Sierra Tucson Veterans Outcomes Report Q3 2024

2024-10-04

This Quarterly Report provides updated information for April - June 2024 on treatment outcomes among U.S. Military Veterans at Sierra Tucson. Sierra Tucson assesses patient outcomes while in residential treatment via the Measurement Based Care (MBC) program.

In this report, we rescaled all measures to a 0-100 scale, called a Percentage of Maximum Possible (POMP) score. This can make it easier to compare different measures, and is especially helpful for plotting changes side-by-side.

This report contains an **effect size statistic, Cohen's d**, to demonstrate level of change while in treatment. Cohen's d is used to compare changes across multiple different measures by taking into account the degree of variability in that measure itself (the standard deviation). Changes in Cohen's d can be thought of as occurring in "standard deviation units." In psychology research the following benchmarks are often used for interpreting Cohen's d:

- Small Effect: d = 0.2
- Medium Effect: d = 0.5
- Large Effect: d = 0.8

Patient Details

Below are basic demographic characteristics of the patients who completed MBC surveys while in residential treatment:

- There are 40 people included in this sample.
- The average age was 45.6 years old, with a range from 26 to 69 years old.
- 75% of individuals were men, 25% of individuals were women, and 0% of individuals were nonbinary or did not specify their gender.

Progress at Sierra Tucson

Residents at Sierra Tucson complete MBC assessments every two weeks while in treatment. The most typical trajectory is an assessment at baseline (within the first two days of starting residential treatment), at mid-treatment (two weeks in), and at the end of treatment (four weeks in).

Some residents stayed longer than four weeks. However, to capture the typical trajectory of change, plots were made that end at the four week mark. Often patients who needed to stay longer were atypical, dealing with problems that required the longer stay. The intent of this report is to capture the normal pattern of treatment response at Sierra Tucson.

In the figures that follow, points indicate the average at the start of treatment and the average at the end of treatment.

In the figure indicating changes in cravings, *standard error bars* are added around the points. Standard error bars indicate a range of values that the cravings scores are likely to take if many groups of comparable patients were measured. More precisely, if similar groups of patients were sampled and measured over and over again, 95% of the time the craving score would be within these bars.

These bars were added in the craving graph because there are fewer people dealing with cravings for each substance, and it provides a good visual of how uncertain we are about generalizability. When many people have been measured, we are more certain about scores (and have smaller error bars around the points); when fewer have been measured, we are less certain (and have wider error bars around the points).

Changes in Mental Health Symptoms

Average changes in mental health symptoms from the start of treatment to the end of treatment were assessed using t-tests. This tests how much the symptoms decrease from start to finish. Statistically significant decreases were seen in all areas of treatment.

