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Title: Prevalence of cannabis use among individuals with a history of cancer in the United States

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Lay summary (100 words): Cannabis (marijuana) use is increasing in the United States, but we do not have much information on the relationships between cannabis use and cancer. We studied information from a representative group of people and found that younger patients generally reported more past and/or recent cannabis use if they had been diagnosed with cancer while older individuals did not. Beliefs about cannabis risk and accessibility also differed by age. Clinical trials to study cannabis should account for patient age, and accurate information about cannabis should be provided to help patients with cancer make decisions about cannabis use.

Precis for Table of Contents (2 sentences): Both patient age and cannabis perceptions should be considered in future studies of cannabis and cancer. Policy initiatives or interventions designed to provide quality information on all aspects of cannabis use in those with cancer, including an accurate assessment of risks associated with cannabis use, may be warranted.

Abstract (250 words)

Background: Patients with cancer have played a key role in advocating for legal access to cannabis, but little is known about links between cancer and cannabis use or cannabis-related beliefs. We used data from a national survey to study these relationships.
Methods: Nationally-representative data collected by the National Survey on Drug Use and Health (NSDUH) from 2015-2019 were acquired. Patterns of cannabis use and cancer history were examined and tested within age group sub-populations via domain analysis utilizing survey weights.
Results: Data for 214,505 adults, including 4,741 (3.8%) with past (>1 year ago) cancer diagnosis and 1,518 (1.2%) with recent (≤ 1 year ago) cancer diagnosis were examined. Cannabis use was less common in those with past (8.9%; 95% CI: 8.0, 9.8) or recent (9.9%; 95% CI: 6.9, 11.1) cancer diagnosis than those without history of cancer (15.9%; 95% CI: 15.7, 16.1). However, when analyses were stratified by age group, those aged 18-34 years were more likely to report past cannabis use and those aged 35-49 years were more likely to report past or recent cannabis use if they had history of cancer. Younger patients felt that cannabis was more accessible and less risky if they had history of cancer.
Conclusions: Patients with cancer were less likely to report cannabis use, but there were different cannabis perceptions and use patterns by age. Age should be considered in studies of cannabis and cancer; policy initiatives may be needed to aid provision of quality information on cannabis risk to those with cancer.
Key words: marijuana, cannabidiol, CBD, THC, oncology

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Introduction

As of 2020, medical cannabis had been legalized in 36 states, and adult non-medical cannabis has been legalized in 14 states [1]. Although cannabis remains illegal at the federal level, the prevalence of cannabis use is increasing within the context of shifting policies related to cannabis use in the United States [1-4]. In 2019, 17.5% of those 12 years of age or older reported cannabis use within the last 12 months, up from 11.0% in 2002 [3]. Along with increasing cannabis use, the perceived risk of cannabis use has been declining, with lower risk perceived in younger age groups [4].

The changes in policy and cannabis perception are particularly relevant to patients with cancer because cancer is a qualifying condition in most of the existing state medical cannabis initiatives while research on cannabis and cancer is still quite preliminary [4,5]. Though some preclinical studies of cannabis

have supported its use as a treatment for cancer, no studies have demonstrated improvement in clinical oncologic outcomes due to cannabis use [5]. Therefore, cannabis is predominantly used by patients with cancer for management of symptoms related to cancer or treatment of cancer [6,7]. Previous reports have demonstrated diverse patient-described indications for cannabis use, including insomnia, nausea, depression, anxiety, and appetite difficulties in addition to management of malignancy (treatment of cancer) [6,7]. Oncologists understand that there is a need for additional information about cannabis use and cancer to facilitate quality patient care, and recent increases in funding opportunities and a key symposium sponsored by the National Cancer Institute in December 2020 suggest that improved understanding in this area has become a greater priority for funding agencies.

