduction

In December 2019, COVID-19 was identified in Wuhan, China, and spread rapidly, causing a worldwide outbreak of acute infectious pneumonia (Cao et al., 2020; Wang et al., 2020). In order to control the spread, governments implemented restrictive measures on all aspects of life – such as work, travel, and education. Those measures disrupted daily life, affected personal relationships, and caused significant emotional distress, which manifested as depression, anxiety, stress and post-traumatic stress, insomnia, worries about physical health, anger irritability, loneliness, and suicidal ideation (Hao et al., 2020; Lahav, 2020; McGinty et al., 2020; Pan et al., 2021; Wang et al., 2020). As expected, this pandemic brought unprecedented psychological pressure also on college students who reported especially elevated rates of depression and anxiety (Li et al., 2021). Initial research indicated that

individuals with ADHD were bound to deteriorate due to the additional stress and loneliness, and there has been a call for research (Becker et al., 2020; Cortese et al., 2020; Pan et al., 2021; Sibley et al., 2021; Yao et al., 2020).

The purpose of the current study is to explore the impact of depression, anxiety, stress, and post-traumatic stress symptoms, on undergraduate and graduate college students who possessed an elevated risk for ADHD during the second lockdown in Greece.

COVID-19 and the quarantine severely affected people's mental health and resulted in elevated rates of depression, anxiety, stress, traumatic stress and sleep problems (Javed et al., 2020; Liu et al., 2021; Sheridan Rains et al., 2021). College students were unexpectedly displaced from their dormitories peer groups and were forced to abandon their college experience. They were required to suddenly leave campus – often without their belongings – while they were instructed to continue their academic work remotely (Copeland et al., 2021; Oddo et al., 2021). Soon, research indicated the effects on mental health. A study in the United States found that the majority of college students (83.8%) reported an increase in anxiety, depression, and loneliness (Lee et al., 2021). Similarly, other studies indicated that students were at a higher risk of anxiety and depression (Esterwood & Saeed, 2020; Solomou & Constantinidou, 2020). Additionally, a meta-analysis showed that during the COVID-19 pandemic, that 39% of college students reported depression, disproportionately higher as compared with the global prevalence of depression reported in 2015, by WHO which was 4.4% (Li et al., 2021). Furthermore, a study from five western countries indicated that COVID-19 could lead to PTSD-like symptomatology and worsen other related mental health problems (e.g., anxiety, depression, psychosocial functioning) (Bridgland et al., 2021).

Following the reopening of the economy in Greece during the summer of 2020, COVID-19 cases increased and a second nationwide lockdown was implemented. This lockdown included uniquely strict measures such as a curfew at 7:00 pm, and a travel ban beyond two kilometers (General Secretariat for Civil Protection, 2020). A cross-sectional study in Greece conducted in April of 2020 showed that 22.8% of the general population reported moderate to severe symptoms of depression. These rates were higher as compared to the rates reported in other countries (Javed et al., 2020; Parlapani et al., 2020). Universities in Greece were forced to reconfigure their educational programs to go online in response to health challenges and social distancing requirements (Banks et al., 2020; Morley & Clarke, 2020). These changes were particularly challenging as Greece ranks low (27th out of 28 EU member states) in the Digital Society and Economy Index (DESI), which measures digital performance and competitiveness, internet connectivity, and use of digital skills (European Commission, 2019).

ADHD and the COVID-19 Pandemic

Attention-deficit hyperactivity disorder (ADHD) is a lifespan, neurodevelopmental condition that is estimated to affect 5-10% of children, and 3-5% of adults (APA, 2013; Becker & Fogleman, 2020; Chan & Mo, 2021). ADHD constitutes a public health issue, as it can affect all aspects of life, and can even reduce life expectancy by as much as seven to nine years (Barkley & Fisher, 2019). Individuals suffering from ADHD experience challenges in several aspects of life, such as education, occupation, and relationships (Barkley & Fischer, 2019; Becker & Fogleman, 2020; Gormley et al., 2019; McGrath, 2020). Among other indicators, the symptoms of ADHD include disorganization, forgetfulness, irritability, hyperactivity, careless mistakes, and difficulties sustaining attention (APA, 2013). Due to their symptoms, individuals with ADHD struggle with low self-esteem, depression, and anxiety (Shen et al., 2020); they also tend to isolate themselves more and thus have fewer friends (Barkley, 2017).

