

A Study on the Cognitive Impairment and Other Harmful Effects Caused by Ketamine Abuse

Executive Summary

1. This is a study on the harmful effects of abusing Ketamine among young people in Hong Kong. The study consists of two parts. The first part is a cross-sectional study comparing the health related outcome measures among three groups of subjects namely pure Ketamine users, Ketamine polydrug users and non-drug user control. The second part is an in-depth qualitative study on the pure Ketamine users. The objectives of the study are:
 - a. To assess the physical and psychological dependence potential of abusing primarily ketamine or with other drug(s), and identify their withdrawal symptoms and factors that modulate the addictive potential of Ketamine; and
 - b. To explore the consequential effects of Ketamine on the cognitive function of abusers
2. A total of 101 drug abusers, fulfilling the inclusion criteria¹ for the study, and 26 control subjects have been recruited. Very few subjects abused only one type of drug. Most of them were polydrug users. There were 24 pure Ketamine users, 6 pure Ecstasy users and 71 polydrug users recruited. All the polydrug users abused Ketamine and other psychotropic drugs. Since the number of Ecstasy was too small for meaningful statistical comparison, analysis of Ketamine abusers was

¹ Subjects recruited should have abused the drug concerned for a frequency of at least twice a month and for a period of over six months within the past two years.

focused in this study. The outcome measures were compared among pure Ketamine group (N=24), Ketamine polydrug group (N=71) and non-drug control group (N=26).

3. The age of first Ketamine use was between 12 and 28 (16.8 on average). Abusers had taken 15 to 2000 times (366.6 times on average) of Ketamine for 6 to 82 months (36.6 months on average) prior to the date of assessment. Majority (74.7%) of the Ketamine users also abused other illicit drugs especially Ecstasy (94.4%).
4. About half of the Ketamine abusers (52.2%) personally preferred to take Ketamine and one-fifth (21.1%) would like Ecstasy. Other illicit drugs were less preferred.
5. Most of the subjects used the illicit drugs in disco and bar (72.3%) while some of them used at home (13.9%), at school or work place (3.2%) or even anywhere and everywhere (10.6%). They preferred to take the illicit drugs with friends (90.4%) and rarely used alone (5.3%) or with their boyfriends / girlfriends (4.3%).
6. There were 78.9% of the subjects fulfilled the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM IV) diagnostic criteria for dependence syndrome. It took 12.7 months after first intake of Ketamine for dependence syndrome development. Moreover, 76.1% of the subjects have shown physiological dependence features (i.e. tolerance or withdrawal symptoms). Fifty-

four (53.5%) of the Ketamine abusers reported withdrawal symptoms when Ketamine was stopped. The five most commonly reported withdrawal symptoms were fatigue, excessive yawning (46%); feeling irritable (38%); feeling angry, hostile or acting aggressive (36%); sleeping difficulty (32%) and feeling depressed (32%).

7. Ketamine abusers experienced on average 11.7 times of acute intoxication. They were found to have more psychiatric disturbance than control subjects as reflected by the Brief Psychiatric Rating Scale (BPRS) total score. No statistically significant difference was noted for the health status from General Health Questionnaire (GHQ).
8. There were 26.3% in Ketamine abusers (N=95) who had life-time history of psychiatric diagnosis apart from the substance use disorders. The two commonest diagnoses were depressive disorder (12.6%) and drug induced psychosis (6.3%).
9. Regarding neurocognitive dysfunction, Ketamine abusers were found to have more soft neurological signs of motor coordination than control subjects. There was impairment in executive function with difficulty to organize their performing tasks in pure Ketamine abusers. There was a trend of verbal memory impairment observed in drug abusers. Ketamine polydrug abusers less commonly used semantic clustering and abstract thinking in their memory strategy. However further studies with larger sample size and detailed memory assessments are required before unequivocal conclusion can be made.

10. The personality traits were assessed by using the Sensation Seeking Scale (SSS) and Barratt Impulsiveness scale (BIS). Disinhibition was found to be more marked in both pure Ketamine and Polydrug abusers while higher experience seeking was found only in the polydrug abusers. It might indicate that disinhibition is a general vulnerability factor for drug abuse while higher experience seeking tendency would render a person to search for new drug effects from various kinds of drugs resulting in polydrug abuse.
11. The drug expectancy assessment showed that Ketamine abusers realized the negative effect of the illicit drugs, however pure Ketamine abusers expected relaxation and tension reduction while the Ketamine polydrug abusers expected positive effects e.g. happiness, sexual potency, excitement, increased work efficiency, increased self-esteem, higher power of control etc. This might indicate that the expectation of drug effect would govern a person to try different drugs or in different combination.
12. Based on the major findings of this study, it is recommended that the dependence potential, neurocognitive impairment and psychiatric morbidity in association with Ketamine abuse should be emphasized in public education. Awareness of the health hazards related to Ketamine abuse should be increased at the community level by family physicians and drug workers. Appropriate measure should be taken for prevention, early identification and treatment of Ketamine abuse.