“Evaluation of clinical risk factors in Hepatocellular Carcinoma: A case-control study in Southeast Louisiana.”

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Introduction

- Hepatocellular Carcinoma (HCC), a prominent form of liver cancer, is the leading cause of cancer death worldwide.
- Over the past decade, HCC incidents have increased in the United States as well.
- In the past few years, Louisiana has experienced great increases in liver cancer making it the fastest growing cancer in the state.

Clinical Risk Factors:
Viral Hepatitis (B and C)
Metabolic Conditions (Non-Alcoholic Liver Disease, Diabetes, Obesity)
Alcohol Abuse

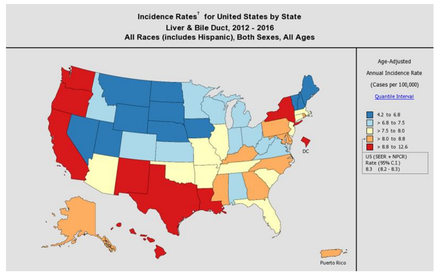


Figure 1: Map of United States shows the HCC Incidence between all races, both sexes, and all ages.

Objective

The objective of this study is to assess the relationship between HCC and known clinical risk factors like viral hepatitis, specifically Hepatitis C (HCV), metabolic conditions such as non-alcoholic fatty liver disease (NAFLD), diabetes and obesity, as well as alcohol abuse.

Data and Methods

- A retro respective case case-control study
  - Louisiana Tumor Registry (LTR)
  - Louisiana Public Health Institute’s Research Action for Health Network (REACHnet).
  - 35 years old or older
  - Cases of primary HCC was diagnosed in these patients between 2010-2015.
- Retro prospective data was collected via medical records.
  - International Classification Data (ICD-9.)
- HCC cases were modeled using logistic regression models.
  - Models controlled for age, sex and race.
  - Models were stratified by race and sex to control for potential confounding.

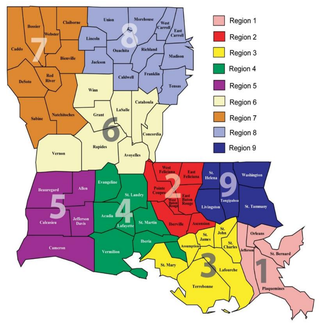


Figure 2: The study was focused on LDH regions 1, 2, 3, and 9 of Louisiana.

Results

Table 1: Study Sample Characteristics of HCC

	Control	Case
All, N	23,270	758
Age, % (N)		
35-44	22.1 (5,141)	2 (15)
45-54	26 (6,051)	15.2 (115)
55-64	23.9 (5,558)	43.1 (327)
65-74	16.5 (3,832)	26.8 (203)
75 and over	11.6 (2,688)	12.9 (98)
Sex, % (N)		
Female	55.8 (12,985)	19.8 (150)
Male	44.2 (10,285)	80.2 (608)
Race, % (N)		
White	71.6 (16,660)	62.5 (474)
Black	28.4 (6,610)	37.5 (284)
Hepatitis C Virus , % (N)	1.3 (292)	55.4 (420)
Non-alcoholic Fatty Liver Disease, % (N)	1.3 (297)	14.4 (109)
Diabetes, % (N)	19.5 (4,538)	46.2 (350)
Obesity, % (N)	12.5 (2,898)	18.5 (140)
Alcohol Use DIsorders, % (N)	1.9 (430)	27.2 (206)
Hepatitis B Virus, % (N)	0 (3)	3 (23)
Genetic Conditions, % (N)	0.1 (31)	1.1 (8)

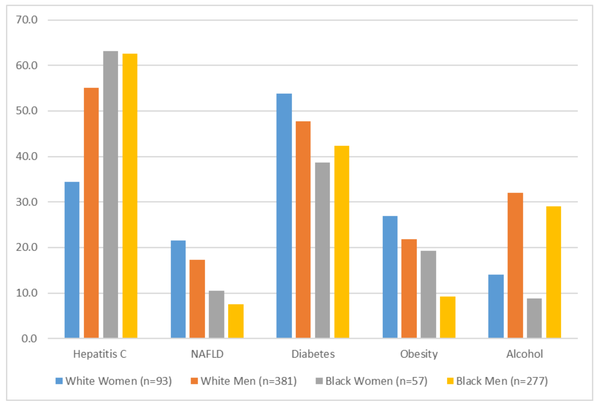
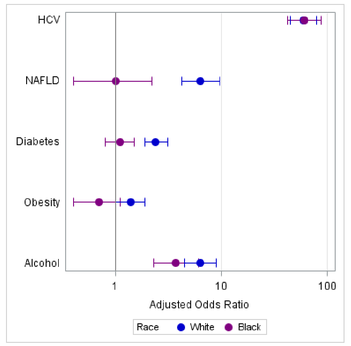


Figure 3: Risk Factor Prevalence, HCC Cases (N=758)

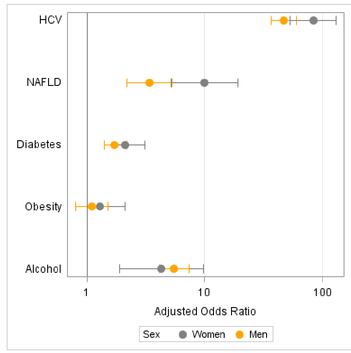
- This dataset included 758 cases and 23,270 controls.
  - Of the cases, 80.2% were male and 62.5% were white
- The most prevalent risk factor among cases was HCV (55.4%) followed by diabetes 42.2%) and alcohol use disorders (27.2%).
  - HCV was more prevalent in Black men and women.
  - Alcohol use disorder was more common in men.
  - Diabetes was more prevalent in the white population.

Results

Figure 4 Odds Ratio (OR) Forest Plots stratified by race and sex.



	Race	
	White	Black
	OR (95% CI)	OR (95% CI)
Hepatitis C Virus	59.3 (44.5,79.1)	60.9 (42.4,87.5)
NAFLD	6.3 (4.2,9.6)	1 (0.4,2.2)
Diabetes	2.4 (1.9,3.1)	1.1 (0.8,1.5)
Obesity	1.4 (1,1.9)	0.7 (0.4,1.1)
Alcohol Use	6.3 (4.5,8.9)	3.7 (2.3,6.1)



	Sex	
	Women	Men
	OR (95% CI)	OR (95% CI)
Hepatitis C Virus	83 (53.1,129.7)	46.5 (36.3,59.6)
NAFLD	10 (5.2,19.2)	3.4 (2.2,5.3)
Diabetes	2.1 (1.4,3.1)	1.7 (1.4,2.2)
Obesity	1.3 (0.8,2.1)	1.1 (0.8,1.5)
Alcohol Use	4.3 (1.9,9.7)	5.5 (4.1,7.4)

- Hepatitis C had the greatest individual risk among all groups
- Risk of HCC associated with alcohol use disorder was fairly consistent across groups.
- However, metabolic conditions differed by race. While obesity was not significant, diabetes and NAFLD were significant risk factors in the white population only.

Discussion

- In this study, we evaluated clinical risk factors among patients in a clinical research network in southeast Louisiana and found significant risk associated with Hepatitis C virus and alcohol use disorders.
- Additionally, metabolic conditions were found to have significant risk among white patients.
- Comprehensive HCC risk assessments among diverse populations in the US are important to public health efforts in cancer prevention and control.

Acknowledgements:

This research was conducted in partnership with Research Action for Health Network (REACHnet), with specific thanks to Ochsner and Tulane health systems.