During the COVID-19 pandemic, individuals with ADHD have been facing noticeable challenges x changes in their symptoms, such as an increase in careless mistakes, disorganization, and reduced motivation (Hamilton et al., 2021; Oddo et al., 2021; Zhao et al., 2021). Individuals with ADHD are particularly sensitive to sudden changes in routines that manifest in disruptions through all aspects of life and a deterioration in their overall lives (Çetin et al., 2020; Hollingdale et al., 2021; Sibley et al., 2021). For example, many online courses required extra attention, the use of new platforms and apps along with keeping up with the rules of social distancing (Laslo-Roth et al., 2022). In addition, they also experienced increased isolation, and initial research indicates that they also struggled academically and/or at work with forgetfulness regarding task initiation and completion, bad organization, as well as worsening mental health issues (Çetin et al., 2020; Cortese et al., 2020; Hollingdale, 2021; Laslo-Roth et al., 2022; Sibley et al., 2021). Considering the impact of the pandemic, one wonders whether they may have also experienced PTSD-like symptoms (Bridgland et al., 2021). It has been widely discussed that an increase in ADHD symptoms – even for a short time, like that of the pandemic – can lead to mental health issues such as depression, anxiety, and long term academic or professional challenges (Becker et al., 2020; Sibley et al., 2021).

Research indicates an overlap between ADHD and PTSD symptoms, such as disorganization and dysregulation (Martínez et al., 2016; Miodus et al., 2021). Although the relationship remains unclear, studies show that children and adults diagnosed with ADHD are at elevated risk for exposure to traumatic events and may develop PTSD-related symptoms (Barkley, 2010; Siegfried et al., 2016). The prolonged quarantine and isolation during COVID-19 may contribute to higher PTSD symptoms similar to those among children and adults (Bridgland et al., 2021; Çetin et al., 2020; Lahav, 2020; Liu et al., 2020).

The purpose of the current study is to explore the impact of affective symptoms – depression, anxiety, stress, traumatic stress, and loneliness – on undergraduate and graduate college students with an elevated risk for ADHD during the second COVID-19 lockdown in Greece.

First, we explored the rates of students at risk for ADHD. Next, the hypotheses put forward were:

H1: *Students at risk for ADHD as compared to students without ADHD will score higher on depression, anxiety, stress, loneliness, and post-traumatic stress symptoms.*

H2: *Depression, anxiety, stress, post-traumatic symptom stress, loneliness, age, gender, GPA, previous ADHD diagnosis, employment, living arrangements, and relationship status, will increase the possibility for ADHD diagnosis.*

Methods

Participants and Data Collecting

An online survey was conducted among a convenience sample of undergraduate and graduate students in Greece through Qualtrics, a secure web-based survey data collection system. The students from tertiary educational level were mainly from health (nursing and medicine) and social sciences (social work, sociology) from both the North and South regions of Greece. The survey took an average of 15 minutes to complete.

Following IRB approval, No. 1462021, data was collected for four weeks from the beginning of the second lockdown on November 9th, 2020. The survey was anonymous, and no data was collected that linked participants to recruitment sources. An informed consent letter was emailed to students describing the nature of the study along with demographic questions and four instruments. As a result, 371 usable surveys were collected while nine were eliminated as incomplete. The total number of the sample was 362 participants. All students identified as Greek and the mean age was 22.5 ($SD = 5.5$), the majority of the respondents identified as female (82.5%). They predominantly reported living with family during the lockdown (72%), were unemployed (78%), and had no previous ADHD diagnosis (71%) (see Table 1).

Measures

This study utilized a questionnaire that inquired into demographic characteristics, including age, year, ethnicity, gender, relationship, living arrangements, employment status, and previous diagnosis of ADHD. Participants also responded to four scales: the ASRS-v1.1, the DASS-21, the PCL-5, and the UCLA Loneliness Scale.

