Patterns and factors of problematic marijuana use in the Canadian population: Evidence from three cross-sectional surveys

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ABSTRACT

OBJECTIVES: The objectives of this study are to describe marijuana use in Canada and explore factors associated with problematic use.

METHODS: Data from the 2010–2012 circulations of the Canadian Alcohol and Drug Use Monitoring Survey were used to create three logistic regression models for the purposes of identifying and comparing factors associated with the degree of marijuana use, as determined via the WHO Alcohol, Smoking and Substance Abuse Involvement Screening Test (non-problematic, problematic) and European Monitoring Centre for Drugs and Drug Addiction (experiential, recent, current) methods.

RESULTS: Canadians aged 15–24 years are 15 times ($p < 0.001$) more likely to be current users than Canadians aged 65 or older, with the odds of exhibiting problematic marijuana use being 10 times ($p < 0.001$) greater. The odds of a male exhibiting problematic marijuana use are 2.46 times ($p < 0.001$) greater than for females. The odds of exhibiting problematic marijuana use are 41.0% ($p = 0.031$) and 53.0% ($p = 0.008$) greater for marijuana users with household incomes $40,000–$80,000 and less than $40,000 respectively compared to those with household income over $80,000. An earlier age of first marijuana use is associated with problematic use but not necessarily with being a current user.

CONCLUSION: The majority of our findings are consistent with the literature, showing that Canadians who are: male, adolescent or young adult, smokers, heavy drinkers, other illicit drug users, and who have poorer mental health status are more likely to engage in any marijuana use, particularly higher levels of marijuana use. These findings can be used to inform the development of policy in Canada to address problematic marijuana use and prepare for its possible legalization.

KEY WORDS: Cannabis; health policy; smoking; mental health; substance-related disorders

La traduction du résumé se trouve à la fin de l'article.

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Marijuana is the most widely used illicit drug in the world, as well as the most commonly used illicit drug in Canada.[1,2] Over 40% of Canadians have tried marijuana at least once in their lifetime and over 10% have used marijuana within the past year.[1] The adverse health effects of marijuana use may include acute psychotic symptoms, mental health disorders,[3] abnormal cognitive development,[4] lung cancer, and cardiovascular disease.[3] Evidence suggests a dose-response relationship exists between increased marijuana use and adverse health effects and those individuals having tried marijuana are at a higher risk for some mental health issues.[3] Because marijuana use in North America contributes approximately 81.5 YLDs (years lost due to disability) per 100 000 persons,[5] the factors influencing marijuana use have public health and economic ramifications.

Currently the Canadian government is exploring a legalization and regulation framework for marijuana use.[6] The Canadian approach to marijuana legalization includes minimizing the harms of use; establishing a safe and responsible supply chain; enforcing public safety and protection; and maintaining medical access.[6] Given the strong possibility of recreational marijuana legalization in Canada, as well as the evidence gap to inform policy,[6] it is important to understand the current implications of Canadian marijuana use.

While experts agree that marijuana has negative health implications, one fundamental limitation in the research is how to differentiate between problematic and non-problematic marijuana use.[7] Chen et al. found that the frequency of marijuana use was the most important factor in predicting drug dependence,[8] and therefore only frequency of use is needed to determine problematic use. Another method is the WHO Alcohol, Smoking and Substance Abuse Involvement Screening Test (ASSIST) instrument, scoring individuals from 0 to 39.[9] A score of 0–3 indicates non-problematic substance use, 4–26 indicates problematic substance use, and 27 or higher indicates substance dependence. This screening tool may lead to what Degenhardt et al. termed "diagnostic orphans": users who are misclassified.[10] Misclassification can occur when an individual exhibits a high

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frequency of drug use but declares that their use does not interfere with day-to-day living.

Canadian marijuana use literature is quite rare; the available literature focuses on subpopulations such as adolescents, young adults, or First Nations.[11] Statistics Canada has attempted to identify correlates of marijuana use, but the study was limited to descriptive statistics.[1] The objectives of our study are to describe Canadian marijuana use and explore factors associated with problematic use. Understanding the factors contributing to marijuana use will inform policy preparing for its possible legalization and interventions curtailing problematic use within the Canadian population. The questions explored here include: i) what factors are associated with an individual trying marijuana?; ii) what factors separate non-problematic and problematic marijuana users?; and iii) what factors are associated with an individual's history of use?

