



Published in final edited form as:

Clin Gastroenterol Hepatol. 2011 October ; 9(10): 834–e110. doi:10.1016/j.cgh.2011.04.027.

Chronic Liver Disease in the Hispanic Population of the United States

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Abstract

Chronic liver disease is a major cause of morbidity and mortality among Hispanic people living in the United States. Environmental, genetic, and behavioral factors, as well as socioeconomic and health care disparities among this ethnic group have emerged as important public health concerns. We review the epidemiology, natural history, and response to therapy of chronic liver disease in Hispanic patients. The review covers nonalcoholic fatty liver disease, viral hepatitis B and C, coinfection of viral hepatitis with human immunodeficiency virus, alcoholic cirrhosis, hepatocellular carcinoma, autoimmune hepatitis, and primary biliary cirrhosis. For most of these disorders, the Hispanic population has a higher incidence and more aggressive pattern of disease and overall worse treatment outcomes than in the non-Hispanic white population. Clinicians should be aware of these differences in caring for Hispanic patients with chronic liver disease.

Keywords

Ethnicity; Fibrosis; Race; Latino; Risk; Epidemiology

The Hispanic population is the largest and fastest growing minority group in the United States. Currently they comprise 15% of the United States population and by the year 2050 will be 30% of the population.¹ The Census Bureau classifies Hispanic as an ethnic group and considers the terms Hispanic, Latino, and Spanish as synonymous. Hispanic persons can be of any racial background and represent a heterogeneous population with multiple origins, cultures, and genetic backgrounds including people of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin. Mexican Americans comprise

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This article has an accompanying continuing medical education activity on page e109. Learning Objectives—At the end of this activity, the learner will recognize the spectrum of liver disease in the Hispanic population in the United States, appreciate the importance of fatty liver disease and its progression to cirrhosis, and understand the role of viral hepatitis in the genesis of liver disease in the Hispanic US population.

Conflicts of interest

The authors disclose no conflicts.

65% of the United States Hispanic population, followed by Central and South Americans (17.4%), Puerto Ricans (8.6%, not including the 4.2 million people living on the island of Puerto Rico), and Cuban Americans (4%).¹ Most Hispanic persons now living in the United States were born in the United States and less than one-third of Hispanic persons residing in the United States are immigrants.² On average, Hispanic persons living in the United States have a socioeconomic status equivalent to African American people, but mortality rates that are comparable to those of non-Hispanic White (NHW) persons and considerably better than the African American population.^{3–5} Furthermore, life expectancy among Hispanic people is on average 3 years greater than in NHW people. These epidemiologic characteristics of low socioeconomic status but favorable overall health outcomes are commonly referred to as “the Hispanic paradox.”

Despite the overall survival advantage for Hispanic persons, they are at increased risk for certain diseases including chronic liver disease. Data from the United States National Center for Health Statistics (2000–2006) identified chronic liver disease as the sixth most common cause of death in the Hispanic population.⁶ In contrast, liver disease is not included among the 10 most frequent causes of mortality in NHW and African American populations. Mortality from chronic liver disease in Hispanic people in the United States is nearly 50% higher than in NHW persons (13.7 per 100,000 in Hispanic persons vs 9.2 in NHW and 7.5 in African American persons).⁷ Furthermore, while mortality rates from chronic liver disease in the United States progressively declined during the past decade, this trend was not evident in the Hispanic population.⁸ These ethnic differences in liver disease burden remain poorly understood but variations in behavioral patterns, healthcare access, referral to specialists, and utilization of therapeutic interventions have all been proposed as potential explanations for these less favorable outcomes in Hispanic persons.^{9–11}

Methods

We searched the MedLine database to identify relevant studies. The Medical Subject Heading terms “Hispanic American” (which encompasses Hispanic, Latino, Mexican American, Spanish American, Cuban American, Puerto Rican, and persons from Central or South America, or other Spanish culture or origin), “Ethnic Groups,” and “Population Groups” were combined with the Boolean operator “AND” to the search terms “chronic liver disease,” “cirrhosis,” “nonalcoholic fatty liver disease,” “NAFLD,” “nonalcoholic steatohepatitis,” “NASH,” “viral hepatitis,” “hepatitis B,” “hepatitis C,” “HIV,” “alcoholic liver disease,” “alcoholic cirrhosis,” “hepatocellular carcinoma,” “hepatoma,” “autoimmune hepatitis,” “primary biliary cirrhosis,” and “primary sclerosing cholangitis.” The Related Articles function of PubMed was used to cross-check for additional relevant studies. The searches were also supplemented by screening the reference lists of included studies and reviews to identify any additional publications missed by the database searches. We limited the literature search to English- and Spanish-language publications. A total of 90 publications were included in the review.

