

A Pilot Study to Explore Attitudes and Knowledge of *Cannabis sativa* L.



Colby Lester BSN OMS2, Matt Endicott MS, Mary Beth Babos PharmD
DeBusk College of Osteopathic Medicine, Lincoln Memorial University, Harrogate , TN

Abstract

As legalization and decriminalization of *Cannabis sativa* L. across the United States have increased recent use of the plant, misinformation about the plant and its potential harms and benefits have similarly exploded. Understanding of the patient perspective and respect for patient capacity for self-care are required elements of professionalism in the practice of osteopathic medicine, thus understanding knowledge of and attitudes toward *Cannabis* is pivotal to professionalism. This pilot convenience sample survey seeks to validate a survey instrument designed to explore the relationship between demographics, sources of information, and veracity of knowledge about *Cannabis*. It seeks to explore the association of these characteristics with level of factual knowledge. Secondary aims are to compare results and willingness to complete a *Cannabis* related survey between compensated and non-compensated participants and to thematically assess attitudes toward *Cannabis* specifically and herbal medicines in general.



Introduction

To symbolize the long history of use, the section header above contains the Chinese ideogram for marijuana “ma” which represents male and female plants in a drying shed. *Cannabis* (marijuana) has enjoyed myriad uses across cultures and across the centuries, barring a not-quite-100-year period when use of the plant was illegal. Figure 1 highlights the long ethnobotanical history of *Cannabis*.

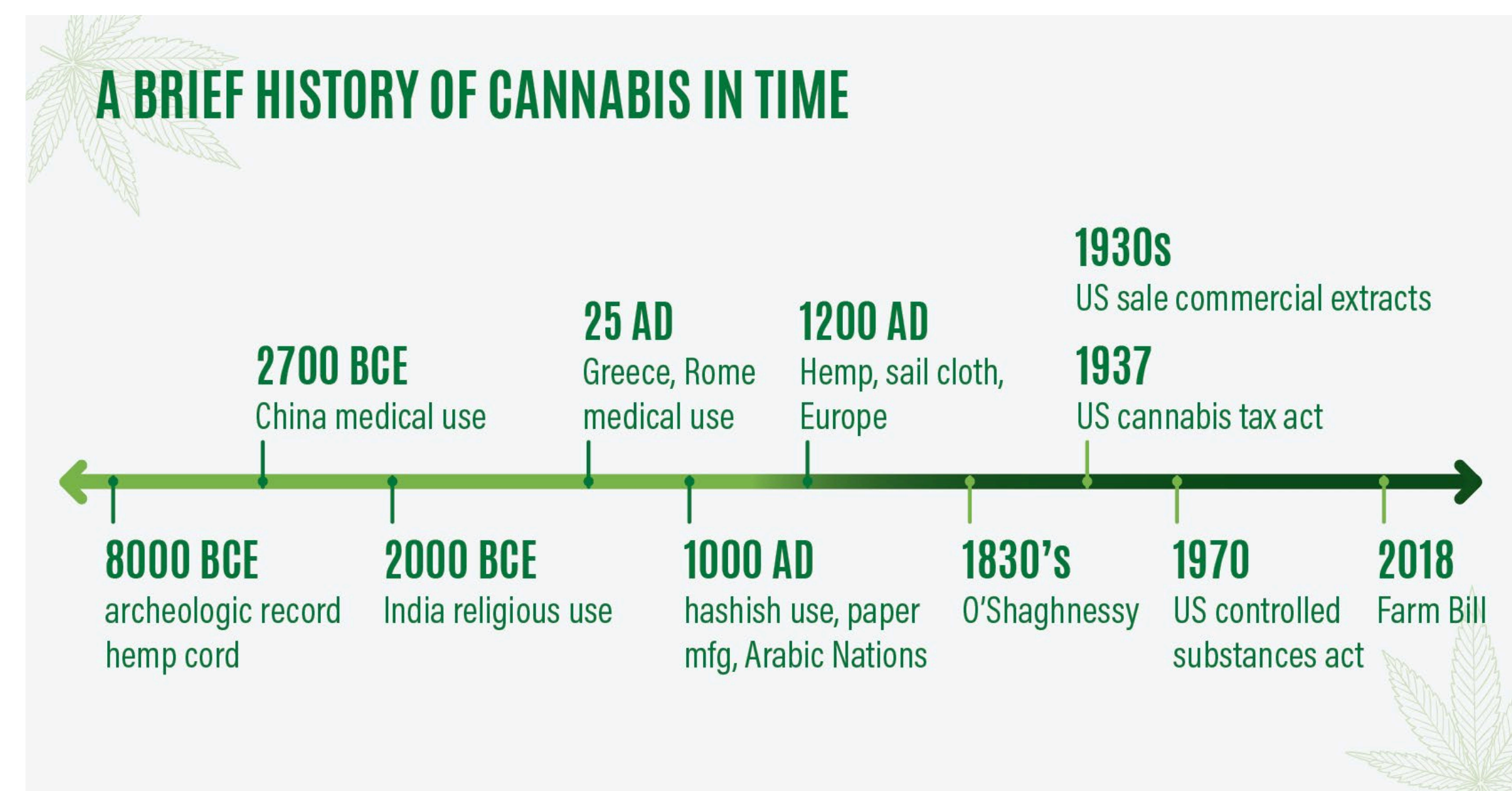


Figure 1 Brief overview of ethnobotanic history of *Cannabis sativa* L.

