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Journal of Psychiatry and Mental Health

ISSN 2474-7769 | Open Access

CASE SERIES

Volume 8 - Issue 1

Improvement of Mental Health Symptoms in Response to Ketamine Therapy in Medicaid-Eligible Patients

Carl J Bonnett[1,*], Jasmine Bonder[2], Rakesh Jain[3], Andrew Stabbert[1], and Casey Sayre[1]

[1]Klarisana Behavioral Health Centers, Denver, Colorado, USA
[2]University of Texas Health Science Center and Acute Care Nurse Practitioner, San Antonio, Texas, USA
[3]Department of Psychiatry, Texas Tech University School of Medicine-Permian Basin, Midland, Texas, USA

***Corresponding author:** Carl J Bonnett, Klarisana Behavioral Health Centers, Denver, Colorado, USA, E mail: cbonnett@klarisana.com

Received: 10 Jun, 2023 | **Accepted:** 24 Jun, 2023 | **Published:** 30 Jun, 2023

Citation: Bonnett CJ, Bonder J, Jain R, Stabbert A, Sayre C (2023) Improvement of Mental Health Symptoms in Response to Ketamine Therapy in Medicaid-Eligible Patients. J Psychiatry Ment Health 8(1): dx.doi.org/10.16966/2474-7769.151

Abstract

Since 2020 there has been an expansion in the number of studies highlighting the positive effect that Ketamine for Non-Anesthetic Indications (KNAI) can have on patients suffering with mental health disorders. Medicaid programs cover a large community of patients that face significant health disparities and suffer more frequently from mental health conditions. Many of these conditions are exacerbated due to socioeconomic stressors, lack of access to care, and poor support systems. Our case study focuses on 289 Medicaid-eligible patients and the effect ketamine treatment had on their mental health symptoms. These participants had an established diagnosis of Generalized Anxiety Disorder (GAD), Major Depressive Disorder (MDD) and/or Post Traumatic Stress Disorder (PTSD) prior to beginning treatment. The GAD-7, PHQ-9, and PCL-5 surveys were utilized for assessment of symptomatology in this cohort of patients. These instruments were all deployed prior to beginning treatment and at the end of the six-session Induction Series of ketamine treatments. The comparison of scores on these screening instruments pre-and post-treatment demonstrated a clinically significant reduction in symptomatology in the three diagnosis cohorts of patients listed above.

Keywords: Medicaid participants; Ketamine; Mental health; Ketamine for Non-Anesthetic Indications (KNAI); Healthcare access

Introduction

Ketamine has established itself as an important treatment for Major Depressive Disorder (MDD), Generalized Anxiety Disorder (GAD), and Post-Traumatic Stress Disorder (PTSD) [1-19]. The first article looking at its role in managing treatment-resistant depression was published in 2000 [2]. Unfortunately, even with over twenty years of published studies, ketamine is still considered "off-label" for the treatment of most mental health conditions; this places ketamine therapy out of the financial reach of most Americans. The last ten years have seen an explosion in the number of clinics that are offering ketamine therapy for the treatment of mental health conditions and chronic pain [20-22]. Third-party payers however, have been slow to recognize the value of ketamine therapy and the role it can play in treating mental health conditions. Many private ketamine centers charge anywhere from $400-$1000 per session [23]. Our interest in studying this modality of treatment stems from the potential economic savings and public health benefits of making racemic ketamine a covered mental health service by state Medicaid programs.

In this case series, we present our data on the patients treated in our centers for MDD, GAD, and/or PTSD in 2022 with Health First Colorado (Medicaid) as their payor source. The objective of this case series is to identify if Medicaid participants had a change in their self-reported mental health surveys with ketamine treatment. Our hypothesis is that Medicaid-eligible patients can experience a significant decrease in their mental health symptoms with ketamine treatment.