Results

Hispanic people living in the United States exhibit singular variations in epidemiology, natural history, and response to therapy of chronic liver disease. Nonalcoholic fatty liver disease (NAFLD) is the most prevalent chronic liver disease in Hispanic persons followed by chronic alcoholic liver disease and viral hepatitis C and B.^{12–15} Among Hispanic persons, hepatocellular carcinoma also has a higher incidence and worse prognosis than NHW or African American persons.^{16,17} Data on ethnic-specific characteristics of less prevalent diseases such as autoimmune hepatitis and cholestatic liver diseases are limited; however, preliminary genetic characteristics and differences in the severity of these diseases have been found among Hispanic persons.

Nonalcoholic Fatty Liver Disease

The most extensive literature on chronic liver disease among Hispanic persons is available for NAFLD. This disease is now recognized as the most frequent etiology of elevated serum aminotransferase levels in the United States and is associated with ethnic-specific differences in body habitus, biochemical, and physiological characteristics.^{18,19} Multiple studies have shown that NAFLD is more common in Hispanic than in NHW or African American persons of the same age with an even distribution among Hispanic men and women.^{12,18,20–22} Studies measuring hepatic triglyceride content by magnetic resonance spectroscopy identified steatosis in 45% of the Hispanic population, making NAFLD 1.4 times more frequent in Hispanic than in NHW and 1.9 times more common than in African American persons.¹² Multiple other studies also support this ethnic-related distribution of the prevalence of the disease.^{18,21,22} One limitation of current epidemiologic data is that the prevalence of NAFLD has typically been estimated using imaging studies, either to establish a presumptive diagnosis or to screen individuals subsequently evaluated with liver biopsy. For example, Williams et al²³ reported the ethnic distribution of biopsy-proven NAFLD in a cohort of patients with abnormal liver ultrasounds. Similar to previous reports, Hispanic persons had the highest prevalence of NAFLD (58.3%), followed by Caucasian (44.4%), and African American (35.1%) persons.²³

The most commonly accepted explanation for these epidemiologic variations reflects ethnic differences in prevalence of the metabolic syndrome.²⁴ Data from the National Health and Nutrition Examination Survey (NHANES) indicate that the prevalence of the metabolic syndrome is strikingly higher in Hispanic than in NHW and African American persons (31.9%, 23.8%, and 21.6%, respectively).²⁵ Furthermore, obesity and insulin resistance, 2 important risk factors for the metabolic syndrome, have been found to have a positive correlation with hepatic steatosis in Hispanic persons only.¹⁸ Insulin resistance is strongly associated with intraperitoneal fat content, and Hispanic persons living in the United States also have the highest intraperitoneal and hepatic fat content when compared with African American and NHW persons.^{25,26}

Histologic and serologic characteristics of NAFLD in different ethnic groups have been noted. For example, a retrospective analysis of liver biopsies revealed that Hispanic persons more frequently had Mallory bodies, more pronounced hepatocyte ballooning, and more advanced fibrosis than NHW or African American persons.²² Hispanic persons with

NAFLD also have higher levels of aminotransferases, therefore suggesting a more prominent inflammatory process during the disease. Furthermore, age and an aspartate aminotransferase/alanine aminotransferase ratio ≥ 1 are independent predictors of advanced fibrosis or cirrhosis only among Hispanic persons.²⁷ However, the severity of liver disease (measured by fibrosis score) is similar in Hispanic and NHW persons with NAFLD. Interestingly, African American persons with NAFLD have lower rates of steatosis, less severe fibrosis, and slower progression to nonalcoholic steatohepatitis (NASH) and cirrhosis than Hispanic persons.²⁸

