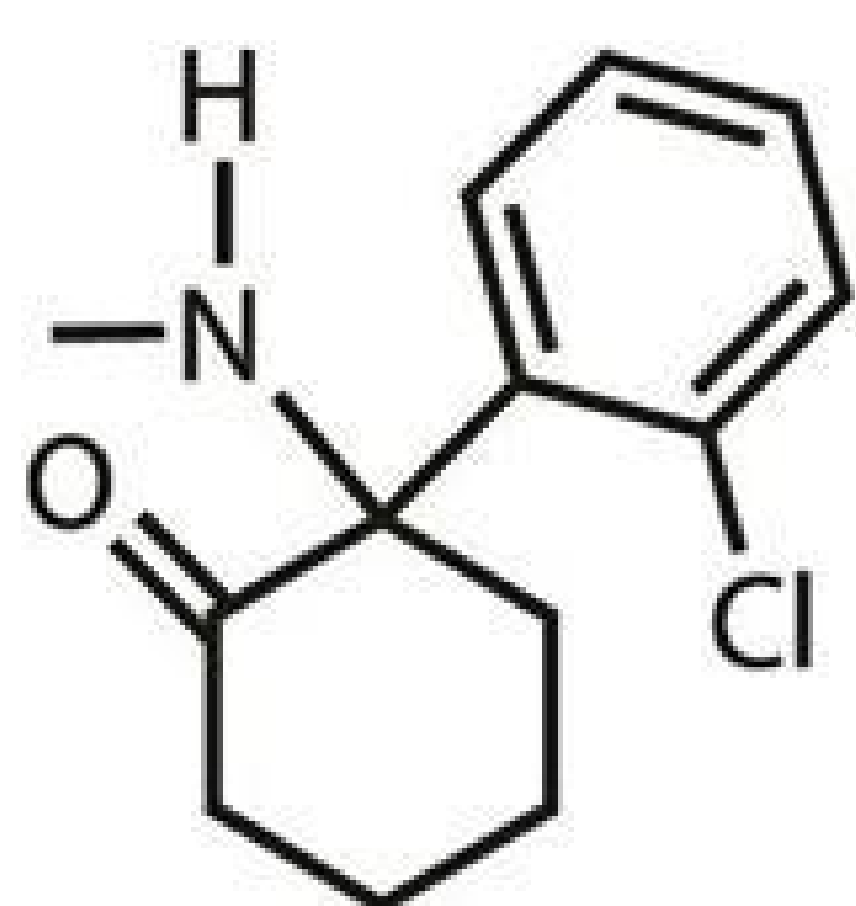


# Repurposing Ketamine for Mental Illness

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CHEM 1101 Horizons in Chemistry and Biochemistry

## Abstract

Anxiety, PTSD, and depression affect millions of people around the world, but often the treatments for these mental disorders are ineffective for many people. Progressive medicinal research has repurposed ketamine from an anesthetic to a psychotropic medication to help treat these mental disorders. Used with general anesthesia, ketamine is an FDA-approved sedative for many major procedures as it targets a different part of the brain than other anesthetics or narcotics. In conjunction with anxiolytics, ketamine uses slight psychodysleptic, hallucinogenic, and dissociative properties to differentiate its effectiveness in treating mental disorders; without the use of anxiolytics, even a small dose of ketamine can cause intense hallucinogenic episodes, which in some patients, can worsen their PTSD, rather than help treat issues. Despite a few concerns, continuous research being done on the effects of ketamine has shown to have long-lasting positive effects.