Patients with cancer are likely exposed to a number of messages about the potential benefits of cannabis either for treatment of cancer or for management of symptoms and side effects from cancer or cancer treatment. However, very little is known about how patients with cancer perceive the risks of cannabis and how this compares to similar-aged adults in the general population. This study utilized 5 years of data from a large nationally-representative sample to compare past and recent (past year) cannabis use between similar-aged adults who report never having cancer, past cancer (not in the past year), and cancer within the past year. An additional study aim was to examine perceptions of cannabis risk and availability based on cancer status.

Materials and Methods

Data Acquisition

Deidentified data were acquired from the United States Department of Health and Human Services (DHHS) Substance Abuse and Mental Health Services Administration (SAMHSA)-sponsored National Survey on Drug Use and Health (NSDUH, RRID:SCR_007031) via the publically-accessible NSDUH data repository on the SAMHSA website (https://www.samhsa.gov). The NSDUH is an annually conducted survey-based study that is designed to be representative of the United States at a national level and includes individuals (age ≥ 12 years) from the 50 states as well as the District of Columbia. The present analyses focused on all individuals 18 years or older across a period of 5 years (2015-2019) [3].

Sample and measures

The sample of interest consisted of all persons aged 18 years or older who completed the NSDUH in 2015-2019. Within this group, cancer history and cannabis use history were key items of interest. A history of cannabis use was identified using the following question: “Have you ever, even once, used marijuana or hashish? 1. Yes, 2. No (MJ01)”. Details of cannabis use (current vs past) were further assessed in subsequent questions. Questions on cancer were added to the NSDUH starting in 2015 [8]. Individuals with a history of cancer diagnosis were identified based upon the following question: “Below is a list of health conditions that you may have had during your lifetime. Please read the list and type in the numbers of all of the conditions that a doctor or other health care professional has ever told you that you

had." This list included a number of conditions, including "Cancer or a malignancy of any kind". Details about cancer history were assessed in subsequent questions. Demographic characteristics were examined, including: age, gender, race/ethnicity, domestic status, education, employment, and income; information about cancer history, cannabis use history, timing of cancer and cannabis use, cannabis accessibility, legal status of cannabis, and misuse of other drugs was also examined (Table S1) [9,10]. Individuals with the sole cancer diagnosis of non-melanoma skin cancer were excluded from the analysis.

Statistical Analysis

Statistical analyses were conducted in SAS 9.4 (SAS Institute, Cary, NC), via the SURVYEYFREQ and SURVEYLOGISTIC procedures which utilized the NSDUH-derived weight, stratum, and cluster variables. Hypothesis tests were evaluated via logistic regression utilizing generalized logits with the goal of understanding the association between cancer diagnosis and other patient features on cannabis use and perceptions of cannabis risk and availability. Patterns of cannabis use and cancer history were examined and tested within age group sub-populations via domain analysis. Reported frequencies include unweighted sample sizes (Ns) with weighted percentages. Data were weighted to adjust for nonresponse rates and to provide nationally representative estimates.

Results

Population description

NSDUH surveys were conducted between 2015 and 2019 for 339,463 individuals throughout the United States. Of these, 282,768 useable (as determined by SAMSHA) cases were made available for public use; the 214,505 individuals who were aged 18 and older were included in the analysis presented in this report. A total of 4,741 (3.8%) individuals with past cancer diagnosis (more than 1 year ago) were identified, and 1,518 (1.2%) individuals reported a cancer diagnosis in the last year. A total of 45,770 individuals endorsed Cannabis use in the past year, and a further 64,409 participants had used cannabis in the past but not within the past year, while 104,326 individuals had never used cannabis. Demographic and cancer history data are presented in Table 1.

Relationship between cancer diagnosis and recent cannabis use

In the full population, those with a cancer diagnosis were much less likely to endorse use of cannabis within the last year than those without a cancer history (Table 2). This effect was seen regardless of whether the cancer diagnosis was more than one year in the past [past cancer: 8.9% (95% CI: 8.0, 9.0) vs. never cancer: 15.9% (95% CI: 15.7, 16.1)] or within the last year [recent cancer: 9.9% (95% CI: 6.9, 11.1) vs. never cancer: 15.9% (95% CI: 15.7, 16.1)].