METHODS

Data

A secondary data analysis was conducted using the three most recent circulations (2010–2012) of the Canadian Alcohol and Drug Use Monitoring Survey (CADUMS). CADUMS is a yearly cross-sectional population survey on alcohol and other substance abuse in non-institutionalized Canadians 15 years of age or older living in the 10 Canadian provinces. Response rates for the surveys were 50.5% in 2010, 42.8% in 2011 and 39.8% in 2012. Table 1 provides a demographic summary of the combined dataset.

Measures

Outcome Measures

For the first research question, the outcome measure was a binary variable coded from the CADUMS question "*can1*" asking whether respondents have ever used marijuana in their lifetime. Those who responded "yes" or "no" are respectively categorized as either tried or never used marijuana.

For the second research question, the outcome variable consisted of categorizing individuals who had used marijuana at some point in their life as either non-problematic users (an ASSIST score of 0–3) or problematic users (an ASSIST score of 4 or higher), as suggested by Asbridge et al.[7]

For the third research question, the outcome measure was a categorical variable classifying users' history of use as either experiential, recent or current users via the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) criteria:[12] respondents who used marijuana at some point in their life were classified as either experiential users (used marijuana at least once in their life but not in the past year), recent users (used marijuana at least once within the past year but not in the past month) or current users (used marijuana at least once within the past month). Chen et al. found that proxy measures for marijuana dependence,[8] as classified by the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV), increased significantly if individuals used marijuana once a month. Hence we suspect our current users will most likely be problematic users.

Independent Predictors

The literature identified independent variables likely associated with any and increased marijuana use. Demographic variables selected were age,[13] sex,[14] marital status[15] and Aboriginal status.[11] Additionally a geographic region variable was included to control for any effects of possible socio-political and cultural factors present across Canada's regions. Socio-economic variables included were household income,[16] employment status[17] and educational attainment.[18] The age marijuana was first used,[19] smoking status, use of other illicit drugs, and heavy drinking (drinking alcohol on average at least once a week in a year and consuming 5 or more drinks on an occasion for men, 4 or more for women)[20] were included as covariates.[21] Self-perceived mental health status was included as a proxy for health status.[22] The distributions of these variables are summarized in Tables 1 and 2. Table 3 contains the cross-classification of the problematic/non-problematic users by history of use.

Table 1. Characteristics of the study sample from the Canadian population (CADUMS 2010–2012, $n = 34\,781$)

Variable	Level	Frequency (%)*
Ever used marijuana	Tried marijuana (Yes)	14 143 (40.7)
	Never used marijuana (No)†	20 517 (59.0)
	Missing	121 (0.3)
Age category (years)	Youth (15–24)	5568 (16.0)
	Adults (25–44)	11 513 (33.1)
	Middle-aged adults (45–64)	11 765 (33.8)
	Older adults (65+)†	5935 (17.1)
Sex	Male	16 876 (48.5)
	Female†	17 905 (51.5)
Region	Atlantic	2528 (7.3)
	Ontario	13 344 (38.4)
	Quebec	8394 (24.1)
	Prairies	5892 (16.9)
	British Columbia†	4623 (13.3)
Aboriginal status	Yes	547 (1.6)
	No†	34 157 (98.2)
	Missing	77 (0.2)
Ever been married	No	8613 (24.8)
	Yes†	25 840 (74.3)
	Missing	328 (0.9)
Household income	Did not know/Refused to answer	10 162 (29.2)
	High income (>$80,000)†	11 424 (32.9)
	Middle income ($40,000–$80,000)	7802 (22.4)
	Low income (<$40,000)	5393 (15.5)
Educational attainment	≤High school	13 024 (37.5)
	>High school†	21 394 (61.5)
	Missing	363 (1.0)
Currently employed	No	12 443 (35.8)
	Yes†	22 099 (63.5)
	Missing	239 (0.7)
Daily smoker	Yes	4232 (12.2)
	No†	30 494 (87.6)
	Missing	55 (0.2)
Heavy drinking	Yes	1111 (3.2)
	No†	32 407 (93.2)
	Missing	1263 (3.6)
Other illicit drug use	Yes	792 (2.3)
	No†	33 326 (95.8)
	Missing	663 (1.9)
Mental health status (self-reported)	Poor mental health	1524 (4.4)
	Good mental health†	33 257 (95.6)

* The displayed frequencies and percentages are weighted.
† The reference category for the variable.