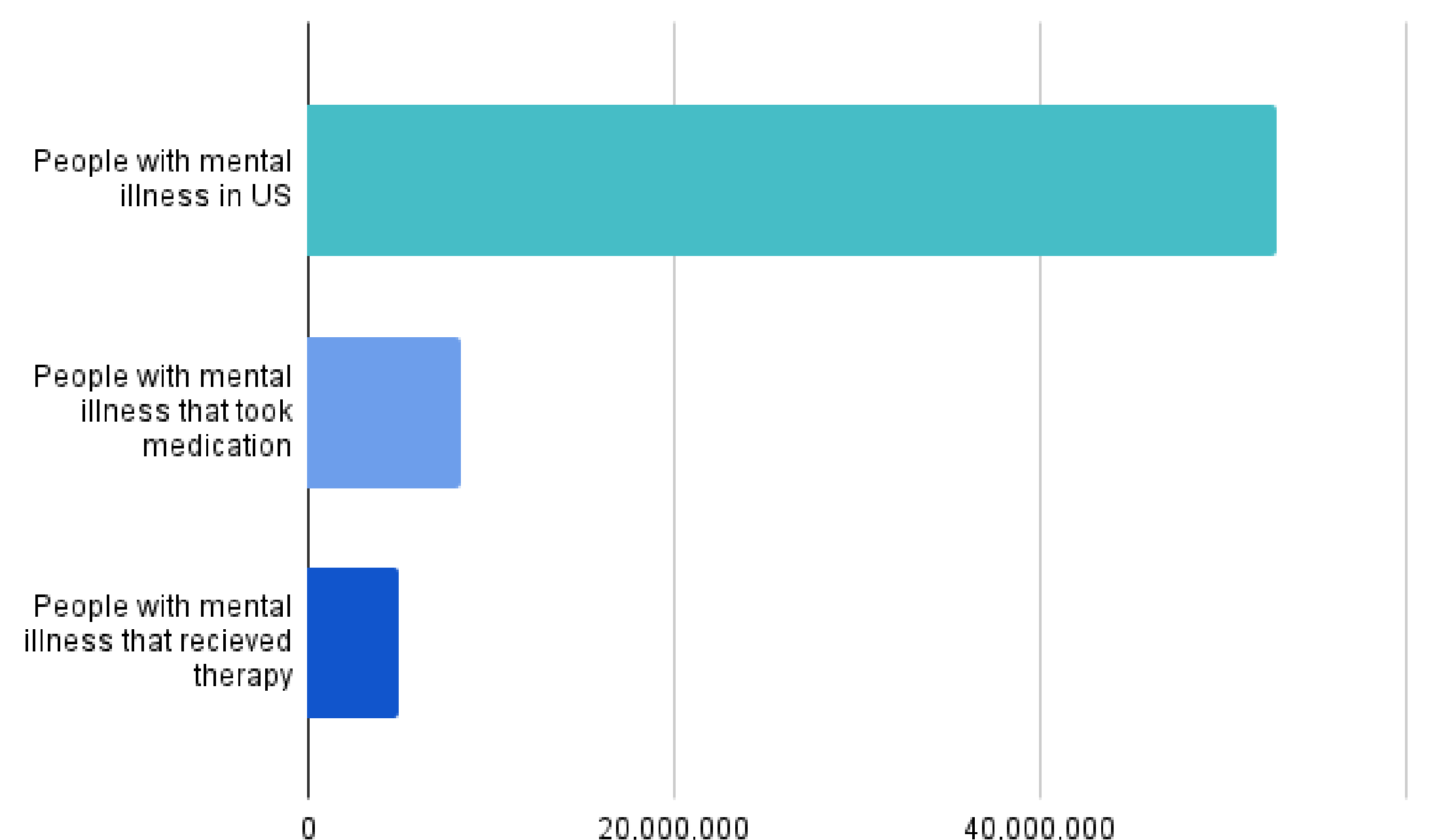


Notman, N. (2017, March 4). The K Factor. Chemistry World. Retrieved March 28, 2022, from <https://www.chemistryworld.com/features/how-ketamine-could-help-treat-severe-depression/2500394.article>

