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ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

Anxiety, depression and post-traumatic stress disorder symptoms among partners during COVID-19 lockdown

OBJECTIVE To investigate the psychological impact of the Coronavirus disease 2019 (COVID-19) quarantine measures on people who were experiencing conflict in their relationships with their co-habiting partners in Greece. **METHOD** A total of 2,998 participants completed four questionnaires: the Generalized Anxiety Disorder scale (GAD-7), the Brief Patient Health Questionnaire (PHQ-9), the Peritraumatic Distress Inventory (PDI), and the Post-Traumatic Stress Disorder-8 items (PTSD-8). The quality of the bond between partners before and during the lockdown was assessed with two items exploring relationship quality. **RESULTS** A subsample of 145 respondents (4.8%) reported that the quality of their intimate relationship worsened during the lockdown. Roughly 5% of the subsample reported being in true danger, and 85% reported moderate to severe anxiety symptoms, and 50% moderate to severe depressive symptoms, while 17.6% met the criteria for probable post-traumatic stress disorder (PTSD). **CONCLUSIONS** In addition to the psychological burden attributed to the COVID-19 pandemic and the related restriction measures, this study underscores the importance of investigating additional psychosocial factors affecting individuals, and couples, during lockdown.

During 2020, the majority of the world population was enforced to observe self-isolation and voluntary or mandatory mass quarantine, as part of the global prevention measures against the spread of the Coronavirus disease 2019 (COVID-19) pandemic. Although quarantine proved to be an important outbreak control strategy for flattening the COVID-19 infection curve,¹ experience with previous pandemics suggests that restriction measures may provoke psychological distress due to stress-related triggers, such as fear of infection and perceived uncertainty.² A recent review of the psychological outcomes of the imposed lockdowns reported a range of negative consequences,

including high levels of anxiety, irritability, frustration, avoidant coping strategies, insomnia, poor concentration, boredom, emotional exhaustion, loneliness and depression.³ In more severe cases, individuals under quarantine may also manifest post-traumatic stress (PTS).⁴

As a result of the mandatory quarantine, many couples were confined with each other at home for several weeks, a condition that may have changed the equilibrium of the relationship, evoked more conflicts and arguments, and caused friction. On a background of underlying issues of resentment and poor communication, the quarantine experience may be devastating to relationships, threaten-

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P. Karamouzi,
A. Blekas,
E. Parlapani,
V.A. Nikopoulou,
V. Holeva,
V. Tsipropoulou,
N.A. Arnaoutoglou,
M.D. Kerasidou,
P. Voitsidis,
M. Pampouchidou,
M. Asaridou,
C.A. Tsiridis,
I. Diakogiannis

First Department of Psychiatry, School of Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Thessaloniki, Greece

Συμπτώματα άγχους, κατάθλιψη και μετατραυματικού stress σε ζευγάρια κατά τη διάρκεια της καραντίνας COVID-19

Περίληψη στο τέλος του άρθρου

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ing the intimacy and relationship harmony of couples.⁵ Specifically, a combination of anxiety, limited space, living continuously with family members, feelings of “suffocation”, instability and social isolation, may exacerbate pre-existing dissatisfaction with the relationship, or even be the cause of discontent.⁶ Loss of income, constant worrying, inability to maintain personal boundaries, and frustration and boredom linked to the quarantine experience, are all likely to burden the tolerance of the individual and affect the quality of the relationship.^{7,8} Emotions of hopelessness, distress, anger, tension and depression may alter the individual perspective, and the resultant feelings of pessimism and negativity may affect intimate interaction.⁹ The attachment style determines how partners might cope with this novel situation and how they might interpret the relationship they are involved in.¹⁰ In the case of pending divorce, the imposed lockdown may prolong the divorce process, forcing separated spouses to continue living together, due to limited availability of legal services, court closures or economic hardship.¹¹

