

## Comparison of 2019 and 2020 Inpatient Data of an AMATEM Clinic

Bir AMATEM Kliniğinin 2019 ve 2020 Yılı Yatan Hasta Verilerinin Karşılaştırması

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### ABSTRACT

**Objective:** This study aims to examine the impact of the coronavirus disease 2019 (COVID-19) pandemic on hospitalisation rates and substance use patterns among patients admitted to the AMATEM clinic of a mental health hospital, by comparing data from 2020 with pre-pandemic data from 2019.

**Material and Method:** All patients who were admitted to the AMATEM clinic of Elazığ Mental Health and Diseases Hospital between 01.07.2019-31.12.2019 and 01.07.2020-31.12.2020 were included in the study. Sociodemographic and clinical data of the patients, such as age, diagnosis, mean duration of hospitalization, and urine toxicology, were recorded.

**Results:** There were 257 hospitalizations on the dates specified in 2019 and 126 hospitalizations in 2020. The most common diagnosis was multiple substance use disorder (n=160), the second most common diagnosis was opioid use disorder (n=111), and the third most common diagnosis was alcohol use disorder (n=56). The most common multiple substance combinations were methamphetamine+opioid (n=47) and methamphetamine+cannabis (n=32). While the mean age in patients using methamphetamine+cannabis was higher than in patients using methamphetamine+opioid (p=0.023), the mean duration of hospitalization was lower in patients using methamphetamine+cannabis (p=0.008).

**Conclusion:** The COVID-19 pandemic has resulted in decreased hospitalization numbers in a mental health hospital's AMATEM clinic, as well as changes in substance use patterns, including changes in common substance use combinations. It seems reasonable to posit that these shifts were associated with altered substance accessibility during the period of the COVID-19 pandemic.

**Keywords:** COVID-19, pandemic, inpatient, substance use, alcohol

### ÖZET

**Amaç:** Bu çalışmanın amacı, koronavirüs hastalığı 2019 (COVID-19) pandemisinin, bir ruh sağlığı hastanesinin AMATEM kliniğine yatırılan hastalar arasında hastaneye yatış oranları ve madde kullanım örüntüleri üzerindeki etkisini, 2020 yılına ait verileri pandemi öncesi 2019 yılı verileriyle karşılaştırarak incelemektir.

**Gereç ve Yöntem:** Elazığ Ruh Sağlığı ve Hastalıkları Hastanesi'nin AMATEM kliniğine 01.07.2019-31.12.2019 ve 01.07.2020-31.12.2020 tarihleri arasında yatışı gerçekleştirilmiş bütün hastalar çalışmaya dâhil edilmiştir. Hastalara ait yaş, tanı, ortalama yatış süreleri, idrar toksikolojisi gibi sosyodemografik ve klinik veriler kaydedilmiştir.

**Bulgular:** 2019 yılında belirtilen tarihlerde 257 yatış, 2020 yılında 126 yatış gerçekleşmişti. En sık saptanan tanı çoklu madde kullanım bozukluğu (n=160), ikinci en sık tanı opioid kullanım bozukluğu (n=111), üçüncü en sık tanı alkol kullanım bozukluğu (n=56) idi. En sık çoklu madde kombinasyonu metamfetamin+opioid (n=47) ve metamfetamin+esrar (n=32) idi. Metamfetamin+esrar kullanımı olan hastalarda ortalama yaş metamfetamin+opioid kullananlara göre daha yüksekti (p=0.023), ortalama yatış süresi metamfetamin+esrarda daha düşüktü (p=0.008).

**Sonuç:** COVID-19 pandemisi bir ruh sağlığı hastanesinin AMATEM kliniğindeki hospitalizasyon sayılarının azalmasına ek olarak yaygın madde kullanım kombinasyonlarındaki değişiklikleri de içeren madde kullanım özelliklerinin değişmesiyle sonuçlanmıştır. Bu değişimlerin COVID-19 pandemisi döneminde maddeye erişilebilirliğin değişmesiyle ilişkili olduğunu varsaymak makul görünmektedir.