Although multiple environmental risk factors may be responsible for ethnic variations in NAFLD, genetic differences are also implicated. For example, a recent study identified a novel polymorphism in a specific allele (rs738409 G) that encodes for the enzyme patatin-like phospholipase domain-containing protein 3 (*PNPLA3*), also known as adiponutrin, which is strongly associated with hepatic lipid content. Although the mechanisms by which this allele affects hepatic fat content remain to be elucidated, it is a predictor of the histologic severity of NAFLD with homozygote patients having a 2-fold greater hepatic fat content than noncarriers of the allele. Among ethnic groups, Hispanic persons have the highest frequency of this polymorphism (49%), followed by NHW (23%), and African American persons (17%).²⁹ A subsequent report demonstrated that this polymorphism was present in 91% of Hispanic persons and 70% of non-Hispanic persons with biopsyproven NAFLD.³⁰

There is no Food and Drug Administration (FDA)-approved therapy for NAFLD; however, insulin sensitizers and antioxidants such as pioglitazone and vitamin E have been studied.^{31,32} To date, ethnic differences in response to therapy have not been reported. Current management of NAFLD focuses on weight loss, increased physical activity, and modification of metabolic risk factors. Existing data suggest that cultural, emotional, social, and linguistic issues are critical factors that need to be addressed in order for exercise programs and nutritional counseling interventions to be effective in Hispanic persons.³³ Outreach by community health workers is one promising approach to tackle these barriers by increasing participation and adherence.³⁴

The only definitive treatment for NAFLD is liver transplantation; however, to date there are no data comparing ethnic-specific differences in graft or patient survival, recurrence, or de novo development of the disease following liver transplantation.^{35,36}

Alcoholic Liver Disease

Data from the Centers for Disease Control and Prevention (CDC) implicate alcohol in 24% of newly identified cases of chronic liver disease in the United States.³⁷ Behavioral patterns of alcohol consumption vary extensively among Hispanic and non-Hispanic populations. Overall, Hispanic persons have lower rates of alcohol consumption than NHW persons,³⁸ however, among heavy drinkers, Hispanic and African American persons consume greater amounts of alcohol per month and also drink for longer periods of time.³⁹ Mexican American and Puerto Rican are the Hispanic subgroup populations with the highest documented alcohol consumption (28%–35% considered themselves heavy drinkers during a period in their lives).⁴⁰ Furthermore, among most immigrant groups including Hispanic,

acculturation to American society is also an important risk factor associated with greater alcohol consumption.⁴¹ However, compared with foreign-born Hispanic persons, US-born Hispanic persons have higher rates of alcohol abuse (16% vs 9.1%) and alcohol dependence (14.5% vs 6.2%).⁴²

Hospital discharge data suggest that Hispanic persons have a lower incidence of acute alcoholic hepatitis (2.9 per 100,000) compared with African American (4.4 per 100,000) and NHW (3.1 per 100,000) persons.¹³ However, paradoxically, Hispanic persons have a higher prevalence of chronic alcoholic liver disease than NHW and African American persons (16.9 vs 11.1 vs 9.9 per 100,000, respectively).¹³ One explanation may be that among current alcohol drinkers, Hispanic persons experience a 2-fold greater increase in aspartate-aminotransferase and gamma-glutamyl transpeptidase than NHW persons, thus suggesting an increased susceptibility to hepatocellular injury.⁴³ Data from a multicenter Veterans Affairs (VA) cooperative study showed that among patients with acute alcoholic hepatitis, cirrhosis is more frequent in Hispanic (73%) than in NHW (52%) and African American (44%) persons.⁴⁴ Mortality rates from alcoholic cirrhosis vary for men and women of different ethnic backgrounds. For example, the age-adjusted mortality for Hispanic men with alcoholic cirrhosis is 2-fold higher than for NHW men (16.9 vs 8.34 per 100,000, respectively). In contrast, Hispanic and NHW women have comparable mortality rates (2.83 per 100,000 and 2.84 per 100,000).⁴⁵ Among Hispanic subgroups, Mexican and Puerto Rican have the highest mortality rates, regardless of gender, and Cuban has a significantly lower mortality rate.⁴⁵

