The Protective Effects of Smoking on Catatonia

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Introduction

Our null hypothesis is: There is no difference between smokers and non-smokers within our catatonic patient population.

Catatonia is a psychomotor syndrome that frequently occurs in the context of schizophrenia, and involves a range of behavioral, motor, and cognitive dysfunctions. These can include symptoms such as; hyperactivity, impulsivity, agitation, mutism, stupor, rigidity and withdrawal symptoms. (Walther, 2017 & Koukouli, 2017)

Few studies are present that address the relationship between smoking and catatonia

Many symptoms are associated with the prefrontal cortex (PFC) (Dehaene, 2011) and are modulated by nicotinic acetylcholine receptor (nAChR) activation by cholinergic stimuli. (Bloem, 2014) The activity of the PFC is altered in neuropsychiatric disorders, (Raichle, 2015 & Buckner, 2008) including schizophrenia (Barch, 2001).

Tobacco smoking has been epidemiologically proven to have a protective factor in Parkinson's disease (another movement disorder) (Ascherio, 2016).

Methodology

The Bioinformatics department of UMKC School of Medicine performed a cohort retrospective data-analytic on national electrical medical records of the Cerner Data Warehouse Health Facts, including 930 unique patients.

Actual anonymized, HIPAA-compliant data was compiled with a data plan of:

- Catatonia Diagnosis
- Inpatient, Emergency and Observational Admissions
- All Ages
- All Medications during admission

Data was cleaned, all words converted to numerical values, duplicate entries were consolidated to a single patient line and coded appropriately. (Code Book available upon request.) Trends in data were identified, stratified by smoking, and limited to

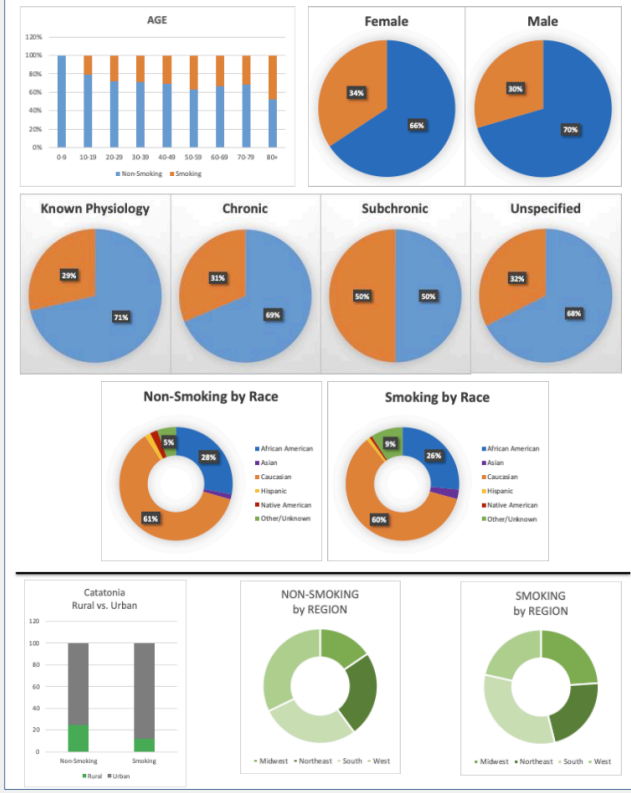
- Non-smoking vs. smoking
- Age in years (grouped by decade
- Gender
- Race
- Census Region
- Urban vs. Rural

Data was analyzed in Microsoft Excel using a Chi-Square test to determine statistical significance ($p < 0.05$). Only the variables within the data set were used, which limited relationships and associations. No control was used

Results

Out of 930 catatonic patients, non-smoking patients outnumbered smoking patients 2:1 across all data fields analyzed. This trend remained consistent across race, sex, age, and type of catatonia, but proved statistically different between census region ($p < 0.001$) and between rural versus urban ($p < 0.001$).

Charts



Summary/Conclusion

- In our retrospective study of 930 catatonic patients, smoking patients represented the minority (31.8%) while non-smoking patients represented the majority (68.2%) of the catatonic population, across four types of Catatonia:
  - Catatonic Type Schizophrenia, Chronic State with Acute Exacerbation
  - Catatonic Type Schizophrenia, Subchronic State with Acute Exacerbation
  - Catatonic Type Schizophrenia, Unspecified State
  - Catatonic disorder due to known physiological condition
- Evidence showed a 2:1 non-smoking to smoking ratio across all fields analyzed.
- This trend remained consistent across race, sex, age, and type of catatonia.
- However there was statistical differences in the trend between census regions ($p < 0.001$) and between rural versus urban ($p < 0.001$).
- On the basis of evidence that elevated nicotine levels associated with smoking can improve certain schizophrenic symptoms, (Barch, 2001 & Hambsch, 2014) this trend was explored in the context of catatonia.
- Since no control was established during this analysis, additional studies are encouraged to determine if smoking confers a protective factor for catatonia among individuals diagnosed with schizophrenia, and whether census region or urban living has additional effects.

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