

Research article

The impact of COVID-19 on people under opioid substitution treatment

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ABSTRACT

Given the aggravation on the general population's quality of life due to COVID-19 and the vulnerability of People Who Use Drugs (PWUD) to acute stress, the current study aimed to better comprehend the impact of COVID-19 on quality of life and mental health of PWUD as well as their drug use patterns. Another study had been conducted before the COVID-19 outbreak, which assessed the quality of life, indicative PTSD symptoms, and drug use patterns of people who were attending an Opioid Substitution Treatment (OST), in Athens, Greece. As a continuation of the aforementioned study, the same variables were assessed in May and June 2020, after the first lockdown measures. 104 patients agreed to participate. The World Health Organization Quality of Life Questionnaire (WHOQOL) and the Post-Traumatic Stress Scale (PCL-C) were used as well as toxicology tests. The only statistically significant outcome was a reduction regarding the dimension referring to the relationship between the individual and their environment. People with low quality of life were found to experience more severe Post-Traumatic Stress Disorder (PTSD) symptoms after the lockdown comparing to those with high quality of life. There was also a statistically non-significant increase in PTSD scores before and after lockdown measures. Regarding drug use patterns, the present research reveals an overall decline in drug use during quarantine. There was a statistically significant decrease in opioid (22.3%) and in benzodiazepine (35%) use after the lockdown. Also, a statistically significant increase in mean scores of indicative PTSD symptoms of people who decreased opioid use during and after lockdown measures was found. In regards to amphetamine use, research findings underline a non-significant increase in use (8.7%). The pandemic's impact on the life of people on opioid substitution treatment should be taken into consideration and further studies need to be conducted to protect this population's quality of life and maximize the potential benefits such as reduced access to illicit substances.

KEYWORDS: COVID-19, post-traumatic stress disorder, quality of life, opioid substitution treatment.

Introduction

Within the first few months of the declaration by the WHO about the COVID-19 pandemic, this disease has escalated with intimidating speed and has turned into an unprecedented global crisis.^{1,2} COVID-19 has led to over 6.320.600 deaths globally³ and constitutes a big chal-

lenge for healthcare systems and public health policies around the world.⁴

Literature suggests that large-scale disruptive events, like natural disasters, are associated with depression, anxiety, and mainly with the manifestation of PTSD symptoms.⁵ Studies found that tobacco, alcohol, and

cannabis users increased their substance consumption in the aftermath of terrorist attacks.^{6–8} Moreover, people with a history of trauma and anxiety disorders were more likely to experience aggravated symptoms of irritability and nervousness after exposure to such events⁶, and participants with increased substance consumption, mainly alcohol and tobacco, had higher scores on post-traumatic stress scales.⁹

Regarding the psychological impact of disease outbreaks worldwide, there is a lack of studies in this field. Nevertheless, the occurrence of new diseases in the 21st century has rekindled interest in this underdeveloped area.¹⁰ Jalloh et al¹¹ researched the impact of the Ebola virus and found that depression and PTSD symptoms usually manifested one year after the disease outbreak and mainly in people who were somehow exposed to the consequences of the virus. Considering that epidemic situation in the past enhanced PTSD symptoms and the fact that humanity is experiencing the most severe pandemic since the Spanish Influenza, we may safely hypothesize that COVID-19 may significantly impact the manifestation of PTSD symptoms.^{12–14}

Research has shown that the psychological impact of “quarantine” may have long-lasting effects and that social distancing is associated with increased psychological distress and PTSD symptoms.¹⁵ Several studies have investigated the prevalence of PTSD in the general population, in students, health care practitioners, and psychiatric patients, following the first wave of the COVID-19 outbreak.^{16–18} A cross-sectional study in China revealed that 4.6% of the population experienced severe PTSD symptoms,² whereas one-third of psychiatric patients presented PTSD symptoms and scored higher than the general population for depression, anxiety, and suicidal ideation scales.¹⁷

Furthermore, the pandemic’s impact on quality of life has been explored. This term describes ‘an individual’s perception of their position in life considering their culture, goals, expectations and their concerns.¹⁹ During the first months of the pandemic Liu et al²⁰ studied, the quality of life in young adults with a psychiatric disorder and found that it was worse than those without a diagnosis.