As regards treatment, data from the National Alcohol Survey show that alcohol abusers of Hispanic background are significantly less likely than NHW and African American persons to receive care in professional settings specializing in substance abuse treatment (5.7% vs 9.6% vs 9.0%, respectively).⁴⁶ However, there were no differences in frequency of attendance at Alcoholics Anonymous among the 3 ethnic groups.⁴⁶ Some data support the effectiveness of brief educational interventions by healthcare providers in decreasing alcohol consumption among Hispanic persons.⁴⁷ Analogous to obesity, specific values, norms, and attitudes of the Hispanic culture need to be acknowledged and addressed in order to increase the efficacy of these interventions. Additionally, ethnic matching of patients and providers, a practice that may help to mitigate some cultural and language barriers, has also been associated with greater reductions in alcohol consumption among Hispanic persons.⁴⁸ Analysis of data from the United Network for Organ Sharing (UNOS) database showed no significant differences in 2-year patient and graft survival rates in Hispanic (87% and 80%, respectively) and NHW persons (80% and 84%, respectively). Patient survival was also similar among African American persons (78%); however, 2-year graft survival rates were lower in African American persons compared with other ethnic groups (72%).⁴⁹

Hepatitis C

The incidence of acute hepatitis C in the United States has steadily decreased over the past 2 decades in all ethnic groups. However, the prevalence of the disease remains disproportionately high among Hispanic and African American groups compared with NHW.^{14,50,51} Data from NHANES III indicate that 3.2% of African American and 2.1% of

Hispanic persons living in the United States are anti-hepatitis C virus (HCV) seropositive in contrast to 1.5% of NHW persons.¹⁴ Among anti-HCV positive participants in NHANES III, the prevalence estimates of different HCV genotypes were similar in Hispanic, NHW, and African American populations (Table 1).⁵² Analysis of data from the National Center for Health Statistics demonstrate that age-adjusted mortality rates from cirrhosis due to HCV are more than 2-fold higher in Hispanic compared with NHW persons (3.3 per 100,000 vs 1.46 per 100,000, respectively).⁴⁵

Among the Hispanic population, injection drug use has been identified as the most common risk factor for HCV infection.^{53,54} Specific behavioral patterns more prominent in this ethnic group include higher frequency and longer duration of drug use, nonaseptic techniques, and paraphernalia sharing.⁵³ Hispanic persons are also less likely than NHW persons to be tested for HCV, even in the presence of an acknowledged risk factor.⁵⁴

Evolution of hepatitis C is more rapid in the Hispanic compared with other ethnic groups with more extensive portal inflammation and more rapid fibrosis progression than in the NHW and African American groups.⁵⁵ Faster progression rates to fibrosis among Hispanic persons persists even after adjusting for age and specific comorbid conditions such as diabetes mellitus, hyperlipidemia, and alcohol abuse.⁵⁶ The exact mechanisms responsible for these important ethnic variations have not been elucidated and some authors have suggested that NAFLD may be a significant cofactor for fibrosis. This hypothesis is supported, at least partially, by data demonstrating an increased prevalence of hepatic steatosis in Hispanic (79%) versus NHW (47%) persons infected with HCV.^{55,56}

Hispanic patients with hepatitis C are more likely than other ethnic groups to meet established criteria for antiviral therapy.⁵⁷ For example, they are more likely to have chronic hepatitis with significant fibrosis (bridging fibrosis or higher) on biopsy, compensated liver disease, and acceptable laboratory results (total bilirubin <1.5 g/dL, hemoglobin >12 g/dL for men and >13 g/dL for women, neutrophils >1500/mm³, platelets >85,000/mm³, and serum creatinine <1.5 mg/dL).⁴⁵ However, the percentage of Hispanic patients referred for treatment with interferon and ribavirin is significantly lower than NHW patients (40% vs 71%, respectively).⁵⁷ Data from a recent clinical trial showed that Hispanic patients infected with HCV genotype 1 have significantly lower sustained virologic response (SVR) rates after treatment with pegylated interferon alfa-2a and ribavirin when compared with NHW patients (34% and 49%, respectively).⁵⁸ Ethnicity remained an independent predictor of response to therapy even after adjusting for characteristics such as body mass index, sex, and HCV ribonucleic acid level, which are known to be associated with response to therapy. Retrospective data also show differences in treatment response rates between Hispanic and NHW patients infected with other HCV genotypes. For example, Hispanic patients infected with genotypes 2 and 3 also had significantly lower SVR rates than NHW patients (65.9% vs 87.3%) after treatment with pegylated interferon alfa-2a and ribavirin.⁵⁹ While both groups had similar rates of compliance with therapy, Hispanic patients had a higher relapse rate after achieving end-of-treatment response (25% vs 7.5%).⁵⁹ Genetic polymorphisms near the IL-28B gene encoding interferon-A-3 have been associated with differences in response to treatment in multiethnic populations infected with HCV genotype 1. The frequency of this polymorphism (CC genotype) is comparable in Hispanic and NHW