Statistical methodology

The datasets were codified, affixed with a timestamp variable (year) and merged using STATA MP 13. The weights included in

Table 2. Marijuana use categorizations of individuals in the Canadian population (CADUMS 2010–2012, $n = 14\,143$)

Variable	Level	Frequency (%)*
Marijuana use defined by ASSIST score	Problematic use	1875 (13.3)
	Non-problematic use†	12 195 (86.2)
	Missing	73 (0.5)
Marijuana use defined by the EMCDDA	Current user	1907 (13.5)
	Recent user	1581 (11.2)
	Experiential user†	10 639 (75.2)
	Missing	16 (0.1)
Age (years) at first marijuana use	Childhood (<13)	295 (2.1)
	Adolescence/young adulthood (13–24)	12 350 (87.3)
	Adulthood (25+)†	1359 (9.6)
	Missing	139 (1.0)

* The displayed frequencies and percentages are weighted.
† The reference category for the variable.

Table 3. Cross-classification of history of marijuana use with problematic/non-problematic usage

	Non-problematic use Frequency (%)*	Problematic use Frequency (%)*	Total Frequency (%)*
Experiential	10 483 (98.9)	117 (1.1)	10 600 (100.0)
Recent	1380 (87.5)	198 (12.5)	1578 (100.0)
Current	332 (17.5)	1560 (82.5)	1892 (100.0)
Total	12 195 (86.7)	1875 (13.3)	14 070 (100.0)

* The displayed frequencies and percentages are weighted.

the CADUM surveys were adjusted for each respective year using SAS 9.3 software. The combined dataset included 34 781 individuals representing 26 587 925 Canadians. Descriptive statistics and regression modelling were performed on the weighted data and were conducted using SAS 9.3 with a 0.05 significance level.

Three models were built: 1) a binary logistic regression model identifying factors influencing the likelihood of individuals engaging in any marijuana use, 2) a binary logistic regression model identifying factors separating problematic and non-problematic users of marijuana as determined by the WHO ASSIST instrument, and 3) a multinomial logistic regression model identifying factors correlated with whether one was a current, a recent or an experiential marijuana user. A multinomial logistic model was used because the Proportional Odds assumption failed. The presence of multicollinearity among the independent variables had negligible influence on estimates because all Variance Inflation Factor (VIF) scores were below 1.8. Backwards elimination regression was used to build the models.

RESULTS

Descriptive statistics

CADUM survey results showed that 40.7% of the Canadian population have used marijuana at least once in their lifetime. Within this subset, 13.5% of the respondents were current users and 13.3% were problematic users. We found 82.5% of current users were problematic users and 98.9% of experiential users were non-problematic users.

Model 1: Tried marijuana vs. Never used

Table 4 presents the odds ratios (ORs) and 95% confidence intervals (CIs) for each independent variable. Our key findings for the odds of trying marijuana are: 59.1% greater for males than females ($p < 0.001$); over 4 times greater for individuals aged 25–44 years relative to those aged 65+ ($p < 0.001$); 2.07 times greater for self-identified Aboriginal Canadians ($p < 0.001$); greater for British Columbia (BC) residents relative to other Canadians; greater for high-income Canadians compared to all other income classes ($p < 0.001$); 42.0% greater for currently employed Canadians ($p < 0.001$); significantly reduced for Canadians who are or have

Table 4. Model 1 – Tried marijuana vs. Never used ($n = 31\,968$)

Variable	Level	OR	95% CI	*p*-value
Sex	Male vs. female	1.59	(1.45–1.75)	<0.001
Age category, years (vs. reference 65+)	15–24	2.67	(2.11–3.38)	<0.001
	25–44	4.23	(3.55–5.05)	<0.001
	45–64	3.61	(3.07–4.26)	<0.001
Aboriginal status	Aboriginal vs. non-Aboriginal	2.07	(1.50–2.85)	<0.001
Region (vs. reference British Columbia)	Atlantic	0.66	(0.59–0.74)	<0.001
	Ontario	0.63	(0.55–0.72)	<0.001
	Prairies	0.65	(0.58–0.74)	<0.001
	Quebec	0.73	(0.63–0.83)	<0.001
Household income (vs. reference High income)	Did not know/Refused to answer	0.56	(0.49–0.64)	<0.001
	Middle	0.77	(0.68–0.87)	<0.001
	Low	0.64	(0.55–0.75)	<0.001
Currently employed	Yes vs. no	1.42	(1.26–1.59)	<0.001
Ever been married	Yes vs. no	0.79	(0.68–0.93)	0.005
Educational attainment	≤High school vs. >High school	0.76	(0.69–0.85)	<0.001
Daily smoker	Yes vs. no	3.90	(3.40–4.48)	<0.001
Heavy drinking	Yes vs. no	3.53	(2.64–4.71)	<0.001
Other illicit drug use	Yes vs. no	22.10	(11.8–41.5)	<0.001
Mental health status	Poor vs. good	1.42	(1.11–1.82)	0.006