Within this context, the impact on PWUD has not been adequately investigated, even though premorbid physical health conditions, which are overrepresented within this group, are also high-risk factors for severe morbidity from COVID-19.⁴ A cross-sectional study in the USA found a correlation between loneliness, binge drinking and severe drug use during the COVID-19 pandemic.²¹ When it comes to people on OST, measures taken to manage the pandemic could compromise access to

treatment services and their quality. These measures could lead to increased rates of treatment discontinuation and hence relapses to opiate use, accidental overdoses, and augmentation of PTSD symptomatology.^{2,22}

According to research findings regarding the lockdown’s effect on the mental health of individuals with SUD in Barcelona, symptoms of clinical anxiety were found in 58.7% of the sample, 48.2% of participants scored above the clinical threshold for depression and 50.3% of the individuals reported a deterioration in depression and anxiety symptoms during lockdown.²³ Fuchs-Leitner et al.²⁴ found that more than a quarter of patients in Opioid Substitution Treatment services in Austria developed an increased risk for PTSD and that 30–50% of the patients displayed elevated levels of depression and stress symptoms. Moreover, given that the quality of life of PWUD is generally lower than the quality of life of the general population of people with physical health problems²⁵ and considering the impact of previous crises (e.g., economic) on people attending drug treatment programs,⁴ it is worth investigating the impact of the pandemic on their quality of life.

Furthermore, it can be hypothesized that any traumatic event may affect drug use patterns. The impact of the COVID-19 pandemic on these patterns must be studied.²⁴ In the first three months of the pandemic there was a reduction in drug use, possibly due to lockdown measures which might affect the availability of certain substances.²⁶ However, there has been an increased use of prescribed drugs, such as benzodiazepines. A Global Drug Survey, conducted in New Zealand came to the same conclusions.²⁷ On the contrary, a study in Spain found that the frequency of use for the majority of individuals with SUD remained stable during lockdown compared to the pre-lockdown era, while there was a reduction in tobacco, alcohol, cannabis, and cocaine use.²³

The current study was an effort to better comprehend the impact of COVID-19 on PWUD who attend OST services. It further adds to the data of a cross-sectional study that took place from November 2019 to March 2020,²⁸ just before the implementation of the lockdown measures in Athens, Greece, on 13th March 2020, with further data collection from the same sample during and immediately after the relaxation of the lockdown measures in spring 2020.

Materials and Method

Participants

Participants were attending an OST service in Athens, operated by the Organization Against Drugs (OKANA, the national public agency providing opioid substitution treatment), and were recruited for another study.

Ethics approval was extended, and participants were approached again after the lockdown period. Participants were prescribed methadone or buprenorphine.

Research process

The research tools were first administered from November 2019 to March 2020 before the implementation of the lockdown measures. To maintain continuity, the same research tools (see below) were administered once more after the lockdown measures, from May to June 2020. Participants were given an adapted information sheet and signed a new consent form. The questionnaires were anonymous and a unique patient code for each participant was used. Participants had to complete these measures outside the premises of the treatment Unit of the Organization against Drugs – OKANA (General University Hospital “ATTIKON”), due to the COVID-19 restrictions.

Research tools

The research tools that were used both in the study before COVID-19 and this study are the World Health Organization Quality of Life Questionnaire (WHOQOL-BREF)²⁸ and the Post-Traumatic Stress Scale (PTSD Check List).²⁹

The WHOQOL-BREF includes 26 questions that assess the quality of life in four dimensions: physical health, mental health, social relationships, and the relationship between the individual and their environment. This questionnaire presents internal consistency reliability, with Cronbach's alpha ranging from $\alpha=.67$ to $.81$.³⁰

The Post Traumatic Stress Scale (PCL-C) contains 17 elements that correspond to the main symptoms of PTSD according to DSM-IV. Regarding its internal consistency, it ranges from $\alpha=.94$ to $.97$.³¹ This questionnaire has been adapted into Greek.³²

Drug use was assessed with toxicology tests (urine) at three-time points (before the enforcement of lockdown measures, and during and after the lifting of these measures).

