projectextramile
PREVENTING ALCOHOL-RELATED HARM

RESEARCH SUMMARY
Date Compiled: September 2022

Key takeaways from included research:

- A group of reservation-based American Indian (AI) adults were studied to determine whether individuals with higher rates of cultural protective factors would have lower rates of alcohol use while those with higher risk factors would have higher rates of alcohol use. Researchers concluded that cultural factors, such as enculturation, could be important to incorporate into treatment planning for AI adults because those with higher rates of cultural protective factors did have lower alcohol use rates.
- An eight-day study was conducted to examine sleep circadian timing and photoreceptor responsivity in adult alcohol drinkers. Researchers found that adults who consumed alcohol heavily had later sleep timing and shorter dim light melatonin onset-midsleep intervals, which was consistent with prior studies. They also concluded that those same individuals also had reduced circadian photoreceptor responsivity, which has only been studied among rodents previously.
- Researchers examined trends in prevalence of binge drinking and heavy alcohol consumption among pregnant and nonpregnant women. In this cross-sectional study, they found that both forms of excessive alcohol consumption were higher among nonpregnant women than pregnant women, however the average annual percentage change was significantly greater among pregnant women. Overall results suggest worsening behavioral risks among pregnant women.

CULTURAL FACTORS AND ALCOHOL USE IN AMERICAN INDIAN ADULTS: RESULTS FROM A CULTURALLY TAILORED CONTINGENCY MANAGEMENT INTERVENTION

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Objective: American Indian and Alaska Native (AI/AN) populations experience greater health disparities in alcohol use outcomes compared to the general population. This secondary data analysis examines cultural factors related to alcohol use in 65 reservation-based American Indian (AI) adults in a randomized controlled trial of a culturally tailored contingency management (CM) program. It was hypothesized that individuals with higher rates of cultural protective factors would have lower rates of alcohol use, while individuals with higher rates of risk factors would have higher rates of alcohol use. It was also hypothesized that enculturation would moderate the relationship between treatment group and alcohol use.

Method: Generalized linear mixed modelling (GLMM) was used to calculate odds ratios (OR) for the repeated measure, biweekly urine tests of the biomarker, ethyl glucuronide (EtG), across 12 weeks. The relationship between alcohol use (abstinence [EtG < 150 ng/mL]) or heavy drinking [EtG ≥ 500 ng/mL]) and culturally relevant protective (enculturation, years lived on the reservation) and risk factors (discrimination, historical loss, historical loss symptoms) were examined.

Results: The sample was 63.1% male with an average age of 36.7 years. There was a negative association between enculturation and probability of submitting a heavy drinking urine sample (OR = 0.973; 95% CI [0.950, 0.996], p = 0.023), indicating enculturation may serve as a protective factor against heavy drinking.

Conclusion: Cultural factors, like enculturation, may be important constructs to assess and incorporate into treatment planning with AI adults engaged in alcohol treatment.

Source: Herron, J., Hirchak, K. A., Venner, K., Tofighi, D., McDonell, M., & HONOR Study Team. (2022). Cultural factors and alcohol use in American Indian adults: Results from a culturally tailored contingency management intervention. *Journal of Studies on Alcohol and Drugs*, jsad-21. https://doi.org/10.15288/jsad.21-00400

SLEEP AND CIRCADIAN DIFFERENCES BETWEEN LIGHT AND HEAVY ADULT ALCOHOL DRINKERS

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Background: Numerous studies have reported that eveningness is associated with increased alcohol consumption. However, biological markers of circadian timing, such as dim light melatonin onset (DLMO) and circadian photoreceptor responsivity (post-illumination pupil response, PIPR), have rarely been assessed in the context of habitual alcohol consumption. This study aimed to examine sleep, circadian timing, and photoreceptor responsivity in adult alcohol drinkers.

Methods: Participants (21 to 45 years) included 28 light and 50 heavy drinkers. The 8-day study consisted of a week of ad lib sleep monitored with wrist actigraphy, followed by a 9-h laboratory session with a photoreceptor responsivity and circadian phase assessment.

Results: The heavy drinkers obtained on average 28 more minutes of sleep (p = 0.002) and reported more eveningness than the light drinkers (p = 0.029). There was a trend for a shorter DLMO-midsleep interval (p = 0.059) in the heavy drinkers, reflecting a tendency for them to sleep at an earlier circadian phase. The PIPR in the heavy drinkers was significantly smaller than in the light drinkers (p = 0.032), suggesting reduced circadian photoreceptor responsivity in the heavy drinkers. A larger

PIPR was significantly associated with a later DLMO in the light drinkers ($r = 0.44$, $p = 0.019$), but this relationship was absent in the heavy drinkers ($r = -0.01$, $p = 0.94$).

Conclusions: These results are consistent with earlier reports of more eveningness and a shorter DLMO-midsleep interval being associated with heavier alcohol drinking. The novel finding of reduced circadian photoreceptor responsivity in heavy drinkers is consistent with prior rodent studies. Future studies should explore the impact of habitual alcohol consumption on other measures of circadian photoreceptor responsivity.

