

Cannabis use in cancer: a survey of the current state at BC Cancer before recreational legalization in Canada

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ABSTRACT

Background Cancer patients experience multiple symptoms throughout their illness, and some report benefit from the use of cannabis. There are concerns that many patients are accessing products inappropriate for their situation and potentially putting themselves at risk. In the present study, we aimed to capture the prevalence of cannabis use among cancer patients at BC Cancer before recreational legalization in Canada and to identify the reasons that patients take cannabis, the various routes of administration they use, and the reasons that prior users stopped.

Methods Patients were eligible if, on the selected study day (15 August 2018), they were scheduled for an appointment at any of the 6 BC Cancer sites. Eligible patients were mailed a survey.

Results Of surveys sent to 2998 patients, 821 (27.4%) were returned and included in analysis. Of those respondents, 23% were currently using cannabis-based products, almost exclusively for medical purposes, and an additional 28% had been users in the past (most often recreationally). Of the patients currently using cannabis, 31% had medical authorization. The most common symptoms that the current users were targeting were pain, insomnia, nausea, and anxiety; many were also hoping for anticancer effects.

Conclusions More than half the respondents had tried cannabis at some time, and almost one quarter of respondents were currently taking cannabis to help manage their symptoms or treat their cancer, or both. Many more patients would consider use with appropriate guidance from a health care professional. More research is needed to inform physicians and patients about safe uses and doses and about the potential adverse effects of cannabis use.

Key Words Cannabis, surveys, symptom management

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INTRODUCTION

Cancer patients experience a number of symptoms caused by both their cancer and its treatments, affecting quality of life¹. The burden of symptoms can be felt by up to 93.5% of patients, regardless of treatment status². Despite repeated patient reports of beneficial therapeutic effects of cannabis on symptoms such as pain, nausea, insomnia, anxiety, and poor appetite, few studies have evaluated the appropriate timing for a trial of a cannabis-based medicine, the side effects that could be expected, and how to dose. That research gap has left many physicians feeling that they have insufficient knowledge of cannabis and cannabinoids to confidently advise their patients³⁻⁵.

In Canada, access to cannabis for medical purposes has been legal since 1999, and cannabis became legal for recreational use on 17 October 2018^{6,7}. Evidence of benefit from synthetic tetrahydrocannabinol analogs (nabilone, dronabinol) and a plant-derived prescribable buccal spray (nabiximols) has been sufficient for Health Canada to have approved them for management of severe cancer pain (nabiximols) and nausea (nabilone). However, systematic reviews have not been positive about use of cannabinoids for other cancer-related symptoms, and none of the most commonly used cannabis-based products available for purchase by Canadian cancer patients have ever been studied⁸⁻¹⁰. Also, although no clinical trials have shown benefit for cannabis in disease control, many patients

anecdotally report taking it, with or without conventional therapies, to help cure their cancer¹¹. The consequences of the latter use have not yet been explored in the literature, but we are aware of occasions on which harm has resulted from inappropriate self-medication with cannabis-based products taken without medical supervision.

The legalization of access to cannabis and cannabis extracts for recreational purposes in Canada presents the opportunity to explore how legalization will affect individuals using cannabis and cannabinoids for medical purposes, and how patient attitudes toward use of those substances might change. With legalization, the number of patients asking their physicians about medical cannabis and using cannabis-based products with or without medical advice is expected to increase. To prepare the medical community for the predicted changes in patient attitudes toward cannabis, it will first be necessary to understand what the pre-legalization state of recreational cannabis and cannabinoid use was.

Past descriptive studies have found that cannabis use for medical purposes is affected by legalization and by authorization of cannabis by a medical professional^{11,12}; however, data about the current state of cannabis use in cancer patients in Canada are limited^{13–15}. A 2017 survey of cancer patients in Alberta showed that 43% had tried cannabis-based products at some time in their life, almost all “through friends” (80%) and mostly dried leaves (81%), neither of which are medically recommended. Significant overlap in use for recreational as well as medical purposes has been evident¹⁵.

