Is chronic cannabis use associated with an increased risk that Monitored Anesthesia Care (MAC) will be required for elective endoscopic procedures?

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Abstract Summary

Studies have been conducted to determine the factors associated with increased sedation requirements. However, there is little in the literature examining the impact of cannabis use on sedation requirements and no relevant studies in the veteran population. A retrospective review of elec tonic colonoscopy procedures performed at the Richard L. Roudebush Veterans Administration Medical Center (VAMC) will be undertaken to examine if cannabis use increases sedation requirements. Key words: cannabis, sedation, anxiety.

Introduction

In the Endoscopy Department at the Richard L. Roudebush VAMC, procedural sedation is primarily given by the nursing staff at the direction of a Gastroenterologist. However, patients are scheduled to receive MAC sedation, given by an anesthesia provider, when they are determined to be at high risk for failing to achieve an adequate sedation level when given Fentanyl and Versed provided by a nurse. Recently, there has been an increased demand for MAC sedation in the health care sector for the general population [1]. In 2013, there was 47.6% and 53% increase use of MAC sedation for Medicare and privately insured patients, respectively [6]. The use of MAC sedation in the Veterans Health Administration has more than doubled, from 4% in 2000 to 9.3% in 2013 [1].

Cannabis and Anxiety

There is an association between anxiety and the use of cannabis:

- The rates of PTSD and CUD both increased from 2002-2007 and the percentage of veterans with a CUD who also had a psychiatric diagnosis was 70% [2].
- For veterans with PTSD and a Substance Use Disorder, cannabis was the substance implicated in 22.7% of the patients [3].
- For veterans who use cannabis, those that defined their cannabis use as medicinal (rather than recreational) had more symptoms of arousal when cued about experiences during combat [5].

The link between CUD and PTSD is strong, but it is unknown if cannabis is used to self-medicate for the symptoms associated with PTSD or is unrelated.

Inclusion and Exclusion Criteria

Inclusion Criteria:


Exclusion Criteria:

Based on the results of two studies [4,8], all confounding variables identified as increasing sedation requirements, including female gender, low BMI, opioid and benzodiazepine use, an alcohol use disorder, and anxiety (PTSD), will be controlled. Patients with an alcohol use disorder, with an ICD-10 code F10 or ICD-9 code of 303.9 or 305.0, will be excluded along with patients with an active substance implicated in 22.7% of the patients [3].

Variables of Interest: Age, BMI, CUD, PTSD, Fentanyl dose, and Versed dose (Table 1).

Table 1: Coding instructions for study variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Variable Description</th>
<th>Level of Measurement</th>
<th>Coding Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>Identification number</td>
<td>Text</td>
<td>None</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>Continuous</td>
<td>None</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
<td>Continuous</td>
<td>None</td>
</tr>
<tr>
<td>CUD</td>
<td>Cannabis Use Disorder</td>
<td>Categorical</td>
<td>1= Yes, 2= No</td>
</tr>
<tr>
<td>PTSD</td>
<td>PTSD Diagnosis</td>
<td>Categorical</td>
<td>1= Yes, 2= No</td>
</tr>
<tr>
<td>Fentanyl Dose</td>
<td></td>
<td>Continuous</td>
<td>None</td>
</tr>
<tr>
<td>Versed Dose</td>
<td></td>
<td>Continuous</td>
<td>None</td>
</tr>
</tbody>
</table>

Methods

The goal is to determine the mean drug dose requirements of the study groups. The groups will then be compared to determine the influence of cannabis use on sedation requirements and the impact anxiety paired with a CUD has on sedation requirements.

Study Group One: Patients with a CUD excluding those with an ICD code for PTSD.

Study Group Two: Patients with a CUD and diagnosis of PTSD.

Study Group Three: The control group, will consist of study participants excluding those with a CUD or PTSD diagnosis.

Anxiety has been linked to increased sedation needs and cannabis has not, theoretically, Group Two with a CUD and PTSD, should have higher mean drug dosages compared to Groups One and Three. Additionally, the CUD group and the control group should have similar mean drug dosages.

Data Analysis

A multivariate analysis of variance (MANOVA) will be performed to evaluate the groups on the two dependent variables, the mean Fentanyl and mean Versed doses. The MANOVA analyses the two dependent variables as one and can determine if the difference in the means of the two groups happened by chance [7]. Performing a MANOVA instead of multiple analyses on each of the dependent variables separately decreases the chance of a Type I error by decreasing the number of analyses. A MANOVA analysis is appropriate for this study because it allows for more than two independent variables and two dependent variables that correlate with each other and are singular in nature as they both define sedation requirements. The mean scores of the Fentanyl and Versed doses for the groups are also analyzed separately in a MANOVA analysis [7].

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References


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