Cannabinoid Use and Total Hospital Cost in Patients With Cirrhosis: A Study Based on Nationwide Inpatient

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Cannabinoid Use and Total Hospital Cost in Patients With Cirrhosis: A Study Based on Nationwide Inpatient

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Introduction

The cannabinoid is becoming legal in an increasing number of states in the USA for both medical and recreational use. However, substantial controversy still exists about the public health consequence of these changes. Conflicting evidence exists regarding the effect of cannabinoid use on patients with cirrhosis. We aim to evaluate the impact of cannabinoid use on the total hospital cost of patients admitted because of cirrhosis using Nationwide Inpatient Sample (NIS).

Methods

Nationwide inpatient sample (NIS) was analyzed from 2017 to 2018 for patients (age >18 years) with a primary diagnosis of liver cirrhosis (LC) (N= 41,0825) and a secondary diagnosis of cannabinoid use (N=12,325) using disease-specific ICD-10 code. The total hospital charges were compared in LC patients with and without cannabinoid use. Multiple confounders like Charlson comorbidity index (CCI), coronary artery disease, opioid use, anxiety, depression, congestive heart failure, smoking, hyperlipidemia, alcohol intake, diabetes mellitus, myocardial infarction, chronic kidney disease, gender, age, race, hospital region, hospital teaching status, hospital bed size, and patient's economic status were included to adjust for biases. The univariate and multivariate logistic regression analysis was used in STAT MP 16.1 to measure total hospital charges.

Results

Cannabinoid use was found in 3% (12,325) of total cirrhosis-related admissions (410,825). The mean age of LC patients with cannabinoids use was 48 years old. There was a male predominance noticed in the cannabinoids use group (68%). Cannabinoids significantly lower total hospital charges $11,566 (p = 0.000, 95% CI 15,533-7,599) independent of other confounders. Factors contributing to higher cost include higher Charlson comorbidity index (CCI), patients admitted to teaching hospitals, patients admitted to medium/large bed-sized hospitals, patients living in household income of >25th percentile, and patients admitted to the western region (Table 1).

Discussion

Cannabinoid use is associated with decreased total hospital cost of patients admitted because of cirrhosis. Future prospective studies are needed to conclude a clear therapeutic role of cannabinoids in patients with cirrhosis.

Table 1: Total Hospital Charge

Variable (Total Charge)	Coefficient	p-Value	95% Confidence Intervals
Cannabinoid	-11,566.74	0.000	-15,533.82—-7,599.65
Charlson Index	4,459.62	0.000	3,730.31—5,188.93
History of Coronary Artery Disease	-1,336.87	0.364	-4221.18—1,547.44
Opioid Use	-11,191.19	0.000	-15,607.09—-6,775.29
Anxiety	-2,739.91	0.023	-5,100.98—-378.84
Depression	-7,260.91	0.000	-9,590.07—-4,931.76
History of Congestive Heart Failure	-2,604.25	0.316	-7,699.51—2,491.01
Smoking	-7,425.24	0.000	-10,023.00—-4,827.48
Hyperlipidemia	-7,466.22	0.000	-9,923.74—-5,008.70
Alcohol Intake	-11,684.26	0.000	-14,464.71—-8,903.82
Diabetes Mellitus	-16,100.92	0.000	-18,609.81—-13,592.03
Myocardial Infarction	-18,977.89	0.000	-22,736.36—-1,5219.42
Chronic Kidney Disease	3,537.26	0.074	-341.99—7416.50
Weekend Admission	-642.29	0.557	-2,784.04—1,499.46
Age	-546.20	0.000	-646.32—-446.08
Female	-1,362.69	0.148	-3,207.90—482.51
Race (compared to White)			
Black	-176.48	0.920	-3,599.82—3,246.86
Hispanic	3,088.78	0.056	-80.25—6,257.82
Asian or Pacific Islander	15,360.99	0.066	-1,002.93—31,724.91
Native American	-15,795.36	0.000	-22,410.39—-9,180.33
Other	11,588.64	0.001	4,673.63—18,503.66
Median Household Income for Patient's ZIP code (compared to 0–25th percentile)			
26th–50th percentile	5,408.85	0.000	2,873.65—7,944.05
51st–75th percentile	10,432.49	0.000	7,088.04—1,3776.95
76th-100th percentile	19,257.31	0.000	1,4754.73—23,759.89
Hospital Teaching Status	23,968.23	0.000	2,0216.32—27,720.14
Region of Hospital (compared to Northeast)			
Midwest	-14,253.32	0.000	-21,560.49-6946.15
South	-7,183.77	0.029	-13,617.48—-750.05
West	13,067.98	0.008	3,436.60—22,699.36
Hospital Belsize (compared to small)			
Medium	11,838.69	0.000	8,109.10—15,568.27
Large	30,021.97	0.000	25,129.28—34,914.65

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