Table 1. Demographic Characteristics

Age	$m = 22.5$	$SD = 5.5$
Ethnicity	Greek (100%)	
Year of study (n = 356)		
1st	74	(20.8)
2nd	43	(12.1)
3rd	71	(19.9)
4th	142	(39.9)
Gender (n = 362)		
Female	298	(82.5)
Male	63	(17.5)
Relationship status (n = 354)		
Single	186	(52.5)
In relationship	146	(41.3)
Engaged/Married	22	(6.2)
Employment status (n = 361)		
Full-time	35	(9.7)
Part time	44	(12.2)
Unemployed	282	(78.1)
Living arrangements (n = 362)		
Living alone	45	(12.5)
Roommate	35	(9.7)
Family	262	(72.4)
Cohabiting	20	(5.5)
Have you been diagnosed with ADHD (n = 361)		
Yes	33	(9.1)
No	259	(71.7)
I do not know	69	(19.2)

The Adult Attention-Deficit/Hyperactivity Disorder Self-Report Scale (ASRS-v1.1)

ASRS-v1.1 is a five-point Likert-type scale based on the DSM-IV -R criteria developed in conjunction with the World Health Organization. It is an eighteen-symptom checklist, widely used to address the main manifestations of adult ADHD (Green et al., 2018; Kessler et al., 2005). The ASRS-V1.1 has two parts. Part A consists of six items and B consists of 12 items. A score of 4 or greater (> 4) in part A indicates an elevated chance for ADHD diagnosis and part B indicates further issues related to ADHD (Kessler et al., 2005; Adler et al., 2004; Green et al., 2018; Kessler et al., 2005). ASRS-V.1 has been used before in Greece with adults and was considered adequate (Andreadaki et al., 2018). For the purposes of this study, the instrument was translated and validated in Greek using best cultural practices (Beaton et al., 2000).

The translation of the scale had a high level of internal consistency, as determined in our sample by a Cronbach's alpha of .863.

Depression, Anxiety Stress Scale - 21 (DASS-21)

Psychological distress was measured with the 21-item DASS (Lovibond & Lovibond, 1995). The DASS-21 yields three subscales, each comprising seven items scored on a four-point Likert-type scale from never (0) to almost always (3). Higher subscale scores reflect higher levels of depression, anxiety, and stress in the past week, with a higher sum score representing greater general distress. DASS has been used widely with college populations (Koutra et al., 2020). The Greek translation of the DASS is both reliable and valid, with psychometric properties close to those reported in the international literature as determined by Cronbach's alpha .97. Subscale coefficient alphas were also high ($\alpha_{\text{depression}} = .94$; $\alpha_{\text{anxiety}} = .91$; $\alpha_{\text{stress}} = .94$) (Lyraikos et al., 2011).

Post-Traumatic Stress Disorder Checklist (PCL-5)

The PCL-5 is used for screening individuals for PTSD symptoms (Bovin et al., 2016; Weathers et al., 2013). It is a 20-item self-report measure that assesses the DSM-5 symptoms of PTSD scored using a five-point Likert scale of 0–4 for each symptom, varying from “Not at all,” to “Extremely.” It has demonstrated high internal consistency reliability ($\alpha = 0.94$) (Bovin et al., 2016). Similar to Lahav (2020), in this study, the PCL was modified to inquire in the last month of the pandemic. Scoring over 33 is indicative of PTSD (Bridgland et al., 2021). PCL-5 has been used before in Greek and has demonstrated high reliability (.97) (Orovou et al., 2021), and similarly, in this study, it was translated using best cultural practices (Beaton et al., 2000). In our sample the scale indicated high internal consistency ($\alpha = .93$).

UCLA Loneliness Scale

The UCLA Loneliness Scale consisted of 20 items testing differences in the subjective experiences of social and emotional loneliness for a range of populations (Russell, 1996). Participants rate each item on a scale from 1 (never) to 4 (often). Higher subscale scores reflect higher levels of loneliness. The UCLA revised edition scale has been translated and used in Greek before and has demonstrated internal reliability ($\alpha = .89$). (Anderson & Malikiosi-Loizos, 1992). The UCLA loneliness scale was translated using best cultural practices (Beaton et al., 2000) and our sample indicated high internal consistency ($\alpha = .95$).