populations (34.6% and 38.5%, respectively) and both groups have a similar 2-fold greater rate of SVR after treatment with standard therapy when this polymorphism is present.⁶⁰

Similar to NHW and African American patients, HCV is the most common diagnosis in adult Hispanic patients listed for liver transplantation in the United States.⁶¹ African American persons have inferior 2-year patient and graft survival rates (69% and 62%) following liver transplantation for HCV-related cirrhosis but Hispanic and NHW persons have comparable 2-year patient (81% and 80%, respectively) and graft survival (76% and 75%, respectively) rates.⁴⁹

Chronic Hepatitis B

The NHANES database is also the major source of epidemiologic data on hepatitis B in the United States suggesting a prevalence of chronic hepatitis B virus (HBV) infection of 0.27%.¹⁵ However, these surveys exclude the incarcerated, homeless, and institutionalized, thus the prevalence of chronic HBV infection is likely to be underestimated. Even with these limitations, NHANES data reveal that the epidemiology, age at the time of initial infection, and mode of transmission of HBV as well as the rate of progression from acute to chronic HBV infection vary widely among ethnic groups.⁶² For example, African American persons have the highest prevalence of chronic HBV infection (0.83%) followed by NHW (0.09%), and Hispanic (0.07%) persons.¹⁵ However, in the Hispanic group, foreign-born individuals have a much higher prevalence of HBV infection compared with US-born Hispanic and NHW individuals. Encouragingly, over the past 20 years, NHANES data have shown a marked decline in age-adjusted prevalence rates of HBV infection among Hispanic immigrants (past and current infection) from 4.3% in the 1988–1994 surveys to 2.2% in the 1999–2006 surveys.¹⁵ The epidemiology of different HBV genotypes among ethnic populations in the United States, particularly Hispanic, has not been extensively studied. A small study in California showed that among Hispanic patients with chronic hepatitis B, the predominant genotypes are H, A, and B, with genotypes H and B being more common in Hispanic than in NHW persons (Table 2).⁶³

The main risk factors for HBV infection identified in Hispanic individuals are injection drug use (35.8%), sexual activity, men who have sex with men (12.7%), and heterosexual contact (7.7%).⁶⁴ This pattern is different from other ethnic groups, with heterosexual contact being the most significant risk factor in African American individuals (47%) and men who have sex with men in NHW individuals (62%).⁶⁴ HBV vaccination rates are disproportionately lower in Hispanic individuals. The 2004 National Health Interview Survey revealed that 27% of Hispanic adults reported having received at least 1 dose of the HBV vaccine compared with 38% of African American and 35% of NHW adults.⁶⁵

In contrast to HCV, there is a paucity of data on the impact of Hispanic background on the progression of chronic HBV infection to cirrhosis and response to antiviral therapy. Two-year patient and graft survival rates following liver transplantation for HBV infection are similar in Hispanic (77% and 77%), NHW (74% and 70%), and African American (80% and 71%) individuals.⁶⁶