Methods

Study Participants

This case series presents all patients seen at the three Klarisana Colorado centers in 2022 diagnosed with Major Depressive Disorder, Generalized Anxiety Disorder, or Post-Traumatic Stress Disorder with Health First Colorado (Medicaid) as their payor source. The data was collected and quantifiably analyzed to find statistical significance. Of the 289 patients total who finished the initial series of six ketamine sessions, 173 patients (60%) self-reported as biologically female at birth, and 116 patients (40%) self-reported as biologically male at birth. Many of these patients had more than one of the above-listed mental health diagnoses concurrently, so there may be an overlap of patients in the three cohorts of subgroup analyses. All patients received our standard treatment protocol without an additional experimental component. This is simply a retrospective review of our clinical data. The mean age of the subjects was 38 years (range 17-64 years). More than half of the patients (n=150) had a diagnosis of

major depressive disorder, (n=211) had generalized anxiety disorder, and (n=149) had PTSD.

Procedures

Patients wishing to receive ketamine therapy at one of our centers undergo a robust intake and evaluation process to ensure they are an appropriate candidate for treatment. Patients have an initial intake visit with one of our Advanced Practice Providers (APP) (nurse practitioner or physician assistant). During that visit, the clinic screens patients for any medical conditions that would preclude treatment. If necessary, we would contact outside clinicians to obtain medical records and/or medical clearance. The APP would then determine if the patient was cleared from a behavioral health standpoint to receive ketamine based on internal guidelines, which look at whether a patient is well-connected and/or referred by an outside mental health clinician. Patients without an established behavioral health support plan or those with high-risk factors such as having had a suicide attempt or mental health hospitalization within the last six months would then have an intake appointment with one of our behavioral health professionals for internal clearance. Klarisana does not clear patients with a history of organic psychosis or any diagnosis on the schizophrenia spectrum for treatment.

The patients cleared for treatment complete three psychological scoring instruments before and after an induction series of the six ketamine treatment sessions. Patients were administered the patient health questionnaire (PHQ-9), PTSD checklist for DSM-V (PCL-5), and Generalized Anxiety Disorder scale (GAD-7) prior to the first ketamine session [24-29]. The same three instruments were administered again just before each patient's sixth session.

Our treatment regimen consists of six ketamine sessions called the "Induction Series." Patients start with a total dose of 1 mg/kg with a maximum dose of 60 mg divided into two Intramuscular (IM) injections separated by 10 minutes. Subsequent sessions see a progressive dose escalation by up to 20 mg each time. The goal is to help the patient eventually attain a profound transpersonal experience that incorporates significant ego disruption [30]. We refer to this as the Psychotropic Therapeutic Response (PTR) [17]. It is important to note that at all times, the patients are responsive and able to speak with the clinicians; this underscores the fact that this setting uses ketamine in a fundamentally different way than it would be in other clinical settings such as emergency departments and operating rooms. This radically different application for ketamine has been referred to as Ketamine for Non-Anesthetic Indications (KNAI) [17]. This broad term covers the use of low-dose, sub-anesthetic ketamine for treating mental health conditions and chronic pain.

Results

We subdivided this cohort of patients with Colorado Medicaid seen in 2022 according to the diagnoses of either a) Major Depression Disorder, b) Post Traumatic Stress Disorder, and c) Generalized Anxiety Disorder. The data regarding the change in scores for each cohort is summarized in table 1. The data showing the overall response rate for each cohort are listed in Table 2.

In the depression sub-group (PHQ-9), the mean score showed a 51% reduction from an average of 17.3 to 8.4 (F=174.5, P<0.001) (Figure 1). In this group, 137 patients (91%) had an improvement in their scores, 11patients (7%) had a worsening of their score, and two patients (2%) had no change in score.

In the PTSD sub-group (PCL-5), patients showed a decrease in mean score from 48.7 pre-treatment to a score of 23.4 after treatment; this represents a 52% reduction (F=186.4, P<0.001).(figure 2).In this group 137 (92%) patients had an improvement in score, 12 patients (8%) had a worsening in their score.

The generalized anxiety disorder subgroup (GAD-7) showed a mean score of 14.5 pre-ketamine, which decreased to a mean score of 6.9 after ketamine treatment, representing a 52% decrease (F=262.6, P<0.001)(figure 3). In this group, 191 (91%) had an improvement in their score, 18 patients (9%) had a worsening of their score, and two patients (1%) had no change in score.