Impact of age on recent cannabis use in context of cancer

Given known relationships between age and cannabis use, further analyses were conducted stratified by age (Table 2). There were large variations in cannabis use rates within the last year among those without cancer aged 18-34 (28.9%; 95% CI: 28.6, 29.3), 35-49 (13.9%; 95% CI: 13.5, 14.3) and ≥50 years (7.8%; 95% CI: 7.3, 7.9). When examining the associations between cancer and cannabis use within stratified age groups, similar patterns were seen among those with past cancer and recent cancer. Specifically, those with past and recent cancer did not have different cannabis use rates from those without a cancer history in the youngest (18-34) and oldest (≥50) age groups; however, there were significant differences in the middle age group based upon cancer history, with higher rates of cannabis use in those with past (16.7%; 95% CI: 14.0, 19.5) or recent (26.2%; 95% CI: 20.5, 31.9) cancer than in those with no cancer history (13.9%; 95% CI: 13.5, 14.3).

When examining past (not in the last year) cannabis use patterns in aggregate, those with past (34.6%; 95% CI: 33.1, 36.2) or recent (34.7%; 95% CI: 31.0, 38.4) cancer endorsed higher rates of past cannabis use than those with no cancer history (32.3%; 95% CI: 32.0, 32.5). When stratified by age groups, the rates of cannabis use were higher in those with past cancer than those with no cancer history in the youngest (18-34) and middle (35-49) age groups, but confidence intervals overlapped in all cases for recent cancer and in both past and recent cancer for the oldest age group (≥50).

Impact of cannabis legal status, sex, race, and ethnicity

Descriptive data with regard to cannabis legal status (Table S6), sex (Table S7) and race/ethnicity (Table S8) by cannabis use and cancer history are presented in the supplementary appendix. Due to low cell counts, statistical assessment was not performed. These tables are meant to be hypothesis generating and suggest trends toward more cannabis use in areas where cannabis is legal and among males with and without cancer across all age groups.

Impact of cancer history and age on cannabis use frequency

Descriptive data regarding cannabis use frequency given as days that an individual used cannabis in the last year (Table S9) are presented in the supplementary appendix for hypothesis generating purposes.

Relationship between cannabis use and misuse of opioids, tobacco, and alcohol

Descriptive data regarding misuse of opioids, tobacco, and alcohol by cannabis use and cancer history (Table S10) are presented in the supplementary appendix for hypothesis generating purposes.

Perceived cannabis accessibility and risk

Additional analyses examined perceptions of cannabis accessibility within specific age groups (Figure 1 A-C, Table S2, Table S3). With increasing age from 18-34 to 35-49 to ≥50, respondents generally perceived cannabis acquisition to be increasingly arduous, and the impact of cancer on this

perception changed. In the youngest age group (18-34), those with cancer history (past or recent) perceived cannabis as more accessible. A similar trend was noted in those with a past cancer history in the middle age group (35-49) but not in those with a recent cancer diagnosis. In the oldest age group (≥50), the opposite relationship was seen, and individuals with past cancer perceived cannabis as less rather than more accessible.

When examining perceived risks of cannabis, individuals from the youngest age group (18-34) were most likely to ascribe "no risk" to cannabis, while older individuals were most likely to ascribe "moderate to great risk"; the middle age group (35-49) was intermediate in terms of relative risk assessments (Figure 1 D-F; Table S4, Table S5). In younger age groups (18-34 and 35-49), those with recent cancer history were less likely to perceive cannabis as being associated with "moderate to great risk." In the oldest age group (≥50), no differences in perceived cannabis risk were noted based on cancer history.