In the present study, our objective was to capture the prevalence of medical cannabis use among cancer patients in British Columbia after the announcement of impending legalization, but before the new law was implemented. We identified patient goals for using medical cannabis to treat their symptoms and explored whether those motives differed in various populations of cancer patients. That information will help to prepare physicians and other care providers with knowledge about the characteristics of patients who report the most benefit from legalized use of cannabis, the reasons that past users have stopped, and the practicalities of access.

METHODS

Survey Design

An anonymous survey was mailed to patients who were scheduled for an appointment on a single day at any of the 6 BC Cancer (bcc) centres (Figure 1). The survey took roughly 5 minutes to complete and included checkbox responses, yes-or-no responses, and open-ended questions that patients could use to express their opinions. The survey contained demographic questions including age, gender, cancer diagnosis, and education. Information about current and past cannabis use was collected, including questions about how they obtained their cannabis, what they used it for (that is, symptoms, recreation, curative disease modification, and so on), and their reasons for discontinuing use, if applicable. Patients were also given the opportunity to share any of their other thoughts on the topic in free text. The survey was reviewed by 6 patient volunteers

**BC
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Provincial Health Services Authority

**Cannabis Use in Cancer: Current State at BC Cancer
Patient Survey**

Age (years) _____ Gender _____ Race _____

- What type of cancer do you have? *Please ask your care team if unsure.*

<input type="checkbox"/> Blood/Lymph system	<input type="checkbox"/> Gynecologic	<input type="checkbox"/> Skin	<input type="checkbox"/> Brain
<input type="checkbox"/> Gastrointestinal	<input type="checkbox"/> Head/Neck	<input type="checkbox"/> Lung	<input type="checkbox"/> Breast
<input type="checkbox"/> Genitourinary	<input type="checkbox"/> Sarcoma	<input type="checkbox"/> Prostate	<input type="checkbox"/> Other _____
- What stage are you in your cancer treatment?

<input type="checkbox"/> Newly Diagnosed (treatment undecided)	<input type="checkbox"/> In treatment
<input type="checkbox"/> Finished therapy	<input type="checkbox"/> I am not receiving treatment
- What is the highest level of education you have completed?

<input type="checkbox"/> Less than High School	<input type="checkbox"/> Some High School/GED	<input type="checkbox"/> High School/GED
<input type="checkbox"/> Some college	<input type="checkbox"/> College graduate	<input type="checkbox"/> Graduate degree
- Have you ever used cannabis (marijuana) in any form?

<input type="checkbox"/> Yes	<input type="checkbox"/> No (If no, please skip to question 12. Thank you).
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- Did you get a medical authorization document from a doctor or nurse practitioner to get cannabis? Yes No
- How have you used cannabis? *(check all that apply)*

<input type="checkbox"/> Oils	<input type="checkbox"/> Vaporized	<input type="checkbox"/> Tablets	<input type="checkbox"/> Drinking (e.g. tea)
<input type="checkbox"/> Smoked	<input type="checkbox"/> Suppositories	<input type="checkbox"/> Eating (in food)	<input type="checkbox"/> Mouth spray
<input type="checkbox"/> On to skin (e.g. cream)	<input type="checkbox"/> Other _____		
- What did/do you use cannabis for? *(check all that apply)*

<input type="checkbox"/> Pain	<input type="checkbox"/> Nausea	<input type="checkbox"/> Anxiety	<input type="checkbox"/> Insomnia	<input type="checkbox"/> Cancer treatment
<input type="checkbox"/> Tiredness (no energy)	<input type="checkbox"/> Depression	<input type="checkbox"/> Lack of appetite	<input type="checkbox"/> Other _____	<input type="checkbox"/> Recreational Use
- Where did/do you get your cannabis from? *(check all that apply)*

<input type="checkbox"/> Dispensary (e.g. Compassion Club)	<input type="checkbox"/> Licensed Producer (online)	
<input type="checkbox"/> Grow it myself	<input type="checkbox"/> From a friend	<input type="checkbox"/> Other _____
- Do you currently use cannabis? Yes No (If yes, please leave question 10 blank)
- If not, why did you stop? *(check all that apply)*

<input type="checkbox"/> Not effective at controlling symptoms	<input type="checkbox"/> Advice from medical professional
<input type="checkbox"/> Intolerable side-effects	<input type="checkbox"/> Safety concerns
<input type="checkbox"/> Cost	<input type="checkbox"/> Other _____
- Have you had any problems in getting cannabis? No Yes (please describe)

12. Do you have any comments not covered by the questions above? *(add a page if necessary)*

Thank you for your participation. Please return this survey using the envelope provided.

