

Spring 2021

A Comparison of the Prevalence of Cirrhosis in a Hispanic and Non-Hispanic Population Based on Body Mass Index

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Recommended Citation

Thompson, Abbie; Perlick, Alexa; Rendon, Angel; Wayne, Colton; and Uppati, Sarvani, "A Comparison of the Prevalence of Cirrhosis in a Hispanic and Non-Hispanic Population Based on Body Mass Index" (2021). *MEDI 9331 Scholarly Activities Clinical Years*. 39.
<https://scholarworks.utrgv.edu/som9331/39>

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MEDI 9331

Title: A Comparison of the Prevalence of Cirrhosis in a Hispanic and Non-Hispanic Population Based on Body Mass Index

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Abstract:

There is a paucity of data regarding the clinical correlation of obesity and cirrhosis in a predominantly Hispanic population. Additionally, data is limited on the contribution of BMI to the incidence of liver cirrhosis in Hispanics in South Texas. The aim of this study is to assess the prevalence of liver cirrhosis and compare the prevalence between Hispanic and Non-Hispanics. In addition, these researchers seek to investigate the prevalence of liver cirrhosis stratified by body mass index. These researchers hypothesize that the prevalence of liver cirrhosis is higher amongst Hispanics than Non-Hispanics individuals, and that higher body mass index scores positively correlate with increased prevalence of liver cirrhosis.

Introduction:

The obesity epidemic is a growing public health concern. According to the CDC, the overall prevalence of obesity in the United States was 39.8% in 2015- 2016.¹ The prevalence of obesity is even higher in individuals of Hispanic origin (47.0%).¹ In addition to the already known complications and comorbidities associated with obesity, data suggest that obesity is an independent risk factor for the development of liver disease.^{2,3} Obesity has been implicated as a risk factor for alcoholic-like inflammation, septal fibrosis, and progression to liver cirrhosis.^{2,4,5} The adipose tissue in obesity is proinflammatory, proangiogenic, and profibrogenic in hepatic tissue.^{6,7} A study from the United Kingdom found that an estimated 17% of cases of liver cirrhosis are attributable to excess body weight.⁸ Moreover, each 5 kg/m² increase in body mass index (BMI) was associated with about 30% higher risk of hepatic mortality.⁹

Studies have found ethnic differences in the incidence of cirrhosis and rate of disease progression.^{10,11} Specifically, one study found a 4-fold higher prevalence of cirrhosis in Cameron County, Texas (0.94%) than the national prevalence (0.27%).¹¹ According to the United States Census Bureau, 89.9% of the population of Cameron County is Hispanic. Furthermore, in the United States, chronic liver disease and cirrhosis are the 7th leading cause of death in Hispanics, 11th in Non-Hispanics white, and 14th in Non-Hispanic blacks.¹² These ethnic variations are likely due to a complex interplay between biological, social and behavioral factors.

There is a paucity of data regarding the clinical correlation of obesity and cirrhosis in a predominantly Hispanic population. Additionally, data is limited on the contribution of BMI to the incidence of liver cirrhosis in Hispanics in South Texas. Therefore, the **aim** of this study is to investigate the prevalence of cirrhosis stratified by BMI in a predominately Hispanic population.

Materials and Methods:

This retrospective single-centered study has approval from the local institutional ethics and review board. Since this is a retrospective study, informed consent was waived. We retrospectively reviewed patient electronic medical records admitted to Valley Baptist Medical Center in Harlingen, Texas with cirrhosis between January 2010 to January 2020 age > 18. In- hospital admission variables were collected through review of electronic medical records. These variables include basic demographic information, vital signs, social history, past medical history, and laboratory values. Additional data collected during hospital stay were also collected, such as abdominal imaging exams (e.g., ultrasound, CT of liver) and pathology results of liver biopsies.

Demographics and presenting features of the patients on admission are illustrated in Table 1.

FIGURES

Table 1. Characteristics of patients.

Variable	Total	Underweight	Normal Weight	Overweight	Obese	P value
Female						
Male						
Age, years						
Hispanic						
Non-Hispanic						
Hypertension						
Hyperlipidemia						
Liver disease						
AST						
ALT						
Alkaline Phosphatase						
GGT						
Creatinine						
GFR						
Fasting plasma						

glucose						
Triglycerides						
LDL						
HDL						
HCV antibody						
HBV surface antigen						
Fasting insulin						
Platelets						
Total bilirubin						

Discussion:

In a cohort of Hispanic patients in South Texas, the prevalence of cirrhosis/fibrosis was estimated to be 3.54%, and central obesity was an independent risk factor for cirrhosis/advanced fibrosis (p=0.04).¹¹ Moderate to severe fibrosis has a statistically significant higher average BMI compared to those with none to mild fibrosis (p<0.001).¹⁴ A study in multiple Mexican regions found increased mortality from cirrhosis with statistically significant findings in the South and North regions (p<0.0001).¹⁵ Obesity only increased in the Central and Mexico City regions.¹⁵

Obesity was an independent risk factor for cirrhosis and 65.3% of cirrhosis and advanced fibrosis cases may be attributable to obesity alone in a cohort of Hispanic patients.¹¹ As South Texas has one of the highest rates of obesity in the United States, this population is susceptible to higher rates of liver disease, obesity and mortality.

Hispanic patients that are obese have an increased risk of liver disease and associated mortality.¹¹⁻¹⁶ These study findings are limited by the paucity of relevant research and variable methodology of the studies. Further research is needed to evaluate the impact of obesity on liver disease for this population.

The main objective of the current study is to identify the prevalence of cirrhosis stratified by BMI in a predominately Hispanic population.^[1] Previous study by Jiao and colleagues observed a 4-fold higher prevalence of cirrhosis in Hispanics versus the general US population in South Texas.¹¹ Therefore, these researchers also expect an increase in prevalence of cirrhosis in Hispanics compared to the US population. Previous studies have found an association between cirrhosis and body mass index, there is a lack in data in a predominantly Hispanic population.^{8,13}

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