Table 5. Model 2: Problematic use vs. Non-problematic use according to WHO ASSIST scores (n = 11 859)

Variables	Levels	OR	95% CI	p-value
Sex	Male vs. female	2.46	(1.97–3.08)	<0.001
Age category, years (vs. reference 65+)	15–24	10.8	(5.41–21.5)	<0.001
	25–44	3.93	(2.01–7.69)	<0.001
	45–64	2.77	(1.42–5.39)	0.003
Age at first marijuana use (vs. reference Adulthood)	Childhood	2.20	(1.13–4.27)	0.020
	Adolescence/young adulthood	0.98	(0.65–1.49)	0.933
Region (vs. reference British Columbia)	Atlantic	0.93	(0.73–1.19)	0.560
	Ontario	1.04	(0.76–1.41)	0.824
	Quebec	0.60	(0.44–0.81)	0.001
	Prairies	0.75	(0.57–0.98)	0.036
Household income (vs. reference High income)	Did not know/ Refused to answer	0.94	(0.68–1.30)	0.741
	Middle	1.41	(1.03–1.92)	0.030
	Low	1.55	(1.13–2.12)	0.007
Heavy drinking	Yes vs. no	1.65	(1.08–2.51)	0.020
Daily smoker	Yes vs. no	2.79	(2.14–3.63)	<0.001
Other illicit drug use	Yes vs. no	6.99	(4.70–10.4)	<0.001
Mental health status	Poor vs. good	1.57	(1.04–2.39)	0.034

been married (OR = 0.79, p = 0.005); 3.90 (p < 0.001), 3.53 (p < 0.001) and 22.11 (p < 0.001) times greater for daily smokers, heavy drinkers and those who have used other illicit drugs within the past year respectively; and 42.0% greater for individuals with poorer self-perceived mental health status (p = 0.006).

Model 2: Problematic use vs. Non-problematic use

Table 5 provides the ORs and 95% CIs for the predictor variables in this model. Our key findings for the odds of exhibiting problematic marijuana use are: 2.46 times greater for males relative to females (p < 0.001); 10.80 (p < 0.001), 3.93 (p < 0.001) and 2.77 times (p = 0.003) greater for Canadian youth, adults and middle-aged adults respectively, relative to older Canadian adults; 2.20 times (p = 0.020) greater for those who first experimented in their childhood (<13 years of age) compared to those who first used marijuana in adulthood (25+); much less among marijuana users living in the Prairie (OR = 0.75, p = 0.036) or Quebec (OR = 0.60, p = 0.001) regions compared to marijuana users living in BC; 41.0% (p = 0.030) and 55.0% (p = 0.007) greater for marijuana users with middle and low household incomes respectively, relative to marijuana users with high household income; and 57.0% greater for marijuana users who report a poorer mental health status (p = 0.034). Marijuana users who are daily smokers (OR = 2.79, p < 0.001), heavy drinkers (OR = 1.65, p = 0.020), and have used other illicit drugs within the past year (OR = 6.99, p < 0.001) have much greater odds of engaging in problematic marijuana use. No difference was found for users who experimented in their teenage years/early adulthood (13–24 years) versus users who first used marijuana in adulthood (OR = 0.98, p = 0.933).

Model 3: Recent and current users vs. Experiential users

Using multinomial logistic regression on the subset of Canadians who have used marijuana in their lifetimes, a model was created to determine how the risk ratios associated with being a current or recent marijuana user compare to those for experiential marijuana users. The relative risk ratios (RRR) and 95% CIs for all predictor variables in this model can be found in Table 6.

