



## Covid-19 pandemic urges patients under buprenorphine and methadone maintenance treatment to craving and to parallel illicit drug use

Alexandra Katsouli<sup>1</sup>, Anna Karasavidou<sup>1</sup>, Panagiotis Papadopoulos<sup>1</sup>, Vasilios Stavropoulos<sup>1</sup>, Elena Batsiari<sup>1</sup>, Sotiris Tasoulis<sup>2</sup>, Ioannis A. Nellas<sup>2</sup>, Petros T. Barmpas<sup>2</sup>, Aristidis S. Veskokoukis<sup>3</sup>, Maria Tsironi<sup>4</sup>, Christonikos Leventelis<sup>1,4</sup>

<sup>1</sup>Organization Against Drugs, Athens, Greece; <sup>2</sup>Department of Computer science and Biomedical Informatics, University of Thessaly, Greece; <sup>3</sup>Department of Nutrition and Dietetics, University of Thessaly, Trikala, Greece; <sup>4</sup>Nursing Department, University of Peloponnese, Tripoli, Greece

### Introduction

COVID-19 pandemic induces notable disturbances in almost every aspect of human life. Furthermore, it putatively leads to a worrying increase in craving, despite the proven effectiveness of medication-assisted treatment (MAT).<sup>1</sup> The clinical evaluation of craving is crucial in terms of the confinement of relapse risk that is affected by stressors related to biopsychosocial status or overdose.<sup>2</sup> On that basis, the aim of this study was to investigate factors that influence craving among patients under MAT with methadone and buprenorphine during COVID-19 pandemic crisis.

### Materials and Methods

In total, 463 patients under methadone maintenance treatment (MMT/n=115) and buprenorphine maintenance treatment (BMT/n=348) completed the validated 5-dimension Heroin Craving Questionnaire (HCQ). A total craving score was obtained from the reversed sum of each dimension sub-score, ranging from 5-35. The higher the score, the higher the magnitude of craving.

Methadone hydrochloride solution (10 mg/ml) and tablets of buprenorphine (2-8 mg) were used. The patients were divided according to medications for opioid use disorders (MOUDs) dose (mg/24h) into three groups, as follows:

|     | Low  | Moderate | High |
|-----|------|----------|------|
| MMT | 2-45 | 45-85    | >85  |
| BMT | 2-10 | 10-18    | >18  |

The analysis was conducted using the R-programming language (v.4.1.2).

### Results

The demographic data of the participants are depicted in Table 1. COVID-19 affected significantly all craving dimensions for MMT and BMT patients, with verified COVID-19 cases having a greater score in each case (Figure 1). A regression tree for the total craving score was constructed, for each agonist (MMT – A, BMT – B) as presented in Figures 2. Concerning MAT patients, the most important factor for the determination of craving was “COVID-19 diagnosis”, with certified COVID-19 cases achieving higher craving score.

### References

- Shircliff, K., Liu, M., Prestigiacomo, C., Fry, M., Ladd, K., Gilbert, M. K., Rattermann, M. J., & Cyders, M. A. (2022). Mixed methods prospective findings of the initial effects of the U.S. COVID-19 pandemic on individuals in recovery from substance use disorder. *PloS one*, 17(7), e0270582.
- Levander, X. A., Hoffman, K. A., McIlveen, J. W., McCarty, D., Terashima, J. P., & Korhuis, P. T. (2021). Rural opioid treatment program patient perspectives on take-home methadone policy changes during COVID-19: a qualitative thematic analysis. *Addiction science & clinical practice*, 16(1), 72.