Statistical analysis

Paired Sample t-tests were performed to explore whether indicative symptoms of PTSD, quality of life, and drug use profiles have changed. Independent sample t-tests, one-way ANOVA, and multivariate analysis (linear and multiple regression analyses) were also conducted. Analyses were performed using the statistical package SPSS 25.0.

Results

Demographic and clinical characteristics

As shown in table 1, 86 males (82.7%) and 18 females (17.3%) took part in the study. The age range was 23 to 71 years, with an average age of 46.2 years old ($SD=9.17$) (results summarized in table 2). The mean age of participants' most severe early traumatic experience was 16.5 years old ($SD=11.72$), while substance abuse was initiated at 17.74 years old ($SD=4.77$). The onset of psychotic symptoms was 27.57 years old ($SD=12.58$).

Quality of Life and PTSD

A paired sample t-test was performed to compare the mean scores of WHOQOL-BREF results. As shown

Table 1. Socio-demographic characteristics

	(%)	N
Gender		
Males	82.7%	86
Females	17.3%	18
Age		
23-44	49%	51
45-54	31.7%	33
55-71	19.2%	20
Nationality		
Greeks	96.2%	100
Foreigners	3.8%	4
Marital Status		
Unmarried	55.8%	58
Married	21.2%	22
Divorced	19.2%	20
Widowed	3.8%	4
Children		
Exist	43.3%	45
Non-existent	56.7%	59
Education level		
Secondary education	91.3%	95
Higher education	7.7%	8
Advanced education	1%	1
Employment status		
Employed	28.8%	30
Unemployed	71.2%	74
Residential area		
Urban	91.3%	95
Rural	8.7%	9

Note: N=104

Table 2. Clinical characteristics (N=104).

		N	%
Substitute	Methadone	32	30.8
	Buprenorphine	72	69.2
Substance of preference	Alcohol	1	1.0
	Benzodiazepine	2	1.9
	Heroin	67	64.4
	Cannabis	14	13.5
	Tobacco	2	1.9
	Cocaine	13	12.5
	Pharmaceutical pills	1	1.0
	Speedball	1	1.0
	Hallucinogenic	1	1.0
	Opiates	2	1.9
Discontinuation of the Program (voluntarily or involuntarily)	Yes	46	44.2
Psychotic Symptoms	Yes	45	43.3

Note: N=104

in table 3 there is no statistically important change in participants' physical, and mental health, and social relations, $p > 0.05$. The only statistically significant change was found in the scores of the dimension which refers to the relationship between the individual and their environment, before lockdown $M = 12.31$ ($SD = 2.57$), after lockdown $M = 12.06$ ($SD = 2.76$); $t(103) = -.626$, $p = 0.05$.

A multiple regression analysis was performed to explore the impact of quality of life on PTSD scores after lockdown, yet there were no statistically important results found $p > 0.05$. However, when the sample was divided into those with high and those with low quality of life, it was found that those with low quality of life had higher PTSD scores after lockdown, $M = 49.98$ ($SD = 15.64$), than those with high quality of life, $M = 37.31$ ($SD = 17.81$); $t(102) = 3.649$, $p < 0.001$.

The independent sample t-test analysis showed no statistically significant differences between men and women in any dimensions of quality of life ($p > 0.05$) nor in PTSD scores.

The sample was divided into three age groups (23–44, 45–54, 55–71). The one-way ANOVA analysis showed no statistically significant differences between these groups ($p > 0.05$) in PTSD scores. Regarding the quality of life, only the dimension which refers to the relationship between the individual and their environment was statistically significant $F(103) = 5.418$, $p = .006$. More specifically, the first age group ($M = 12.92$, $SD = 2.18$) scored higher than the second group ($M = 11.40$, $SD = 3.09$), $p = 0.012$ and the third group ($M = 10.95$, $SD = 2.98$), $p = 0.006$ on this dimension.