Many of the findings for Model 3 are qualitatively similar to both Models 1 and 2. The risk ratios of males engaging in either recent (RRR = 1.30, p = 0.021) or current (RRR = 2.35, p < 0.001) marijuana use are significantly greater than the respective risk ratios for females. Also, the risk ratios for each of Canadian youth, adults and middle-aged adults engaging in either recent or current marijuana use are significantly greater than the risk ratios for older Canadian adults (65+).

While no significant differences in the risk ratios for those who initiated marijuana use in childhood versus in adulthood were observed for both recent (RRR = 0.75, p = 0.456) and current (RRR = 1.15, p = 0.709) marijuana users, the risk ratio for individuals who initiated use in adolescence/young adulthood and recently used marijuana (RRR = 0.60, p = 0.013) is less than the risk ratio for individuals who initiated use in adulthood.

The risk ratios of current users in the Prairie and Quebec regions (RRR = 0.60, p < 0.001, and RRR = 0.41, p < 0.001 respectively) are less than the risk ratios of individuals in BC. Considering household income for current users versus experiential users, the risk ratios for middle-income and low-income Canadians respectively are 39.0% (p = 0.040) and 45.0% (p = 0.029) greater than for high-income individuals. The risk ratios of married/have-been-married Canadians are less than the risk ratios of never-married Canadians for both recent (RRR = 0.56, p < 0.001) and current (RRR = 0.70, p = 0.021) marijuana users. Smoking status, heavy alcohol use, and other illicit drug use are significant predictors for both recent and current marijuana use. Individuals who used other illicit drugs within the past year have 15 times the risk ratio for engaging in current marijuana use (RRR = 15, p < 0.001). Finally, for both recent (RRR = 1.97, p = 0.002) and current marijuana users (RRR = 1.82, p = 0.005), the risk ratios for individuals with poor self-reported mental health were greater than those for individuals who reported good mental health.

Table 6. Model 3: Multinomial logit model – Recent vs. experiential users and Current vs. experiential users (n = 11 775)

Variables	Levels	Recent user vs. experiential user			Current user vs. experiential user		
		RRR	95% CI	*p*-value	RRR	95% CI	*p*-value
Sex	Male vs. female	1.30	(1.04–1.62)	0.021	2.35	(1.87–2.95)	<0.001
Age category, years (vs. reference 65+)	15–24	25.21	(9.93–63.97)	<0.001	15.41	(7.52–31.59)	<0.001
	25–44	6.28	(2.58–15.29)	<0.001	3.91	(2.00–7.61)	<0.001
	45–64	3.66	(1.51–8.84)	0.004	2.81	(1.45–5.43)	0.002
Age at first marijuana use (vs. reference Adulthood)	Childhood	0.75	(0.36–1.53)	0.456	1.15	(0.55–2.39)	0.709
	Adolescence/young adulthood	0.60	(0.40–0.90)	0.013	0.67	(0.44–1.00)	0.051
Region (vs. reference British Columbia)	Atlantic	0.79	(0.61–1.03)	0.078	0.79	(0.62–1.01)	0.059
	Ontario	0.79	(0.57–1.11)	0.172	0.75	(0.55–1.03)	0.076
	Prairies	0.78	(0.59–1.03)	0.078	0.60	(0.46–0.78)	<0.001
	Quebec	0.77	(0.57–1.05)	0.099	0.41	(0.30–0.56)	<0.001
Household income (vs. reference High income)	Did not know/Refused to answer	0.78	(0.58–1.05)	0.098	0.82	(0.58–1.17)	0.270
	Middle	1.26	(0.94–1.69)	0.115	1.39	(1.02–1.91)	0.040
	Low	0.87	(0.61–1.24)	0.444	1.45	(1.04–2.01)	0.029
Ever been married	Yes vs. no	0.56	(0.43–0.74)	<0.001	0.70	(0.52–0.95)	0.021
Daily smoker	Yes vs. no	1.38	(1.05–1.82)	0.022	2.93	(2.22–3.88)	<0.001
Heavy drinking	Yes vs. no	1.85	(1.21–2.85)	0.005	2.09	(1.34–3.26)	0.001
Other illicit drug use	Yes vs. no	5.63	(3.12–10.17)	<0.001	15.00	(8.47–26.56)	<0.001
Mental health status	Poor vs. good	1.97	(1.29–3.01)	0.002	1.82	(1.20–2.77)	0.005

DISCUSSION

Several distinguishing features of this study include: the presented detailed relationship between social and demographic factors associated with whether one has ever used marijuana, whether one is a problematic user, and one's history of marijuana use (experiential, recent, or current). This study extends the international literature through the application of the WHO ASSIST tool for use in population surveys. The study also contributes to Canadian literature by providing robust statistical models exploring factors associated with whether one has ever used marijuana, whether one is a problematic marijuana user, and one's marijuana-use history with respect to the general Canadian population.