Source: Burgess, H. J., Rizvydeen, M., Kikyo, F., Kebbeh, N., Tan, M., Roecklein, K. A., ... & Cao, D. (2022). Sleep and circadian differences between light and heavy adult alcohol drinkers. *Alcoholism: Clinical and Experimental Research*. https://doi.org/10.1111/acer.14872

TRENDS IN BINGE DRINKING AND HEAVY ALCOHOL CONSUMPTION AMONG PREGNANT WOMEN IN THE US, 2011 TO 2020

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Introduction: Alcohol-related mortality has been increasing among women in the US during the past 2 decades.1 Although no recent studies have found increased alcohol-related mortality specifically among pregnant women, 1 study2 found increases in combined drug- and alcohol-related mortality. Recent data on binge drinking among pregnant women suggests a modest increase from 2011 to 20183 and no increase from 2018 to 2020.4 However, little is known about how longer trends in problematic alcohol use may differ between pregnant and nonpregnant women. We sought to compare trends in prevalence of binge drinking and heavy alcohol consumption among pregnant and nonpregnant women from 2011 through 2020.

Methods: This cross-sectional study obtained public use data from the Behavioral Risk Factor Surveillance System (BRFSS) from January 1, 2011, to December 31, 2020. The BRFSS is a nationally representative, cross-sectional sample of US adults that measures alcohol consumption based on 30-day recall. The BRFSS defines binge drinking as 4 or more drinks during a single occasion and heavy alcohol consumption as 8 or more drinks per week (eMethods and eTable in the Supplement). Pregnancy status (pregnant vs not pregnant) was the primary exposure; sex was self-reported by all participants in the BRFSS data set, and all pregnant participants identified as women. Race and ethnicity (Hispanic or Latino, non-Hispanic Black, non-Hispanic White, non-Hispanic multiple races or ethnicities, and non-Hispanic other race or ethnicity) are reported in the BRFSS, and the distribution differs significantly by the primary exposure (pregnancy), which should be accounted for when comparing prevalence between pregnant and nonpregnant women. Analyses were adjusted for age group (18-24, 25-29, 30-34, 35-39, and 40-44 years) and race and ethnicity. The University of Texas at San Antonio Institutional Review Board waived the need for approval because the research did not involve human participants. This study followed the STROBE reporting guideline.

Age- and race and ethnicity–adjusted prevalence of binge drinking and heavy alcohol consumption were estimated using logistic regression models adjusted for complex survey design and weighting. Log linear regression models were used to estimate average annual percentage change (AAPC) in prevalence rates with 95% CIs. Two-sided $P < .05$ was considered statistically significant. Data were analyzed using R, version 4.0.2 (R Foundation for Statistical Computing).

Results: Among the 49 098 pregnant women included in the study, 28.8% were 18 to 24 years of age and 3.7% were 40 to 44 years of age compared with 26.2% and 19.1%, respectively, for the 1 243 402 nonpregnant women ($P < .001$). Pregnant women were less likely to be non-Hispanic White (50.5%) compared with nonpregnant women (54.4%) ($P < .001$) (Table). The prevalence of binge drinking increased from 2.5% (95% CI, 1.6%-3.4%) in 2011 to 6.1% (95% CI, 2.2%-10.0%) in 2020 for pregnant women, an AAPC of 8.9% (95% CI, 4.8%-12.9%; $P = .003$) (Figure). Binge drinking for nonpregnant women decreased from 18.6% (95% CI, 17.8%-19.3%) in 2011 to 17.6% (95% CI,

16.8%-18.5%) in 2020 with an AAPC of 0.7% (95% CI, −0.5% to 1.8%; P = .28), reflecting an increase from 2012 to 2019. Prevalence of heavy alcohol consumption increased from 0.7% (95% CI, 0.3%-1.0%) in 2011 to 3.2% (95% CI, 0.6%-5.8%) in 2020 for pregnant women, an AAPC of 11.6% (95% CI, 4.0%-19.3%; P = .02). Prevalence of heavy alcohol consumption for nonpregnant women increased from 6.6% (95% CI, 6.1%-7.1%) in 2011 to 7.5% (95% CI, 6.9%-8.1%) in 2020, an AAPC of 2.3% (95% CI, 0.9%-3.7%; P = .01).

Discussion: In this cross-sectional study, we found that binge drinking and heavy alcohol consumption were higher among nonpregnant women than pregnant women, but the AAPC for both behaviors was significantly greater among pregnant women than nonpregnant women. Binge drinking increased by 0.7% per year between 2012 and 2019, and heavy alcohol consumption increased by 2.3% per year among nonpregnant women. However, binge drinking increased 8.9% per year and heavy alcohol consumption increased 11.6% per year among pregnant women.

Study limitations include the cross-sectional design, self-reported alcohol consumption, and wide CIs for estimates in 2019 and 2020. These results suggest worsening behavioral risks among pregnant women, potentially owing to changes in socioeconomic5 and psychosocial stressors6 that may have been exacerbated by the COVID-19 pandemic.

Source: Howard, J. T., Perrotte, J. K., Flores, K., Leong, C., Nocito, J. D., & Howard, K. J. (2022). Trends in Binge Drinking and Heavy Alcohol Consumption Among Pregnant Women in the US, 2011 to 2020. *JAMA network open*, *5*(8), e2224846-e2224846.