



# Methamphetamine-associated psychosis in acute stroke

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## Background

Methamphetamine is an addictive psychoactive stimulant and a known risk factor for stroke<sup>1</sup>. This illicit substance commonly leads to psychosis while under its influence as well as during periods of abstinence<sup>2,3</sup>. Methamphetamine-associated psychosis is unique in that periods of psychosis are prolonged, clinically challenging to treat, and lead to extended hospital length of stay (LOS)<sup>2,4</sup>. Little is known about the impact of methamphetamine use and the development of psychosis in patients with acute stroke. Whether concurrent methamphetamine use leads to prolonged psychosis in these patients and extends hospital LOS is unknown.

## Research Objectives

- Determine if patients admitted with acute stroke and concurrent methamphetamine use have prolonged psychotic episodes.
- Determine the association between methamphetamine use in stroke patients and hospital and intensive care unit LOS.
- Identify risk factors associated with development of post-stroke psychosis in patients with concurrent use of methamphetamine.

## Methods

- Single-center retrospective cohort (2016-2019).
- Inclusion criteria: consecutive adult patients admitted for acute ischemic stroke, intracerebral hemorrhage (ICH), aneurysmal subarachnoid hemorrhage (SAH), and transient ischemic attack (TIA) with methamphetamine detected on urine drug screen was compared to control (consecutive acute stroke patients with a negative urine drug screen).
- Psychosis onset and duration, clinical characteristics, total hospitalization time, intensive care unit LOS, and psychosis treatment interventions were documented.
- Additional clinical variables: history of psychiatric illness, medication administration, and restraint use in psychosis management.
- Differences were assessed using Chi square analysis, Fisher's exact test, and t-test.

