G34 Temporal Variation of Ethanol Related Firearm Deaths

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After attending this presentation, attendees will understand the potential risk of ethanol use and subsequent homicidal death by firearms (gunshot and shotgun), and the seasonal temporal variation in homicides in which the decedent was under the influence of ethanol.

This presentation will impact the forensic community by examining the association between ethanol intoxication and firearm related homicides. Previous reports have shown a direct correlation between ethanol intoxication and suicides and accidental deaths (specifically motor-vehicle accidents). However, a definitive association between ethanol intoxication and homicides has not been established.

A review of all homicides in the State of Maryland between 2003 and 2007 was performed for cases in which death was due to firearms and in which heart blood was available and evaluated for toxicology (cases in which complications occurred were omitted). Cases were classified by whether the decedent's heart blood ethanol level was above or below the legal limit of intoxication (0.08 g/dl). Predictors of elevated blood ethanol were examined by logistic regression analysis with multiple independent variables including age, gender, week of the year, day of the week, month, and season. Statistical significance was determined by likelihood ratio tests. The numbers of total homicides were compared for different days of the week and month of the year by Poisson regression analysis, aggregating the five years of the study period.

A total of 1,571 cases were identified using the above criteria. The median age for the cases was 26-years-old, 91.4% of the decedents were male and 86.4% were African-American. Statistically significant temporal variation was noted in the aggregate number of homicides by day of the week (greater on Saturday) and month of the year (greater in July and January). Of all cases, 271 (17.3 percent) had a blood ethanol level of 0.08% g/dl or greater. There was statistically significant temporal variation in ethanol related homicides by day of week (increased on Saturday and Sunday) and month of the year (increased between May and August with peaks in June and July). In addition there was a significant increase in ethanol related homicides in the summer when compared to the remaining seasons. No temporal variation was seen in non-alcohol related homicides. A direct relationship was not seen between increased ethanol related homicides and increased total homicides when compared to month of the year and season, however a trend was seen when compared to the day of the week (increased on Saturday).

In conclusion this study shows temporal variations in overall firearm homicides and ethanol related firearm homicides. However a direct association in terms of increased ethanol consumption was not established.

Ethanol, Firearm, Temporal Variation

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