



## Oncologists' perspectives on medical marijuana use by older adults



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### 1. Introduction

Medical marijuana (MM) use among adults 65-years and older is increasing faster than among any other age group, yet few studies have examined this phenomenon [1]. Cancer qualifies for MM in almost every state MM law, and approximately 70% of patients with cancer are over 65-years of age [2]. Cancer-related symptom management for older adults, including targeting low appetite, nausea, and pain can be challenging because age-related physiologic changes in drug metabolism and polypharmacy can place individuals at greater risk for adverse drug events [3]. At this time, however, insufficient evidence exists to either support or refute MM's benefits for cancer-related symptoms, especially in older adults [4]. Three retrospective studies and one clinical trial examined MM use in older adults and found a  $\geq 30\%$  incidence of adverse events, predominately dizziness and increased risk for falls [5–7]. Additionally, researchers have predominantly tested pharmaceutical-grade cannabinoids with few active ingredients, while whole-plant MM contains up to 60 pharmacologically-active compounds [3]. Unfortunately, little else is known about the utility or safety of MM for older patients, making it difficult for physicians to make recommendations in this population.

We recently completed a national survey of U.S. oncologists in which 80% conducted discussions with patients about MM and 46% recommended MM clinically [8]. Although the majority of patients with cancer are older than 65-years of age, little is known about how physicians perceive the relative risks and benefits of MM for older adults with MM-qualifying diseases such as cancer.

Here, we present additional findings from this national survey of oncologists regarding their perspectives on MM's benefits for older adult patients with cancer. We examined oncologists' beliefs about MM's efficacy and safety for older adults. We hypothesized that oncologists who perceive MM to be beneficial for older adults (as compared to those who do not) would have more confidence in its benefits and fewer concerns about its risks.

### 2. Methods

We selected a nationally-representative, random sample of 400 practicing oncologists from SK&A Healthcare Database, and mailed each participant the survey and a \$50 cash incentive (2016–2017). Full study methods are described elsewhere [8].

### 3. Survey

The 30-item questionnaire assessed oncologists' knowledge, beliefs, and practices regarding MM [8]. The study was approved by the Dana-Farber Cancer Institute's institutional review board.

### 4. Measures

Oncologists were queried about their demographics and perceived knowledge regarding MM: "Do you feel you have sufficient knowledge about the medicinal use of marijuana to make recommendations to oncology patients?" Response options included: "yes" or "no."

#### 4.1. Utility of elder MM use

The primary outcome assessed whether oncologists viewed MM as beneficial for the older. Oncologists were asked: "In your opinion, how often is MM beneficial for the older?" Response options included: "Always beneficial," "Usually beneficial," "Sometimes beneficial," "Rarely beneficial," "Never beneficial," and "Don't know." Responses were dichotomized to: "Beneficial" = (always, usually, sometimes) versus "Non-beneficial" = (rarely or never). "Don't know" were examined separately for each item. The term "older" was not defined in the survey, given that no widely agreed-upon definition of what constitutes "older" exists, and physicians consider numerous factors beyond age (e.g. frailty, comorbidities) when assessing older patients' degree of vulnerability.

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#### 4.2. Comparative effectiveness

Without reference to patient age, an item asked: "Compared to treatments you typically use, how would you rate the effectiveness of MM for the following cancer-related issues?" "Issues" included: nausea/vomiting, pain, poor appetite/cachexia, depression, anxiety, poor sleep, and general coping. Response options were: "Much more effective," "Somewhat more effective," "Equally effective," "Somewhat less effective," "Much less effective," and "Don't know." Responses were trichotomized to: "At least as effective" = (much, somewhat more, and equal), "Less effective" = (somewhat or much less), and "Don't know."

#### 4.3. Comparative risks

Without reference to patient age, an item asked: "In your opinion, how do the risks of MM use compare to the risks of prescription opioid use?" "Risks" included: paranoia/psychosis, anxiety, depression, confusion/impaired mentation, falls, driving difficulties, addiction, and overdose. Response options were: "Much higher," "Somewhat higher," "Comparable," "Somewhat higher," "Much lower than opioids," and "Don't know." Responses were trichotomized to: "equal or higher risk" = (much, somewhat more, and equal), "lower risk" = (somewhat or much less), and "don't know."

#### 4.4. Statistical methodology

Bivariate Chi-square tests and Pearson correlations examined associations between oncologists' professional characteristics and their views on MM for older patients with cancer. We used chi-square tests to examine associations between oncologists' views on the utility of MM for the older (beneficial vs. non-beneficial) and perceptions of MM's effectiveness; risks of MM compared to opioids; and whether oncologists considered themselves knowledgeable to make MM recommendations. We conducted a Bonferroni adjustment to account for multiple comparisons, with a two-tailed significance defined as  $p < .0027$ . We used Statistical Package for Social Sciences, Version 25.