**Anahtar Kelimeler:** COVID-19, pandemi, yatan hasta, madde kullanımı, alkol

### INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic, caused by Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2), has had profound economic and social impacts and has led to a global crisis in healthcare systems (1). The direct and indirect effects of COVID-19 have led to an increase in psychological distress around the world, the emergence of new mental health problems, and the deterioration of individuals who already have mental

problems. This global event has caused an acute response in individuals and societies, presenting with fear, grief, disruption and financial distress (2). Governmental restrictions and lockdowns were most stringent during the beginning of the pandemic. Lockdowns have augmented risk factors that negatively impact mental health, such as social isolation and unemployment, while also limiting access to face-to-face social and professional support. Accordingly, the provision of mental health services has come under serious pressure due to

the impact of COVID-19 (2,3).

The effects of COVID-19 on the mental health of the general population have been frequently studied. However, its effect on patients with an existing psychiatric disorder has not been adequately investigated (4,5). Data regarding the hospitalization processes of patients with psychiatric disorders have also rarely been investigated. The functioning of Alcohol-Substance Addiction Research, Treatment and Training Centres (AMATEM), where outpatient and inpatient treatments for substance use disorders (SUD) are carried out, has also changed during the COVID-19 period. This is evidenced by the operational constraints experienced by AMATEM clinics as a consequence of social distancing and other protective measures. The capacities of AMATEMs have also been reduced within the scope of social distance rules. In this study, it was aimed to examine inpatient data for the same months of 2019 and 2020 in order to reveal the effect of the COVID-19 pandemic on the profile of patients diagnosed with SUD hospitalized in AMATEM unit of a mental health and disease hospital (MHDH). It is hypothesised that the

restrictions imposed by the COVID-19 pandemic resulted in a reduction in the number of inpatients in AMATEM units, reflecting alterations in accessibility and treatment engagement during this period.

## MATERIAL AND METHODS

### Study Design

This study addresses all patients diagnosed with SUD who were hospitalized in the AMATEM inpatient unit of Elazığ MHDH between 01.07.2019-31.12.2019 and 01.07.2020-31.12.2020. Elazığ MHDH is one of the largest psychiatric branch hospitals in Turkey, with outpatient and inpatient AMATEM clinics, providing mental health services to 18 different provinces in the Eastern Anatolia, Black Sea and South-Eastern Anatolia regions. All information presented in the study was obtained retrospectively from the hospital registry system. Ethics committee approval was received from Firat University (Date: 18/03/2021; No: 2021/04-33).

### Psychiatric Diagnosis Procedure

The psychiatric diagnoses included in the study were written according to the fifth edition of the Diagnostic and Statistical

