Fructose Consumption and NAFLD in US Adult Population of NHANES 17-18

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Non-alcoholic fatty liver disease (NAFLD) is a serious condition whose prevalence differs by race/ethnicity. Studies have suggested that consumption of high-fructose corn syrup is likely a risk factor for NAFLD. We investigated the associations between fructose consumption and NAFLD, and its distribution by race/ethnicity in the adult US population using NHANES 2017-2018 data (n=3292). NAFLD was diagnosed by FibroScan® using controlled attenuation parameter (CAP) values of =>260 and no exclusion criteria. Fructose consumption was calculated from 24-hour dietary recall data in combination with USDA food nutritional content data files. Fructose consumption was categorized into tertiles (low= ≤0.95 g, middle= >0.95-<=2.1 g, and high= >2.1 g).We analyzed data in SAS 9.4 using Chi squared tests and multinomial logistic regression, adjusting for demographics, behavioral, and laboratory data, and including sample weights and design. Of the 3292 participants, 31.3% were in the middle tertile of the fructose consumption and 35.5% were in the high tertile. There was no significant difference in the prevalence of NAFLD by fructose consumption group [low=44%; middle=48%, and high=51%] (p=0.094).The highest percentage of participants in the high tertile of fructose consumption were in Mexican Americans (48%) and non-Hispanic Blacks (44%), with a much lower percentage of non-Hispanic Whites (33%) (p<0.0001). The highest prevalence of NAFLD was in Mexican Americans in the high tertile of fructose consumption (70%), which was significantly different than the prevalence in Mexican Americans in the low tertile (52%) (p=0.031). In the adjusted models, those in the high tertile of fructose consumption had higher odds of NAFLD relative to those in the low tertile (AOR = 1.6, 95%CI = 1.1 - 2.3, p=0.0224). Fructose consumption in the high tertile was associated with increased odds of NAFLD in non-Hispanic Whites (AOR = 2.0, 95%CI = 1.0 - 3.7, p=0.0387) and Mexican Americans (AOR = 1.8, 95%CI = 1.2 - 2.8, p=0.0050). We conclude that there is an association between fructose consumption and the odds of NAFLD. This association does not explain the racial/ethnic disparity in NAFLD. Interventions should aim to decrease consumption of fructose overall.

Presentation Type: Oral
Presentation Date: Sunday, June 12
Presentation Time: 11:00 AM - 12:30 PM
Location: A313-A314