Discussion

The patients in this case series showed a robust treatment effect on symptoms of depression, anxiety, and PTSD. This treatment response is in line with previous studies looking at ketamine as a treatment for these indications [1-19]. It also provides further evidence that the intramuscular route of administration has similar effectiveness to the intravenous route of administration [4,31,32]. This report also highlights the larger public health implications that ketamine-based mental health therapies may have with regards to containing costs in the American healthcare system. The cohort of patients in this report all had Health First Colorado (Medicaid) as their payor source and showed a significant decrease in their symptomatology. Other published studies show that ketamine can reduce suicidal ideation [33-40]. While we did not design this case series to answer this question, it does raise the possibility that increased access to ketamine-based mental health treatments in Medicaid systems across the country could translate into a decrease in suicidality in patients and fewer emergency department visits and hospital admissions.

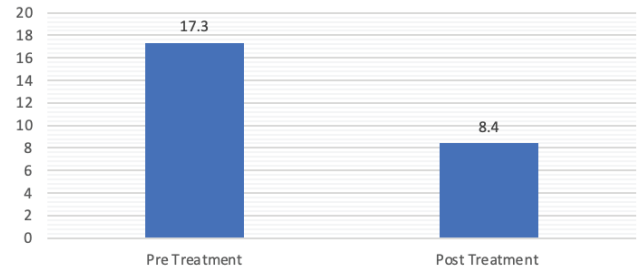
Additionally, each diagnosis cohort saw a robust response in the percentage of patients in each cohort who had an improvement in symptoms (Table 2). One limitation of our data set is that we do not

Table 1: Psychological Screening Instrument Results by Diagnosis Cohort.

Diagnosis Cohort	N	Assessment	Pre-Ketamine	SD	Post-Ketamine	SD	F	P	Change
Depression	**150**	PHQ-9	**17.3**	6.1	**8.4**	5.5	174.5	p<0.001	**-51%**
PTSD	**149**	PCL-5	**48.7**	15.8	**23.4**	16.1	186.4	p<0.001	**-52%**
Anxiety	**211**	GAD-7	**14.5**	4.9	**6.9**	4.8	262.6	p<0.001	**-52%**

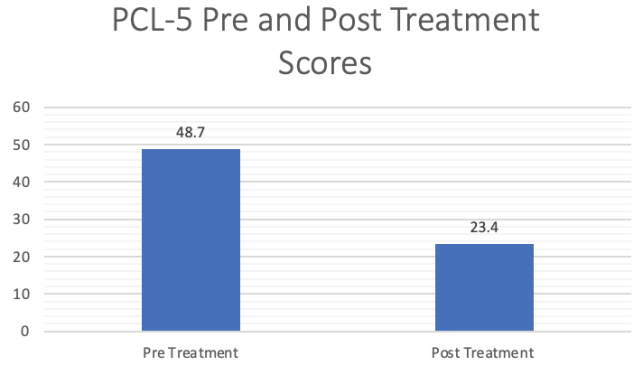
Table 2: Response to Treatment by Diagnosis Cohort.

Diagnosis Cohort	N	Assessment	Improved Score	Worsened Score	Unchanged Score
Depression	**150**	PHQ-9	91% (137)	7% (11)	1% (2)
PTSD	**149**	PCL-5	92% (137)	8% (12)	0
Anxiety	**211**	GAD-7	91% (191)	9% (18)	1% (2)



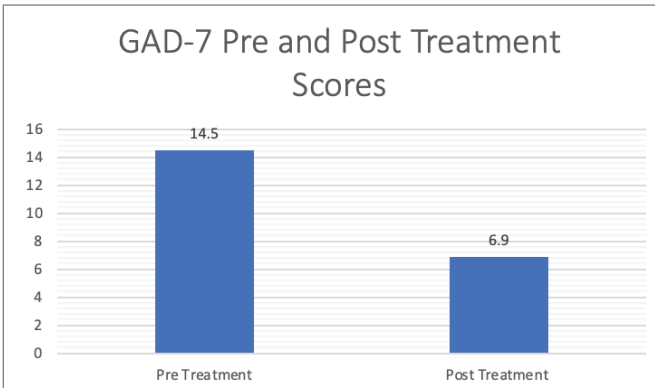
Note: 150 patients diagnosed with MDD report 51% reduction in symptomatology post KNAI treatment

Figure 1: PHQ-9 Pre and Post Ketamine Treatment Scores.