An extended quarantine places a substantial psychological strain even on couples without previous conflict or abuse, but the risk is heightened when there is already a history of previous violence. During this continuous enforced cohabitation period, violent people may experience heightened stimulus to lose control, accentuating the cycle of violence.⁹ Abusers are more likely to become violent towards their partners in the wake of personal crises such as unemployment and significant financial setbacks, or due to maladaptive coping.¹² Additionally, the perception of gender roles may further trigger controlling, manipulative or dominating behaviors against family members.¹³ This pattern aligns with a dynamic in which the loss of control in one domain, such as the financial field, leads abusers to assert greater control over another field, such as their intimate relationship.¹⁴ A recent study reported a potential risk of post-traumatic symptoms, which are more likely to manifest in problematic and violent relationships, and particularly during the quarantine conditions.¹⁵

The increased mental pressure and psychological distress due to the global COVID-19 lockdowns are expected to sharpen the rise of domestic and family malfunction worldwide.¹⁶ According to published statistics from the Greek General Secretariat for Family Policy and Gender Equality,¹⁷ the number of women who asked for help or reported family violence during quarantine quadrupled compared with the past period. Specifically, most of the calls (71%) came from women, and 29% were made by third parties (relatives, neighbors, and friends). For the majority (91%) this was their first attempt to ask for assistance.

Based on the above statistics, information about intimate relationships, domestic violence, and other psychological stressors during the quarantine, is essential for mental health professionals, in order to design, develop and implement effective support systems. This study aimed to explore anxiety, depression and PTSD symptoms in individuals living with people with whom their relationships were perceived as disrupted or dangerous.

MATERIAL AND METHOD

Participants

This study was part of a larger cross-sectional online survey (created using Qualtrics.com), distributed through social media from April 10 until April 13 2020. Ethical approval was granted from the “Papageorgiou” General Hospital Review Board (563/2020) and the study was conducted in accordance with the Helsinki Declaration.

Participants were informed about the nature of the study and were asked to indicate their consent by clicking the appropriate answer, a required field. Participation was voluntary and anonymous. The inclusion criteria were: acceptance to participate, being adult, completion of the survey, and response to the questions (a) please describe the status of the relationship with your cohabiting partner before the lockdown (the possible answers were “Single”: absence of a steady relationship; “satisfying relationship”: a relationship that I want to be part of, because I am feeling loved, safe and trusted; “complicated relationship”: a relationship with frequent conflicts and misunderstandings; “abusive relationship”: a relationship that involves emotional and or physical violence), and (b) has the relationship with your co-habiting partner changed during the lockdown? (the possible answers were “My relationship hasn’t changed”; “my relationship became better”; “my relationship became worse”; “my relationship became dangerous”).

Study instruments

Sociodemographic variables recorded included gender, age, educational level and residential area, and the participants completed the Greek versions of the following self-administered psychometric scales:

The Generalized Anxiety Disorder scale (GAD-7):^{18,19} This scale is an instrument for the assessment of the severity of anxiety symptoms over the preceding two weeks. Each of the seven items is rated on a 4-point severity scale (0: not at all; 1: several days; 2: more than half the days; 3: nearly every day). The total scores range from 0 to 21 (cutoff scores: 0–5, mild anxiety symptoms; 6–10, moderate anxiety symptoms; 11–15, moderately severe anxiety symptoms; 15–21, severe anxiety symptoms).

The Brief Patient Health Questionnaire (PHQ-9) Depression scale:^{20,21} This scale is an instrument for the diagnosis of major depression and subthreshold depressive disorder in the general

population.²² Each of the nine items is rated on a 4-point severity scale (0: not at all; 1: several days; 2: more than half the days; 3: nearly every day). Total scores range from 0 to 27 (cutoff scores: 0–4, no or minimal depressive symptoms; 5–9, mild depressive symptoms; 10–14, moderate depressive symptoms; 15–19, moderately severe depressive symptoms; 20–27, severe depressive symptoms).