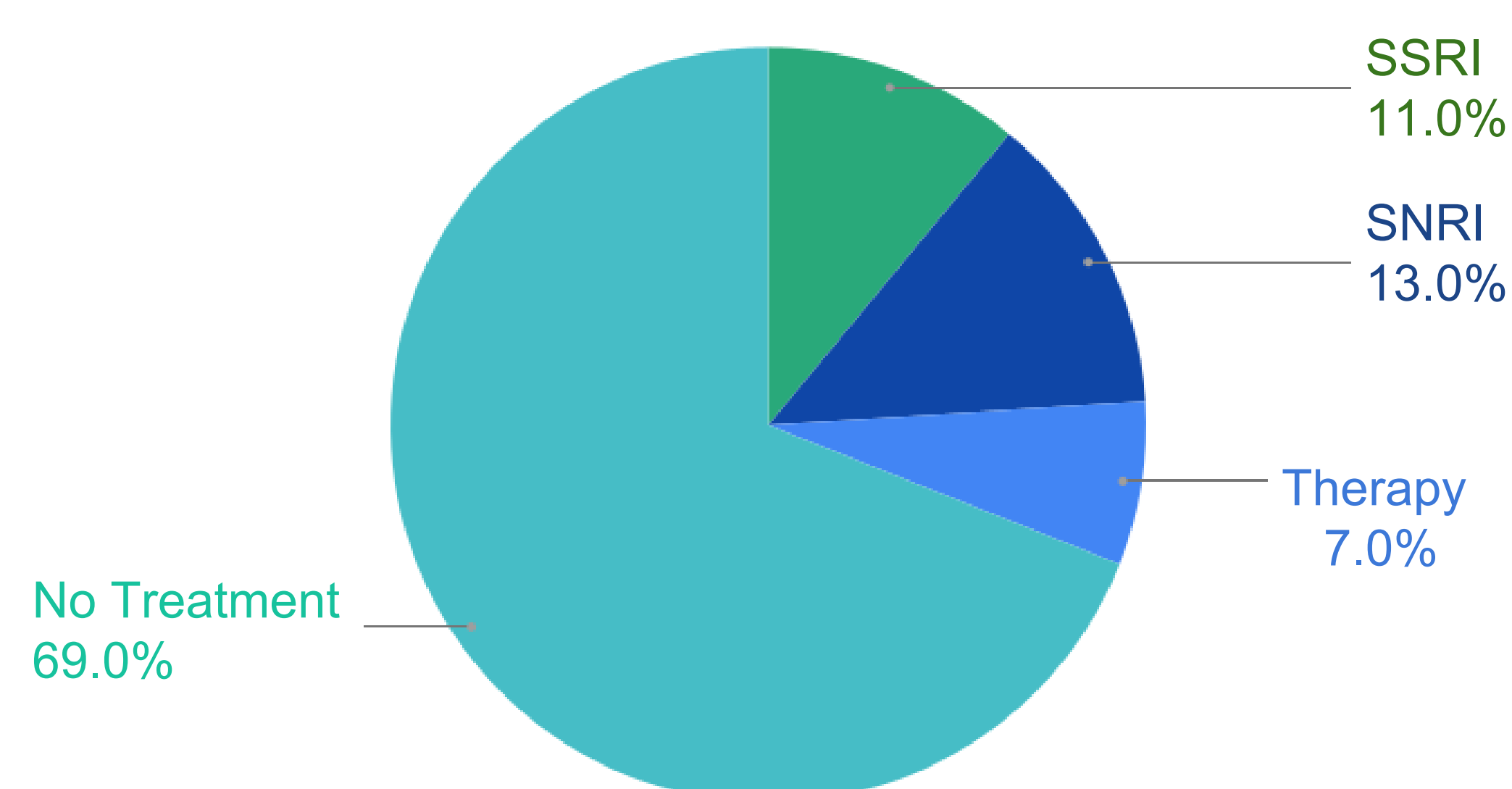
## Introduction

- Awareness for mental illness is becoming more common
- What is the result of using Ketamine for major mental illnesses?

## Mental Illness



How Many People Use Treatments for Mental Illness in the US?



- 10-30% of patients do not respond to SSRI/SNRI medications

## What is Ketamine?



Begley, A. (2021, October 4). Statistical Model Defines How Ketamine Anaesthesia Affects the Brain. Drug Target Review. Retrieved March 15, 2022, from <https://www.drugtargetreview.com/news/98070/statistical-model-defines-how-ketamine-anaesthesia-affects-the-brain/>

- Previously an animal tranquilizer and a schedule III controlled substance
- Has been repurposed as a treatment for chronic pain and mental illness.
- Invented by combining ketone with amine; due to the dissociative effects, it was then considered an anesthetic
- Routes: capsules, IV, nasal sprays

## Research

- Treatments are effectively combating PTSD, anxiety, and depression.
- Used with SSRIs for major anxiety/depression disorders, OCD, phobias, ADHD, etc.