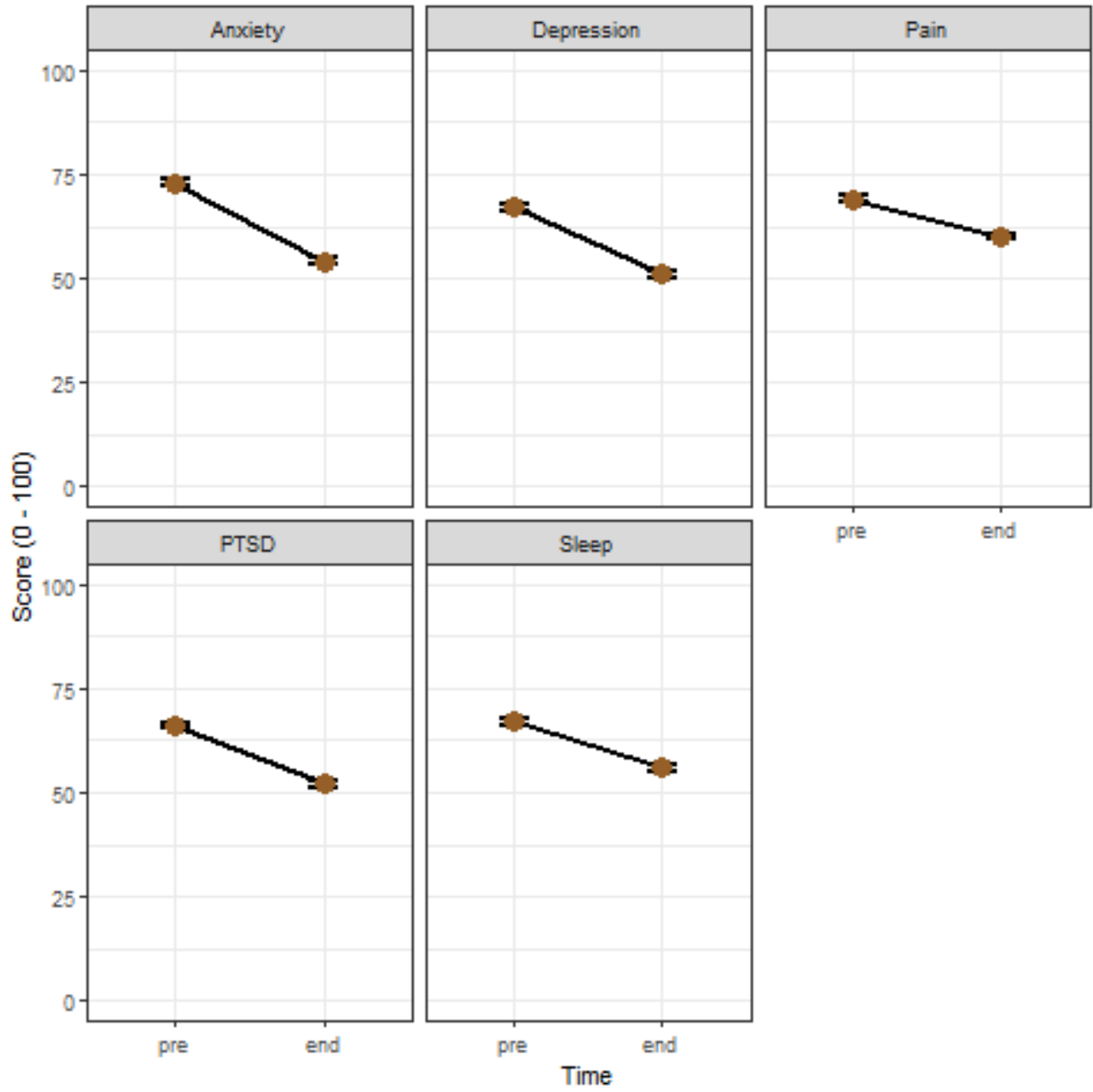| Measure	N	Pre Avg	Last Avg	Difference	t	p	sig	Cohen's d
PROMIS Pain	34	69.2	60.3	-8.9	2.71	0.009	**	-0.34
Depression	34	67.1	50.5	-16.6	3.17	0.002	**	-0.60
Anxiety	34	72.7	53.5	-19.2	3.52	< .001	***	-0.63
Sleep	34	66.9	56.3	-10.6	2.25	0.028	*	-0.40
PCL5 Overall PTSD	34	66.3	51.9	-14.4	3.17	0.002	**	-0.54

Changes in Symptoms by Week of Treatment

Figure 1: Average Changes in Symptoms

Changes in Cravings for Substances of Abuse

Changes in cravings for substances of abuse were analyzed so that only individuals who started treatment with some level of craving for a substance were analyzed. In other words, analysis of change in cravings for alcohol only included people who started treatment with cravings for alcohol above zero.

The table below provides information on the statistical tests for cravings. The column labeled "N" indicates how many individuals treated at Sierra Tucson in Q3 2024 had cravings for different substances. The table is organized in order of the substances craved most often among patients. So alcohol, painkillers, and marijuana were the substances with the largest cravings in Q3 2024.

In cases where there were 3 or less people who had used a substance, no statistical test was performed. Statistical tests are performed to determine if a change holds in general, for any set of people assessed from the overall population. The more people tested, the more precisely the difference between the start and end of treatment can be measured. When **only a small number of people are tested**, even if there is a large change, it is **unlikely that there will be a statistically significant change**.

Statistically significant decreases in cravings were seen for alcohol and marijuana, which each had 10 or more individuals being tested. Cravings for painkillers were only seen in four veterans, and on average there was no significant decrease.

Substance	N	Pre Avg	Last Avg	Difference	t	df	p	sig	Cohen's d
Alcohol	19	39.5	22.1	-17.4	2.62	37	0.013	*	-0.71
Marijauna	10	52.0	31.0	-21.0	2.15	19	0.045	*	-0.80
Painkiller	4	25.0	35.0	10.0	-0.94	7	0.381	n.s.	0.30

