Association between sleep duration and hepatic steatosis in the USA

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PREMISE

- To promote optimal health and well-being, adults aged 18-60 years are recommended to sleep at least 7 hours each night.
- Sleep disruption has been associated with metabolic diseases, such as obesity and diabetes in murine models.
- Sleep disruption can interrupt the circadian rhythm and thus the body metabolism.
- It can be speculated that sleep-related problems may trigger several pathophysiologic processes associated with nonalcoholic fatty liver disease (NAFLD).

Aim: We hypothesized an association between sleep duration, steatosis, and advanced fibrosis.

METHODS

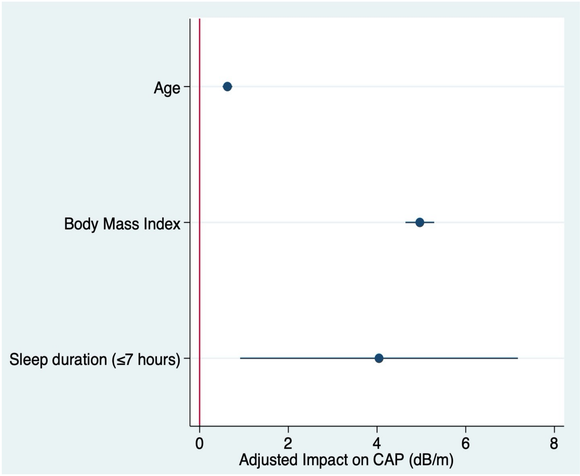
- Using the NHANES database, we identified all patients aged 18 and older from 2017 to March 2020 pre-pandemic surveys.
- The presence of fatty liver was determined using vibration - controlled transient elastography (VCTE).
- Sleep duration was grouped by short sleep duration (≤7 hours) and normal sleep duration (>7 hours).
- Linear regression models were used to examine the relationship between continuous CAP score and sleep duration, after adjusting for potential confounders.

RESULTS

Table 1. Cohort characteristics

		Sleep hours	
	Overall	**≤7 hours**	**>7 hours**
Age, (mean ±)	47 ± 16	46.6 ± 14	47 ± 16
Sex, female (%)	51	46	54
Race/ethnicity, (%)			
White	62	59	64
Black	11	13	9
Hispanic	16	17	15
Asian	5	5	6
Other	4	4	3
BMI, (mean ±)	29.6 ± 6.4	30 ± 7	29 ± 6
Diabetes, (%)	10	11	10
FibroScan®			
CAP, (mean ±)	264 ± 56	269 ± 56	260 ± 56
kPa, (mean)	5.8 ± 4	5.9 ± 4	5.7 ± 4

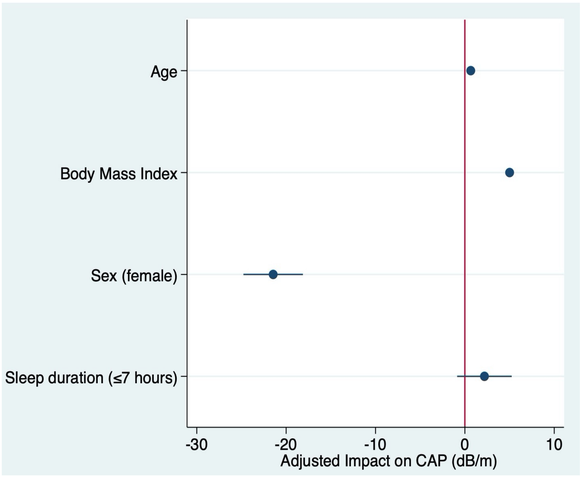
BMI, body mass index; **CAP**, controlled attenuation parameter; **kPa**, kilopascales



Model 1:

Adjusted for age and body mass index

β = 4.0, **p** = 0.013



Model 2:

Adjusted for age, body mass index and sex

β = 2.1, **p** = 0.152

CONCLUSIONS

Overall, FibroScan® data in NHANES 2017-2020 support a positive association between short sleep duration and hepatic steatosis independently of metabolic factors such as BMI.