**Table 1:** Comparison of AMATEM data for the last 6 months of 2019 and 2020

Parameters	Year 2019 mean±SD (Quartile 25th/50th- h/75th) & n (%)	Year 2020 mean±SD (Quartile 25th/50th- h/75th) & n (%)	P	F/t & Pearson Chi-square	Odds Ratio (95%CI) & Cohen's d
Age (years)	33.37±8.74 (27.00/31.00/36.50)	32.88±10.20 (26.00/30.00/37.00)	0.625	1.258/0.490	0.051
Duration of hospitalization (days)	13.49±8.87 (5.00/14.00/22.00)	13.46±8.82 (4.00/14.50/21.00)	0.982	0.022/0.023	0.003
Marital status	<i>Single</i>	150 (58.4)	76 (60.3)	0.715	0.150  0.920 (0.594-1.425)
	<i>Married</i>	97 (37.7)	45 (35.7)	0.699	
	<i>Divorced/widowed</i>	10 (3.9)	5 (4.0)	0.971	
Admission history to Elazığ MHDH	<i>Yes/no</i> 95 (37.0)/50 (39.7)	162 (63.0)/76 (60.3)	0.606	0.265	1.122 (0.724-1.738)
Diagnosis	<i>AUD</i>	34 (13.2)	22 (17.5)	0.002*	18.831  1.627 (1.049-2.523)
	<i>MUD</i>	14 (5.4)	18 (14.3)		
	<i>CUD</i>	16 (6.2)	4 (3.2)		
	<i>OUD</i>	88 (34.2)	23 (18.2)		
	<i>CoUD</i>	3 (1.2)	1 (0.8)		
	<i>MSUD</i>	102 (39.7)	58 (46.0)		
Urine toxicology	<i>Methamphetamine positivity</i>	87 (33.9)	50 (39.7)	0.263	1.251  1.286 (0.827-1.997)
	<i>Cannabis positivity</i>	62 (24.1)	23 (18.3)	0.194	1.687  0.702 (0.411-1.199)
	<i>Opioid positivity</i>	115 (44.7)	40 (31.7)	0.015*	5.932  0.574 (0.367-0.899)
	<i>Buprenorphine positivity</i>	28 (10.9)	12 (9.5)	0.680	0.170  0.861 (0.422-1.756)
	<i>Cocaine positive</i>	4 (1.6)	2 (1.6)	0.982	0.001  1.020 (0.184-5.646)
	<i>Ecstasy positivity</i>	10 (3.9)	0 (0.0)	0.025*	5.034  0.961 (0.938-0.985)

\*p<0.05; Independent-Samples T-Test was used in statistical analysis. Odds ratio (95%CI), Cohen's d, and quartile values were calculated; Abbreviations: AMATEM=Alcohol-Substance Addiction Research, Treatment and Training Centers, SD=Standard Deviation, MHDH=Mental Health and Diseases Hospital, AUD=Alcohol Use Disorder, MUD=Methamphetamine Use Disorder, CUD=Cannabis Use Disorder, OUD, Opioid Use Disorder, CoUD = Cocaine Use Disorder, MSUD = Multiple Substance Use Disorder

Manual of Mental Disorders (DSM-5) (6). During the psychiatric diagnosis process, urine toxicology, the patient’s history, information obtained from the patient’s relatives and e-nabiz records were used.

The diagnoses determined in the patients in this study were as follows: Alcohol use disorder (AUD), methamphetamine use disorder (MUD), cannabis use disorder (CUD), opioid use disorder (OUD), cocaine use disorder (CoUD), multiple substance use disorder (MSUD).

**Biochemical Analyses**

Beckman Coulter AU480 Biochemical Auto-Analyser (Beckman Coulter, Inc.; CA, USA) device was used in urine toxicology. The reference ranges of the substances were as follows: cannabis (0-50 ng/mL), methamphetamine (0-500 ng/mL), buprenorphine (0-5 ng/mL), opioid (0-2000 ng/mL), cocaine (0-150 ng/mL), ecstasy (0-500 ng/mL).

**Statistical Analysis**

SPSS 26 version was used in statistical analysis. Descriptive statistics and continuous variables are presented as mean ± standard deviation, and categorical variables are presented as frequency and percentage. Categorical data, such as diagnostic groups, marital status, admission history, toxicology results, were subjected to analysis using the Chi-square test, while numerical data, such as age and duration of hospitalisation, were compared using the independent samples t-test. The statistical significance level was determined as p<0.05 and below.

**RESULTS**

When the data was examined in terms of the number of hospitalizations, it was seen that there were 257 hospitalizations in the Elazığ MHDH AMATEM unit in the last 6 months of 2019, and 126 hospitalizations in the last 6 months of 2020. All patients were male. The characteristics of the hospitalizations were shown in Table 1.