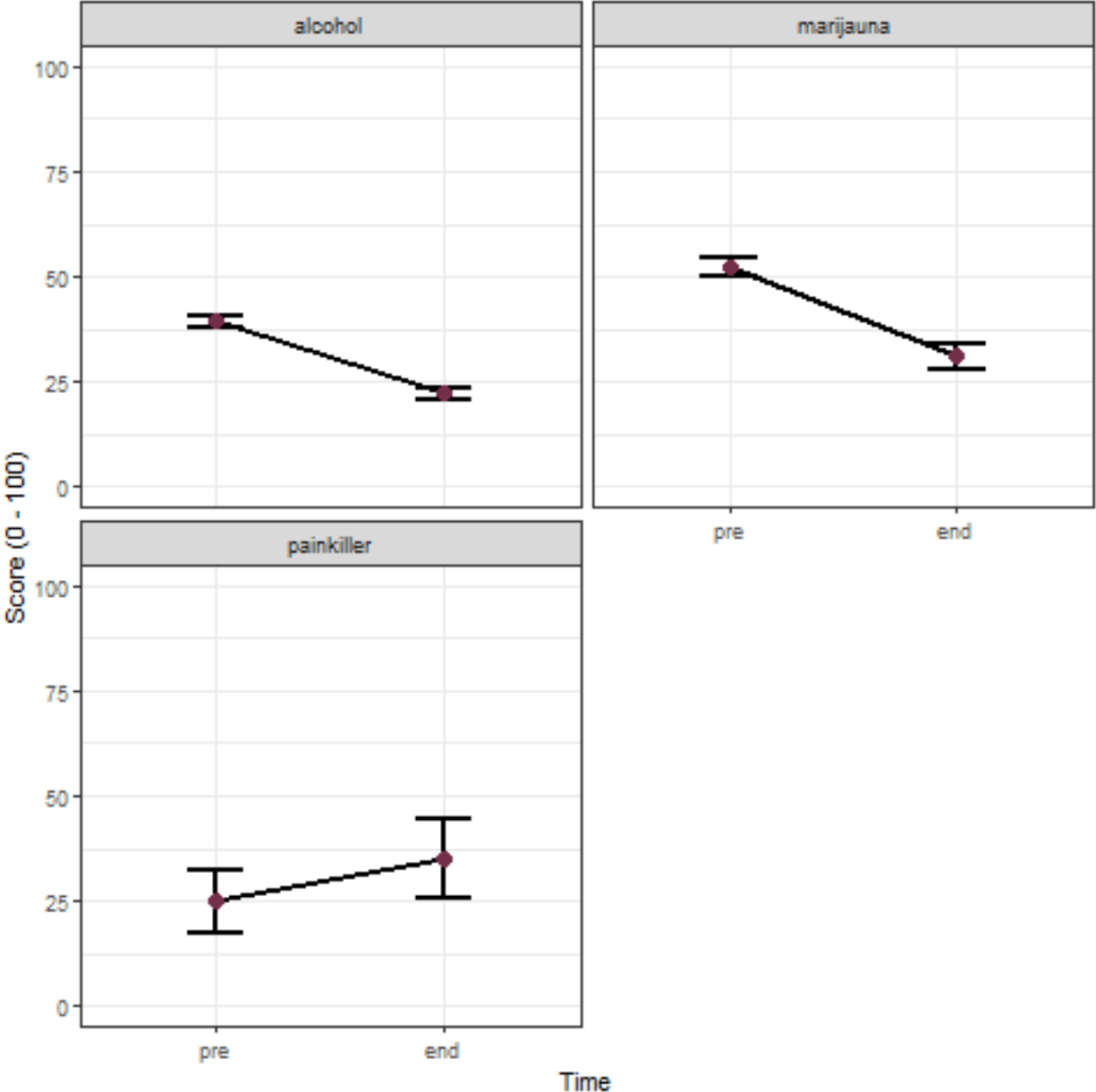**Changes in Cravings by Week of Treatment**

Figure 2: Average Changes in Craving

Conclusions

The overall analyses of outcome data for Sierra Tucson for Q3 2024 indicate that patients' mental health and psychological functioning improve significantly while in residential treatment.

Among individuals who had already discharged, our ongoing outcomes data collection revealed gains being maintained after discharge.

Several highlights from this report stand out:

Although all mental health symptoms assessed declined over the course of residential treatment, there were particularly dramatic drops in depression, PTSD symptoms, and sleep disturbances:

- Average anxiety scores dropped by 26% (Cohen's d: -0.63)
- Average depression scores dropped by 25% (Cohen's d: -0.60)
- Average PTSD scores dropped by 22% (Cohen's d: -0.54)

There were statistically significant declines in cravings for alcohol and marijuana, the most commonly seen substance cravings last quarter:

- Average cravings for alcohol declined by 44% (Cohen's d: -0.71)
- Average cravings for marijuana declined by 40% (Cohen's d: -0.80)

Alex Danvers PhD

2024-10-04

Alexander Danvers, PhD

Director of Treatment Outcomes

Methodological Notes

In the Comprehensive Psychological Profile (CPP) the following measures were used:

1. PROMIS Pain Interference (PIQ 6b)
2. Patient Health Questionnaire (PHQ9)
3. Generalized Anxiety Disorder - 7 Item Scale (GAD7)
4. Insomnia Severity Index (ISI)
5. Post-Traumatic Stress Disorder Checklist (PCL-5)