Characterization of Marijuana Usage in Individuals With and Without Non-Cancer Chronic Pain in the State of Maine Using the Behavioral Risk Factor Surveillance System (BRFSS)

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Introduction

- One in 3 Mainers experiences chronic pain[1], which is higher than the US national level (1 in 5).[2]
- Maine began to provide medical marijuana for chronic conditions in 2009, followed by legalization of recreational usage in 2016.[3] However, cannabis usage in Mainers with chronic pain remains unclear.
- To assess this, we obtained data from Maine's Behavioral Risk Factor Surveillance System (BRFSS), an annual randomized, anonymous telephone survey.[4]
- Maine's BRFSS began to collect cannabis usage information in 2017, asking the frequency of usage (Q1).
- Both tetrahydrocannabinol (THC) and cannabidiol (CBD) products were considered marijuana.
- Two follow-up questions regarding ways of use (Q2) and reasons for use (Q3) were added in 2020.

Methods

- We used data only from 2017-2020 when marijuana questions of interest were asked (n=40,173).
- To focus on non-cancer pain, we only included participants that answered "no" to ever having been diagnosed with skin cancer or any other type of cancer (n=31,668).
- As there were no direct questions regarding chronic pain, individuals with non-cancer chronic pain were identified as those that answered "yes" to ever having been diagnosed with arthritis, lupus, gout, or fibromyalgia (n=11,464). The controls were identified as individuals that said "no" to this same question (n=19,999).
- Lastly, for each of the 3 separate marijuana questions, we eliminated individuals that answered "don't know/unsure" or "refuse to answer" for either the question of interest or the participant's sex (305 for Q1, 13 for Q2, and 10 for Q3).
- Data were organized and graphed in Microsoft Excel. Statistical analyses were performed with IBM SPSS linear regression) and SigmaPlot (chi-squared tests).
- Results are presented based on participants' sex and pain status.

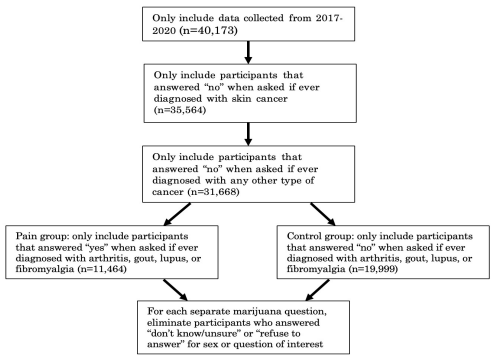

Fig 1. Process to identify pain and control groups

Results

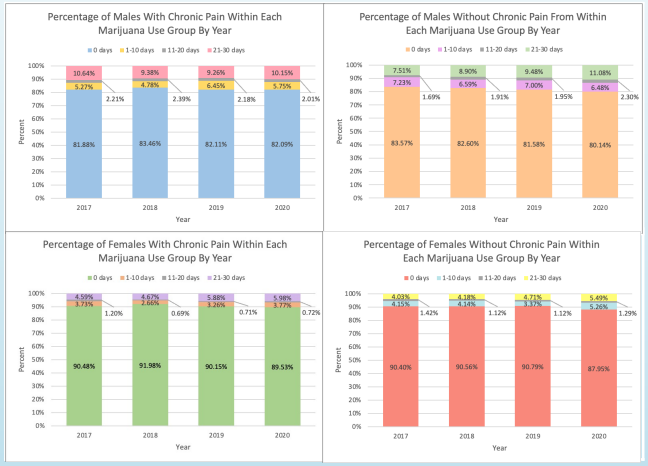

Fig 2. Percentage of males vs. females, with vs. without chronic pain, within each marijuana use group by year (pain group total n=11,360; control group total n=19,798). All participants were asked (Q1), "*During the past 30 days, on how many days did you use marijuana or cannabis?*" Answers were sorted into 4 groups: "no use" (0 days), "low use" (1-10 days), "moderate use" (11-20 days), and "high use" (21-30 days). Except for males with chronic pain, there was a steady increase of "high users" and gradual reduction of "non-users" in all sub-groups, which was significant in controls (p<0.05 for both sexes).

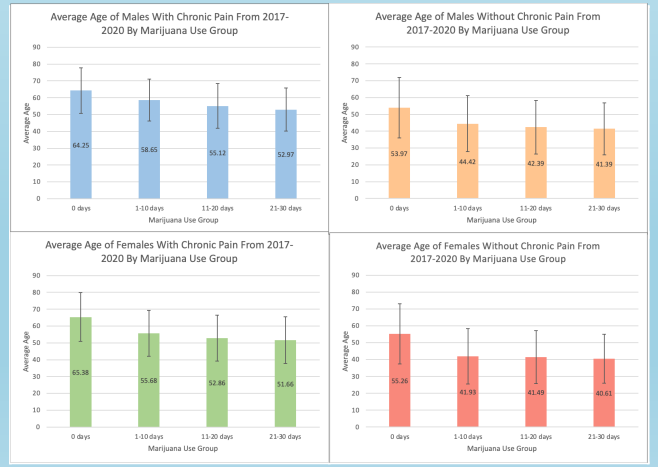

Fig 3. Average ages of males vs. females, with vs. without chronic pain, from 2017-2020 by marijuana use group (pain group total n=11,460; control group total n=19,798). Q1 was used for this figure as well. The average age of marijuana users was lower than non-users regardless of sex or pain status (p<0.05). Data are presented as mean ± SD.