Data Analysis

The statistical package SPSS 27 was used for data analysis. Data was cleaned to address anomalies. Frequencies and descriptive statistics were run. Next, we ran the Kolmogorov-Smirnov test for Normality of the data, as all scales and scores were not normally distributed. We therefore used non-parametric, Spearman correlations and Mann Whitney U tests to explore associations between the presence or absence of ADHD and the variables Depression, Anxiety Stress, post-traumatic stress, and loneliness scores. Finally, binomial logistic regression was used as appropriate when the dependent variable was categorical.

Results

Rates of Students at Risk for ADHD

A significant number of the participants ($n = 67$, 18.5%) met four out of six criteria in Part A that puts them at risk for ADHD. The mean score of the 18 symptoms reported using the ASRS-V1.1 tool was 4.8 ($SD = 3.6$). Interestingly in this study, a large number of students reported having received an ADHD diagnosis in the past ($n = 33$) 9.1%, while several did not know or said that they should have been diagnosed ($n = 69$, 19.1%).

A chi-square test for association was conducted between those who reported having been diagnosed with ADHD in the past and those who met the criteria for being at risk for ADHD in this study. All expected cell frequencies were greater than five. There was a statistically significant association between those who had been diagnosed with ADHD in the past and those who met the criteria for ADHD in this study, $\chi^2(1) = 21.043$, $p < .001$.

H1: Students at risk for ADHD will score higher on depression, anxiety, stress, loneliness, and post-traumatic stress symptoms as compared to students without ADHD.

The average loneliness score reported in this sample was 26 ($SD = 14.3$) and the average PTSD score was 21.7 ($SD = 14.2$). The average DASS score was 22.2 ($SD = 14.2$). Results for the three subscales were: Depression ($M = 7.5$, $SD = 5.8$), Anxiety ($M = 5.7$, $SD = 5.1$) and Stress ($M = 8.9$, $SD = 5$).

Depression, Anxiety, Stress, Loneliness, and PTSD scales were not normally distributed, as assessed by the Kolmogorov-Smirnov test ($p > .05$). In order to test our hypothesis, Mann-Whitney non-parametric tests were run to determine mean differences in scores of Depression, Anxiety, Stress and Loneliness, and PTSD for students at risk for ADHD as compared to those without such risk. Statistically significant differences existed in all scores between students at risk for ADHD and those without risk (see [Table 2](#)).

Table 2. Comparing Students at Risk for ADHD to Those Without, DASS, Loneliness & PTSD

Variables	NO ADHD		ADHD		Mann-Whitney	P	
	M	(SD)	M	(SD)			
Depression	6.6	(5.2)	11.6	(6.1)	$U = 5346$	$z = -5.880$	<.001
Anxiety	5.2	(4.9)	8.3	(5.3)	$U = 6250$	$z = -4.714$	<.001
Stress	8.2	(4.8)	12	(5)	$U = 5660.5$	$z = -5.471$	<.001
Loneliness	20.2	(13.4)	28.7	(15.7)	$U = 6760$	$z = -4.008$	<.001
PTSD	24.2	(14.7)	36.7	(18.1)	$U = 5822$	$z = -5.197$	<.001

H2: Depression, anxiety, stress, PTSD, loneliness, age, gender, ethnicity, GPA, previous ADHD diagnosis, employment, living arrangements, and relationship status, will increase the possibility for ADHD diagnosis.

Categorical variables were recorded as (0) and (1) to reflect presence (1) and absence (0) for variables of employment, ethnicity, relationship status, living arrangements, gender, and a previous diagnosis of ADHD. The Spearman correlation matrix was run to determine variables that were significantly correlated ($p < .05$) with the presence of ADHD.

