(NHANES 2017-2020 dataset)

Team Presentations

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BU School of Public Health

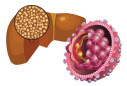
HARIRI INSTITUTE

BU Center for Trauma & Mental Health

Research Question: What is the association between Hepatitis B virus infection and diagnosis of liver fibrosis?

Hepatitis B virus infection: liver inflammation caused by the hepatitis B virus (HBV)

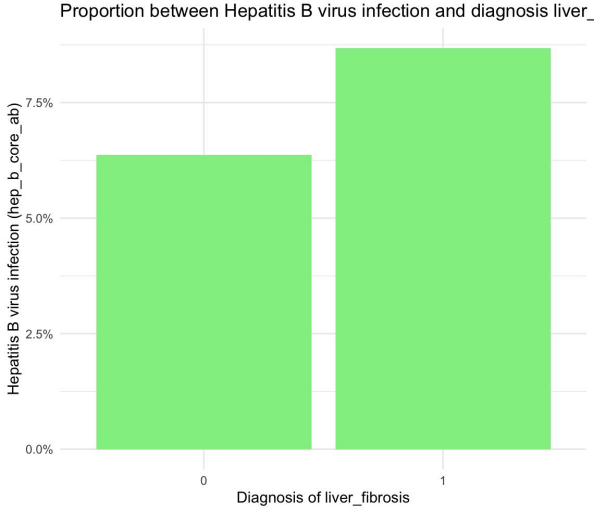
Liver fibrosis: scarring of the liver occurs when body attempts to repair itself after long-term injury



Descriptive statistics table

1	292 (3.7%)	349 (4.5%)	641 (4.1%)
Missing	2283 (29.1%)	2361 (30.6%)	4644 (29.8%)
liver_cond			
0	4521 (57.7%)	4230 (54.8%)	8751 (56.2%)
1	223 (2.8%)	239 (3.1%)	462 (3.0%)
Missing	3095 (39.5%)	3252 (42.1%)	6347 (40.8%)
liver_fibrosis			
0	4257 (54.3%)	4017 (52.0%)	8274 (53.2%)
1	590 (7.5%)	836 (10.8%)	1426 (9.2%)
Missing	2992 (38.2%)	2868 (37.1%)	5860 (37.7%)
kidney_fail			
0	4562 (58.2%)	4272 (55.3%)	8834 (56.8%)
1	182 (2.3%)	201 (2.6%)	383 (2.5%)
Missing	3095 (39.5%)	3248 (42.1%)	6343 (40.8%)
bmi			
Mean (SD)	27.2 (9.08)	26.1 (7.64)	26.7 (8.42)
Median [Min, Max]	26.0 [11.9, 92.3]	25.7 [12.5, 86.2]	25.8 [11.9, 92.3]
Missing	1167 (14.9%)	1256 (16.3%)	2423 (15.6%)
diabetes			
0	6743 (86.0%)	6506 (84.3%)	13249 (85.1%)
1	809 (10.3%)	920 (11.9%)	1729 (11.1%)
Missing	287 (3.7%)	295 (3.8%)	582 (3.7%)

Examine Associations plot



Chi-square tests

`X-squared = 9.2981, df = 1, p-value = 0.002294`

p<0.5 so there's a significant association between Hep B infection and liver fibrosis correlation (patients having HepB infection more likely to diagnose with liver fibrosis)

Regression Model (could add other covariate)

```
> exp(coef(logit_model))
   (Intercept) hep_b_core_ab1
     0.1692308       1.3960378
```

Pvalue `0.00196`

Individuals infected with HepB virus have 40% greater risk of Liver Fibrosis compare to those who not affected. Odds ratio = 1.40(95%CI: 1.13, 1.72)

Regression model adding confoundings:

```
> exp(coef(OR_adj))
   (Intercept) hep_b_core_ab1             age    factor(sex)1
    0.05508219     1.05739891      1.01974826      1.49372353
```

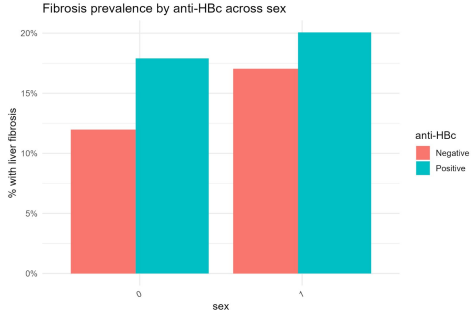
P Value `0.612` `< 2e-16` `3.49e-11`

Chi-square tests

Adjusted Odds Ratios for Liver Fibrosis (Adults ≥18 years)

anti-HBc exposure + confounders

Term	Adjusted OR (95% CI)	p-value
age	1.05 (1.01–1.09)	0.007
bingedrink_binary	1.47 (0.56–3.68)	0.417



After adjusting for age and sex (confoundings), there is no statistically significant association between Hepatitis B core antibody positivity and liver fibrosis once age and sex are accounted for.

Discussion: Possible factors not included are kidney failure, BMI, diabetes & heavy bingedrinking alcohol. they both have high missing data N/A so not good quality data to count to analyze since large alcohol consumption could lead to liver fibrosis.

Potential biases: Selection bias: The sample may overrepresent individuals who had liver testing, excluding healthier individuals

Age & sex correlate causing liver fibrosis meanwhile HepB doesn't correlate with liver fibrosis