Discussion

We present findings from what is to our knowledge the first nationally representative analysis of the prevalence of recent and past cannabis use in those with cancer in the United States. We have also examined perceptions of cannabis accessibility and risk in this population. This analysis has revealed a number of general and age-specific patterns of association between cannabis use, perceptions of cannabis risk and accessibility, and cancer. First, in unadjusted analyses, individuals with either past (not in the past year) or recent (past year) cancer diagnosis were less likely to endorse recent cannabis use than those without cancer. Second, these differences can be largely explained by differences in cancer diagnosis rates by age (increased cancer incidence with increasing age) and differences in cannabis use rates by age (lower cannabis use rates with increasing age). Third, there were variable impacts of cancer diagnosis on recent cannabis use rates by age. Fourth, age-related differences in recent cannabis use paralleled similar findings related to perceived cannabis accessibility and perceived cannabis risk. Fifth, younger individuals with a cancer diagnosis were more likely to endorse past (not in the last year) cannabis use. Taken together, these findings demonstrate the need for clinicians, clinical trialists, and policy makers to carefully consider patient age when addressing multifaceted questions and concerns related to cannabis use and cancer while providing appropriate guidance to patients and the public. Age-related differences in cannabis use and perception support periodic future studies of the United States population to understand dynamics of cannabis use as younger populations age in the face of ongoing legalization efforts in addition to ongoing and future studies designed to assess the true benefits and risks of cannabis use in diverse populations of patients with cancer.

Cancer history and recent cannabis use

Published reports document rates of cannabis use among patients with cancer of approximately 20% at one cancer center in Washington in the United States and approximately 35% in a large Canadian

study [7,11]. These rates are higher than the rates seen in the present study with overall recent cannabis use rates among those with past cancer of 8.9% (95% CI: 8.0, 9.8) vs. 15.9% (95% CI: 15.7, 16.1) in those with no cancer history. There are many potential reasons for the differences among these data. The present study captures participants across the United States who may be subject to very different legal contexts with regard to cannabis that could impact use rates. Reporting biases or differences in patient selection could also impact the rates of cannabis use identified in these studies. It is also unclear the extent to which differences in assignment of cannabis use and cancer diagnoses between the present work in the US and the Canadian study noted above could have led to differences in ability to consider recent cannabis use versus past cannabis use. If greater numbers of individuals who were no longer using cannabis but used cannabis in the past were counted in the Canadian study, it could explain the larger numbers seen in the Canadian study, which are not very different from the numbers seen in the United States when anyone with a history of cannabis use (not just recent cannabis use) is considered (Table 2). Regardless, this work extends the previously available data by presenting national level information from the United States.

Beyond discussions of cannabis use prevalence, consideration of patient age is critical to the study of cannabis use in the context of cancer. Patients with cancer in aggregate were less likely to use cannabis, which was unexpected given the important role that patients with cancer have played in policy discussions about cannabis [12]. However, it is well known that cancer incidence increases with age and that cannabis use is more prevalent in younger age groups [3,13]. This suggests that if age is not considered, both cancer history and cannabis use would be confounded with age. In our analysis with age-based stratification, findings supported well-known patterns of cannabis use in different age groups that were also present within the cancer patient population. As a result, careful age-based stratification should be performed when studying cannabis and cancer to avoid generation of misleading conclusions.

When looking specifically within age groups, differences in recent cannabis use between those with and without cancer were not seen in older individuals (50+) or in the youngest age group (18-34), but they were seen in the middle age group (35-49). The cause of this difference is unclear; however, it is possible that the impact of cancer was noted in this group because of the intermediate cannabis use rates seen in this group and greater variation within this age group in terms of perception of cannabis accessibility and risk, as described in the following section. It is also possible that similar differences in recent cannabis use by cancer history were present in both the youngest and middle age groups but that they were only detected in the middle age group because the prevalence of cancer in the youngest age group is exceedingly low.

Perceptions of cannabis accessibility and risk

Exploration of perceived accessibility and risk also revealed age-related differences that varied with history of cancer. There were large age-specific differences in perceived accessibility, with older individuals feeling that cannabis was less accessible and younger individuals feeling that cannabis was

more accessible. Similarly, older individuals felt that cannabis use was riskier than younger individuals. In terms of reasons for these differences, older individuals may have formed opinions during a period of time when cannabis was universally illegal while the opinions of younger individuals developed at the same time that cannabis legalization was occurring, which has progressed rapidly in recent decades [1]. A previous study noted a potential impact of legal status on cannabis use in those with cancer; individuals with cancer were less likely to endorse cannabis use in the absence of current approval for medical cannabis [12]. Generally speaking, legalization is thought to lower perceived risk and increase accessibility [14]. This suggests that shifts in perception may drive increases in cannabis use in those with cancer as they have likely driven changes in state-level policy and that this perception is likely related in complicated ways to past opinions, current legal status, and patient education both by the provider and by society.