The Peritraumatic Distress Inventory (PDI):^{23,24} This scale assesses the level of distress experienced during or immediately after a traumatic event. Each of the thirteen items is rated on a 5-point Likert scale (0: not true at all; 1: slightly true; 2: somewhat true; 3: very true; 4: absolutely true). The total score ranges from 0 to 52. The inventory consists of two subscales, a 7-item subscale assessing negative emotions and a 6-item subscale assessing perceived threat and arousal.

The Post-Traumatic Stress Disorder-8 Items (PTSD-8):^{25,26} This scale evaluates probable PTSD. It originates from the Harvard Trauma Questionnaire (HTQ),²⁷ targeting trauma populations, and includes eight items. The overall cut-off criteria require a combination of at least one symptom with an item score of three or higher from each of the three PTSD symptom clusters.²⁵

Data analysis

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS), version 26.0 (IBM Corp), with $p < 0.05$ as the level of statistical significance. Mean (M) and standard deviation (SD) were used to describe continuous variables. For categorical variables, group proportions were calculated. Student's t-tests were used to examine relationships between demographic variables and the psychological outcome variables. The scores on the GAD-7, PHQ-9, PDI, and PTSD-8 were used to estimate the prevalence of anxiety, depression, peri-traumatic distress and post-traumatic symptomatology, respectively.

RESULTS

A total of 2,998 participants met the inclusion criteria and completed the study. Most of the participants were female ($n=2,177$, 72.3%) and within the age range of 18 to 30 years ($n=1,559$, 51.8%). The majority of the respondents had a university degree ($n=1,360$, 45.2%) and were urban residents ($n=2,298$, 76.3%). Regarding the relationship status, 542 (20.8%) were single, 2,117 (70.3%) reported enjoying a satisfying relationship, 346 (9.1%) were involved in a complicated relationship and 3 (0.1%) in an abusive relationship.

Based on their answers 1,859 (75.7%) respondents reported that their relationship had not changed during the imposed lockdown, and another 18.4% ($n=452$) reported that the relationship became better. A subtotal of 145 participants (5.9% of the total sample) reported that the bond with their partner had changed for the worse, of which 138

(5.6% of the total sample; 109 females, 29 males) stated that their relationship had deteriorated during the lockdown, and 7 (0.3% of the total sample; 5 females, 2 males) that it had become dangerous. Of these 7 participants, 3 had been experiencing an abusive relationship even before the lockdown and 4 characterized their relationship as complicated during the lockdown. Further analysis of the respondents who stated that their relationship worsened or become dangerous will be described in the section "Participants at risk of violence". The characteristics of the study population are presented in table 1.

Psychometric scales

The participants who reported that their relationship was complicated or abusive before the lockdown, had the highest mean scores on all the psychometric scales compared to the respondents who were single or rated their relationship as satisfying. More detailed results are presented in table 2.

The same pattern was repeated with anxiety, depression, peritraumatic distress and post-traumatic symptomatology in the answers about how the relationship evolved during the lockdown period. Respondents who answered that their relationship changed for the worse or became dangerous recorded statistically significantly higher mean scores on all the psychometric scales than respondents who reported that their relationship did not change, or became better. Participants who were single were excluded from this analysis. More detailed results are presented in table 3.

Participants at risk of violence

The sociodemographic characteristics of the subgroup "Participants at risk of violence" are presented in table 4.

No significant gender differences were found in the scores on the psychometric scales, with the exception of post-traumatic symptomatology. Specifically, female scores were higher on GAD-7 [$M=15.52 \pm 5.41$ versus $M=13.84 \pm 5.05$; $t(139)=-1.620$, $p=0.10$], on PHQ-9 [$M=18.41 \pm 5.67$ versus $M=16.81 \pm 5.30$; $t(140)=-1.406$, $p=0.16$], on PDI [$M=25.67 \pm 8.16$ versus $M=22.71 \pm 8.23$; $t(143)=-1.785$, $p=0.76$]. Finally, females appeared to suffer higher post-traumatic symptomatology ($M=19.11 \pm 4.67$) than males ($M=16.83 \pm 4.73$, $t(136)=-2.354$, $p=0.02$).