It was observed that the mean age in 2019 hospitalizations was 33.37±8.74 years, the mean age in 2020 hospitalizations was 32.88±10.20 years and the difference was not significant (p=0.625, Cohen’s d=0.051). It was observed that the mean duration of hospitalization in 2019 was 13.49±8.87 days and the mean duration of hospitalization in 2020 was 13.46±8.82 days (p=0.982, Cohen’s d=0.003). When the data of 2019 and 2020 were evaluated in total (n=383), it was seen that the mean age was 33.21±9.24 years (median=31, min=21, max=71) and the mean duration of hospitalization was 13.48±8.84 days (median=14, min=1, max=46).

According to the diagnoses, their marital status was examined. The divorced/widow rate was highest in AUD (16.1%). The single rate was 23.2% in AUD, 43.8% in MUD, 65.0% in CUD, 73.0% in OUD, 65.6% in MSUD. There was a significant difference between the diagnoses in terms of marital status (p<0.001) (Figure 1). There was no significant difference in terms of history of admission to Elazığ MHDH according to diagnoses (p=0.705, 95%CI=0.806 (0.532-1.222)).

While the rate of married individuals was 37.7% in 2019 admissions, it was 35.7% in 2020 admissions (p=0.928, 95%CI=0.920 (0.594-1.425)). Two people each, who were admitted in both 2019 and 2020, were followed under probation (p=0.601).

When patients diagnosed with MSUD (n=160) were examined, it was seen that the number of patients using cannabis+opioid was 14, the number of patients using methamphetamine+cannabis was 32, the number of patients using methamphetamine+opioid was 47, and the number of patients using methamphetamine+cannabis+opioid was 17.

The substance combinations of patients diagnosed with MSUD were compared between 2019 and 2020 and it was found that there was no significant difference (p=0.371). While the methamphetamine+opioid combination was present in 28

