H101 Trends of Cannabis- and Alcohol-Related Single-Vehicle Accident Fatalities at the Jackson County Medical Examiner's Office From 2012 to 2016

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The goal of this presentation is to examine the demographics as well as the toxicology in cannabis- and alcohol-related single-vehicle accident fatalities at the Jackson County Medical Examiner's Office.

This presentation will impact the forensic science community by demonstrating the increasing prevalence of cannabis-related single-vehicle accident fatalities and the increased blood tetrahydrocannabinol levels of the subjects involved at the Jackson County Medical Examiner's Office.

Cannabis use has increased in popularity in recent years; various studies reveal cannabis to be the number one illegal drug used among those reported driving under the influence in several different countries.[1-4] Some of these same studies as well as others demonstrate there is a dose-related association between the increased blood Tetrahydrocannabinol (THC) concentration and the heightened risk of a traffic accident and death.[4,5] Many studies have also shown that when cannabis and alcohol are used in combination, there is a higher incidence of traffic accidents compared to when each drug is used alone.[3,5]

The goal of this study was to examine all of the cannabis- and alcohol-related single-vehicle accident fatalities at the Jackson County Medical Examiner's Office in Kansas City, MO, in the past five years and to discuss the trends of alcohol-only related fatalities versus cannabis-only related fatalities versus combined cannabis- and alcohol-related fatalities. This study also examined the postmortem blood THC concentration trends of the drivers. In addition to toxicology, the race, gender, and age of the subjects were studied. Finally, the time of day the accident occurred was also recorded. All traffic fatalities processed at the Jackson County Medical Examiner's Office from January 1, 2012, to December 31, 2016, were reviewed. Only the drivers of single-vehicle accident fatalities were selected for this study. The postmortem toxicology of the drivers was examined with an emphasis on reviewing alcohol and cannabis levels specifically. During the years studied, the number of traffic fatalities ranged from 93 to 135 per year, with an average of 115. Of those fatalities, 29 to 55 (average 44) individuals were drivers in single-vehicle crashes.

The results of this review revealed that there was an increase in the number of cannabis-only and cannabis-plus-alcohol-related single-vehicle accident fatalities by 57% and 125%, respectively. A 204% increase in the average blood THC concentrations was noted over the five-year period, with the average THC blood concentration being 254.31ng/ml in 2016 compared to 83.6ng/mL in 2012. The demographics of the drivers did not change over the five-year period, with males being more prevalent over females and Caucasians more prevalent than African Americans. Generally, the majority of the drivers were under the age of 40 years. No particular trend was identified in the time of day the single-vehicle fatalities occurred.

Public health concern has grown recently due to the increased numbers of individuals driving under the influence of cannabis as well as the level of intoxication of these drivers. This study provides supporting evidence that there is increasing incidence of cannabis-related traffic fatalities as well as upward-trending blood THC concentrations; this may coincide with increased social acceptance and popularity of cannabis usage as a recreational and possibly medicinal drug.

Reference(s):

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Cannabis, Motor Vehicle, Blood Tetrahydrocannabinol

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