FIGURE 1 The BC Cancer cannabis survey.

and by a professional plain language consultant, whose suggestions were incorporated into the survey wording where possible. Patient reviewers suggested the inclusion of “marijuana” in parentheses to improve patient understanding of the word “cannabis,” although no cannabinoid products were excluded from the survey. The study was approved by the University of British Columbia Research Ethics Board (H18-01638).

Data Collection

All patients scheduled for an appointment on the arbitrarily selected study day (Wednesday, 15 August 2018) were eligible for the study. Patient names and addresses were collected from the scheduled appointments using the BC Cancer Electronic Patient Record in the week before the study day. The sites of the scheduled appointments were Abbotsford, Prince George, Surrey, Kelowna, Vancouver, and Victoria. Together, those sites make up 94% of the total number of cancer patients seen each year in British Columbia (fiscal 2017/2018).

Selected patients were mailed the study materials within 1 week of the index day. The mailed study materials included an implied consent form, the 1-page survey, and a prize-draw form. Patients were also sent a stamped and addressed envelope in which to return the study materials, once completed. The implied consent form explained to

patients that they were being asked to take a survey about cannabis use, that their participation was voluntary, and that they would remain anonymous. Information about confidentiality risks was also provided. It was emphasized that if the completed survey was returned their consent for participation would be implied.

Patients who received the survey also had the option of completing a form to enter into a draw for a \$500 Visa gift card as an incentive to return the survey. Patients were informed they did not have to complete the survey to enter into the draw. To ensure that surveys remained anonymous, the surveys and the prize-draw forms (which contained identifiable information) were immediately separated upon return and before keyboarding of the survey data. Surveys were collected for 1 month from the date of mailing.

Statistical Analysis

Collected data were entered by author MG into REDCap (Research Electronic Data Capture, version 8.10.12: REDCap Consortium, Vanderbilt University, Nashville, TN, U.S.A.), a Web-based application used to manage datasets¹⁶. The data were summarized using percentages and interquartile ranges; *p* values are reported. Categorical variables were analyzed using the chi-square test of independence, and continuous variables were analyzed using a 2-sample *t*-test.

RESULTS

At the 6 BCC sites, 3689 appointments were scheduled for the index study day. Of those appointments, 691 were eliminated from the mailing list, because 686 patients were attending more than 1 appointment on the index day, and addresses for 5 patients were not listed on the Electronic Patient Record. Thus, 2998 individual patients were included in the study. The distribution of patients at the BCC sites was as expected based on typical numbers seen at each site year-round. The number of included patients reflects the average number of unique patients seen on any Wednesday at all BCC sites ($n = 2697$, fiscal 2017/2018).

Of the 2998 surveys mailed, 823 (27.5%) were returned within the collection period. Two participants did not respond to the questions about cannabis use (that is, if they currently were using or had ever used cannabis) and were therefore eliminated from the analysis. The 821 analyzed surveys (27.4%) captured data from roughly 1% of the total patient population seen each year at BCC sites ($n = 81,418$, fiscal 2017/2018). Respondents were stratified by their cannabis use into never users ($n = 398$), prior users ($n = 233$), and current users ($n = 190$). More than half the respondents (52%) had used cannabis at some point in their lifetime.

Compared with prior and never users, current users tended to be younger, white, and currently in cancer treatment. They had a minimum of a high school education (Table 1). Gender and primary cancer site were not found to be different between the groups.

Compared with prior users, current users were more likely to have obtained a medical authorization from their physician or nurse practitioner to buy cannabis (Table 1). The most common routes of administration were smoking,

oils, and edibles. Oils were the most common route for current users (73%); smoking was substantially more common for the prior users (75%, $p < 0.01$). The primary reason current users gave for using cannabis was pain (62%), followed by cancer treatment (52%), insomnia (41%), nausea (39%), and anxiety (36%). The most common reason prior users gave was recreational purposes (65%, $p < 0.01$). Only 6 of 190 current users reported using cannabis exclusively for recreational purposes.