Cancer diagnosis was related to perception of cannabis risk and cannabis accessibility in the youngest age group (18-34) and in the middle age group (35-49), although to a lesser degree. It is possible that perceived accessibility increased with cancer diagnosis in younger and middle aged individuals because they were more aware that cannabis is a near-universal qualifying condition for medical cannabis. Younger individuals may also be more likely to ask questions of colleagues and providers or may be more likely to know people who use cannabis given greater numbers of individuals using cannabis within their age cohort, likely impacting perceived risk and perceived accessibility. These findings raise questions about how general cannabis-related perceptions might change with time as the younger cohorts age and replace older cohorts. It is also important to note that the actual risks associated with cannabis use may themselves vary with age to facilitate appropriate education of patients with regard to potential risks of greatest relevance[3].

Past cannabis use and cancer diagnosis

The finding that individuals with any history of cancer (past or recent) were more likely to endorse a past cannabis use in the youngest and middle age groups raises questions about cancer-related risks of cannabis use. There are several potential explanations. Interactions between cannabis use and carcinogenesis and/or behaviors related to both cannabis use and cancer risk could drive increased rates of cancer, but the degree to which cannabis contributes to cancer risk versus potential increased cannabis use in those with cancer is difficult to assess given the cross-sectional nature of the NSDUH data. Specifically, NSDUH data provide limited insight with regard to chronology. However, the finding of higher rates of past cannabis use in those with recent cancer suggests that the differences are less likely to be explained in entirety by cannabis initiation for management of cancer or cancer-related symptoms, highlighting a need for further study.

A number of prior studies have examined the relationship between cannabis use and cancer risk. An Institute of Medicine report noted that the strongest association between cancer and cannabis use has been found in testicular cancer, but no robust causal relationships between cannabis use and the

development of cancer have been demonstrated to date [5]. More recently, some have raised concerns that growth of HPV-positive head and neck malignancies might be accelerated in the setting of cannabis use [15]. These data are somewhat difficult to interpret in isolation given the examples of potential anti-cancer effects of cannabis components in pre-clinical studies of other malignancies, but it is important to note that there has not been evidence of improved clinical oncologic outcomes through cannabis use to date [5]. Outside of the lab, behavioral studies have noted riskier sexual practices and co-use of substances such as tobacco and alcohol in those using cannabis [16-20]. Linkage between sexual behaviors and both head and neck and gynecologic malignancies are well understood, as are relationships between substance use and malignancy (particularly tobacco and alcohol) [21,22]. There is an urgent need for understanding regarding the risks associated with cannabis use in terms of impact of cannabis on cancer development and growth and on behaviors that might result in greater cancer risk so that appropriate interventions can be devised to mitigate such risk.

Limitations

There are several important limitations of this study that must be considered. NSDUH data are self-reported responses to survey questions, raising concerns about substance use-related stigma and associated biasing of responses, but the use of computer-assisted interviewing does increase the likelihood of obtaining honest responses when sensitive questions are asked [23]. The study is cross-sectional, so it is not possible to follow use patterns over time as they might relate to a patient's course of cancer treatment. We are also unable to assess chronicity of use. Because cannabis use among those with a cancer diagnosis occurs at a relatively low frequency in some age cohorts (e.g., those aged 18-34), findings reported here should be interpreted with caution and regarded as hypothesis generating. Numbers for individual cancers were small, and as a result, we were not able to provide detailed assessments by cancer type. Additionally, the NSDUH questions about cannabis use the term "marijuana" but not "cannabis," and later questions in the survey focus on cannabis products in the form of joints and loose plant materials; there may be under-reporting of cannabis use in general and/or under-reporting or of particular product types, which might be more or less popular with particular groups of individuals or may be referenced using differing terminology in various groups. Finally, it was not possible to effectively disaggregate medicinal and recreational cannabis use nor was it possible to relate cannabis use to detailed time windows shorter than 1 year, limiting the extent to which we are able to accurately characterize use patterns within various groups. This list of limitations provides valuable insight for those designing future studies of Cannabis use in those with cancer, which will seek to answer many questions that could not be addressed with these data.