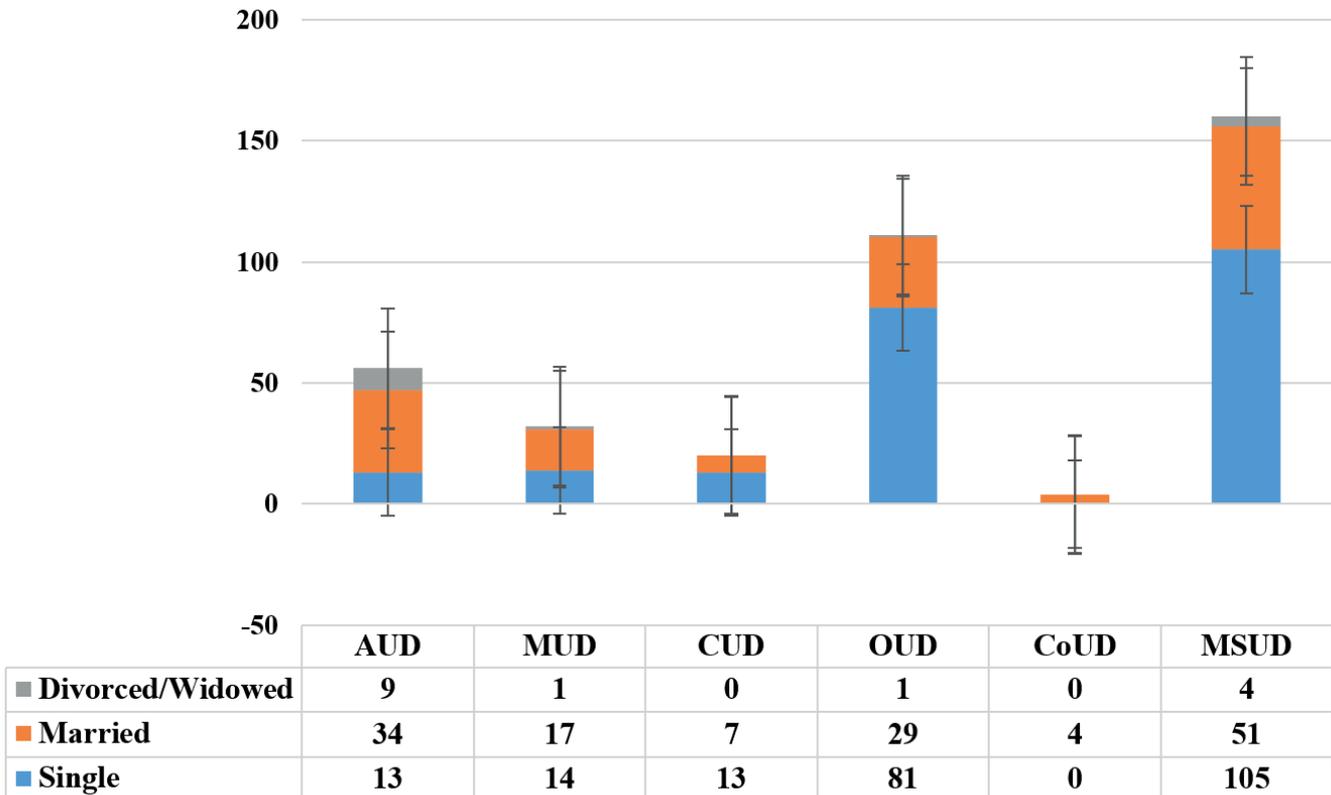
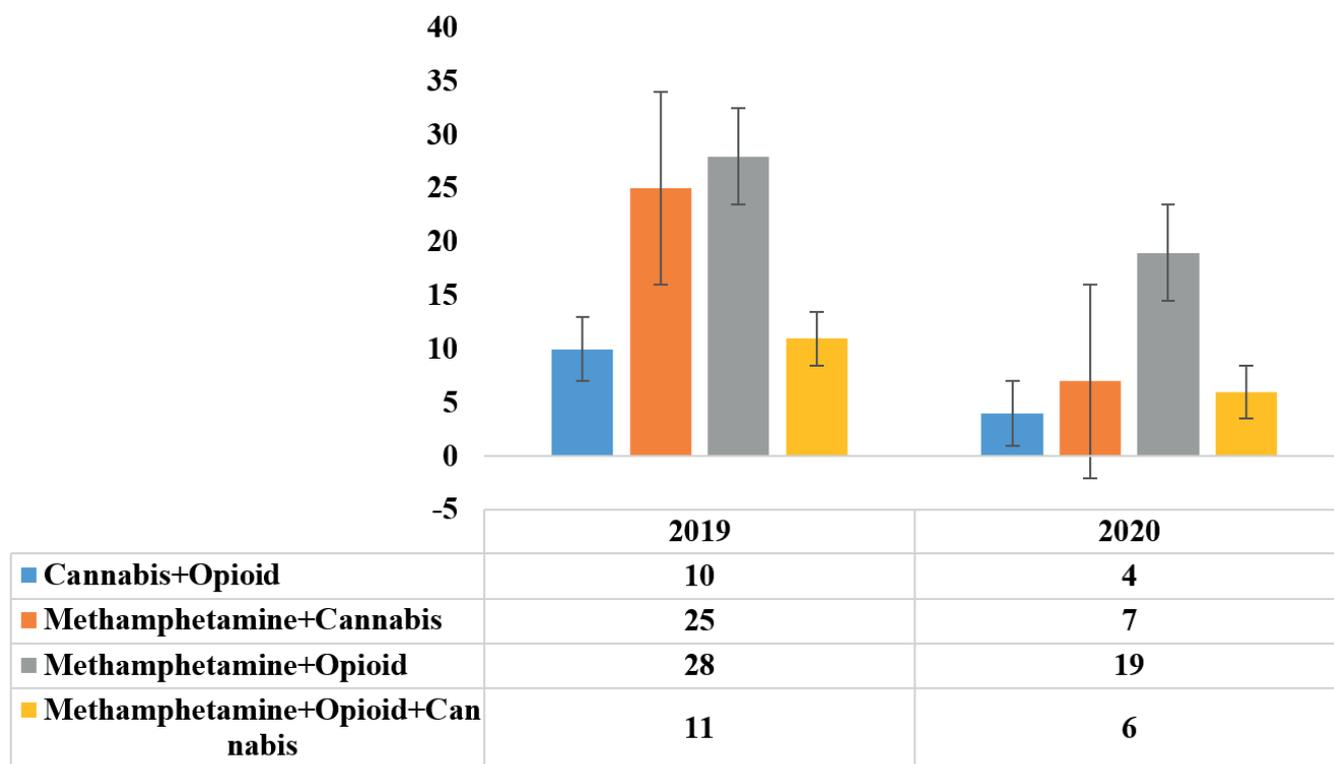