	Length before effectiveness after the first dose	How long do effects last?	How many people with mental illness does it work?
<b>Ketamine (IV)</b>	2 hrs	Up to 2 wks	50% - 70%
<b>SSRI (Capsule)</b>	4-12 wks	14-18 hrs	50% - 65%
<b>SNRI (Capsule)</b>	2-8 wks	16-20 hrs	40% - 65%
<b>Therapy (Weekly)</b>	12-14 wks	4-8 wks	50% - 70%

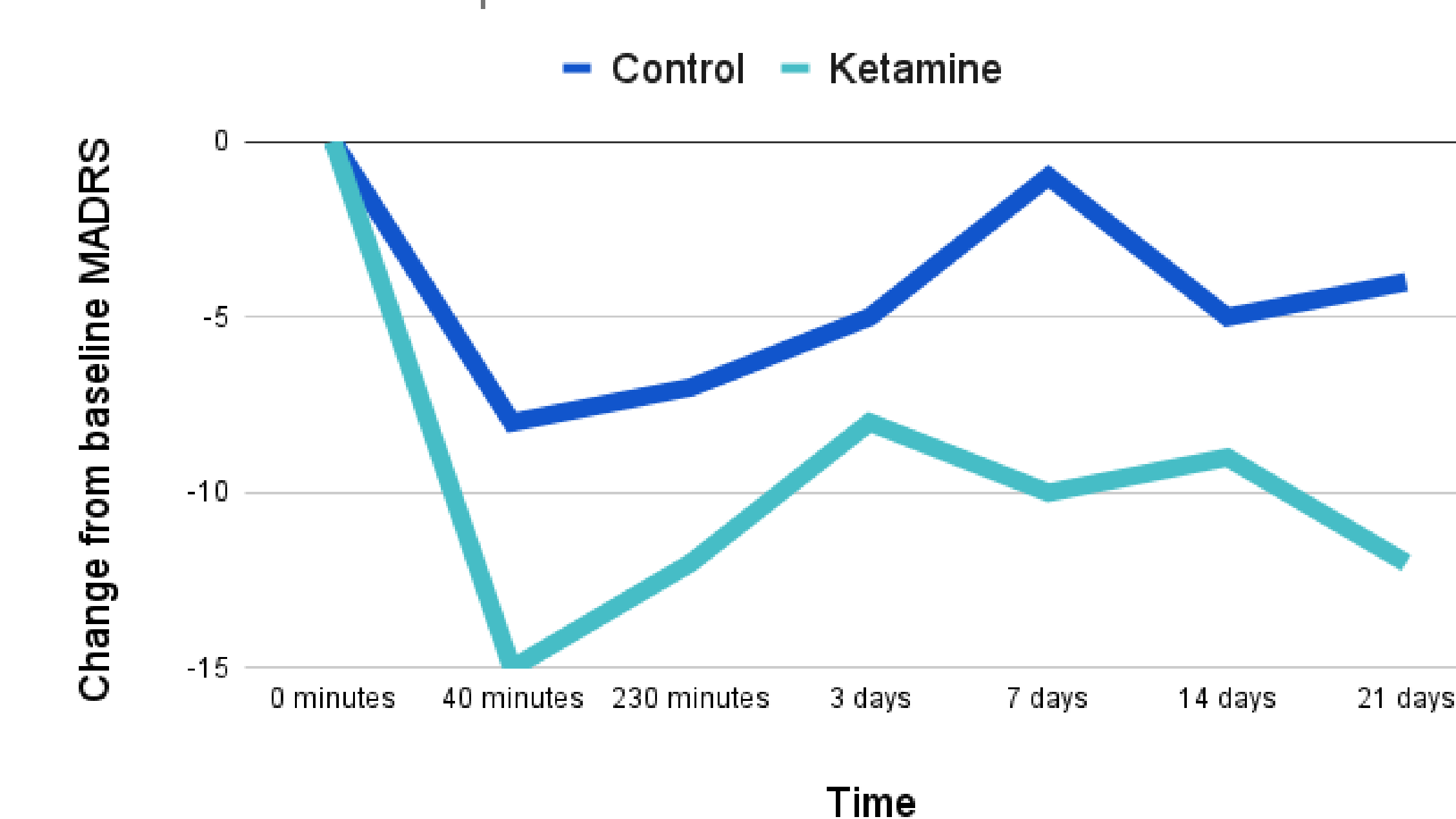
## Pros and Cons

- | Pros  | Cons                         |
|---|------------------------------|
| • Helps short-term depression and anxiety   | • Hallucinations             |
| • Used for aesthetic during major surgeries | • Detached from the body     |
| • Feeling happy and relaxed                 | • Impaired cognitive ability |
| • Lower sensitivity to pain                 | • Seizures                   |
| • Mental breakthroughs                      | • Respiratory depression     |
|   | • Overdose/Death             |
|   | • Elevated blood pressure    |
|   | • Blurred vision             |
|   | • Addiction                  |