Drug use patterns

As shown in table 4, it was found that before the lockdown 32% of the sample tested positive for opioid use, during lockdown it increased to 35% and after lockdown, it reduced to 22.3%. A repeated measures ANOVA determined a statistically significant decrease in opioid use between time points, $F(1.936, 385.263) = 7.719$, $p = 0.001$. Post hoc analysis with a Bonferonni adjustment revealed that opioid use was higher before, $M = 0.29$ ($SD = 0.45$), than after lockdown, $M = 0.21$ ($SD = 0.41$). It was also higher during, $M = 0.32$ ($SD = 0.47$) than after the lockdown. Regarding benzodiazepine use, there was a reduction during, $M = 0.33$ ($SD = 0.47$), and after lockdown, $M = 0.30$ ($SD = 0.46$), $F(1.816, 361.412) = 25.742$, $p < 0.001$. The percentage of participants who tested positive for cannabis and cocaine use remained stable both during and after the lockdown ($p > 0.05$). Regarding amphetamine use, no differences were found between time points ($p > 0.05$).

Regarding opioid use, it was found that the average age of participants that stopped using opioids ($N = 13$) was 48.7 years old ($SD = 9.8$). The majority were on (or prescribed) buprenorphine (76.9%). This group showed a significant increase in mean scores of indicative PTSD

Table 3. Differences in mean scores of WHOQOL-BREF domains and PCL-C (N=104).

	Before lockdown		After lockdown		t (df=103)	p
	M	SD	M	SD		
PTSD	44.77	17.98	46.07	17.27	0.552	0.453
Physical health	12.06	3.05	12.13	3.35	0.145	0.691
Mental health	11.80	3.16	11.20	3.32	-1.33	0.941
Social relations	11.60	3.99	11.46	4.44	-0.230	0.323
Environment	12.31	2.57	12.06	2.76	-0.626	0.037*

Note: * $p < 0.05$

Table 4. Frequencies of substances used before, during and after quarantine (N=103).

Substances	Before	During	After
Opioid	32%	35%	22.3%
Benzodiazepines	75.7%	35%	35%
Cocaine	10.7%	9.7%	7.8%
Cannabis	32%	32%	30.1%
Amphetamines	3.9%	8.7%	5.7%

symptoms before ($M=42.61$, $SD=17.92$) and after lockdown ($M=54.76$, $SD=21.06$); $t(12)=-2.326$, $p<0.05$. There is also, a statistically significant decrease in the dimension 'environment' of quality of life before ($M=12.42$, $SD=2.99$) and after lockdown ($M=10.26$, $SD=3.13$); $t(12)=-1.417$, $p<0.05$. The decrease in mean scores of physical health before and after the lockdown was just below significance levels ($p=0.08$). Moreover, the average age of participants that stopped using benzodiazepines during and after lockdown ($N=42$) was 46.8 years old ($SD=8.9$) and the majority was on buprenorphine (69%). There were no statistically significant changes in the mean scores of indicative PTSD symptoms before and after lockdown, $p>0.05$; or in the mean scores of the four dimensions of quality of life.

The average age of participants that started using amphetamines ($N=5$) was 48 years old ($SD=15.8$) and the majority were on buprenorphine (60%). There were no significant differences between the mean scores of indicative PTSD symptoms or the dimensions of quality of life before and after the lockdown.

Discussion

It is evident from the results of this study that the prevalence of indicative PTSD symptoms remained stable during and after the lockdown period suggesting no impact of the COVID-19 pandemic. This finding was against researchers' predictions and not consistent with existing literature. PTSD constitutes the most common psychological impact on people who are exposed to the threat of a new, frightening disease and it is generally considered the most likely consequence of a major disaster.^{2,12,17} Martinotti et al³² argued that there is a high prevalence of depression, anxiety, and PTSD in their sample, which consisted of PWUD.