Current users most frequently named dispensaries as their source of cannabis (45%); "from a friend" was the most common source named by prior users (74%, $p < 0.01$). Current users also tended to use multiple cannabis-based products; most prior users had only ever used cannabis in one or two forms (Figure 2), primarily smoking or edibles.

Likewise, current users were much more likely to use cannabis for several reasons; most prior users listed only 1 reason for cannabis use (Figure 3).

Safety concerns (14%), ineffectiveness (13%), recreational use during youth only (12%), cost (12%), and intolerable side effects (11%) were the most common reasons given by prior users for stopping their use (Table 1). Excluding individuals who indicated using cannabis for recreational purposes (where the purpose is to get "high," $n = 152$) or as a form of cancer treatment (where dangerously high doses are sometimes taken with the goal of disease management in mind¹⁷, $n = 25$), only 5 prior users reported intolerable side effects. Less common reasons for stopping use included not enjoying cannabis (8%), losing interest (8%), no longer needing cannabis (6%), advice from their doctor (4%), and accessibility difficulties (1%).

Several prominent themes were found within the written comments from respondents. Positive experiences using cannabis medically were reported by prior and current users ($n = 15$ and $n = 29$ respectively), and many never users expressed their willingness to try cannabis if the need arose ($n = 47$). In contrast, another prominent theme, expressed entirely in the never user group, was concern about the dangers of cannabis use and the alleged consequences of the impending legalization ($n = 32$). Lastly, in all 3 groups, many patients expressed interest in obtaining more information about cannabis and cannabinoids and in their physicians having more knowledge about cannabis (prior users, $n = 10$; current users, $n = 17$; never users, $n = 22$). Patients said that they would like to be able to discuss the use of cannabis with their physician, either as an alternative to medications such as opioids or as a form of cancer treatment. Some typical examples:

- "I would be interested, but I wish my doctors would be the ones to bring it up."
- "It should be more available, and care workers should be more informed."
- "The medical profession needs to become more knowledgeable and proactive."

DISCUSSION

Our survey adds to the current body of knowledge about cannabis use in cancer patients in Canada and provides new insights into the attitudes held by current, prior, and

TABLE I Demographics of survey respondents

Variable	Respondents by reported cannabis use ^a				p Value ^b
	Overall	Never	Prior	Current	
Respondents (n)	821	398	233	190	
Age (years) ^c					<0.01
Median	66	70	63	61	
IQR	57–72	61–76	54–69	52–70	
Not reported [n (%)]	5 (1)	3 (1)	1 (0)	1 (1)	
Gender [n (%)]					0.54
Women	434 (53)	213 (54)	127 (55)	94 (49)	
Men	382 (47)	182 (46)	105 (45)	95 (50)	
Not reported	5 (1)	3 (1)	1 (0)	1 (1)	
Race [n (%)]					<0.01
White	626 (76)	284 (71)	187 (80)	155 (82)	
Asian	66 (8)	49 (12)	10 (4)	7 (4)	
Indigenous	18 (2)	6 (2)	4 (2)	8 (4)	
East Indian	10 (1)	8 (2)	0 (0)	2 (1)	
African American	3 (0)	1 (0)	0 (0)	2 (1)	
Latin American	2 (0)	2 (1)	0 (0)	0 (0)	
Other	56 (7)	25 (6)	20 (9)	11 (6)	
Not reported	40 (5)	23 (6)	12 (5)	5 (3)	
Primary cancer [n (%)]					0.41
Breast	182 (22)	93 (23)	58 (25)	31 (16)	
Prostate	112 (14)	59 (15)	27 (12)	26 (14)	
Gastrointestinal	109 (13)	56 (14)	27 (12)	26 (14)	
Blood or lymph system	100 (12)	52 (13)	25 (11)	23 (12)	
Lung	86 (10)	41 (10)	21 (9)	24 (13)	
Head-and-neck	57 (7)	18 (5)	25 (11)	14 (7)	
Gynecologic	54 (7)	28 (7)	14 (6)	12 (6)	
Skin	40 (5)	15 (4)	14 (6)	11 (6)	
Brain	25 (3)	9 (2)	9 (4)	7 (4)	
Genitourinary	16 (2)	7 (2)	5 (2)	4 (2)	
Sarcoma	10 (1)	3 (1)	3 (1)	4 (2)	
Other	25 (3)	13 (3)	5 (2)	7 (4)	
Not reported	5 (1)	4 (1)	0 (0)	1 (1)	
Treatment stage [n (%)]					0.02
Newly diagnosed	35 (4)	12 (3)	13 (6)	10 (5)	
In treatment	521 (63)	254 (64)	137 (59)	130 (68)	
Finished therapy	215 (26)	100 (25)	76 (33)	39 (21)	
Not receiving treatment	48 (6)	30 (8)	7 (3)	11 (6)	
Not reported	2 (0)	2 (1)	0 (0)	0 (0)	
Education [n (%)]					<0.01
Less than high school	35 (4)	20 (5)	7 (3)	8 (4)	
Some high school	71 (9)	41 (10)	17 (7)	13 (7)	
High school or GED	142 (17)	72 (18)	29 (12)	41 (22)	
Some college	157 (19)	51 (13)	59 (25)	47 (25)	
College graduate	221 (27)	105 (26)	67 (29)	49 (26)	
Graduate degree	181 (22)	104 (26)	48 (21)	29 (15)	
Not reported	13 (2)	5 (1)	5 (2)	3 (2)	

