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Alprazolam and Marijuana Use in Younger Populations

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Abstract

Drug use in the younger population is a major health concern and the use of THC as a popular recreational drug among young adults has been well reported. There are reports that the use of nonprescription use of Alprazolam has been increasing in this age group as well. The combining of drugs is common among substance abuse users. Urine drug testing in populations of subjects prone to substance abuse offers the possibility of studying the relationship of the use of Alprazolam with THC throughout several generations. We tested 1.3 million subjects of varying ages for Alprazolam, MDMA, and THCA and observed that the population of users of both Alprazolam and THC was greater in the younger generation.

Introduction

Drug use in the United States is a major public health problem. The Center for Disease Control has been monitoring illegal drug use through its National Center for Health Statistics [1]. One of the concerns of the National Institutes of Health has been drug use in the younger population. It has commissioned studies to examine drug use in this population and these surveys use questionnaires to poll among young adults however Urine Drug Testing (UDT) offers more comprehensive information on drug use in this population [2-5]. There have been several newspaper reports regarding the use of the recreational drug MDMA and marijuana as well as an increase in the prescription drug Alprazolam in the younger population. Marijuana is used for its intoxicating effect and Alprazolam is a drug that belongs to the benzodiazepines drug group and is prescribed treat anxiety and panic disorders) [6,7]. Alprazolam activates GABA receptors and is the 23rd most frequently prescribed drug in the United States [8] but is used recreationally for its euphoric effect. MDMA is a synthetic drug that acts as a stimulant and hallucinogen [9]. Combinations of drugs are often used to potentiate their effects [10] however there has been an increase in reports indicating exactly the opposite, younger users are continuing to abuse Alprazolam as a euphoric [11]. Using our database of 1,300,000 urine drug tests we reviewed the incidence of marijuana-MDMA use and Alprazolam-marijuana use as a function of user age. We wished to establish that the age group of 21-36 has a higher correlation between using MDMA with marijuana. Similarly, we wished to determine the use of marijuana with Xanax (Alprazolam). Since there are reports that combined use of MDMA and marijuana are popular among younger adults and Xanax use is on the rise [12], we tested the hypothesis that the incidence of marijuana and Alprazolam and MDMA and with Xanax in the age group of 21-36 is higher than other age groups.

Methods

From March 26, 2016 to June 6, 2019 we performed comprehensive urine drug tests on 1.3 million urine specimens submitted by pain, addiction treatment, internal medicine, and behavioral clinics across the United States. This study is approved by ASPIRE IRB Santee, California. The method of drug analysis has been described by Krock et al. [13].

The de-identified data for the specimen's positive for MDMA and Alprazolam and THC and Alprazolam was examined. The tests were then categorized by generation [14]. The Millennials are 21-36, Gen X is 36-51, and the Boomers are 51-66. The percentages per age were determined for results indicating the prevalence Alprazolam and then the prevalence of MDMA or THC. Then, the values were normalized by the number of tests per age group. The data collection and analysis was performed in Power BI [15] with data from Ascent Indigo Biosystems LCMS [16], a fully automated chromatography and MS quantitative analysis system and entered in Excel and the data subsequently normalized.

Results and Discussion

Our laboratory testing did not reveal a significant amount of MDMA use. The drug apparently is used at Raves or other social events [17] and not used chronically by substance abuse users. The data is consistent with its use in a younger population. The combined use of Alprazolam and THC is more clearly prevalent in the younger population. This observation is consistent with the more frequent marijuana use in the younger population [18]. The use of Xanax by this group has several possible explanations including its availability, and that they look for ways to "chill out".

Conclusion

Only a small number of patients were positive for both Alprazolam and MDMA. This number seemed to slightly decrease by age group. In the test population, MDMA is not a drug of choice. It has limited use and is not a chronically used drug [17]. It has a short half-life and a detection time of two days [19]. So, the low number of positive tests is consistent with these observations. In contrast, a larger percent of the patients was positive for the use of Alprazolam and THC. This was a small percent of the total positive drug tests. It was about 0.35% for the

age group of 51-66 compared to 1.4% for the age group 21-36 (Tables 1 and 2).

Age group	Total positive tests for Alprazolam and MDMA	Total positive tests for Alprazolam and THCA	Total number of specimens tested
21-36	14	5,597	4,04,396
36-51	9	4,968	3,41,112
51-66	5	2,647	7,50,384

Table 1: Positive results for Comprehensive urine drug tests of Alprazolam-MDMA and Alprazolam and THCA.

Results			
	Tests positive for Alprazolam and THC	Total tests	Row totals
21-36 years	5597 (743.39) [31689.06]	404396 (-579.86) [-282834502.07]	409993
36-51 years	4968 (183.85) [124496.72]	341112 (-1320.48) [-88801141.60]	346080
51-66 years	2647 (900.61) [3386.47]	750384 (776.37) [723771486.93]	753031
Column Totals	13212	1495892	1509104 (Grand Total)

Table 2: Chi-square Analysis. The chi-square statistic is 352295415, the p-value is<0.00001. The result is significant at p<0.05.

Limitations

Because the status of the tests was de-identified, one patient could have more than one positive test, thus possibly skewing the data and creating a limitation to the experiment.

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