Professionalism is a core competency of the American Osteopathic Association Code of Ethics. Some of the recognized elements of professionalism include cultural competency, non-maleficence, and respect for patient autonomy (AOA 2023). In order to encompass these elements of professionalism, osteopathic physicians must understand and intelligently address patient beliefs about *Cannabis* use. Furthermore, understanding the prevalence and characteristics of *Cannabis* use and knowledge is important to inform public education and policy decisions (Berey et al. 2022; Carlini & Schauer 2022; Ishida et al. 2020).

This mixed-methods pilot project aims to validate an online questionnaire intended to explore the relationships between *Cannabis* user demographics, reliability of reported sources of *Cannabis* information, and attitudes toward legal status of marijuana with self-perceived knowledge and actual knowledge as evidenced by performance on an eight-point fact-based assessment of *Cannabis* knowledge. Secondary aims include adding to the body of knowledge that compares survey responses between compensated and non-compensated participants. Thematic analysis of open-ended questions will be performed to analyze for quantitative differences in thematic responses between demographic groups, educational levels, and higher percentage use (predefined as 50% or more) of informational sources predefined as “reliable” (conferences/meetings, continuing education/self-study, peer reviewed journals or literature, textbooks cited in “other”). Survey-choices defined as “unreliable” sources include family members, friends, magazines, newspaper articles, television, social media, TEDtalks, YouTube videos. Survey selections corresponding to information from health care providers and herbalists is classified as indeterminate in reliability and will be excluded from analysis but will be included with descriptive statistics.

The following hypotheses will be tested:

1. Ho: Educational level and occupation do not impact opinion about legal status of marijuana.
2. Ho: People using unreliable sources of information as more than 50% of their sources will score $\geq 60\%$ on the 8-point assessment with the same frequency that those using reliable sources as more than 50% of cited sources
3. Ho: Rural residents and Appalachian residents are comparable to urban and non-Appalachian regarding opinions about legal status, use of *Cannabis* and other herbs, use of reliable resources, knowledge, and perceived knowledge.
4. Ho: Self-perceived knowledge of *Cannabis* does not differ between those relying upon 50% or more unreliable sources and those relying $>50\%$ on reliable sources.
5. Ho: Health care providers using more than 50% reliable resources do or would prescribe/recommend marijuana with less than or equal frequency as those using more than 50% “unreliable” sources.
6. Ho: Those who use other herbal products use *Cannabis* solely for medicinal purposes.

Methods

The questionnaires for this study are modifications of previously validated instruments that aimed at populations and domains not specifically targeted by this proposed study (Jouanjus et al., 2021; Kansagara et al., 2020). The modified studies were reviewed and exempted by Lincoln Memorial University Institutional Review Board. Face validation of the modified studies was performed by administering the online questionnaires to a small number of volunteers. Two versions of the questionnaire exist, one targets uncompensated, and the other targets compensated participants. Non-probability population samples will be obtained through posting of an anonymous link to social media of investigators with snowball recruitment (uncompensated participants) and through use of two pools of compensated participants hired through outside channels. A sample size of 400 paid respondents was selected to assure an acceptable comparability of response patterns (Guadagnoli & Velicer, 1988).

An alpha of ≥ 0.05 has been selected as significance level for all statistical tests. Between-group comparison (compensated versus uncompensated) will be performed under the assumption of independence. Student's t-test will be used to test for differences between compensated and uncompensated continuous data and Pearson's χ^2 will be applied to compare distribution of categorical/nominal data. If all domains indicate similarity between groups, data will be combined for further analysis. If any domain is significantly different, that domain will be analyzed separately. If the expected frequency for any cell in the contingency table is less than 5, Fisher's exact test will be applied. Point-biserial analysis will be performed on seven fact-based questions aimed at assessment of knowledge to assess validity. Incomplete surveys will be included in the final analysis.

Cluster analysis will be performed to evaluate the association of score of the 8-point assessment with sources of information, mean annual income, age, geographic region (as defined by the USPS downloadable zip code file), Appalachian region (as defined by the Appalachian commission) and highest level of education attained. Binomial logistic regression will be used to test the relationship between a score of $\geq 60\%$ on the 8-point assessment with opinion about legalization of marijuana, ever-use of marijuana, reason for use of marijuana and for compensated participants willingness to complete a *Cannabis* survey without compensation.