Note: 149 patients diagnosed with PTSD report 52% reduction in symptomatology post KNAI treatment

Figure 2: PCL-5 Pre and Post Ketamine Treatment Scores.



Note: 211 patients diagnosed with GAD report 52% reduction in symptomatology post KNAI treatment

Figure 3: GAD-7 Pre and Post Ketamine Treatment Scores.

have any information as to why some of the patients had a worsening in a particular score. In reviewing those patients, some of them had improvements in one of the other scores even though one particular score may have worsened. One hypothesis is that, given that these scoring instruments show a snapshot in time, a given patient may have had other factors and/or life stressors on the day the follow up score was administered. Future research can look at adding a qualitative component to better characterize if a worsening score truly reflects worsening symptomatology or if it is a function of the circumstances of the day it is administered.

This data is important given the number of people who qualify for state Medicaid programs nationwide. In February 2023, 29.8% of all Coloradans reported having either symptoms of anxiety and/or depression [41]. This number rapidly increased due to the stressors that occurred during the COVID-19 pandemic. Colorado's average suicide rate is 8.7% higher than the U.S. national average, with 17.4% of children reporting needing mental health services and not being able to obtain those [41]. This demographic that continues to face challenges accessing health care services is typically underrepresented and has a low socioeconomic status. These demographic groups often face disparities in receiving adequate mental health services with fears of discrimination, stigma, and financial debt [42]. The expansion of Medicaid led to 4 million new eligible participants, with nearly 60% being people of color [43]. As there are over twenty years of published studies supporting the use of ketamine for mental health conditions, one can raise an important ethical question of why this therapy is not being made accessible to patients with Medicaid as their payor source. This population has a disproportionate number of minorities and other disadvantaged people who do not have the financial means to pay for ketamine treatment out of pocket [44-45]. Although these participants qualify for Medicaid, they are often under-represented, which inadvertently can lead to poorer health outcomes. In order to mitigate the barrier this population faces, more mental health services must be available.

When one looks at whether access to ketamine-based treatments for Medicaid patients can improve health and decrease costs, it is crucial to have some context on Medicaid. Currently, there are 1,563,8445 Coloradans covered by Medicaid [46]. There is clear evidence that access to mental health services and mental health clinicians allows patients to be treated in outpatient settings, which helps reduce unnecessary emergency department visits [47]. Increased services showed improved compliance with care and easier access to medication, especially for those needing psychiatric care [48]. There are financial incentives for state governments to consider when there are adequate mental health services. With the federal funding to states dropping, there has never been a more critical time to find effective solutions for the rapidly escalating numbers of people suffering from mental illness [49]. Studies completed by the Department of Corrections indicate a $10 million saving for inpatient hospitalization in the first year of Medicaid expansion related to providing preventative mental health services in outpatient settings [47]. Reducing hospital admissions expenditures can decrease the accumulation of unforeseen medical debt. Overall, the first two years of implementing Medicaid expansion reduced $3.4 billion of medical debt sent to collections [50]. This government-funded healthcare program supported the reduction of unnecessary healthcare expenditure, which impacts patients' financial well-being.

Conclusion

While this current report does not address the longitudinal component of whether this cohort of patients had decreased emergency department visits and hospital admissions, we plan on a follow-up study that will look at these data points in the year after they finish treatment. Taken against the backdrop of the large body of evidence supporting the use of ketamine therapy for mental health indications, our snapshot of data in this cohort of Medicaid patients

highlights the potential public health benefits of government payors offering mental health therapies utilizing racemic ketamine to their members. We are encouraged that there has also been some early acceptance by private companies to offer ketamine as a direct benefit to employees [51,52]. We would recommend further research focusing on the cost savings that could occur with ketamine therapy covered under a government healthcare program. Additional research should focus on government funded healthcare programs increasing access to mental health services such as ketamine therapy.

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