A total of 54.6% of the participants at risk reported severe anxiety symptoms, 2.8% reported severe depressive symptoms, while 17.6% met criteria for probable PTSD, as shown in table 5.

Comparison between the 7 participants who answered

Table 1. Sociodemographic and relationship characteristics of respondents to a survey on relationships during COVID-19 lockdown (n=2,998).

Characteristics	Frequency	%
<i>Gender</i>		
Male	821	27.3
Female	2,177	72.3
Total	2,998	99.6
<i>Age (years)</i>		
18–30	1,559	51.8
31–45	767	25.5
46–60	556	18.5
61–75	102	3.4
>75	11	0.4
Total	2,995	99.5
<i>Educational level</i>		
Elementary school	12	0.4
Middle school	33	1.1
High school	894	29.7
University	1,360	45.2
MSc	622	20.7
PhD	73	2.4
Total	2,994	99.5
<i>Residence</i>		
Urban city	2,298	76.3
Small city	324	10.8
Rural city	352	11.7
Total	2,974	98.8
<i>Co-habiting partnership</i>		
Single	542	20.8
Satisfying relationship	2,117	70.3
Complicated relationship	346	9.1
Abusive relationship	3	0.1
Total	2,998	99.3
<i>Impact of lockdown*</i>		
Relationship did not change	1,859	75.7
Relationship became better	452	18.4
Relationship became worse	138	5.6
Relationship became dangerous	7	0.3
Total	2,456	100.0

* Participants who reported "single" in the relationship status were excluded from the descriptive analysis

MSc: Master of science, PhD: Philosophy doctorate

that they feel being in danger and the 138 respondents who reported that their relationship worsened during the lockdown also revealed higher mean scores in anxiety as assessed by the GAD-7 ($M=19.29\pm 2.98$ versus $M=14.82\pm 5.16$), in depression as assessed by the PHQ-9 ($M=21.43\pm 7.67$ versus $M=17.80\pm 5.49$), in peri-traumatic distress as assessed by the PDI ($M=32.53\pm 11.90$ versus $M=24.65\pm 7.88$) and in post-traumatic symptomatology as assessed by the PTSD-8 ($M=23.57\pm 1.81$ versus $M=18.27\pm 4.74$).

DISCUSSION

The majority of the participants reported that the imposed lockdown did not change the quality of their relationship, and a subtotal of 18.4% reported a positive impact. This result is in line with recent studies reporting that relationship quality was not impacted by lockdown measures,^{28,29} presumably because supportive intimate relationships can safeguard the feeling of stability during a challenging time of uncertainty.³⁰ Attention should be given to those individuals who struggled to survive the lockdown period, reporting deterioration in relationships, and even danger. In the current study a subsample of 5.9% participants reported a decline in relationship quality and their psychometric testing showed significant mental health impairment. Roughly 85% of these participants expressed moderate to severe anxiety symptoms, 50% moderate to severe depressive symptoms, while 17.6% met the criteria for probable PTSD. Similar results were documented in studies exploring relationship quality and mental health amid the COVID-19 lockdown across Europe.^{31–33}

A subtotal of 7 individuals (0.3% of the total sample; 4.82% of the subgroup at risk of violence) described that they felt threatened by their cohabiting partner's behavior during the imposed lockdown. Among these, only 3/7 recorded abusiveness in their relationship prior to quarantine. The COVID-19-related restriction measures increased the risk of partner violence, at the same time creating barriers to the victims, such as limited access to aid services and support networks.³⁴ Domestic violence shelters struggled to keep up with state regulations and social distancing measures, and access to legal or social services and shelters was limited for victims of abuse during the lockdown.^{35,36} Due to the stay-at-home orders, victims were forced to spend much more time with their partners and tolerate violence and abuse in their intimate relationship. Being trapped in their own houses, they were exposed to increased danger with limited choices, "a quarantine within a quarantine". Moreover, victims of physical abuse may not seek medical attention, because either they fear they may contract the

Table 2. Scores on the psychometric scales according to the nature of the relationship of respondents to a survey on relationships during COVID-19 lockdown (n=2,998).

