A literature review of tobacco and cannabis co-use and cancer risk, including a nationwide assessment of cannabis legalization, and examination of co-use among young adults in Texas.

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Background

With a rising availability of cannabis in the United States there has also been an increase in the co-use of tobacco and cannabis. Vapes and other electronic delivery systems have further popularized the use of both cannabis and tobacco. The co-use of vaping tobacco and cannabis-based products has emerged as a significant public health concern, particularly young adults. Both tobacco and cannabis contain harmful and carcinogenic compounds[1], raising concerns about their combined effect on cancer risk.

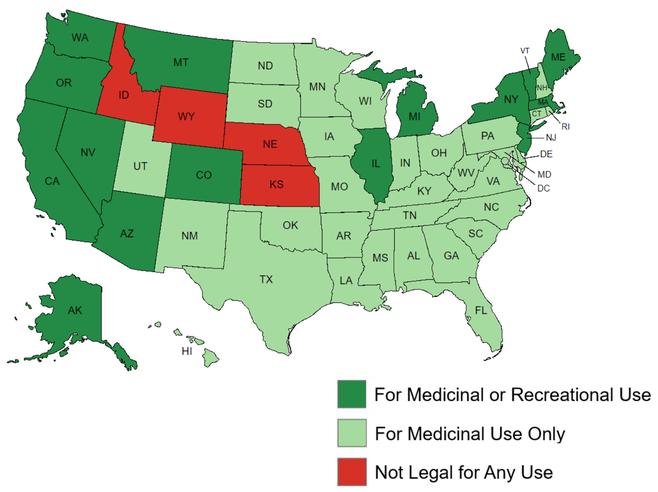
Methods

- A comprehensive literature search was performed in collaboration with a professional librarian to identify published studies on the co-use of cannabis and tobacco and its impact on cancer risk. The inclusion criterion consisted of studies of adults who co-use tobacco and cannabis. Secondary and tertiary sources were excluded
- A fifty-state review analyzed the legal status of cannabis possession and use across the United States.
- Evaluated prevalence among adults by analyzing the Texas Tobacco College Survey (TTCS) to understand the co-use of tobacco and cannabis in a variety of forms. This survey included responses from 7,542 participants who used at least one tobacco and/or cannabis product in the past 30-days at 27 Texas colleges and universities. Co-use is defined as the use of cannabis and tobacco products in the past 30 days.

Results

- Five of the forty-two studies reviewed evaluated the impact of tobacco and cannabis co-use on cancer risk. One was a case study[2], while the remaining four studies are cross-sectional studies. Three of the cross-sectional studies evaluated the concentration of carcinogenic biomarkers and compared it across exclusive tobacco users, exclusive cannabis users, and co-users of cannabis and tobacco. Two of those three studies found significant increases in carcinogenic biomarkers with co-use[1,3], while one study found significant increases with only tobacco use.[4] The remaining cross-sectional study found that cannabis co-used with conventional cigarettes causes greater carcinogen exposure than cannabis co-used with e-cigarettes.[5]
- The fifty-state review determined that 15 states have legalized possession of cannabis for recreational and medicinal use, whereas 4 states have not legalized possession for any purpose. The remaining 31 states only allow for medicinal use only.
- Out of 7,542 TTCS participants who used at least one tobacco or cannabis product in the past 30-days, 2,423 (32.1%) reported using both tobacco and cannabis in the past 30-days. Out of the 2,423 TTCS participants who co-used tobacco and cannabis, 197 (8.1%) only smoked tobacco and smoked cannabis, 271 (11.2%) only vaped tobacco and vaped cannabis, and the majority (73.7%) used tobacco and cannabis via mixture of smoking and vaping.

Legal Status of Cannabis Possession Across the U.S.



Texas Tobacco College Survey (TTCS) Prevalence Table

	Smoked/ Combustible (%)	Vaped/ Electronic (%)	Both- Smoked/ Combustible & Vaped/ Electronic (%)
Tobacco Only (n = 1,986)	26.7% (n = 531)	40.9% (n = 813)	32.3% (n = 642)
Cannabis Only (n = 3,133) *	31.1% (n = 973)	16.5% (n = 517)	30.2% (n = 945)
Co-use of Tobacco & Cannabis (n = 2,423) **	8.1% (n = 197)	11.2% (n = 271)	73.7% (n = 1,786)

Participants who currently used at least one tobacco product and/or cannabis in the past 30-days (N = 7,542)
*There are 698 current cannabis only users who did not smoke or vape cannabis (i.e., likely pure edible and/or tincture cannabis users), therefore these percentages do not add up to 100%
**Percentages do not add up to 100% because current cannabis users included in sample who did not smoke or vape cannabis (see above note)

Conclusion

- The systematic review revealed an under-researched association between the co-use of tobacco and cannabis with cancer. Most of the studies found a significant increase in carcinogenic biomarkers among individuals who co-used these substances compared to those who used tobacco alone.
- No correlation was found between state legalization and co-use with an increased risk of cancer because there was not enough data from enough states.
- The TTCS survey indicated that among those who used at least one tobacco or cannabis product in the past 30-days, 32.1% used both tobacco and cannabis in the past 30-days.
- Given the lack of substantial evidence between co-use and cancer risk, additional research should focus on longitudinal and mechanistic studies to better understand the long-term cancer risks from co-use.

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