

Is there a predictive association between methamphetamine use and depression?

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Introduction: People dependent on methamphetamine have elevated rates of depression compared people who do not use the drug. However, it is not clear whether methamphetamine use worsens depression, or whether depression leads to more methamphetamine use. In a cohort of people who are dependent on methamphetamine, we explore the direction of the relationships between methamphetamine use and depressive symptoms.

Methods: We analysed 12 contiguous weeks of data from a randomised controlled trial of 153 people dependent on methamphetamine. Weekly measures included days of methamphetamine use in the past week, assessed using the Timeline Followback method, and depression in the past week, assessed using the Brief Psychiatric Rating Scale depression item. A random-intercept cross-lagged panel model was used to examine the directional associations for methamphetamine use and depression. Baseline sex, age, duration of methamphetamine use, and baseline depression were included as covariates.

Results: There was good overall model fit ($\chi^2(df)=378.44(345)$; RMSEA=0.026; CFI=0.991). There was no significant association between methamphetamine use in the past week and depression in that week. Model parameter estimates indicated that if an individual increased their days of methamphetamine use above their average in one week, then it is associated with increased days of methamphetamine use (Est=0.693, 95%CI: 0.607-0.779) and likelihood of depression (Est=0.246, 95%CI: 0.131-0.360) in the following week. Additionally, if in one week, an individual had an increased likelihood of depression above their average, it was associated with an increase in days of methamphetamine use (Est=0.525, 95%CI: 0.347-0.704) and the likelihood of depression (Est=0.378, 95%CI: 0.247-0.509) in the following week.

Discussions and Conclusions: Amongst this cohort of people dependent on methamphetamine, our modelling provides evidence of a short-term bi-directional relationship between methamphetamine use and depression. This cyclical relationship highlights the need for effective management of depression in people with methamphetamine use disorder to prevent ongoing use.

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