### 5. Results

Of 400 medical oncologists who were mailed the survey, 232 completed all items relevant to this analysis resulting in a 58% response rate. Physician characteristics are reported in Table 1.

Among the 232 oncologists, 109 (46.0%) reported that MM had at least some benefit for older patients with cancer, 66 (27.8%) reported it to be rarely or never beneficial, and 57 (24.1%) reported not knowing (Table 1). There were no significant associations among oncologists' sociodemographic, professional characteristics, and their beliefs about

the utility of MM for older patients. Beliefs about the utility of MM for older patients were associated with self-rated knowledge of MM ( $p < .004$ ), an association that appeared to be driven by the high proportion of oncologists with low self-rated knowledge regarding the utility of MM for the older.

Oncologists' beliefs about the utility of MM for older patients with cancer were significantly associated with their perspectives regarding MM's comparative effectiveness for treating several common cancer-related symptoms including low appetite, nausea, poor coping, and depression ( $p < .001$ ; Fig. 1). Specifically, as compared to oncologists who believed MM to be non-beneficial for the older, oncologists who believed MM to be beneficial for the older were significantly more likely to report that MM was at least as effective as standard treatments ( $p < .001$ ) for appetite (83.3% vs 58.5%), nausea (66.7% vs 33.9%), coping (58.3% vs 26.6%), and depression (46.3% vs 25.0%). In contrast, there were no significant associations between oncologists' beliefs about MM for the older and their perceptions of the comparative effectiveness of MM for anxiety, pain, and sleep. Oncologists' beliefs about the benefit of MM for older patients with cancer were not significantly associated with perceived risks of MM as compared to risks of prescription opioids.

### 6. Discussion

Among United States oncologists, no consensus regarding whether MM benefitted older adults with cancer existed. Almost half believed MM to be beneficial; a quarter believed MM to be never/rarely beneficial; and a quarter reported not knowing. As hypothesized, oncologists' perceptions of MM's utility for this population were associated with their understanding of MM's effectiveness (as compared to standard treatment) for several cancer-related symptoms (e.g. poor appetite, nausea, coping). Perceptions of MM's risks were not significantly associated with beliefs about MM's utility for older patients with cancer. Even though practice guidelines for older adults focus on limiting use of certain therapeutics (e.g. opioids and benzodiazepines) due to polypharmacy concerns and MM by state law must be authorized by a healthcare professional, MM use continues to increase rapidly among older adults [1,3,4,9]. Our study, which to the best of our knowledge is the first to explore the oncologists' perceptions regarding MM for older adults with cancer, suggests that perceptions regarding the breadth of MM's benefits rather than its risks drive their views on its utility for older adults.

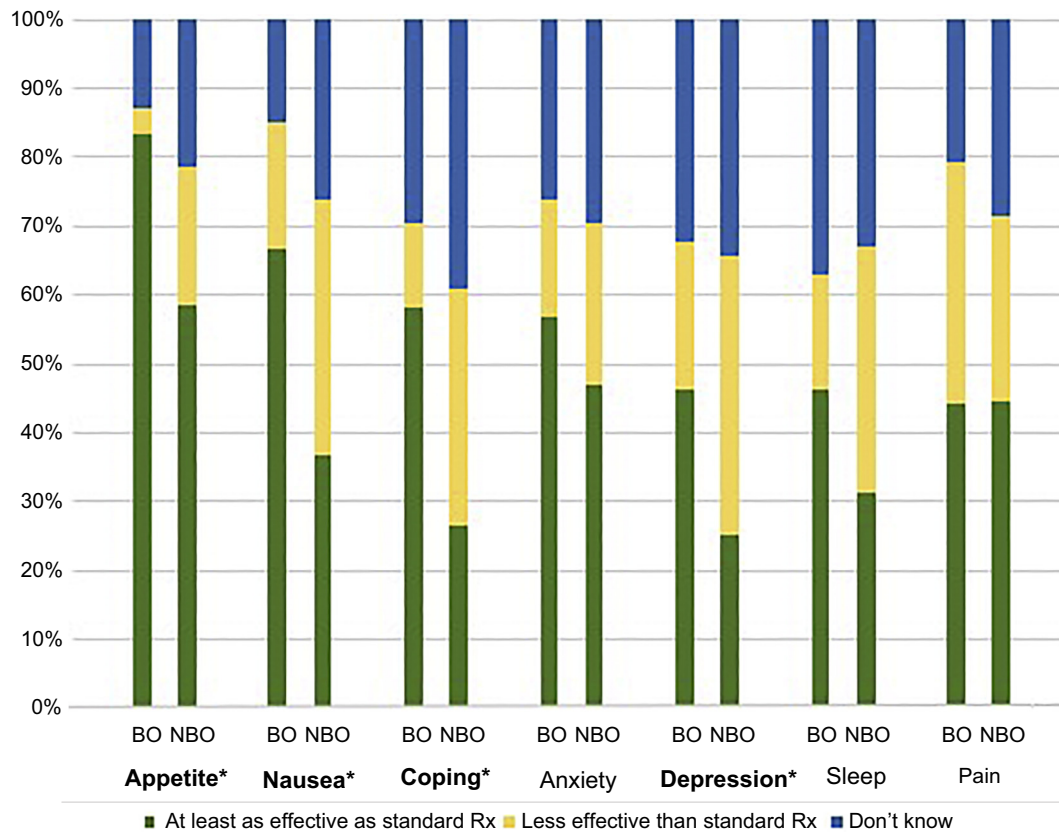
Although the survey was not designed to evaluate why this curious finding might be, one hypothesis stems from the fact is the majority of U.S. cannabis research has been conducted through the National Institute of Drug Abuse and focuses on cannabis' risks more than its possible health benefits [2]. Research supporting the effectiveness of MM for cancer-related symptoms is limited, and clinical decision-making in