^a All percentages have been rounded to the nearest whole number.

^b Represents the comparison of never, prior, and current users and was calculated using the chi-square test of independence.

^c Age was calculated using a 2-sample t-test comparing never users with prior and current users.

IQR = interquartile range; GED = General Educational Development.

TABLE II Descriptions of cannabis use by respondents who reported themselves to be prior and current users

Variable	Respondents by reported cannabis use [<i>n</i> (%)] ^a			<i>P</i> Value ^b
	Overall	Prior	Current	
Respondents	423	233	190	
Medical authorization ^c				<0.01
No	327 (77)	199 (85)	128 (67)	
Yes	90 (21)	32 (14)	58 (31)	
Not reported	6 (1)	2 (1)	4 (2)	
Product ^c				<0.01
For smoking	279 (66)	174 (75)	105 (55)	
Oil	214 (51)	75 (32)	139 (73)	
Edible	169 (40)	83 (36)	86 (45)	
For vaporizing	75 (18)	14 (6)	61 (32)	
Cream	67 (16)	21 (9)	46 (24)	
Tablet	34 (8)	10 (4)	24 (13)	
Drink	19 (4)	3 (1)	16 (8)	
Mouth spray	12 (3)	3 (1)	9 (5)	
Suppository	10 (2)	4 (2)	6 (3)	
Other	22 (5)	6 (3)	16 (8)	
What do you use it for? ^c				<0.01
Recreation	212 (50)	152 (65)	60 (32)	
Pain	169 (40)	51 (22)	118 (62)	
Cancer treatment	124 (29)	25 (11)	99 (52)	
Insomnia	108 (26)	31 (13)	77 (41)	
Nausea	104 (25)	30 (13)	74 (39)	
Anxiety	91 (22)	22 (9)	69 (36)	
Lack of appetite	75 (18)	16 (7)	59 (31)	
Depression	43 (10)	11 (5)	32 (17)	
Tiredness	34 (8)	10 (4)	24 (13)	
Drowsiness	19 (4)	3 (1)	16 (8)	
Other	22 (5)	7 (3)	15 (8)	
Where do you get it from? ^c				<0.01
A friend	256 (61)	171 (73)	85 (45)	
A dispensary	160 (38)	46 (20)	114 (60)	
A licensed producer	41 (10)	13 (6)	28 (15)	
Grew it myself	21 (5)	4 (2)	17 (9)	
Other	26 (6)	15 (6)	11 (6)	
Not reported	4 (1)	4 (2)	0 (0)	
Issues in obtaining cannabis?				0.36
No	356 (84)	184 (79)	172 (91)	
Yes	26 (6)	11 (5)	15 (8)	
Not reported	41 (10)	32 (14)	3 (2)	

^a All percentages have been rounded to the nearest whole number.

^b Represents the comparison of prior and current users and was calculated using the chi-square test of independence.