Scales	Type of relationship	n	Mean	SD	95% CI	SS	Df	F	p
<i>Total score GAD-7</i>	Single	542	12.96	0.231	12.51–13.42				
	Satisfying relationship	2,117	13.18	0.095	12.99–13.36				
	Complicated relationship	346	14.82	0.441	13.95–15.69	523.78	3	8.893	0.001
	Abusive relationship	3	19.29	1.128	16.53–22.05				
	Total	2,998	13.24	0.086	13.07–13.41				
<i>Total score PHQ-9</i>	Single	542	14.98	0.227	14.53–15.42				
	Satisfying relationship	2,117	14.45	0.088	14.28–14.62				
	Complicated relationship	346	17.80	0.468	16.87–18.72	825.88	3	25.130	0.001
	Abusive relationship	3	21.43	2.902	14.33–28.53				
	Total	2,998	14.70	0.083	14.54–14.86				
<i>Total score PDI</i>	Single	542	21.50	0.315	20.88–22.12				
	Satisfying relationship	2,117	21.65	0.131	21.39–21.91				
	Complicated relationship	346	24.65	0.671	23.33–25.98	1030.87	3	14.168	0.001
	Abusive relationship	3	32.57	4.498	21.57–43.58				
	Total	2,998	21.79	0.121	21.55–22.03				
<i>Total score PTSD-8</i>	Single	542	17.38	0.244	16.90–17.86				
	Satisfying relationship	2,117	17.96	0.102	17.76–18.16				
	Complicated relationship	346	18.27	0.410	17.46–19.08	320.60	3	5.136	0.001
	Abusive relationship	3	23.57	0.685	21.90–25.25				
	Total	2,998	17.90	0.092	17.72–18.08				

GAD-7: Generalized Anxiety Disorder scale, PHQ-9: Brief Patient Health Questionnaire, PDI: Peritraumatic Distress Inventory, PTSD-8: Post-Traumatic Stress Disorder-8 items, SD: standard deviation, 95% CI: 95% confidence interval

Table 3. Scores on psychometric scales according to change in the nature of the relationship during lockdown of respondents to a survey on relationships during COVID-19 lockdown (n=2,998).

Scales	Change	n	Mean	SD	95% CI	SS	df	F	p
<i>Total score GAD-7</i>	My relationship has not changed	1,859	12.96	4.81	12.51–13.42				
	It became better	450	13.18	4.57	12.99–13.36	638.78	3	9.893	0.001
	It became worse	138	14.82	5.16	13.95–15.69				
	It became dangerous	7	19.29	2.98	16.53–22.05				
	Total	2,454	13.24	4.66	13.07–13.41				
<i>Total score PHQ-9</i>	My relationship has not changed	1,846	14.98	4.82	14.53–15.42				
	It became better	452	14.45	4.29	14.28–14.62	1,825.88	3	30.742	0.001
	It became worse	137	17.80	5.49	16.87–18.72				
	It became dangerous	7	21.43	7.67	14.33–28.53				
	Total	2,442	14.70	4.51	14.54–14.86				
<i>Total score PDI</i>	My relationship has not changed	1,859	21.50	6.70	20.88–22.12				
	It became better	443	21.65	6.41	21.39–21.91	2,030.31	3	15.789	0.001
	It became worse	138	24.65	7.88	23.33–25.98				
	It became dangerous	7	32.57	11.90	21.57–43.58				
	Total	2,447	21.79	6.59	21.55–22.03				
<i>Total score PTSD-8</i>	My relationship has not changed	1,859	17.38	5.05	16.90–17.86				
	It became better	452	17.96	4.86	17.76–18.16	369.60	3	5.168	0.001
	It became worse	138	18.27	4.74	17.46–19.08				
	It became dangerous	7	23.57	1.81	21.90–25.25				
	Total	2,456	17.90	4.89	17.72–18.08				