Viral Hepatitis and HIV Coinfection

Viral hepatitis B and C and human immunodeficiency virus (HIV) share common routes of transmission and coinfection is frequent. Therefore, all HIV-infected persons should be screened for hepatitis B and C infection.⁶⁷ Hispanic and African American injection drug users are at highest risk of coinfection.⁶⁸ For example, Fisher et al⁶⁹ studied a large group of injection drug users in California and found that HBV/HCV coinfection occurred more frequently in Hispanic (60%) compared with African American (44%) or NHW (39%) individuals. Data from a more diverse group of patients demonstrated that HIV-positive African American and Hispanic individuals have a greater than two-fold prevalence of HIV/HBV/HCV triple infection compared with NHW individuals (43.8% vs 38.2% vs 18%, respectively) (Table 3).⁷⁰

Coinfection of HIV and HCV has also been considered a risk factor for more severe hepatic steatosis in Hispanic persons; however, 2 trials which included liver biopsy data showed no significant differences in the prevalence of hepatic steatosis among Hispanic, NHW, and African American patients with HIV/HCV coinfection.^{71,72}

Treatment of HCV in patients coinfecting with HIV results in lower SVR rates compared with HIV-negative controls. Furthermore, ethnic variations in response to anti-HCV therapy in HIV-infected individuals have also been described. For example, Sherman et al⁷³ assessed early virologic response (EVR), an accurate predictor of SVR, in HIV/HCV coinfecting patients. Similar to HCV mono-infected individuals, Hispanic and African American individuals coinfecting with HIV were much less likely than NHW individuals to achieve early virologic response after 12 weeks of therapy with pegylated interferon and ribavirin (56% vs 42.3% vs 65.5%, respectively).

Hepatocellular Carcinoma

Data from the Centers for Disease Control and Prevention's National Program of Cancer Registries (NPCR) and the Surveillance Epidemiology and End Results (SEER) database (2001–2006) identify significant ethnic variations in the incidence of hepatocellular carcinoma (HCC) in the United States.¹⁶ In general, Hispanic individuals have higher incidence rates of HCC compared with African American and NHW persons (5.7 vs 4.2 vs 2.6 per 100,000, respectively).¹⁶ Furthermore, the mean yearly age-adjusted incidence rate of HCC is 2.7 times higher in Hispanic than in NHW individuals.⁷⁴ Hispanic persons also had the greatest absolute increase in the incidence of HCC from 1992 to 2004 (4.9–7.6 per 100,000 persons/year).⁷⁵ Perez et al⁷⁶ studied a Hispanic population concentrated along the US-Mexico border in Texas and found a higher incidence rate of HCC (7.9 per 100,000 persons), likely reflecting a higher burden of important risk factors in this population, including history of nonspecified hepatitis, blood transfusion before 1991, alcohol abuse, and illicit drug use. Data from the SEER database also revealed that Hispanic persons have a 9% higher mortality risk from HCC than NHW persons and, similar to African American persons, they have the shortest 1- and 3-year survival rates amongst all ethnic groups in the United States, even after adjusting for time of diagnosis, receipt of therapy, age, and gender.¹⁷ Analysis of HCC-related mortality in Texas and California (which together contain half the total Hispanic population of the United States) demonstrates that mortality

rates for US-born Hispanic men are more than twice as high than those for immigrant Hispanic men in California and 65% higher in Texas.⁷⁴ The authors speculated that this disparity could be attributed to a greater prevalence of risk factors for HCC (ie, HCV infection, greater alcohol consumption, NAFLD, etc.) among the more acculturated US-born Hispanic population. Data from a small retrospective study suggest that chronic HBV infection is implicated in the development of HCC in up to 44% of Hispanic compared with 28% of African American individuals with HCC.⁷⁷

Hispanic individuals have a higher proportion of localized HCC at the time of diagnosis compared with other ethnic groups; however, they are 34% less likely to receive local ablation or surgical resection than NHW persons.^{17,74} These disparities affecting Hispanic individuals with HCC are likely to result from differences in access to healthcare services, socioeconomic inequalities, as well as important language and cultural barriers. Although data about patient survival following surgical resection or transcatheter arterial chemoembolization for HCC is limited, a retrospective analysis showed no significant differences between ethnic groups.⁷⁸ Analysis of the SEER database demonstrates that after adjusting for other variables, Hispanic and NHW persons with HCC have a similar likelihood of receiving a liver transplant; however, there is a difference, although not statistically significant, favoring NHW individuals.⁷⁹ Two-year patient and graft survival rates following liver transplantation for HCC are comparable between Hispanic and NHW persons (83% and 76% for patient survival, and 78% and 73% for graft survival, respectively).¹⁶ These 2 ethnic groups, however, have a significant patient and graft survival advantage when compared with the African American group (57% patient survival and 51% graft survival).⁴⁹

