

## Incidence of Amphetamine and Benzodiazepine Over Dosage Cases Detected in Manipal Poison Detection Centre, South India

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### Abstract

**Introduction:** Amphetamine and Benzodiazepine are a group of compounds that are abused in many regions of the world. Drugs of abuse can alter a person's thinking and judgement, leading to health risks, including addiction, drugged driving and infectious disease. **Aim:** was to estimate the incidence of amphetamine and benzodiazepines in urine samples collected at Manipal poison detection center (MPDC). **Material and Methods:** The data was collected from the records and reports available in the MPDC. The data was tabulated assessed and analysed statistically. **Results:** 2 samples were tested positive for amphetamines and 4 samples were tested positive for benzodiazepines. **Conclusion:** Under the limitation of this study, it can be concluded that people consuming abusive drugs in this region is very low.

**Keywords:** Amphetamines; Benzodiazepines; Drugs of abuse; Addiction

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### Introduction

Amphetamine and Benzodiazepine are a group of compounds that are abused in many regions of the world. The prevalence of Amphetamines over dosage or toxicity cases around the world amounts to 0.3% to 1.1% as per the United Nations Office of Drugs and Crime data from 2013.<sup>1,2</sup> Drugs of abuse can alter a person's thinking and judgement, leading to health risks, including addiction, drugged driving and infectious disease. These drugs also tap into the brains communication system and disrupt the way nerve cells normally send, receive and process information.<sup>3</sup> Amphetamine is a stimulant that affects certain chemical in the brain and nerves that contribute to hyperactivity and impulse control.<sup>4</sup>

On the other hand, the benzodiazepine use has

reached a stage of an epidemic.<sup>5</sup> the use of Benzodiazepine and other tranquilizers was the third most misused illicit or prescription drug amounting to approximately 2.2% of the population in united states in 2017. The worldwide statistics appears to be in par with the united states.<sup>6</sup> Benzodiazepine is a psychoactive drug that enhances the effect of neurotransmitter gamma amino butyric acid (GABA).<sup>5</sup>

### Aim:

Aim of this study was to estimate the incidence of amphetamine and benzodiazepines in urine samples collected at Manipal poison detection center (MPDC).

### Materials & Methods:

Ethical clearance for this study was obtained from institutional ethics committee. In this retrospective study, the samples analysed in MPDC were from September 2015 to September 2016 were considered. During the period total of 50 samples were received related to abusive drugs. The samples were analysed in the center using Urine kit method which is Lateral flow Immuno

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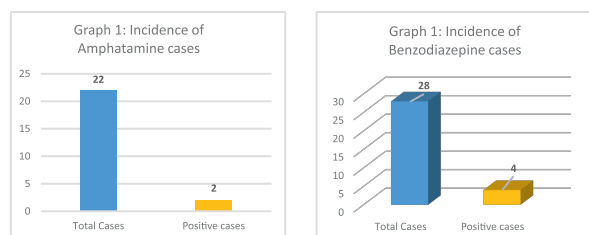
Received on 22.06.2020

Accepted on 08.10.2020

Chromatographic Assay Method. The data was collected from the records and reports available in the MPDC. The data was tabulated assessed and analysed statistically using Statistical Package for Social Sciences (SPSS) 20.

## Results

Total of 50 samples were analysed for presence of Amphetamines or Benzodiazepines in the study. Out of total samples 22 urine samples were tested for amphetamines of which 2 were tested positive for presence of the drug as shown in Graph 1. Total of 28 samples considered for benzodiazepines detection, 4 samples showed the positive results as depicted in Graph 2.



## Discussion:

In our study only 9% of people consumed amphetamine and 14% have consumed benzodiazepine. Thus consumption of abusive drugs is comparatively low in this part when equated to a study conducted in Sweden<sup>7</sup> in 2003 where amphetamine and benzodiazepine were implicated in 39% of suicides using these drugs. In another study done over a period of 5 years in Australia in 1994, where they found out 16 cases of fatalities related to over dosage of benzodiazepines and related drugs.<sup>8</sup> In a 12 months' review done in Auckland, New Zealand, the Benzodiazepines was associated in 40% of cases.<sup>9</sup> In Scotland study done in 2018 revealed that 45% of all drugs related deaths were due to benzodiazepine group of drugs.<sup>10</sup>

## Conclusion:

Under the limitation of this study, it can be concluded that people consuming abusive drugs in this region is very low.

**Conflict of Interest:** Nil.

**Source of funding:** Self.

**Ethical clearance:** Obtained from the Institutional Ethical committee.

## References

1. Matsumoto RR, Seminerio MJ, Turner RC, Robson MJ, Nguyen L, Miller DB, O'Callaghan JP. Methamphetamine-induced toxicity: an updated review on issues related to hyperthermia. *Pharmacol Ther.* 2014 Oct;144(1):28-40.
2. Miller DB, O'Callaghan JP. Elevated environmental temperature and methamphetamine neurotoxicity. *Environ Res.* 2003 May;92(1):48-53.
3. Drugs, Brains, and Behavior The Science of Addiction. [https://www.drugabuse.gov/sites/default/files/soa\\_2014.pdf](https://www.drugabuse.gov/sites/default/files/soa_2014.pdf) accessed on 08.07.2019.
4. Vasan S, Olango GJ. Amphetamine Toxicity. [Updated 2020 Jul 10]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470276/>
5. Schmitz A. Benzodiazepine use, misuse, and abuse: A review. *Ment Health Clin.* 2016;6(3):120-126. Published 2016 May 6. doi:10.9740/mhc.2016.05.120
6. Votaw VR, Geyer R, Rieselsbach MM, Mc Hugh RK. The epidemiology of benzodiazepine misuse: A systematic review. *Drug and Alcohol Dependence.* 1 July 2019; 200: 95-114.
7. Carlsten A, Waern M, Holmgren P, Allebeck P (2003). "The role of benzodiazepines in elderly suicides". *Scandinavian Journal of Public Health.* 31 (3): 2248. doi:10.1080/14034940210167966
8. Drummer OH, Ranson DL (December 1996). "Sudden death and benzodiazepines". *The American Journal of Forensic Medicine and Pathology.* 17 (4): 336–42. doi:10.1097/00000433-199612000-00012.
9. Large RG (September 1978). "Self-poisoning in Auckland reconsidered". *The New Zealand Medical Journal.* 88 (620): 240–3.
10. "Drug-related deaths in Scotland, 2018". National Records of Scotland. Accessed on 29.08.2019.