There was a negative association involving the lower GPA for individuals at risk for ADHD, while the presence of employment, depression, anxiety, stress, traumatic stress, and loneliness scores were positively associated with being at risk for ADHD. Those significant variables were next entered in the binomial logistic regression. Binomial logistic regression was performed to ascertain the effects of the following categorical variables of employment status and the continuous variables GPA, scores depression, anxiety, stress, PTSD, and loneliness in the likelihood that participants manifest ADHD. The logistic regression model was statistically significant, $\chi^2(9) = 40.421$, $p < .0005$. The model explained 42.9% (Nagelkerke R²) of the variance of the chance for ADHD diagnosis and correctly classified 86.5% of cases. Sensitivity was 41.7%, specificity was 96.3%, positive predictive value was 74.2% and negative predictive value was 88.2%. Of the nine predictor variables, only three were statistically significant:

Table 3. Logistic Regression for Students at Risk for ADHD

Predictors (<i>df</i> = 1)	95% C.I. for EXP(B)			
	Sig.	Exp(B)	Lower	Upper
Living with others	.357	.394	.054	2.856
Employment status	.059	.294	.083	1.045
Previous ADHD diagnosis	.238	.304	.042	2.196
GPA grades	.005	.306	.133	.702
Depression DASS subscale	.035	1.168	1.011	1.350
Anxiety DASS subscale	.157	1.126	.955	1.327
Stress DASS subscale	.111	.857	.710	1.036
Post-traumatic (PCL) scores	.561	1.017	.962	1.074
Loneliness scores	.116	1.041	.990	1.094
Constant	.020	1094.634		

Depression scores, employment status, and lower GPA. College students with higher scores of depression had 1.01 higher risk for ADHD. Lower GPA and being employed were also associated with an increased likelihood of ADHD (see Table 3).

Discussion

Most ADHD studies were conducted before the pandemic. A call has arisen to examine the pandemic's impact on children and adults with ADHD while there has been an increase in ADHD related referrals (Cortese et al., 2020; McGrath, 2020) but also in reported symptoms and diagnoses (Hollingdale et al., 2021). To our knowledge, this is the first study that explores the impact of affective symptoms – depression, anxiety, stress – and traumatic stress, on undergraduate and graduate students having an elevated risk for ADHD during the second COVID-19 lockdown in Greece.

Students reported higher rates of ADHD symptoms as compared to previous studies. More specifically, approximately 18% of the students met the criteria for being at risk of ADHD. This rate stands higher than in previous studies conducted before the pandemic where the rate ranged between 3-5% (Barkley & Fischer, 2019). Although unclear research during COVID-19 has been slowly showing an increase in symptoms, diagnoses, and medication for ADHD (Hollingdale et al., 2021). Still, caution should be employed when interpreting these results as they may be attributed to methodological selectivity.

In this study, students at risk for ADHD reported experiencing significantly more depression, anxiety, and stress. Per the DASS scoring guide (Lovibond & Lovibond, 1995), the mean scores above indicated mild depression and stress, and moderate levels of anxiety. Similarly, loneliness and traumatic stress symptoms registered higher for students at risk for ADHD as compared to those without. Students with ADHD tend to struggle with depression, anxiety, and stress (Oddo et al., 2021; Solanto, 2015) and during the first months of the pandemic isolation, difficulties initiating tasks, depression, and anxiety were also reported as the main struggles (Hollingdale et al., 2021; Sibley et al., 2021). Similarly to other studies, it could be argued that these findings also demonstrate the potential negative impact of the pandemic on individuals at risk for ADHD (Sibley et al., 2021). Students with ADHD had significantly higher PTSD scores. Individuals with ADHD have been found to have higher rates of traumatic exposure, often making a diagnosis complicated (Miodus et al., 2021). Emerging evidence indicates that the pandemic has been traumatic and may lead to PTSD symptoms (Bridgland et al., 2021; Lahav, 2020; Sibley et al., 2021), and one could argue that some of these overlapping symptoms could have been captured in the elevated PTSD scores. Although further research is needed, these results reflect that the impact of the pandemic in Greece has been traumatic for individuals at elevated risk for ADHD.

We used binomial regression to create a model that could predict the presence of risk for ADHD. Having higher scores of depression, a lower GPA, and being employed made it 46% more likely to be at risk for an ADHD diagnosis. Consistent with the literature, individuals with ADHD are at high risk of depression, as well as academic and employment struggles (Barkley & Fisher, 2019; Becker et al., 2020; Gormley et al., 2019) and

this was the case in this sample. Similarly, in another study, depression and academic struggles ranked among the main risk factors reported during the beginning of the pandemic (Sibley et al., 2021), and in our sample, changes in the routines, adjustment to online academic work and employment may have exacerbated symptoms and difficulties for individuals at risk for ADHD.