Preliminary Results

At the time of poster preparation, 251 people have responded to the uncompensated version of the survey with a completion rate of 80.9%. Chi-square testing reveals no statistically significant association between educational level and ever-use ($p=0.0851$, χ^2 (6, $N=229$) = 6.62) or categorical type of *Cannabis* use (χ^2 (6, $N=229$) = 6.3, $p=0.39$). Similarly, educational level was not significantly associated with opinions about legality of medical (χ^2 (6, $N=229$) = 12, $p=0.529$) or adult recreational use (χ^2 (6, $N=229$) = 10.9, $p=0.092$). Figure 2 depicts the categorical type of *Cannabis* use reported by those reporting ever-use of *Cannabis*.

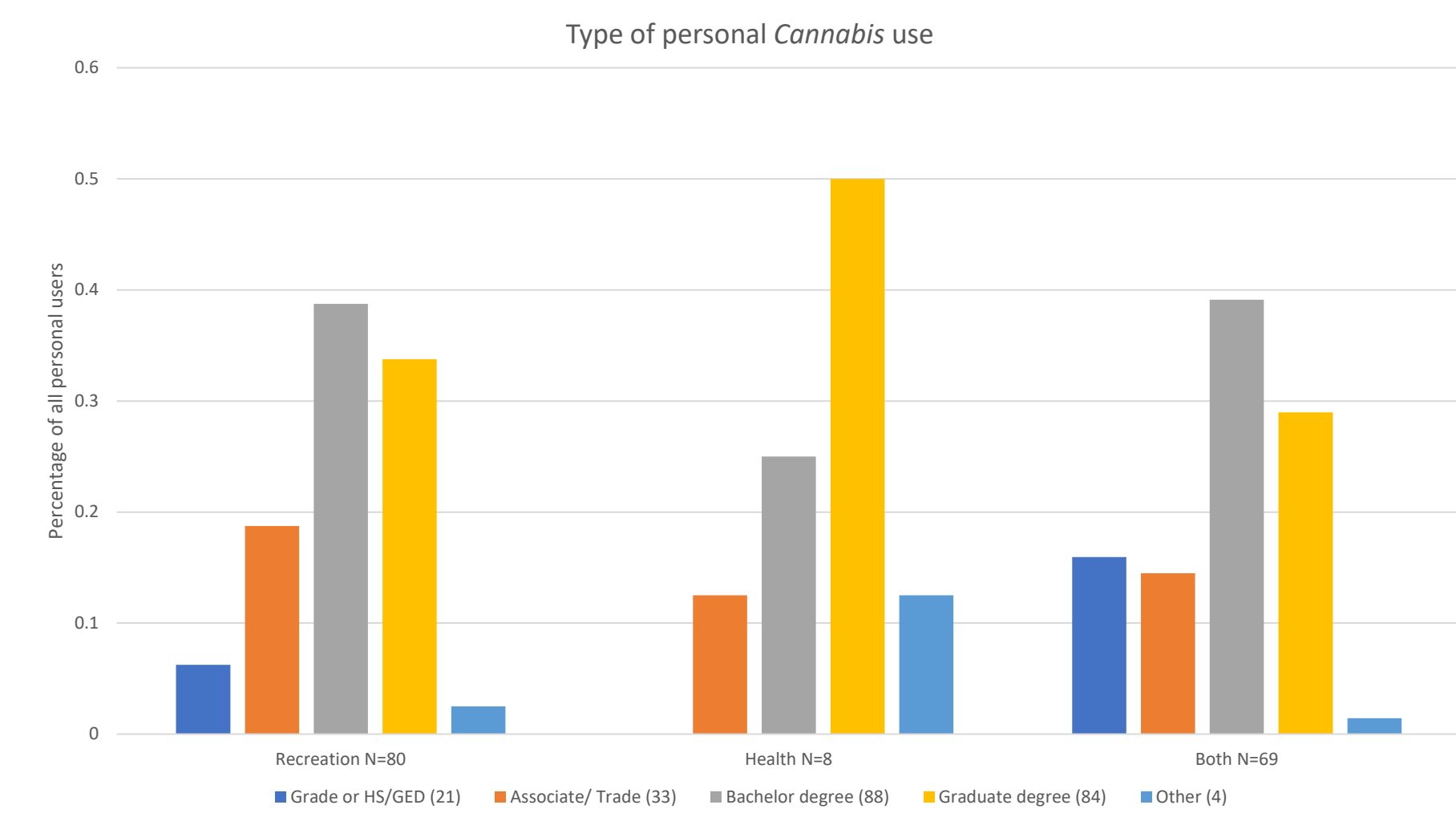


Figure 2 Type of *Cannabis* use by educational level. Numbers in parentheses represent total number of respondents at educational level.

Discussion

To the best of our knowledge this is the first survey aimed to evaluate the relationships targeted by this study. There are several major limitations to this study that extend beyond the nonprobability sampling method used to recruit the uncompensated participant results reported here. The reliability classification of informational sources represents a large potential source of bias introduction. The eight-point assessment of factual knowledge is unvalidated; this pilot aims in part to establish validity. Themes emerging from qualitative analysis of this pilot project will guide future probability-based samples so that the results may guide culturally competent patient care that is beneficent, patient-centered, and respectful of patient autonomy.

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