Other Less Prevalent Chronic Liver Diseases

Autoimmune hepatitis—Epidemiologic data about autoimmune hepatitis (AIH) in different ethnic groups in the United States, and particularly among the Hispanic group, is limited. Genetic studies suggest that susceptibility alleles for type 1 AIH (HLA-DRB1*1301 and DRB1*0301) are similar in Hispanic populations from different South American countries.^{80–83} Furthermore, protracted hepatitis A virus infection in Hispanic children has also been associated with 1 of these alleles (DRB1*1301). Based on this finding, investigators have hypothesized that prolonged exposure to hepatitis A virus may be an important factor that decreases self-tolerance and may increase the risk of AIH in Hispanic persons.⁸⁴ There are no data analyzing variations in response to treatment for AIH among different ethnic groups; however, recurrence rates of AIH after liver transplantation are comparable in Hispanic and NHW children (22% and 29%, respectively) and significantly lower than in African American children (71%).⁸⁵ Among adults, ethnic-specific data on recurrence of AIH after transplantation are not available. Hispanic individuals have lower 2-year patient and graft survival rates (70% and 62%) following liver transplantation compared with NHW (83% and 78%) and African American individuals (78% and 70%).⁶⁶

Cholestatic liver diseases—Primary biliary cirrhosis (PBC) is more prevalent in NHW individuals, particularly women. Hispanic and African American individuals often have more advanced and more severe disease compared with NHW individuals at the time of

diagnosis.⁸⁶ For example, compared with NHW, Hispanic individuals with PBC are more likely to have hepatomegaly, icterus, cutaneous excoriations and hyper-pigmentation, more intense pruritus, and more pronounced muscle wasting. However, all 3 groups have similar duration of the disease after adjusting for age at the time of diagnosis.⁸⁶ Some genetic markers potentially associated with the pathogenesis of the disease (HLA-DRB1*01 and HLA-DRB1*04) have been studied in Hispanic populations and suggest common geographic origins of Mexican individuals with PBC and populations of southern Europe.⁸⁷ There are no data analyzing ethnic differences in response to pharmacologic therapy in patients with PBC. However, 2-year patient and graft survival rates are comparable between Hispanic, NHW, and African American individuals.⁴⁹ Primary sclerosing cholangitis (PSC) is the main diagnosis in 1.3% of Hispanic patients listed for liver transplantation. In contrast, PSC as a listing diagnosis is more frequent in NHW (5.4%) and African American (6.4%) patients.⁸⁸ Data from the United Network for Organ Sharing (UNOS) liver transplant registry showed similar 5-year graft survival rates in Hispanic persons receiving a liver transplant for PBC and PSC (75.3% and 77.1%, respectively) compared with NHW (78.1% and 73.6%, respectively) persons.⁸⁹ Hispanic individuals have a higher incidence of PBC and African American individuals have a higher incidence of recurrent PSC and AIH during the post-liver transplant period.⁹⁰ Much less is known about primary sclerosing cholangitis which remains largely understudied in Hispanic populations in the United States.

Conclusions

The major characteristics of chronic liver disease in Hispanic persons are summarized in Table 4. The Hispanic population represents the largest and fastest growing minority group in the United States. Despite an overall relative survival advantage of Hispanic versus NHW patients, liver diseases are an important and disproportionate cause of morbidity and mortality for the Hispanic population in the United States. Data suggest a higher incidence, more aggressive pattern, and overall worse outcome after treatment for many of these diseases in Hispanic compared with NHW and African American persons. These observations underscore the importance of recognizing differences during clinical assessment and treatment of Hispanic patients, which often includes consideration of cultural and linguistic barriers. We conclude that chronic liver disease is an important health disparity area for Hispanic persons and thus, an area in need of public health and research priority. Areas for future research include addressing ethnic-specific characteristics that could potentially be translated into better strategies for prevention, improvement of therapeutic outcomes, and ultimately increased survival in Hispanic persons with chronic liver disease.