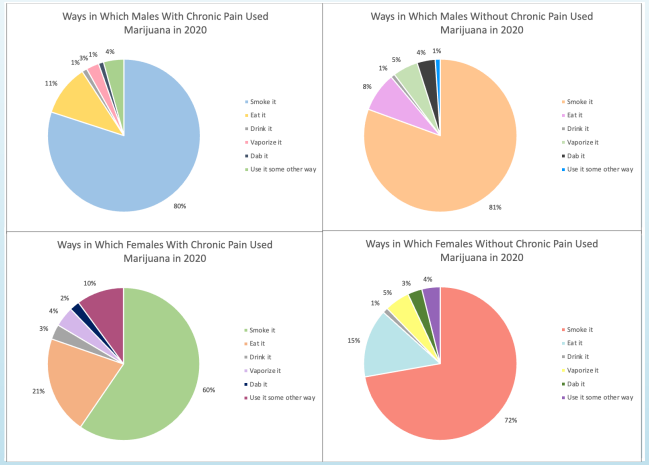

Fig 4. Ways in which males vs. females, with vs. without chronic pain, used marijuana in 2020 (pain group total n=373; control group total n=829). Only participants who used marijuana were asked (Q2), "*During the past 30 days, which of the following ways did you use marijuana the most often? Did you usually…*" and participants chose from the list shown in the figure legends. Regardless of pain status, males tended to "smoke it" more while females tended to "eat it" more (p<0.01), and "use it some other way" more (p<0.05). Participants with chronic pain, regardless of sex, reported more "other way" of usage (p<0.01).

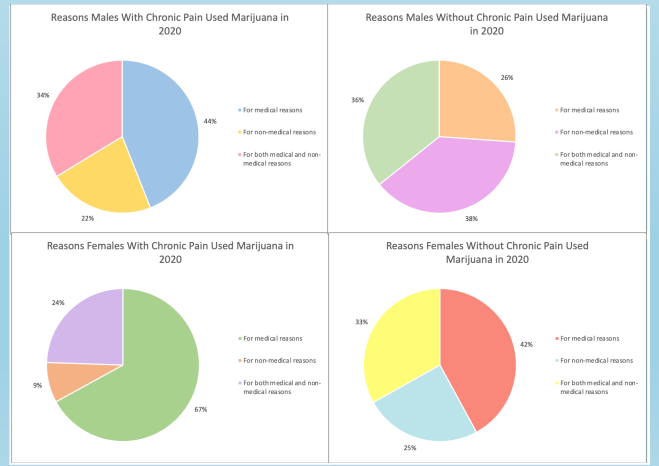

Fig 5. Reasons males vs. females, with vs. without chronic pain, used marijuana in 2020 (pain group total n=372; control group total n=826). Only participants who used marijuana were asked (Q3), "*When you used marijuana or cannabis during the past 30 days, was it usually…*" and participants chose from the list shown in the figure legends. Participants with chronic pain, regardless of sex, and females, regardless of pain, reported more medicinal usage (p<0.001).

Conclusions and Discussion

- Since the legalization of marijuana, more Mainers have started to use marijuana, with increasing frequency. "High users" are generally younger than "non-users."
- Females and chronic pain sufferers are more likely to use marijuana for medicinal reasons and are more likely to use marijuana in non-traditional ways.
- Further characterization of the association between cannabis usage and chronic pain is warranted, as data collection regarding cannabis usage is relatively new. Specifically, ways of use and reasons for use have only been assessed in Maine since 2020. Regional differences could be assessed as well.
- A particular limitation in this study was the exclusion of individuals that did not provide a male vs. female answer to their sex. Non-binary or gender fluid individuals may have chosen not to answer this question, preventing that population from being included in this characterization.
- The exclusion of participants with previous cancer diagnoses narrows the specific chronic pain population we characterized, so it may be warranted in the future to analyze marijuana use specifically in cancer patients as a unique population of interest.
- The nature of using BRFSS data precludes the possibility of longitudinal studies since random individuals are called via telephone, randomized, and anonymized; therefore, tracking an individual's amount of, reasons for, or ways of use of marijuana over time is not possible as it stands.
- Since BRFSS is conducted in all 50 states, it may be helpful to expand this research nationwide to better characterize marijuana usage in chronic pain patients beyond the state of Maine.

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References

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