GAD-7: Generalized Anxiety Disorder scale, PHQ-9: Brief Patient Health Questionnaire, PDI: Peritraumatic Distress Inventory, PTSD-8: Post-Traumatic Stress Disorder-8 items, SD: standard deviation, 95% CI: 95% confidence interval

Table 4. Sociodemographic characteristics of the subgroup “Participants at risk of violence” of respondents to a survey on relationships during COVID-19 lockdown.

	Overall	
	n=145	%
<i>Gender</i>		
Female	114	76.55
Male	31	21.38
<i>Age (years)</i>		
61–75	2	1.38
46–60	12	8.28
31–45	19	13.10
18–30	112	77.24
<i>Educational level</i>		
Middle school	2	1.38
High school	43	29.66
University	70	48.28
MSc	30	20.69
<i>Residential area</i>		
Large city	105	72.41
Small city	21	14.48
Village	15	10.34
Not reported	4	2.76

MSc: Master of science

virus or they assume that access to hospitals is limited due to overload with COVID-19 patients.³⁷

Apart from the psychological burden attributed to the pandemic and the related restriction measures^{38–42} this study underscores the importance of investigating additional psychosocial factors affecting individuals during the pandemic. Mental health care professionals need to screen for abuse and seek for additional risk factors, since mental health symptoms may not be solely attributed to the quarantine, but to the domestic conditions as well.

The present study has some limitations. Being a part of a larger COVID-19 study, extended research of the domestic violence during the pandemic in Greece was out of the scope of the survey, but it appeared incorrect to conceal these warning signs of potential abuse. The authors preferred not to acquire in depth data on such a sensitive issue from an anonymous survey delivered online.⁴³ Instead, questions pointing to an unfavorable domestic environment were applied. As a result, the types of unfavorable relations that may have had an impact on individuals during the quarantine were not determined, limiting the interpretation of the results. In addition, the study employed self-administered tools, and may therefore suffer from bias. Lastly, online surveys may suffer from the so-called “volunteer-effect” and the characteristics of responders may differ substantially from those of non-responders and those without online access.⁴⁴

Table 5. Participants at risk of violence in a survey on relationships during COVID-19 lockdown: Levels of anxiety, depression and post-traumatic stress disorder (PTSD).

Symptoms	Severity	Overall		Female		Male		x2
		n	%	n	%	n	%	
<i>Anxiety symptoms</i>	Mild	21	14.9	14	9.9	7	5.0	NS
	Moderate	43	30.5	31	22.0	12	8.5	
	Severe	77	54.6	65	46.1	12	8.5	
	Total	141	100.0	110	78.0	31	22.0	
<i>Depressive symptoms</i>	None/minimal	23	16.2	15	10.6	8	5.6	NS
	Mild	49	34.5	39	27.5	10	7.0	
	Moderate	43	30.3	33	23.2	10	7.0	
	Moderately severe	23	16.2	21	14.8	2	1.4	
	Severe	4	2.8	3	2.1	1	0.7	
	Total	142	100.0	111	78.2	31	21.8	
<i>Probable PTSD</i>	Does not meet criteria	117	82.4	90	63.4	27	19.0	NS
	Meets criteria	25	17.6	21	14.8	4	2.8	
	Total	142	100.0	111	78.2	31	21.8	

NS: Non-significant (p>0.05)

In conclusion, this study showed that living with an intimate partner while experiencing unhealthy relationship patterns or patterns of abusive behavior had a substantial psychological impact during the COVID-19 pandemic. Anxi-

ety, depressive symptoms and post-traumatic symptoms observed in this study may have been influenced by the domestic circumstances and not only by the quarantine measures.