**Table 1**

Comparisons between oncologists' perceptions of medical marijuana's benefits for older patients with cancer.

	View MM as beneficial for older		Do not view MM as beneficial for older		Don't know		p
	n	% or (sd)	n	% or (sd)	n	% or (sd)	
Total (n = 232)	109	46.0	66	27.8	57	24.1	
Mean age	50.1	(9.9)	54.4	(11.6)	51	(10.4)	0.7
Gender (Male)	68	62.4	51	77.3	34	59.6	0.2
Subspecialty							
"Liquid" cancer	16	15.2	11	17.2	12	21.4	0.3
Solid tumor	89	84.8	53	8.28	44	78.6	0.3
Mean patients/week	58.0	(37.7)	54.3	(28.3)	44.2	(30.1)	0.1
Self-reported MM knowledge base							
Insufficient	69	63.3	44	66.7	50	87.7	0.004
Sufficient	40	36.7	22	33.3	7	12.3	

Note: \*  $p < .0027$  indicates significance with Bonferroni correction for all analyses. Oncologists were asked: 1) "In your opinion, how often is MM beneficial for the older?" Responses were categorized as: "Beneficial" (always, usually, sometimes), "Non-beneficial" (rarely or never), or "Don't know." Oncologists were also asked: "Do you feel you have sufficient knowledge about medicinal use of Marijuana to make recommendations to oncology patients?" Responses were dichotomized as sufficient or insufficient.



**Fig. 1.** Perceived benefit of MM for older adults and perceptions of comparative effectiveness of MM for common cancer symptoms. \*Indicates significance  $p < 0.0027$ . Oncologists were asked: 1) "In your opinion, how often is MM beneficial for the older?" Responses were dichotomized to: BO- "Beneficial for the older" (always, usually, sometimes) versus NBO- "Non-beneficial for the older" (rarely or never); the group that reported "Don't know" was excluded from this analysis. Oncologists were also asked "Compared to treatments you typically use, how would you rate the effectiveness of MM for the following cancer-related issues?" without reference to age. Responses were divided into to: "At least as effective" (Much, Somewhat more, and Equal), "Less effective" (Somewhat or Much less), or "Don't know."

this regard may be loosely extrapolated from studies of isolated cannabinoids, or MM used in other conditions (e.g., human immunodeficiency virus), or drawn from anecdotal experiences [4,10]. Perhaps when armed with more evidence regarding MM's risks than benefits, oncologists reach greater consensus around MM's comparative risks than its comparative benefits (and this lack of consensus likely leads to oncologists' differing opinions regarding MM's utility for older adults).

This study has several limitations. The survey did not define "older" and included only one item related explicitly to older patients. It was neither designed to explore nuance in how oncologists' weigh decision-making regarding MM use nor how oncologists compare the risks/benefits of MM between older and non-older adults. Our study also had strengths, including a nationally-representative, random sample, a high response rate, and an investigation of an important and understudied topic.

In conclusion, this study demonstrated a lack of consensus among oncologists regarding the benefits of MM in older adults, indicating that MM clinical trials examining the risks/benefits in this patient population are warranted. Our analyses also suggest that the differences in opinion among oncologists are driven more by their diverging beliefs regarding the breadth of MM's benefits rather than its risks. This finding suggests that completion of MM comparative efficacy trials may help to bring greater clarity to the appropriate role for MM in the oncologic armamentarium.

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#### Declaration of Competing Interest

The authors deny any conflicts of interest.

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