^c Percentages based on the 423 self-reported users (prior or current). Respondents could select more than 1 answer, and so percentage total can exceed 100.

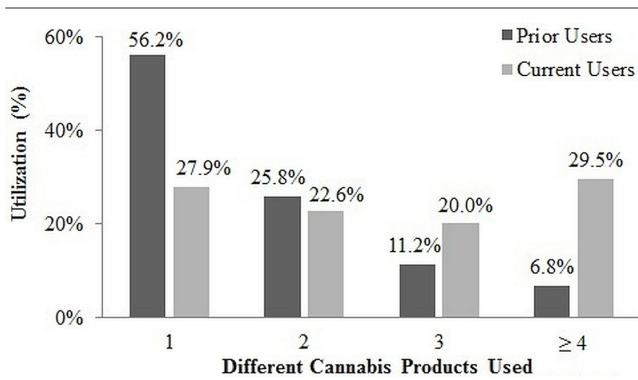


FIGURE 2 Different modes of administration (cannabis products used) in the surveyed population.

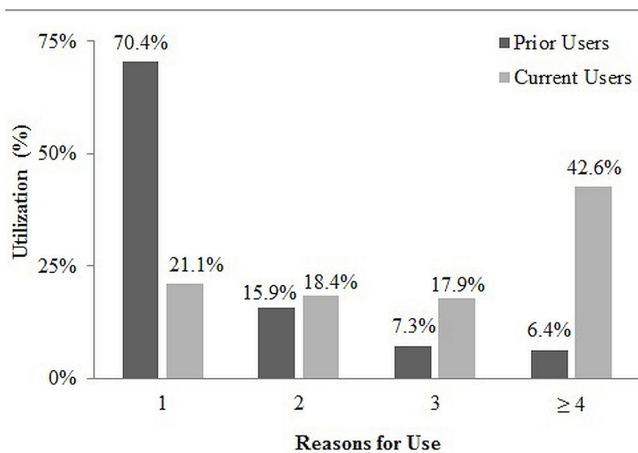


FIGURE 3 Reasons given for cannabis use by the surveyed population.

never users of cannabis. Similar to previous studies, the present work found that 23% of responding cancer patients were current cannabis users and that 52% of patients had used cannabis at some point in their life^{11,15,18}. Those numbers are expected to increase with the legalization of recreational cannabis in Canada.

Despite the limited scientific evidence investigating the use of non-synthetic cannabis for medicinal purposes, current users in the present study reported using cannabis to alleviate a variety of symptoms largely related to cancer¹⁹. Those findings align with results from several previous studies investigating cannabis use by cancer patients to manage several symptoms—primarily pain, appetite, and nausea^{4,11,15,20}.

Cancer patients are heavily burdened by polypharmacy, with one study finding that the median number of tablets taken daily was 6, with a range of 0–30 tablets daily²¹. Management of multiple medicines can be a significant inconvenience—and a safety concern if medications are confused or forgotten. Our survey indicated that almost all patients currently taking cannabis use it to alleviate multiple symptoms, which suggests that cannabis has the potential to reduce the number of other drugs used by cancer patients. The fact that relatively few prior users ($n = 5$) reported intolerable side effects from the cannabis they

TABLE III Reasons respondents who are prior cannabis users ceased using cannabis

Variable	Value
Respondents [prior users (n)]	233
Why did you stop? ^a [n (%)]	
Not effective	31 (13)
Intolerable side effects	26 (11)
Cost	27 (12)
Advice from doctor	9 (4)
Safety concerns	33 (14)
Other	131 (56)
Difficult to access	3 (1)
No longer needed	13 (6)
Contraindication	4 (2)
Lost interest	18 (8)
Not since youth (20+ years ago)	29 (12)
Did not enjoy it	18 (8)
Not reported	18 (8)

^a Respondents could select more than 1 answer, and so percentages exceed 100. All percentages have been rounded to the nearest whole number.

used for symptom relief suggests that cannabis is a safe option to be investigated for potential benefit in such patients.