## Results

Figure 1. Patient Characteristics

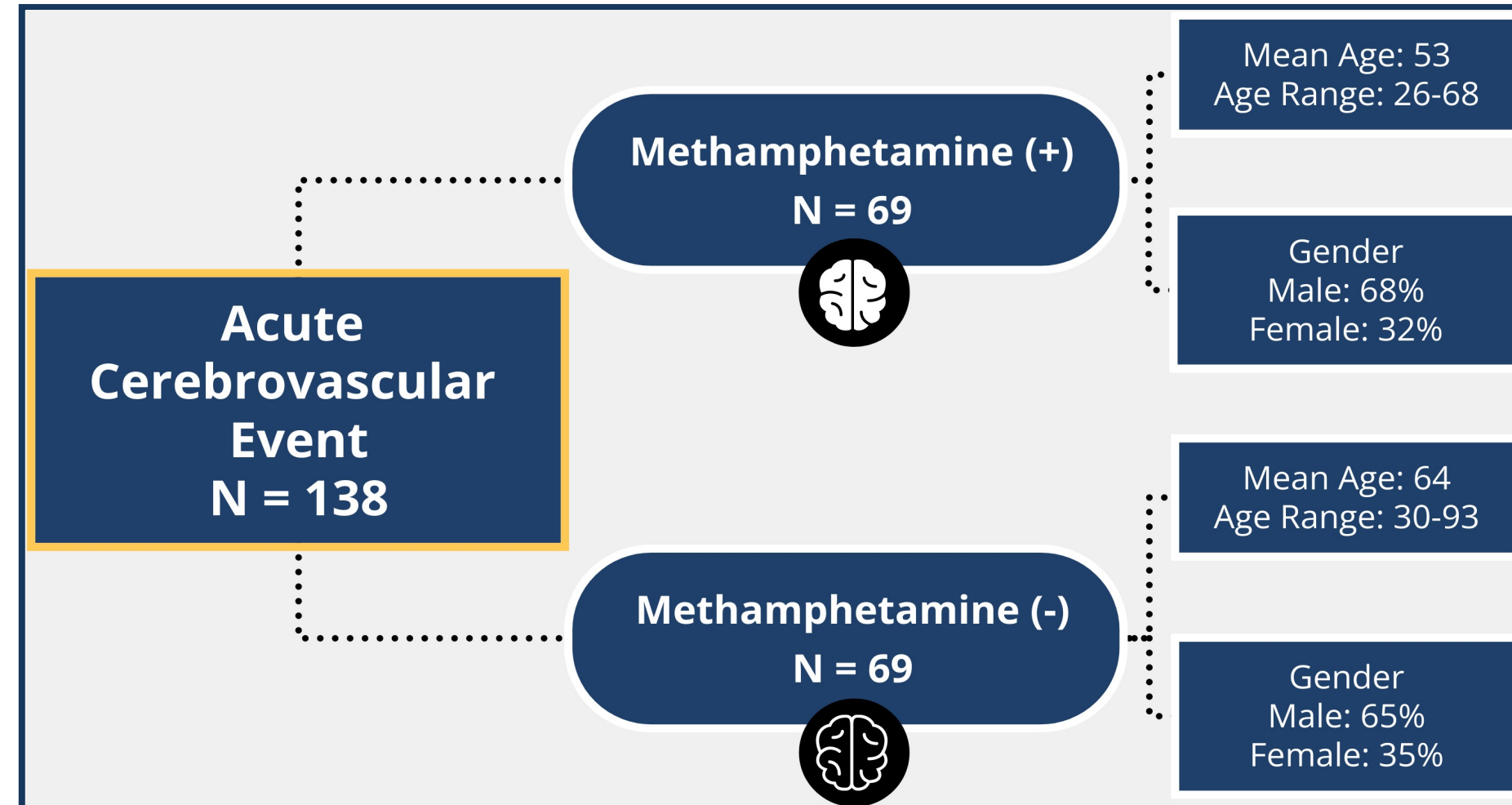


Figure 2. Acute Stroke Type

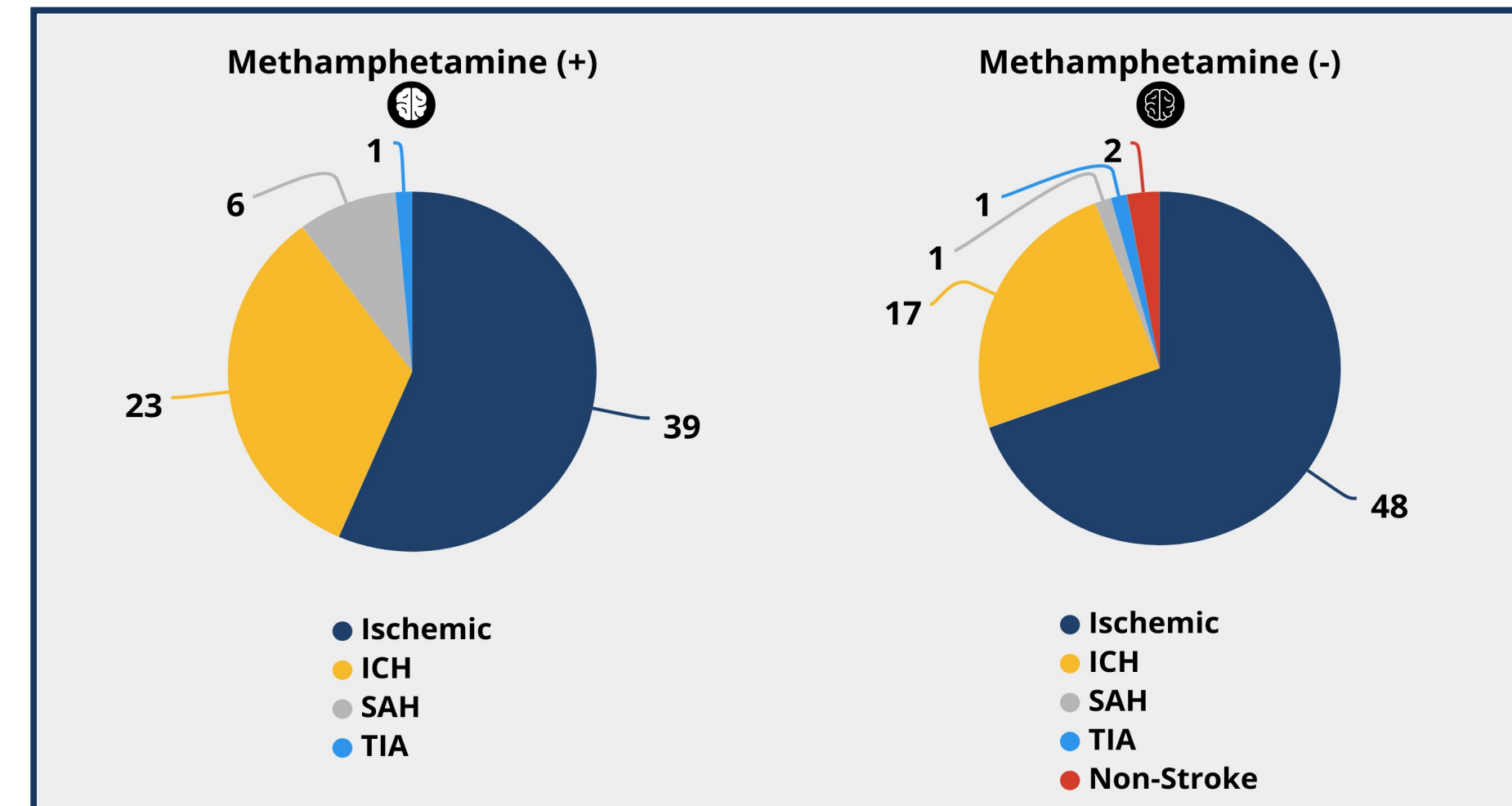


Figure 3. Psychosis Incidence

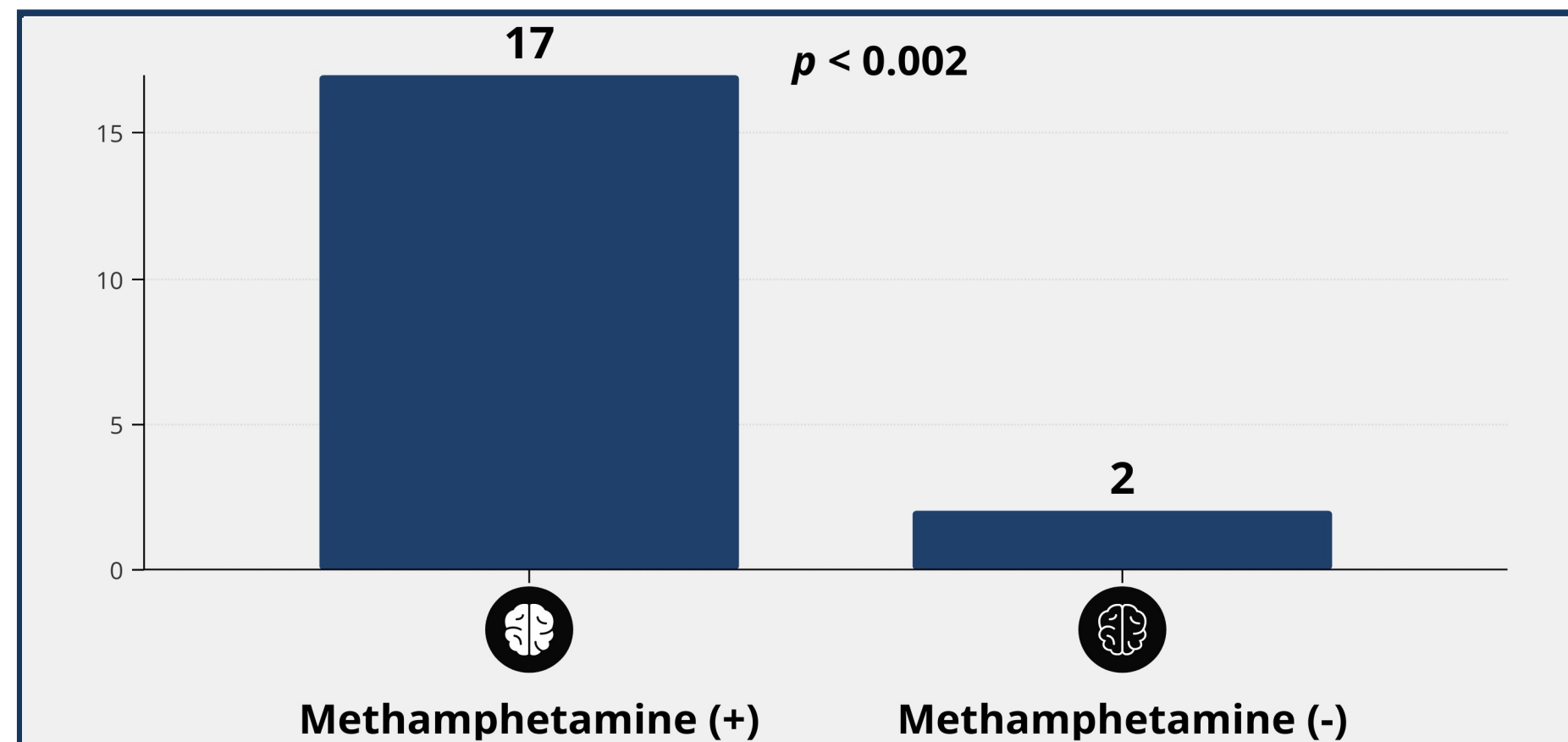


Figure 4. Psychosis Days

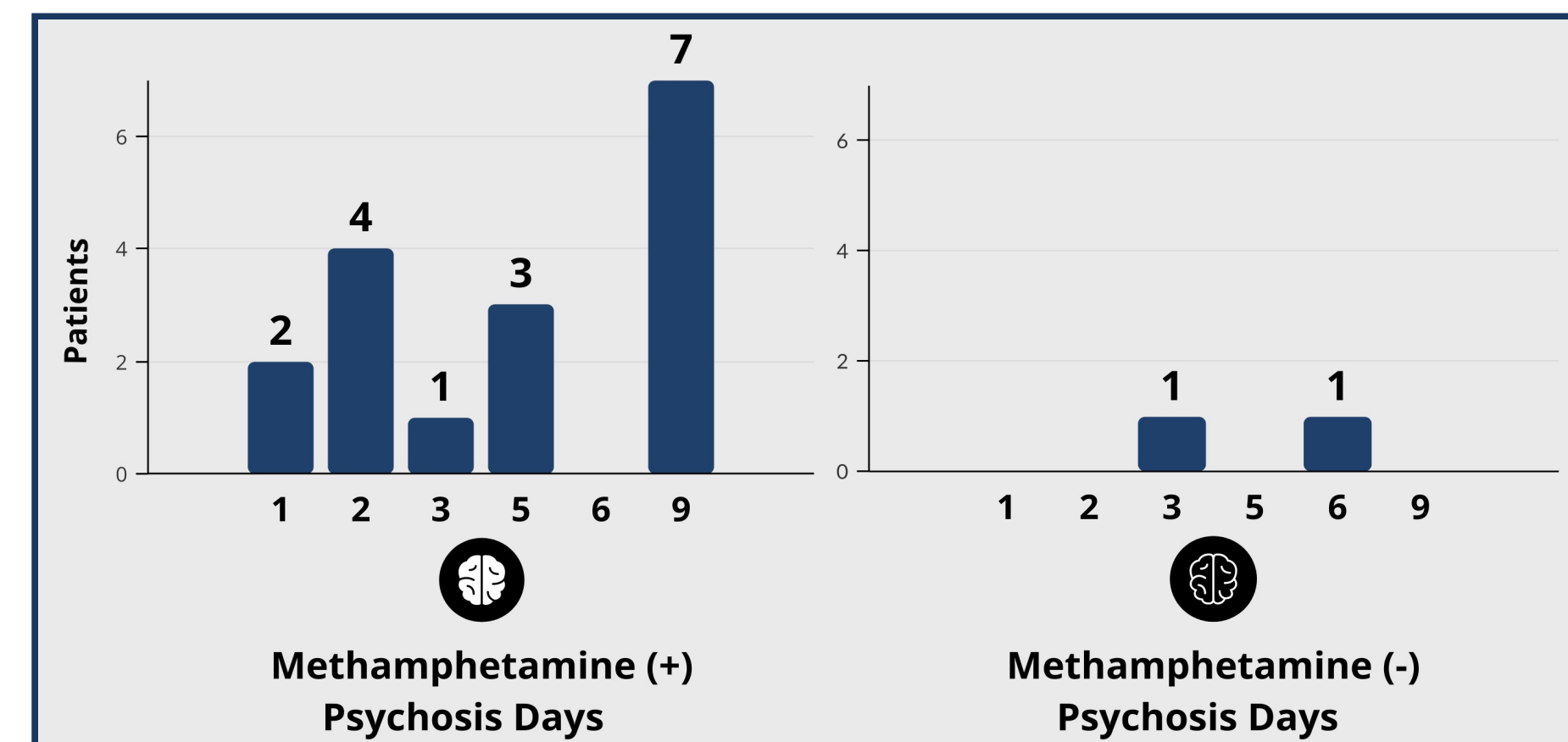