Figure 1: Distribution of Marital Status According to Diagnosis



**Figure 2:** Distribution of Substance Combinations by the Year

patients (37.8%) in 2019, it was present in 19 patients (52.8%) in 2020. While the methamphetamine+cannabis combination was present in 25 patients (33.8%) in 2019, it was present in 7 patients (19.4%) in 2020 (Figure 2).

Methamphetamine+cannabis combination and methamphetamine+opioid combination were compared in terms of various parameters. While the mean age of patients using methamphetamine+cannabis combination was  $33.31 \pm 6.74$  years, the mean age of patients using methamphetamine+opioid combination was  $29.97 \pm 5.92$  years ( $p=0.023$ , Cohen's  $d=0.526$ ). While the mean duration of hospitalization in patients using the methamphetamine+cannabis combination was  $8.28 \pm 5.65$  days, the mean duration of hospitalization in those using the methamphetamine+opioid combination was  $13.27 \pm 9.33$  days ( $p=0.008$ , Cohen's  $d=0.646$ ).

The mean age in the cannabis+opioid combination was  $31.00 \pm 4.29$  years (95%CI=28.51-33.48), in the methamphetamine+cannabis combination was  $33.31 \pm 6.74$  years (95%CI=30.88-35.74), in the methamphetamine+opioid combination was  $29.97 \pm 5.92$  years (95%CI=28.23-31.71), and in the methamphetamine+cannabis+opioid combination was  $30.64 \pm 6.76$  years (95%CI=27.16-34.12). There was no significant difference in mean age between these combinations ( $p=0.129$ ).

The mean duration of hospitalization in the cannabis+opioid combination was  $16.57 \pm 8.00$  days (95%CI=11.94-21.19), in the methamphetamine+cannabis combination was  $8.28 \pm 5.65$  days (95%CI=6.24-10.32), in the methamphetamine+opioid combination was  $13.27 \pm 9.33$  days (95%CI=10.53-16.01), and in the methamphetamine+cannabis+opioid combination was  $15.64 \pm 7.19$  days (95%CI=11.94-19.34). There was no significant difference in mean duration of hospitalisation between these combinations ( $p=0.252$ ).

All patients ( $n=383$ ) were compared in terms of age and duration of hospitalization according to their diagnosis. The

mean age was  $46.67 \pm 11.33$  years in AUD (95%CI=42.93-49.61),  $32.03 \pm 7.94$  years (95%CI=29.16-34.89) in MUD,  $33.45 \pm 5.48$  years (95%CI=30.88-36.01) in CUD,  $30.63 \pm 7.40$  years (95%CI=29.29-31.98) in OUD,  $39.50 \pm 3.31$  years (95%CI=34.22-44.77) in CoUD,  $31.25 \pm 6.90$  years (95%CI=30.17-32.33) in MSUD ( $p<0.001$ ). The mean duration of hospitalization in AUD was  $15.94 \pm 8.98$  days (95%CI=13.35-18.47), in MUD  $12.40 \pm 9.89$  days (95%CI=8.83-15.97), in CUD  $13.05 \pm 8.39$  days (95%CI=9.12-16.97), in OUD  $14.44 \pm 8.71$  days (95%CI=12.95-16.15), in CoUD  $21.00 \pm 0.81$  days (95%CI=19.70-22.29), in MSUD it was  $12.03 \pm 8.57$  days (95%CI=10.69-13.37) ( $p=0.020$ ).