Table 1. The demographic data of the patients

| Parameters                    |              | MMT               |       | BMT               |       |
|-------------------------------|--------------|-------------------|-------|-------------------|-------|
|                               |              | N                 | %     | N                 | %     |
| Sex                           | Female       | 30                | 26.32 | 77                | 22.13 |
|                               | Male         | 84                | 73.68 | 271               | 77.87 |
| Age group                     | 18-30        | 0                 | 0.00  | 7                 | 2.15  |
|                               | >30-50       | 56                | 52.34 | 251               | 76.99 |
|                               | >50-67       | 51                | 47.66 | 68                | 20.86 |
| Area of residence             | Urban        | 104               | 91.23 | 267               | 78.76 |
|                               | Rural        | 10                | 8.77  | 72                | 21.24 |
| COVID-19 data                 | Non-infected | 83                | 72.17 | 306               | 87.93 |
|                               | Infected     | 32                | 27.83 | 42                | 12.07 |
|                               |              | <b>Mean (±SD)</b> |       | <b>Mean (±SD)</b> |       |
| Age                           |              | 48.74±8.18        |       | 42.95±8.06        |       |
| Age of onset                  |              | 18.90±6.49        |       | 17.47±5.22        |       |
| Years of drug use (prior MAT) |              | 17.99±8.34        |       | 16.31±9.64        |       |
| Years in MAT                  |              | 10.34±6.45        |       | 6.58±4.81         |       |
| BMI                           |              | 24.71±4.54        |       | 25.56±16.01       |       |

### Discussion – Conclusions

The present study presents increased craving in MAT patients following COVID-19 infection. Craving for infected patients with coronavirus was more intense than the non-infected, both for each dimension sub-score and total score. For MMT patients, craving was higher for those that were administered with the lower dose, and that had remained in MAT for 11 years. Regarding their BMT counterparts, craving was related only to urban area of residence, probably due to the observed “ceiling effect” of buprenorphine. In conclusion, the MOUDs dose, the residence area and the number of years in MAT are interrelated and affect total craving of MAT patients.