PTSD symptoms were significantly higher for students at risk for ADHD but did not contribute to our model, which may again indicate overlapping symptoms and that the escalated PTSD scores are related to the impact of the pandemic.

Strengths and Limitations

This study has several strengths and limitations. The strengths of the study include the fact that data were drawn during the second COVID-19 lockdown in Greece. This is the first study that explores the impact of anxiety, stress, depression, and PTSD, on college students, undergraduates, and graduates with an elevated risk for ADHD in Greece. Our sample size was sufficient to be able to control for several demographic and health variables that might explain the increased risk for ADHD during the COVID-19 pandemic. Another strength of the sample was the inclusion of youth and young adults as ADHD is significantly increased in these populations.

One of the limitations of this study was the sample of convenience, therefore, results cannot be generalized to the overall population. This study included more participants identifying as female, while a more gender-balanced sample would have been more appropriate. In addition, the department that each student attends should have been explored. Participants completed self-report surveys that are less valid as compared to a comprehensive assessment. The study's cross-sectional design precludes any causal relations. As we did not collect data before and during the pandemic, we are unable to measure exactly how the pandemic affected students. Finally, this study did not include measures of potentially protective factors such as social networks and support.

Conclusion, Implications and Future Directions

During the second COVID-19 lockdown in Greece, students at risk for ADHD compared to students not at risk reported higher levels of stress, anxiety, depression, loneliness, and post-traumatic stress. Additionally, being at risk for ADHD is positively associated with low academic performance, current employment, and the presence of depression. These findings can be used by universities to create psychological interventions, and improve mental health for students with ADHD post COVID-19 epidemic. Also, this study can be used to support forthcoming difficulties such as the social impact of isolation and remote learning disengagement.

ADHD is a newly treated issue in Greece. The current findings make substantive contributions to the existing literature for mental health professionals who are in the first line of helping with the assessment and management of ADHD (Chan & Mo, 2021). The survey revealed that 9% of students have a prior diagnosis and 18% of the total sample met the criteria for a diagnosis of ADHD. Issues and complexities associated with diagnosing and early detection of ADHD are crucial to finding the most effective treatments (McGrath, 2020). As discussed earlier, these elevated rates of symptoms may also be a result of the overlapping symptoms of ADHD and PTSD, thus professionals should use suitable metrics to appropriately measure and assess.

COVID-19 and the related physical distancing measures present many challenges likely to be considerably greater for those students at risk of ADHD. Based on our findings, students at risk for ADHD were struggling with depression and other mental health issues during the pandemic. Especially now, mental health services need to explore ways to access and support individuals having ADHD. As it is likely that physical distancing and other mitigating measures will continue, thus treatment of ADHD and other mental health symptoms ought to be prioritized. Universities should take additional measures to protect students with ADHD because of their increased risks for psychological and social challenges.

Overall, limited research on ADHD exists in Greece. Future research should further explore the relationship between depression, anxiety, stress, PTSD, and ADHD. In addition, more males should be included in a more representative sample. Finally, the impact of pressure resulting from employment and education should also be explored in Greece.

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Author contributions

Kleio KOUTRA: conceptualization, design, methodology, investigation, project administration, interpretation, writing – original draft, writing – review, and editing.

Effrosyni D. KOKALIARI: conceptualization, design, methodology, project administration, data management, formal analysis, interpretation, writing – original draft, writing – review, and editing.

All authors gave final approval of the version to be published and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Declaration of interest statement

The authors have no conflicts of interest to disclose.

Ethical statement

This manuscript is the authors' original work.

The study was reviewed and approved by the Springfield College IRB committee. 374920, license number: 374920.

All participants participated in the research voluntarily and anonymously, and provided their written informed consent to participate in this study.

Data are stored in coded materials and databases without personal data, and the authors have policies in place to manage and keep data secure.

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