ΠΕΡΙΛΗΨΗ

Συμπτώματα άγχους, κατάθλιψης και μετατραυματικού stress σε ζευγάρια κατά τη διάρκεια της καραντίνας COVID-19

Π. ΚΑΡΑΜΟΥΖΗ, Α. ΜΠΛΕΚΑΣ, Ε. ΠΑΡΛΑΠΑΝΗ, Β.Α. ΝΙΚΟΠΟΥΛΟΥ, Β. ΧΟΛΕΒΑ, Β. ΤΣΙΠΡΟΠΟΥΛΟΥ, Ν.Α. ΑΡΝΑΟΥΤΟΓΛΟΥ, Μ.Δ. ΚΕΡΑΣΙΔΟΥ, Π. ΒΟΪΤΣΙΔΗΣ, Μ. ΠΑΜΠΟΥΧΙΔΟΥ, Μ. ΑΣΑΡΙΔΟΥ, Χ.Α. ΤΣΙΡΙΔΟΥ, Ι. ΔΙΑΚΟΓΙΑΝΝΗΣ

Α΄ Ψυχιατρική Κλινική, Τομέας Επιστημών Υγείας, Ιατρική Σχολή,
Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης, Θεσσαλονίκη

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ΣΚΟΠΟΣ Η διερεύνηση του αντίκτυπου της καραντίνας στην ψυχική υγεία των ατόμων που βιώνουν συγκρουσιακές σχέσεις με τους(τις) συντρόφους τους. **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ** Συνολικά 2.998 συμμετέχοντες συμπλήρωσαν την κλίμακα γενικευμένης αγχώδους διαταραχής, το σύντομο ερωτηματολόγιο υγείας ασθενών, το ερωτηματολόγιο περιτραυματικής δυσφορίας και το ερωτηματολόγιο διαταραχής μετατραυματικού stress. Η ποιότητα της σχέσης πριν και κατά τη διάρκεια της καραντίνας αξιολογήθηκε με δύο λήμματα. **ΑΠΟΤΕΛΕΣΜΑΤΑ** Μια υπο-ομάδα 145 ερωτηθέντων (4,8% του συνολικού δείγματος) ανέφεραν ότι η σχέση επιδεινώθηκε κατά τη διάρκεια της καραντίνας. Περίπου το 0,2% από αυτούς ανέφεραν ότι βρίσκονταν σε πραγματικό κίνδυνο. Συνολικά, το 85% της υπο-ομάδας ανέφερε μέτρια έως σοβαρά συμπτώματα άγχους, το 50% ανέφερε μέτρια έως σοβαρά καταθλιπτικά συμπτώματα, ενώ το 17,6% πληρούσε τα κριτήρια για πιθανή διαταραχή μετατραυματικού stress. **ΣΥΜΠΕΡΑΣΜΑΤΑ** Εκτός από την επιβάρυνση που αποδίδεται στην πανδημία και τα σχετικά περιοριστικά μέτρα, η παρούσα μελέτη υπογραμμίζει τη σημασία της διερεύνησης πρόσθετων ψυχοκοινωνικών παραγόντων που επηρεάζουν τα άτομα.

Λέξεις ευρητηρίου: Άγχος, Ζευγάρια, Κατάθλιψη, COVID-19, Μετατραυματικό stress

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- Corresponding author:*
- A. Blekas, First Department of Psychiatry, “Papageorgiou” General Hospital of Thessaloniki, Aristotle University of Thessaloniki, Ring Road Thessaloniki, Nea Efkarpia, 546 03 Thessaloniki, Greece
e-mail: apsychauth@papageorgiou-hospital.gr