Regarding adverse mental health effects of the pandemic, findings from OST services in Spain have shown that a high percentage of patients displayed clinical levels of anxiety and/or depression and that 50.5% of the patients reported worsening of these symptoms due to lockdown.²³

The absence of a statistically significant increase following the experience of the pandemic and the lockdown measures could be attributed to several factors, which also reflect possible limitations of the present study: (i) the small sample size, and (ii) the timing of the second screening which was immediately after the lifting of the lockdown measures and too close to the experience of what was hypothesized as the traumatic experience. Literature suggests that it sometimes takes up to six months for the diagnosis of PTSD to be made or for the first symptoms of the disorder to appear.³³ This time-lapse hypothesis is indicatively well considered by Jalloh et al,¹¹ who assessed PTSD one year after the outbreak of the Ebola virus. Perhaps further follow-up studies are needed to assess the short and long-term effects of the COVID-19 pandemic on individual and collective mental health.

As far as participants' quality of life, scores on the dimensions of physical, and mental health, and social relations remained stable before and after the lockdown measures. PWUD continued to evaluate their quality of life as mediocre, without any deterioration against predictions. This was also inconsistent with Zhang and Ma³⁴ findings that suggested a major impact of COVID-19 on the Chinese population's quality of life, with 50% feeling terrified and unsafe because of the pandemic. Our findings revealed a significant relationship between PCL-C and WHO-QOL scores, with those with a low quality of life scoring higher on PCL-C than those with a higher quality of life. This finding is consistent with previous research results which underlined the negative correlation between general PTSD symptom levels and subjective quality of life.^{35,36}

It could be argued that the experience of the pandemic was not severe or long enough to compromise further the pre-existing mediocre quality of life of PWUD, as opposed to the good quality of life of the general population; or that PWUD is somehow better equipped to cope with such threatening experiences and traumas. However, there was a decrease in the scores of dimension, referring to the participant's relationship with their environment. After the lockdown participants felt insecure in their daily life to a greater extent than they did before and they were not satisfied with their living conditions and their financial status.²³ Martinotti et al³² came to the same conclusion by associating low quality of life with an increased craving for drug use during the lockdown period.

Regarding the drug use pattern, the use of opioids was reduced and possibly was substituted by an increase in the use of crack cocaine or amphetamines.³⁷ However, these changes might reflect a change in substance

availability due to the impact of COVID-19 restrictions on drug production and trafficking. Similar findings have been reported from other European countries.²⁶ It is of great interest that this reduction seems to be associated with an increase in indicative PTSD symptoms. Furthermore, studies indicate that opioid reduction leads to increased benzodiazepine use, which aims to help people deal with stress and withdrawal symptoms caused by other substances.^{26,27} This is not confirmed in the current study, where benzodiazepine use during and after the quarantine was reduced. Cocaine and cannabis use remained stable during lockdown measures. However, amphetamine use rates doubled during the lockdown, but changes during time points were not statistically significant. This outcome is not consistent with studies conducted in northern Europe.²⁵ This could be a result of the small sample size used.

The less severe than anticipated immediate impact of COVID-19 on patients with high levels of drug depend-

ency reported here has also been reported by another survey conducted in Austrian OST services.³⁸ This outcome is evident in many European countries, without overlooking the national variations, which depend on the sub-population and the availability of a substance.²⁶ Drug use patterns seem to be affected by the new social reality under COVID-19, but it is still uncertain whether the identified changes will remain or not. The pandemic's impact on PWUD should also be taken into consideration during the readjustment and the repair of possible ruptures in the therapeutic interventions in Substitution Units for PWUD. Scientific reviews have already highlighted the importance of service adaptability to respond to COVID-19's effects on drug market disruption, heightened risk of psychological distress, and drug-related harms.^{39,40} Therefore, this area needs to be further studied, to raise awareness of the long-term effects of the pandemic on drug users' mental health needs, service delivery, and treatment efficacy.