Figure 1. Correlations of HCQ dimensions in MMT/BMT patients and Covid-19 crisis

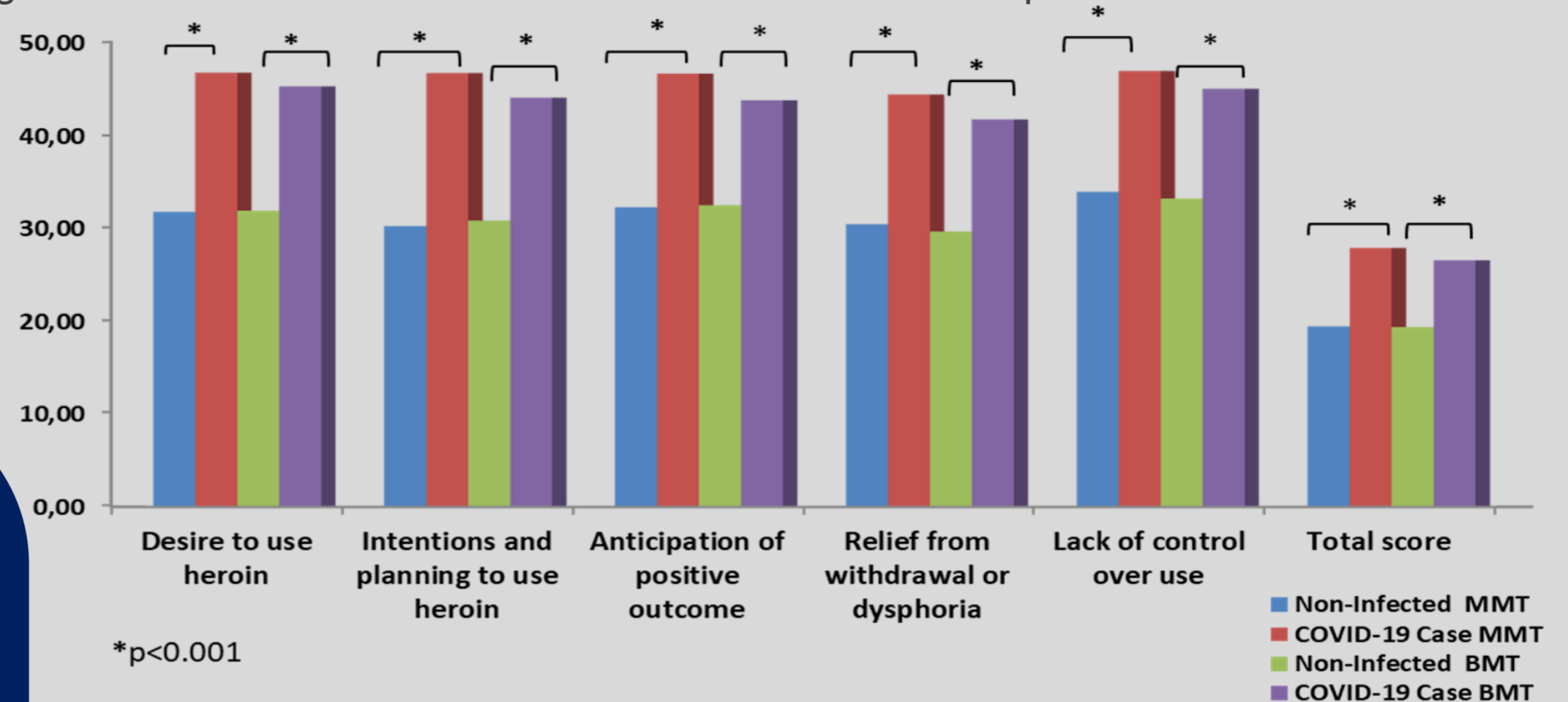
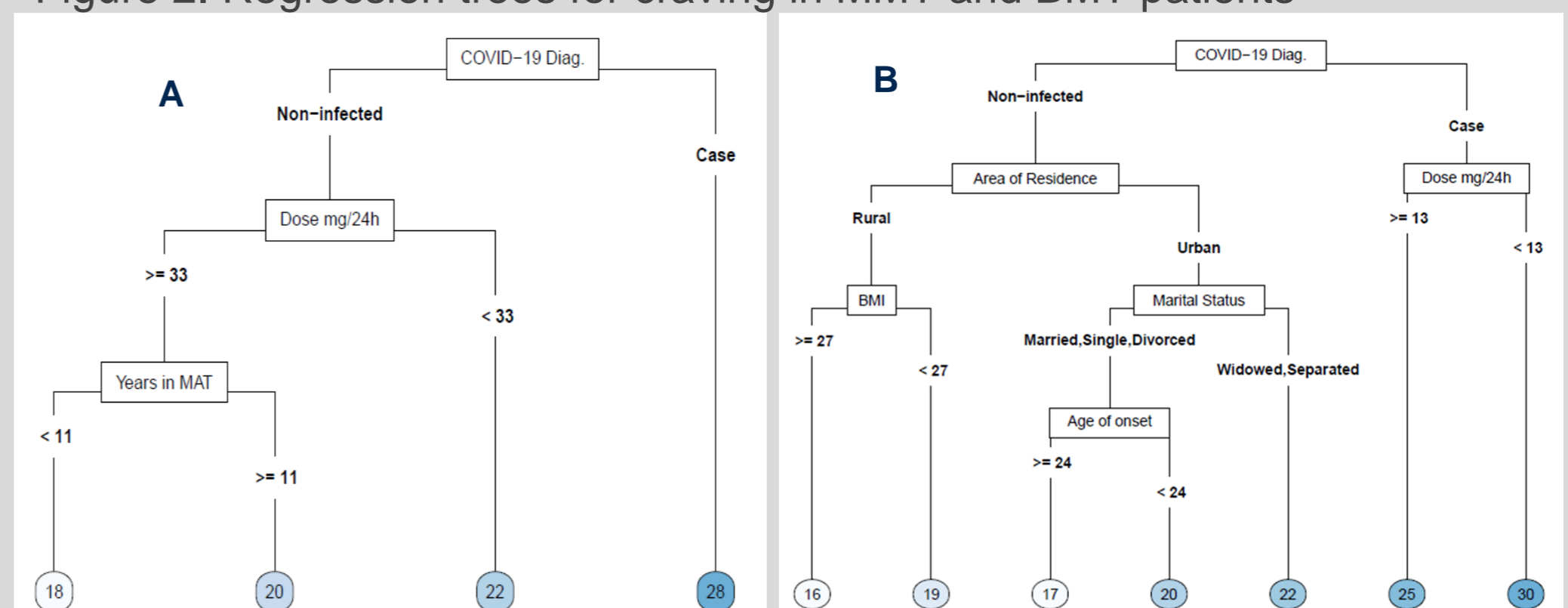


Figure 2. Regression trees for craving in MMT and BMT patients



The authors declare no conflict of interest