A prospective study to evaluate the change in cognitive function in stimulant users

Executive Summary

This is a prospective longitudinal study using a repeated-measure design to assess changes in cognitive functions among stimulant users in Hong Kong over 12 months. Participants using methamphetamine (MET) and cocaine (COC) were recruited and assessed every three months on their global cognitive functions using the Montreal Cognitive Assessment (MoCA) and their frontal lobe functions using the Frontal Assessment Battery (FAB). Additionally, their DSM-5 defined severity of stimulant use disorder (SUD) and reported frequency of stimulant use were recorded.

93 current stimulant users participated in this study. 17 participants completed the baseline assessments only and were then lost to follow-up, resulting in a total of 76 participants included in the analysis. There were more MET users than COC users, and more than half of them had ever used both in their lifetime. Only six participants were single stimulant users.

The findings demonstrated no change in global cognitive functions and frontal lobe functions over the 12-month study period for all participants. There was also no difference in these cognitive functions between participants of different severities of SUD. Nevertheless, several factors were identified to be associated with worsened global cognitive functions, including older stimulant users and longer lifetime stimulant use. Male users and participants with a higher education level were found to have better global cognitive functions than female users and those with lower education levels, respectively. On the other hand, both longer lifetime stimulant use and recent stimulant use were associated with poorer frontal lobe functions.

In addition, the average frequency of stimulant use within three months was found to increase alongside severity of SUD, ranging from 17.48 days for users with no SUD to 45.89 days for users with severe SUD. Despite the difference in the frequency of stimulant use, no correlations established between the assessed cognitive functions and the average frequency of stimulant use during the three-monthly follow-ups.

To conclude, the current study did not demonstrate any effects on the change in cognitive functions from either severity of SUD or the frequency of stimulant use in a group of chronic stimulant users over 12 months. The use of methamphetamine and/or cocaine appeared to be harmful to cognitive functions in female and older users, and those with lower educational levels. Both longer duration of lifetime stimulant use and recent stimulant use may predict frontal dysexecutive syndrome in stimulant users.