Figure 5. Hospital LOS

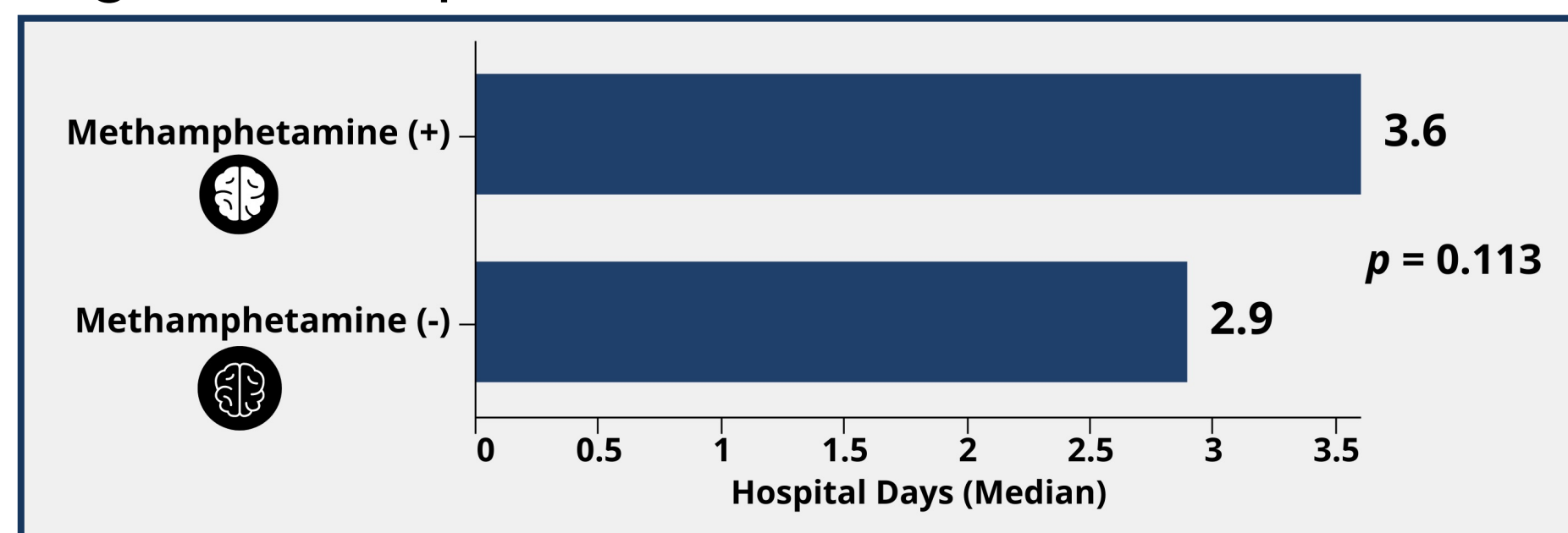
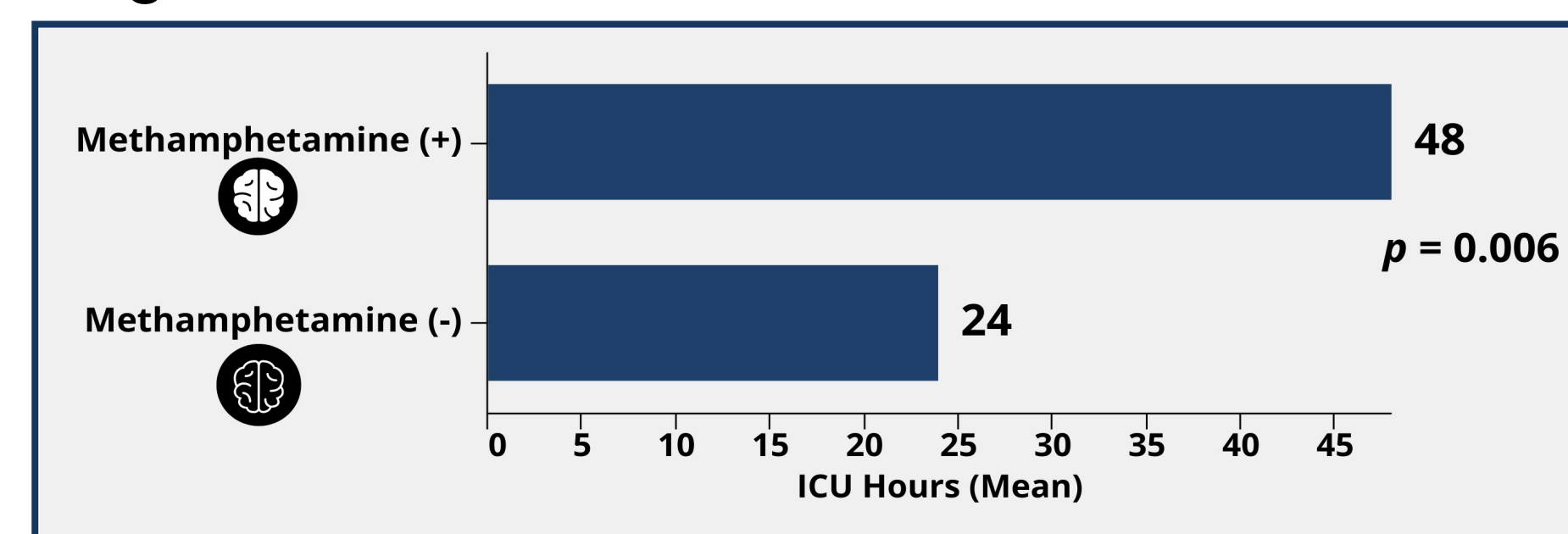


Figure 6. Intensive Care Unit LOS



## Conclusions

**25%**  
of Methamphetamine (+)  
acute stroke patients experienced  
psychosis, compared to 3% of controls  
( $p < 0.0002$ ). (Figure 3)

**5.4 days**  
of psychosis  
in Methamphetamine (+) patients compared to  
4.5 days in controls.  
(Figure 4)

**Hospital LOS**  
No statistical difference  
between groups; median 3.6 days in  
Methamphetamine (+) group compared to 2.9 days in  
controls.  
( $p = 0.113$ ). (Figure 5)

**ICU LOS**  
extended by 24 hours  
in Methamphetamine (+) group  
compared to controls.  
( $p = 0.006$ ). (Figure 6)

## Summary

- Acute stroke patients admitted with concurrent methamphetamine use experienced psychosis more frequently.
- Methamphetamine use was associated with extending intensive care unit LOS by 24 hours, despite similar total hospital LOS compared to controls.
- Initial analysis indicates no statistical difference in psychosis length between groups.

## References

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4. Stangeland H, Orgeta V, Bell V. Poststroke psychosis: a systematic review. *J Neurol Neurosurg Psychiatry*. 2018 Aug;89(8):879-885.