



## H41 A Broad Demographic Analysis of Chronic Ethanol Deaths and Sequelae From Two Different Medical Examiner Offices

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**Learning Overview:** After attending this presentation, attendees will understand the demographics of chronic ethanol-related deaths in New Mexico and Jefferson County, AL.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by highlighting trends associated with chronic ethanol deaths across racially and ethnically diverse populations.

**Background:** Mortality due to cirrhosis in the United States has increased substantially over the past two decades. Liver disease caused by chronic ethanol abuse has fueled this increase and has disproportionately affected younger people.<sup>1</sup> Ethanol-related mortality, particularly liver disease caused by ethanol, has disproportionately affected American Indian populations.<sup>2</sup>

New Mexico's population is 2,103,586 and is comprised of 8.6% American Indian/Alaska Native, 1.7% Asian/Pacific Islander, 2.2% Black/African American, 48.5% Hispanic, and 39% non-Hispanic White. In the United States as a whole, 0.8% of the population is American Indian/Alaska Native.<sup>3</sup> Ethanol-related mortality rates in New Mexico have historically been highest among American Indians and, while ethanol-related mortality declined among non-Hispanic Whites in New Mexico over recent decades, it has remained high in American Indian populations.<sup>4</sup>

**Purpose:** The intent of this study is to compare ethanol-related deaths in New Mexico to those in Jefferson County, AL, by examining data from the medical examiners' offices in both locations. Jefferson County's population is estimated at 659,197, with 53.2% non-Hispanic Whites, 43.4% Black/African American, 0.3% American Indian/Alaska Native, 3.9% Hispanic, and 1.8% Asian/Pacific Islander.<sup>5</sup> By comparing ethanol-related mortality between these racially diverse populations, this study will identify demographic trends, particularly related to the ages at which people succumb to complications of ethanol abuse, and will also examine autopsy findings indicating an ethanol-related death.

**Methods:** To examine a diverse population, five years of data were retrieved from the New Mexico Office of the Medical Investigator (OMI) and Jefferson County Coroner/Medical Examiner (JCCMO) databases. Cases included natural deaths directly related to chronic ethanol abuse. Analysis of chronic ethanol abuse-related diagnoses used only cases with autopsy verified findings.

Analysis was performed using Statistical Analysis Software (SAS). This study analyzed continuous variables with a Wilcoxon rank-sum test, compared categorical variables using either a chi-square test or Fisher exact test. The significance level was 0.05.

**Results:** Given the racial and ethnic differences between these two offices, an initial control comparison using White and Black chronic ethanol-related deaths indicated no significant difference. The mean age at death from chronic ethanol abuse increased between 2013 and 2018 at both OMI and JCCMO, with a mean age at death of 47.4 years in 2013 and 56.5 years in 2018. Age at death among autopsied cases was lower in New Mexico (47.2 years  $p < 0.007$ ) compared to Jefferson county (51.3 years), possibly due to the younger age at which American Indians died from chronic ethanol abuse (45.3 years,  $p < 0.0001$ ). Regarding sex, women died significantly younger than men ( $p < 0.0001$ ), and this can be explained by the disproportionate number of American Indian females dying young from chronic ethanol abuse (39.4 years).

Autopsy findings demonstrated American Indians had a younger mean age at diagnosis of cirrhosis (42.5 years,  $p < 0.0026$ ), steatosis (42.1 years,  $p < 0.0026$ ), cardiomyopathy (38.7 years,  $p < 0.0016$ ), and jaundice (37.3-year,  $p < 0.01$ ) compared to the rest of the population. Additionally, American Indians comprised a high proportion of cases with varices and cardiomyopathy (35%, and 31%, respectively).

Despite comprising only 8.6% of New Mexico's population, American Indians made up 21.5% of chronic ethanol abuse cases analyzed. Furthermore, American Indian females represented 29% of the female deaths. These dramatic results suggest that factors leading to ethanol abuse and early death within the American Indian population need further investigation.

### Reference(s):

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3. *Health Indicator Report of New Mexico Population—Race/Ethnicity*. published on 1/24/2018, [https://ibis.health.state.nm.us/indicator/view/NMPopDemoRaceEth.NM\\_US.html](https://ibis.health.state.nm.us/indicator/view/NMPopDemoRaceEth.NM_US.html).
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### Chronic Ethanol, Alcoholism, Alcohol Abuse

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