Conclusions

Patient age is an important factor with regard to cannabis use rates in those with and without cancer. In younger patients, past cannabis use is seen more frequently in those with past or recent

cancer diagnosis. Middle-aged patients are more likely to endorse current cannabis use if they have a history of cancer. Age-stratified findings related to perceived risks and availability of cannabis related to cancer status appear to generally parallel the findings on cannabis use, suggesting that these factors could partially account for use patterns that also vary by age. The importance of perception places particular emphasis on both the development of additional data regarding cannabis risk and the careful provision of patient education within the bounds of available quality evidence.

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Tables

Table 1. Characteristics of the study population (years 2015-2019)

	Cancer History		
	Never	**Past**[a]	**Recent**[b]
Total	208246 (94.9; 94.8, 95.0)	4741 (3.8; 3.7, 4.0)	1518 (1.2; 1.2, 1.3)
Sex	–	–	–

Male	975752 (48.7; 48.4, 49.1)	1554 (36.0; 34.1, 37.9)	643 (49.4; 45.8, 52.9)
Female	110674 (51.3; 50.9, 51.6)	3187 (64.0; 62.1, 65.9)	875 (50.6; 47.0, 54.2)
Age group	–	–	–
18-34	113150 (31.2; 30.9, 31.6)	603 (4.4; 4.0, 4.9)	179 (4.0; 3.3, 4.7)
35-49	55203 (25.4; 25.1, 25.7)	1051 (11.3; 10.4, 12.2)	312 (10.1; 8.6, 11.5)
50 and older	39893 (43.3; 42.9, 43.8)	3087 (84.2; 83.2, 85.3)	1027 (85.9; 84.2, 87.5)
Race/ethnicity	–	–	–
Non-Hispanic White	123860 (62.8; 62.3, 63.4)	3864 (83.2; 81.9, 84.5)	1200 (81.7; 79.2, 84.2)
Non-Hispanic Black	26650 (12.1; 11.8, 12.5)	302 (6.0; 5.2, 6.9)	129 (8.3; 6.4, 10.2)
Hispanic	36559 (16.5; 16.1, 16.9)	341 (7.0; 6.0, 7.9)	115 (6.8; 4.9, 8.6)
Other Non-Hispanic	21177 (8.5; 8.2, 8.7)	234 (3.8; 3.0, 4.6)	74 (3.2; 1.9, 4.5)
Domestic status			
Married	84519 (51.3; 50.8, 51.7)	2718 (60.3; 58.5, 62.0)	843 (60.6; 57.3, 63.8)
All others	123727 (48.7; 48.3, 49.2)	2023 (39.7; 37.9, 41.5)	675 (39.4; 36.1, 42.7)
Employment	–	–	–
Full or part time	142235 (63.6; 63.3, 64.0)	2352 (42.6; 41.2, 43.9)	656 (37.7; 34.2, 41.2)
All others	66011 (36.4; 35.9, 36.7)	2389 (57.4; 56.1, 58.8)	862 (62.3; 58.8,65.8)
Education	–	–	–
Less than HS diploma	27309 (12.9; 12.7, 13.2)	379 (8.1; 7.0, 9.2)	167 (10.2; 7.9, 12.4)
HS grad/GED	55569 (24.9; 24.6, 25.2)	1099 (23.0; 21.4, 24.5)	390 (24.8; 21.4, 28.3)
College, <4 years	69922 (30.8; 30.5, 31.2)	1583 (31.0; 29.1, 33.0)	476 (29.5; 26.2, 32.8)
College graduate	55446 (31.3; 30.8, 31.8)	1680 (37.9; 36.0, 40.2)	485 (35.5; 31.6, 39.4)
Income			
<20,000	42017 (16.5; 16.2, 16.8)	650 (11.8; 10.5, 13.1)	267 (15.0; 12.8, 17.2)
20,000-49,999	64995 (29.4; 29.0, 29.8)	1463 (30.7; 28.8, 32.6)	488 (31.5; 28.6, 34.3)
≥50,000	101234 (54.1; 53.6, 54.7)	2628 (57.5; 55.3, 59.7)	763 (53.5; 50.8, 56.2)