After use of cannabis for its analgesic effects, anticancer treatment was the reason for cannabis use most commonly reported by current users. Only one clinical study in humans has a preliminary report suggesting a survival benefit from the use of a commercially available cannabis-based product²². The disconnect between evidence of benefit and actual use was also seen in a 2015/2016 survey of 926 adult cancer patients in Washington State, which also found that more than one quarter of cancer patients currently using cannabis used it with the intent of reducing cancer growth¹¹. Our survey did not further investigate the reasoning behind a patient’s decision to use cannabis as part of cancer care. In contrast to the situation in which patients dose their medications in response to the effect on a symptom or symptoms, patients believing that cannabis can be used to cure their cancer or extend their life can be problematic, because they might ignore adverse effects or take dangerously high doses in the hopes of achieving an unproven and unrealistic outcome¹⁷.

Access to cannabis did not seem to be a problem for patients, with less than 8% of current users indicating that they experienced any barriers to access despite less than one third having a medical authorization. Almost all current users obtained it “from a friend” or a dispensary. Before 17 October 2018, dispensaries were all unregulated, meaning that the products they sold could have contained moulds or pesticides that could worsen the health of already unwell patients and could have had inaccurate labelling²³. Sourcing “from a friend” is arguably even more unsafe. The rarity of medical authorizations among the patients suggests that few had discussed cannabis with

their health care provider or that some might be using it against the advice of their health care provider.

Also consistent with other reports is our finding that health care professionals do not feel sufficiently informed to be able to counsel their patients effectively³. The numerous comments made by patients in our study about their desire for their health care provider to be more knowledgeable about cannabis and to discuss cannabis routinely at appointments reported negative experiences. With legalization of recreational access, patients might be even less inclined to speak with their physician about cannabis use.

As for any study, our study has several limitations that must be considered. To begin, resource constraints meant that the survey was distributed on only a single day, which limited the number of patients that could be included. Because some clinics are held only on certain days at BCC sites (for example, the Pain and Symptom Management/Palliative Care clinic, which is held on Tuesdays and Thursdays at the Vancouver site, handles the most referrals for symptom management support of any of the sites), underrepresentation or overrepresentation of some patient groups might result from the use of a Wednesday as the index day. However, each centre schedules patients from different tumour groups on different days, and so any group underrepresented at one centre should be countered by its relative overrepresentation at other centres, thus minimizing that bias. The proportion of patient respondents from each tumour group was consistent with the proportions of patients seen at BC Cancer overall²⁴. An underrepresentation of patients from rural areas might also have been possible because community oncology sites were not included, potentially reducing the number of patients who reported accessibility barriers. Additionally, the relatively small number of current users who reported using cannabis for its appetite-enhancing effects suggests a possible underrepresentation of patients near end of life, when anorexia is more common. Such patients might no longer be attending outpatient clinic appointments. Lastly, as with all surveys, the potential for inaccurate information because of response bias has to be acknowledged. Given that recreational access to cannabis was illegal in Canada at the time of survey distribution, we expected, if anything, that cannabis use would have been underreported by both prior and current users. The large percentage of respondents who were white (compared with respondents of other races) should be noted as another potential response bias. Furthermore, we expected the stigmatization and illegality of cannabis to have affected the overall response rate, as for another study of the same kind¹¹. However, we believe that the results are still generalizable, given that another recent Canadian study of cannabis use in cancer patients reported similar results¹⁵.

Cannabis-based products do have potential as alternatives to polypharmacy for cancer-related symptoms; however, that benefit can be realized only if more research is carried out to develop a standard of practice for the use of cannabis-based products. It is important to determine the risks associated with the use of such products, the potential contraindications, the dosing regimens, and the potential roles for cannabis extracts in treating various symptoms or symptom clusters.

CONCLUSIONS

Our study provides valuable information about the current state of cannabis use in patients attending cancer centres in British Columbia. We found that almost one quarter of cancer patients currently use cannabis-based products of one form or another, frequently from unreliable sources and with little physician guidance. Many more are considering cannabis use. With recreational legalization in full effect as of 17 October 2018 in Canada, the survey will be repeated to determine if legalization has had any effect on patient use of, or attitudes toward, cannabis.

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CONFLICT OF INTEREST DISCLOSURES

We have read and understood *Current Oncology's* policy on disclosing conflicts of interest, and we declare that we have none.

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