## DISCUSSION

This is the first study to examine the patients diagnosed with SUD who were hospitalized in the AMATEM inpatient unit of a MHDH in our country in the six months immediately before the COVID-19 pandemic, and the patients in the six months when the COVID-19 pandemic was experienced most intensely and restrictions were most intensely applied, together with sociodemographic and clinical data. Consistent with the hypothesis at the beginning of the study, data before and during the COVID-19 pandemic were found to be different from each other in various aspects. While the most basic finding was the change in the number of patients, it was observed that the general characteristics of the patients also varied greatly. While the decrease in the number of hospitalizations was thought to be related to COVID-19 pandemic, patient characteristics were not thought to be related.

Various precautions have been taken by governments to manage the risks posed by the COVID-19 pandemic to public health. In our country, especially in the last few months of 2020, we have transitioned to an increasingly limited life cycle. Serious precautions have also been taken in hospitals. Many units except the emergency department, emergency surgery units and intensive care units have been closed.

Psychiatric inpatient units other than closed psychiatric inpatient units were also limited within the scope of these precautions. The importance of MHDHs for patients in need of psychiatric hospitalization has gradually increased during the COVID-19 period. AMATEM units in many hospitals were also temporarily unable to provide hospitalization. AMATEM inpatient units of MHDHs have become the only centres for the treatment of patients diagnosed with SUD (7). When the data of current study is examined, it is seen that the number of patients decreased by 2.03 times from 2019 to the same months of 2020. Not wanting to enter a closed environment due to fear of COVID-19 and the reduced bed capacity of Elazığ MHDH may be possible reasons for this result. The findings of our study in terms of sociodemographic data were evaluated in the light of the literature. Bulut et al. (8), who examined the data of 2001-2005, reported the mean age as 36.02 years, Karaağaç et al. (9), who examined the data of 2007-2015, reported the mean age as 33.6 years, and Orum et al. (10), who examined the data of 2018, reported the mean age as 26.09 years. Studies have shown that the mean age of patients diagnosed with AUD is significantly higher than that of other illicit substance users. The age difference between studies also appears to be related to the rate of patients diagnosed with AUD. In Orum et al.'s study (10), the lower rate of patients diagnosed with AUD resulted in a lower mean age. In our study, it was found that the mean age was similar in 2019 and 2020 and is similar to many studies in the literature.

It is known that substance use characteristics vary regionally and temporally. Difficulty or ease in accessing substances, state policies in the fight against substances, changes in substance production areas, marketing of substances, dominant powers, and substance traffic are some of the situations that affect substance trends and characteristics (11). In the study of Bulut et al. (8) where they evaluated the 2001-2005 AMATEM data of Gaziantep, they found the diagnosis of AUD to be 46.8%, the diagnosis of OUD to be 42.1% and the diagnosis of CUD to be 7.1%. Karaağaç et al. (9) examined patients hospitalized in an AMATEM in Kayseri between 2007 and 2015 and reported that the most common diagnosis was AUD (37.2%) and the second most common diagnosis was CUD (34.1%). In the study conducted by Eğılmez et al. (12), probation data of Adıyaman province for 2017 and 2018 were examined. In that study (12), while opioid use increased significantly in 2018 compared to 2017, the rate of cannabis use decreased significantly. The data of the AMATEM units where the study was performed vary depending on the study samples and the years on which the study was based. In our study, it is seen that substance use characteristics in successive years show some alterations. While the rate of MUD diagnosis and methamphetamine positivity increased in 2020 compared to 2019, the rate of OUD diagnosis and opioid positivity decreased. The decrease in the rate of opioid positivity was found to be statistically significant. It is assumed that findings such as increases in methamphetamine use rates and decreases in opioid use rates are due to changes in substance availability, not COVID-19 itself. According to United Nations Office on Drugs and Crime World Drug Report, an estimated 36 million people used amphetamines in 2021, representing 0.7 per cent of the global population. Record-high quantities of amphetamine-type stimulants were seized in 2021, dominated by methamphetamine at the global level (13). Our finding regarding methamphetamine appears to be consistent with