[a]Cancer diagnosed more than 1 year ago, excluding sole diagnosis of non-melanoma skin cancer.

[b]Cancer diagnosed in the last year, excluding sole diagnosis of non-melanoma skin cancer.

[c]Raw N (weighted %; 95% CI)

Abbreviations: GED – General Equivalency Degree; HS – high school; CI – confidence interval

Table 2. Prevalence of past and recent Cannabis use by cancer history (years 2015-2019)

Cannabis use history	Cancer History		
	Never	Past[a]	Recent[b]
Whole population	–	–	–
Never[c]	101061 (51.9; 51.5, 52.2)	2488 (56.4; 54.8, 58.1)	777 (56.3; 52.4, 60.1)
Past[c,d]	62161 (32.3; 32.0, 32.5)	1711 (34.6; 33.1, 36.2)	537 (34.7; 31.0, 38.4)
Recent[c,e]	45024 (15.9; 15.7, 16.1)	542 (8.9; 8.0, 9.8)	204 (9.9; 6.9, 11.1)
Aged 18-34	–	–	–
Never[c]	51786 (45.5; 45.1, 46.0)	228 (36.6; 32.0, 41.1)	60 (41.3; 31.9, 50.7)
Past[c,d]	27571 (25.5; 25.1, 25.9)	198 (33.9; 28.7, 39.2)	61 (34.2; 24.8, 43.6)
Recent[c,e]	33793 (28.9; 28.6, 29.3)	177 (29.5; 25.1, 33.8)	58 (24.5; 15.7, 33.2)
Aged 35-49	–	–	–
Never[c]	26688 (50.0; 49.4, 50.6)	442 (41.9; 38.6, 45.2)	122 (38.4; 32.4, 44.3)
Past[c,d]	20469 (36.1; 35.5, 36.7)	445 (41.3; 37.5, 45.2)	116 (35.4; 29.1, 41.8)
Recent[c,e]	8046 (13.9; 13.5, 14.3)	164 (16.7; 14.0, 19.5)	74 (26.2; 20.5, 31.9)
Aged ≥50	–	–	–
Never[c]	22587 (57.5; 56.9, 58.1)	1818 (59.4; 57.7, 61.2)	595 (59.1; 54.8, 63.4)
Past[c,d]	14121 (34.9; 34.3, 35.4)	1068 (33.8; 32.1, 35.4)	360 (34.7; 30.4, 38.9)
Recent[c,e]	3185 (7.8; 7.3, 7.9)	201 (6.8; 5.9, 7.7)	72 (6.3; 4.3, 8.3)

[a]Cancer diagnosed more than 1 year ago, excluding sole diagnosis of non-melanoma skin cancer.

[b]Cancer diagnosed in the last year, excluding sole diagnosis of non-melanoma skin cancer.