## Conclusion

- Should be reconsidered by patients and doctors to treat mental illnesses as a last resort medication
- Quick effect treatment option
- Proven to be a helpful treatment for several mental illnesses

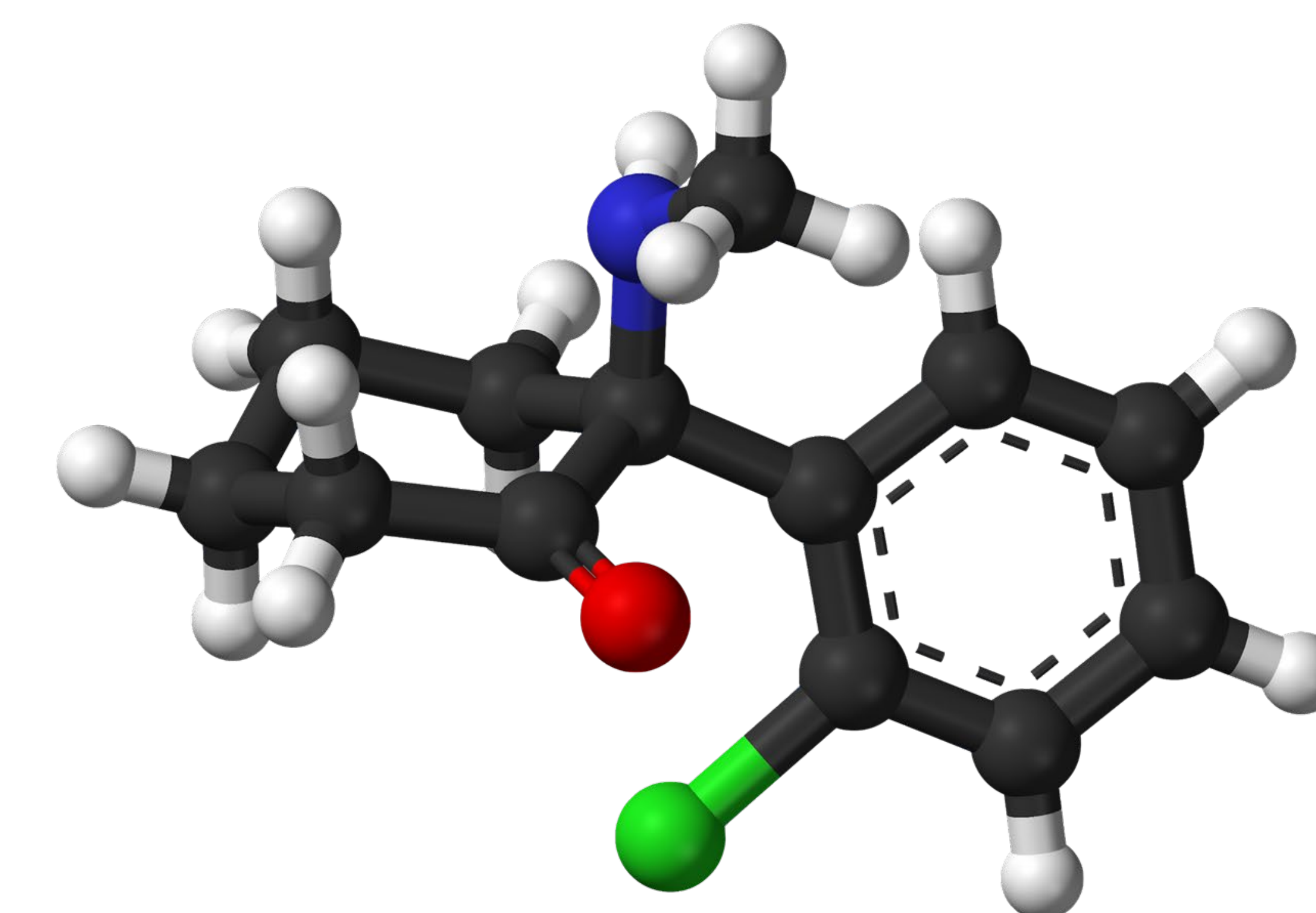
Ketamine vs. Depression



Out of 22 patients, 1 in 4 had resolved depression in 3 weeks.

## Resources

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