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Ερευνητική εργασία

Η επίδραση της πανδημίας σε άτομα με διαταραχή χρήσης ουσιών υπό θεραπεία υποκατάστασης

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ΠΕΡΙΛΗΨΗ

Δεδομένης της επιδείνωσης της ποιότητας ζωής του γενικού πληθυσμού λόγω της COVID-19 και της ευαισθησίας των ανθρώπων που κάνουν χρήση ουσιών στο έντονο στρες, ο στόχος της παρούσας έρευνας είναι η καλύτερη κατανόηση της επίδρασης που έχει η πανδημία της COVID-19 στην ποιότητα της ζωής, στην ψυχική υγεία των χρηστών ουσιών και στο μοτίβο χρήσης ουσιών. Πριν την έξαρση του ιού είχε διεξαχθεί μία έρευνα η οποία αξιολογούσε την ποιότητα ζωής, τα ενδεικτικά συμπτώματα Διαταραχής Μετα-τραυματικού Στρες (PTSD) και το μοτίβο χρήσης ουσιών των ατόμων που λάμβαναν υπηρεσίες από μία Μονάδα Ολοκληρωμένης Θεραπείας της Εξάρτησης, θεραπεία με υποκατάστατο, στην Αθήνα. Σε συνέχεια της μελέτης αυτής, αξιολογήθηκαν οι ίδιες μεταβλητές τον Μάιο και τον Ιούνιο του 2020, έπειτα από την άρση των περιοριστικών μέτρων. 104 ασθενείς δέχθηκαν να συμμετάσχουν και συμπλήρωσαν το ερωτηματολόγιο Ποιότητας Ζωής του Παγκόσμιου Οργανισμού Υγείας (WHOQOL-BREF) και την Post-Traumatic Stress Scale (PCL-C). Για την αξιολόγηση του μοτίβου χρήσης ουσιών λήφθηκαν υπόψη οι τοξικολογικοί έλεγχοι. Μία στατιστικά σημαντική διαφορά που αναδείχθηκε ήταν η μείωση στον παράγοντα της ποιότητας ζωής που αφορά τη σχέση του ατόμου με το περιβάλλον του. Βρέθηκε ότι τα άτομα με χαμηλή ποιότητα ζωής βίωσαν πιο σοβαρά συμπτώματα PTSD μετά την άρση των περιοριστικών μέτρων σε σχέση με τα άτομα με υψηλή ποιότητα ζωής. Γενικότερα βρέθηκε μία στατιστικά μη σημαντική αύξηση στα σκορ του PTSD πριν και μετά τα περιοριστικά μέτρα. Όσον αφορά στο μοτίβο χρήσης ουσιών, η παρούσα έρευνα αναδεικνύει μία συνολική μείωση στη χρήση ουσιών κατά τη διάρκεια των περιοριστικών μέτρων. Υπήρξε, επίσης, μία στατιστικά σημαντική μείωση στη χρήση οπιοειδών (22.3%) και βενζοδιαζεπινών (35%) μετά την άρση των περιοριστικών μέτρων. Τα άτομα που μείωσαν τη χρήση οπιοειδών κατά τη διάρκεια και μετά τα περιοριστικά μέτρα παρουσίασαν αυξημένο σκορ στα ενδεικτικά συμπτώματα PTSD. Όσον αφορά στη χρήση αμφεταμινών, βρέθηκε μία στατιστικά μη σημαντική αύξηση (8.7%). Η επίδραση της πανδημίας στη ζωή των ωφελούμενων μίας θεραπευτικής μονάδας υποκατάστασης οπιοειδών χρειάζεται να ληφθεί υπόψη και να διερευνηθεί περισσότερο ώστε να προστατευθεί η ποιότητα ζωής του πληθυσμού αυτού και να μεγιστοποιηθούν πιθανά οφέλη, όπως η περιορισμένη πρόσβαση σε παράνομες ουσίες.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: COVID-19, διαταραχή μετα-τραυματικού στρες, ποιότητα ζωής, θεραπευτική μονάδα υποκατάστασης οπιοειδών.