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"Association of Alcohol Use on Prevalence of Ophthalmic Diseases"

Background: Alcohol consumption continues to pose harmful effects on human health with 5.3% (3 million) of deaths worldwide due to alcohol. While alcohol's effect on many organ systems is already known, its effect on eye diseases is still unclear. The main ocular conditions which alcohol has been proposed to have an effect include cataracts, age-related macular degeneration (AMD), diabetic retinopathy (DR), and glaucoma. Given the lack of research related to alcohol's effect on ocular conditions, this study aims to explore the association of alcohol on these four eye diseases in the U.S. adult population.

Methods: This analysis utilized data from adults 18 years and older from the 2005-2006 and 2007-2008 National Health and Nutrition Examination Survey (NHANES; N=11,791). Participants were 51.7% female, 70% White, with a mean age of 45.7±0.44. Alcohol use was measured as binge drinking (four to five drinks in a two-hour time frame), heavy drinking (binge drinking on each of five or more days in the past 30 days), and average number of drinks per drinking day (DpDD. Logistic regression was used to analyze the association of alcohol use and having any or one of the four eye disorders; potential confounders considered were age, gender, race, education level, income, smoking status, diabetes status, and hypertension.

Results: Binge drinking was estimated as having a prevalence of 34.4% in the US with 13.3% reporting heavy drinking. The prevalence of any of the four eye disorders was 12.9%. When assessing each eye disease to binge drinking, heavy drinking, and average DpDD, all four conditions produced a crude odds ratio less than 1. After adjusting for confounders, especially age, many of these associations were attenuated completely. However, it was found that heavy drinkers compared to non-drinkers have 58% increased odds of having cataracts (OR=1.58; 95% confidence interval (CI) (0.93,2.70). The associations did not reach statistical significance. When stratified by age, it was found that in those aged 60+, binge drinkers compared to non-binge drinkers had 1.4 greater odds of having any eye disorder (OR=1.43; (0.96, 2.12). Those aged 60 and above also had 55% increased odds of having glaucoma if they were binge drinkers. As average DpDD increased, there were overall increased odds of having any eye disorder.

Conclusions: In this national sample, we found that alcohol use was a significant predictor of eye disorders. However, these associations were largely driven by age differences, with binge drinking only associated with increased eye disorders among those 60 or older. These results suggest that interventions to reduce hazardous alcohol use among older populations may be especially useful in reducing the increasing burden of eye disorders. However, further research is needed to provide consistent data highlighting these age-dependent results.