the status of illicit substance use worldwide. COVID-19 may have led to increased use and substitution of toxic but cheaper substances (14). The increase in methamphetamine positivity rate indicates the need for specific changes in treatment processes. The higher incidence of psychotic disorders due to methamphetamine use than psychotic disorders due to other substance use makes SUD treatment a priority (15).

The substance availability is also likely to have shown regional variation. Niles et al.'s study (16) comparing drug test results collected before (1 January 2019–14 March 2020) and after (14 March 2020–16 May 2020) the onset of the pandemic among a national sample of United States adults found significant increases in positive test rates for fentanyl, heroin, and opiates following the onset of the pandemic but neither change nor a reduction in positive tests for drugs such as amphetamines, oxycodone, and benzodiazepines. Although there has been a decrease in methamphetamine use in various parts of the world during the COVID-19 pandemic compared to before the pandemic, the increase detected in this current study is also a striking finding. The most important possible reason for this is that there is a traffic and transition line specific to each substance (17).

Changes in substance availability have also resulted in changes in substance use combinations. According to the findings of this presented study, there was an increase in the combination of methamphetamine plus opioid after COVID-19, while there was a decrease in the combination of methamphetamine and cannabis. The characteristics of multiple/combined substance use have also changed around the world. The above-mentioned study by Niles et al. (16) found evidence of increased use of dangerous substance combinations during the pandemic, as the proportion of positive tests for non-prescribed fentanyl alone and in combination with amphetamines, benzodiazepines, cocaine, opiates, and heroin increased significantly across all demographic groups during COVID-19 compared to the months before the stay-at-home orders.

#### **Strengths and Limitations**

The most important strength of this study is that it compares substance use characteristics in the same time periods before and after COVID-19. This study is the first to examine the data of an AMATEM inpatient unit serving within MHDH for the same time periods before and after COVID-19. According to the findings of this study, substance use characteristics likely show a significant shift due to changes in access to the substance. Despite its strengths, this study has several limitations. Its retrospective nature is one of the most important limitations of this study. Detailed characteristics of the patients' SUD diagnoses could not be obtained. Patients' past substance use, family history, and psychometric scale data are not available. There is no information about additional psychiatric disorders and additional medical diseases. Only some frequently used substances are analysed in Elazığ MHDH. For this reason, illicit substances other than those reported in this study may be used. The types of substances used by patient with SUD change frequently. Sometimes there is single, sometimes multiple substance use. In other words, it is not correct to think that the psychiatric diagnoses are continuous based on the substances determined cross-sectionally.

#### **CONCLUSION**

According to results of this study, the COVID-19 pandemic has resulted in decreased hospitalization counts in a MHDH's AMATEM inpatient unit, as well as changes in substance use

characteristics, including changes in common substance use combinations. It seems reasonable to posit that these shifts were associated with altered substance accessibility during

the period of the COVID-19 pandemic. Further studies based on treatment and clinical observations be conducted in order to provide a framework for future research.

**Conflict of Interest:** No conflict of interest was declared by the authors

**Ethics:** This research is approved by the Firat University Ethics Committee (Approval date: 18/03/2021; No: 2021/04-33).

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**Approval of final manuscript:** All authors.

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