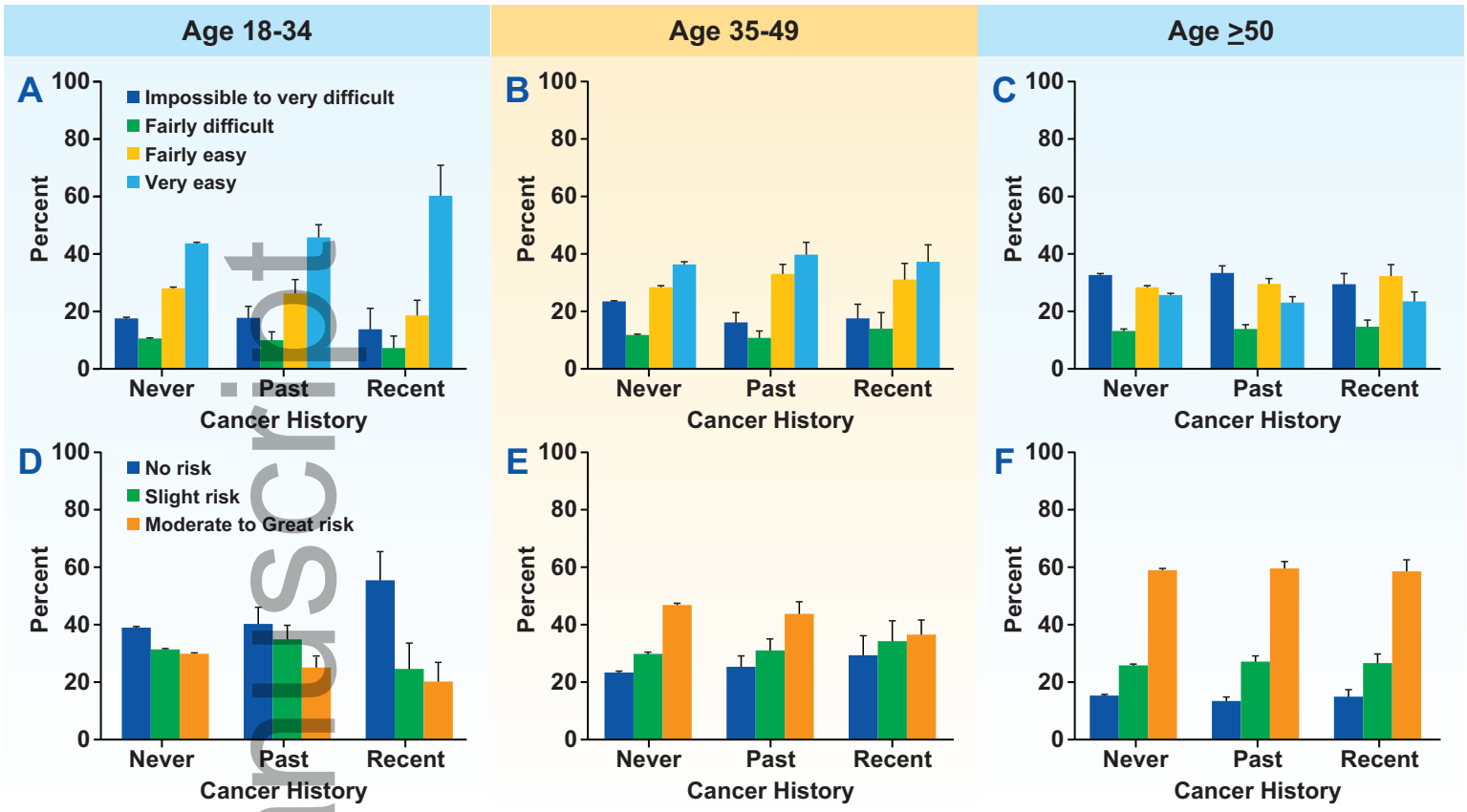
[c]Raw N (weighted %; 95% CI)

[d]Cannabis use in the past but not in the last year.

[e]Cannabis use in the last year.

Figure Legends

Figure 1. Perceived Difficulty Associated with Cannabis Acquisition and Perceived Risk of Monthly Cannabis Use. Respondent assessment of the ease or difficulty associated with acquisition of Cannabis by age and cancer history is presented for three age groups: (A) 18-34, (B) 35-49, and (C) ≥50 (see Table S2 and S3). Respondent assessment of the risk of monthly Cannabis use by cancer history is presented for three age groups: (D) 18-34, (E) 35-49, and (F) ≥50 (see Table S4 and S5). Error bars indicate 95% confidence intervals.



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