Abbreviations used in this paper

AIH	autoimmune hepatitis
HBV	hepatitis B virus
HCC	hepatocellular carcinoma
HCV	hepatitis C virus

HIV	human immunodeficiency virus
NAFLD	nonalcoholic fatty liver disease
NHANES	National Health and Nutrition Examination Survey
NHW	non-Hispanic white
PBC	primary biliary cirrhosis
PSC	primary sclerosing cholangitis
SEER	surveillance epidemiology and end results
SVR	sustained virologic response.

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Table 1

Ethnic Distribution of HCV Genotypes in the United States

Ethnicity	Percent distribution by genotype		
	1	2	3
Hispanic	71.2	13.9	14.9
NHW	69.6	19.9	10.5
African American	90.9	7.7	1.3

NOTE. Adapted from Nainan OV, Alter MJ, Kruszon-Moran D, et al. Hepatitis C virus genotypes and viral concentrations in participants of a general population survey in the United States. *Gastroenterology* 2006;131: 478-484.⁵²

Table 2

Ethnic Distribution of HBV Genotypes

Ethnicity	Percent distribution by genotype							
	A	B	C	D	E	F	G	H
Hispanic	22	22	0	0	0	0	11	33
NHW	67	2	5	14	0	2	11	2
Asian	6	19	71	3	0	0	0	0

NOTE. Adapted from Diaz T, Des Jarlais DC, Vlahov D, et al. Factors associated with prevalent hepatitis C: differences among young adult injection drug users in lower and upper Manhattan, New York City. *Am J Public Health* 2001;91:23–30.⁵³

Table 3

Ethnic Distribution of the Prevalence of Coinfection With HBV/HCV Among HIV-Positive Patients

	HIV/HBV (n = 252)	HIV/HCV (n = 1411)	HIV/HBV/HCV (n = 89)
Hispanic	17.5	39.2	38.2
NHW	13.5	14.4	18
African American	67.1	44.6	43.8

NOTE. Adapted from Kim JH, Psevdos G Jr, Suh J, et al. Co-infection of hepatitis B and hepatitis C virus in human immunodeficiency virus–infected patients in New York City, United States. *World J Gastroenterol* 2008;14:6689–6693.⁷⁰

Table 4**Main Characteristics of the Most Prevalent Chronic Liver Diseases in the Hispanic Population in the United States**

NAFLD	<p>The prevalence is almost 2-fold higher in the Hispanic than in the African American population and 1.4 times higher than in the NHW population.</p> <p>Genetic polymorphisms of a specific allele (<i>PNPLA3</i>) are associated with ethnic variations in hepatic fat content.</p> <p>Hispanic individuals with NAFLD have more advanced fibrosis than other ethnic groups; age and an AST/ALT ratio > 1 are independent predictors of advanced fibrosis in this population.</p> <p>There is a need for culturally adapted interventions to address risk factors associated with NAFLD.</p>
Alcoholic cirrhosis	<p>Hispanic individuals have the highest prevalence of alcoholic liver disease.</p> <p>Elevations of biological markers of hepatocellular injury (AST, ALT, and GGTP) are more pronounced and more common in alcohol drinkers of Hispanic background.</p> <p>Ethnic-matching patients and providers may result in greater effectiveness of brief interventions by the healthcare provider.</p>
Hepatitis C	<p>Injection drug use is the most common risk factor in Hispanic individuals.</p> <p>Hispanic individuals exhibit faster progression to fibrosis.</p> <p>SVR is significantly lower in Hispanic compared with non-Hispanic individuals after treatment with interferon alfa-2a and ribavirin for HCV genotypes 1, 2, and 3.</p>
Chronic hepatitis B	<p>Genotypes A and B predominate in Hispanic individuals.</p> <p>Need for data comparing therapeutic response among ethnic groups.</p>
Hepatocellular carcinoma	<p>The incidence of HCC in Hispanic individuals is 2.7 times higher than in NHW individuals.</p> <p>Mortality from HCC is 9% higher than in NHW individuals.</p>

ALT, alanine aminotransferase; AST, aspartate aminotransferase; GGTP, gamma-glutamyl transpeptidase.