Our findings suggest that the WHO ASSIST scale can be used effectively in a population-based survey to identify prevalence of problematic marijuana use if the dependent and problematic groups are combined, as suggested by Asbridge.[7] We found that problematic users (defined via the ASSIST scale) are most likely to be current users (defined by the EMCDDA). Because the EMCDDA definition of current user is frequent user, as defined by Chen et al.,[8] our results support Chen et al.'s work that frequency of use can be used to define problematic use.

Our findings are consistent with the literature in which males, adolescents and young adults, smokers, heavy drinkers, persons who use other illicit drugs, and persons who exhibit poorer mental health status are more likely to engage in using marijuana at some point in their lives and exhibit higher levels of marijuana use.

Males are more likely to engage in marijuana use, initiate use earlier and have higher usage patterns than females.[14,17] One theory for this may be increased risk-taking behaviours exhibited in males.[23] Another possibility is the effect of pregnancy on females' decisions to initiate or to cease marijuana use.[17] Adolescents and young adults may have an increased likelihood of marijuana use compared to adults due to peer influence,[24] a reduced perception of health risks[25] and due to life-course theory, where illicit drug use declines as individuals assume increased responsibilities which coincide with ascension into adulthood.[15] While the literature contained mixed results regarding the impact of marijuana legalization on increased adolescent usage,[4] given the negative health consequences on adolescents who use marijuana,[4] usage rates will be an important factor to monitor should marijuana use be legalized in Canada.

Drug and alcohol misuse is related to psychiatric disorders, including addictive behaviours and personalities.[21] The associations we found between marijuana use, smoking, heavy drinking, and other illicit drug use mirror previous research[3] on addictive behaviours involving multiple and co-addictions.[26]

With regard to the association between poorer perceived mental health status and marijuana use, this finding could be explained through the psychiatric effects that marijuana has on individuals or via the relationship between perceived general health and perceived mental health.[21] Research has demonstrated a link between marijuana use and perceived health, which may in turn alter perceived mental health.[22] In Canadian adolescent populations, drug use is associated with lower self-perceived general and mental health.[27] Our research supports that any proposed Canadian marijuana legalization framework should recommend implementing measures to protect these vulnerable populations.[6]

The relationship household income has with marijuana use is intriguing. We observed that both low- and middle-income individuals had lower odds of trying marijuana than high-income individuals. However when we examined the subpopulation of persons who have used marijuana at least once, we found the opposite trend. Low- and middle-income individuals had higher relative risks for currently using marijuana than high-income individuals (i.e., relative to the experiential users). These findings are similar to the literature on alcohol misuse, wherein wealthier

individuals tend to drink more frequently but moderately and are not usually problematic.[28]

We found the first use of marijuana in childhood (<13 years of age) is associated with a twofold increase in the odds of problematic marijuana use when compared to first marijuana use in adulthood (25+). Further, using marijuana first in adolescence/young adulthood (13–24 years) as opposed to adulthood is associated with a lower relative risk for being a recent or current marijuana user. These results suggest that individuals who experimented with marijuana as adolescents/young adults tend to discontinue using it. This result deviates from the literature, where earlier experimentation had been associated with an increased frequency of use.[21] Possible explanations for this deviation include: recall bias regarding age at first use, or social desirability bias where respondents report first use within a later age range to conform to social norms.

With the possibility of marijuana legalization in Canada, factors influencing usage are of key importance in policy development. Macro-level social normalization of marijuana could influence the rates of use in the whole population.[29] Hence, knowing the factors affecting usage and implementing appropriate controls are vital to ensuring harm reduction and health promotion in the Canadian population.[6]

Limitations

The CADUM surveys are limited because: 1) they do not include certain population subgroups, including Canadians under the age of 15, residents of the three northern territories, permanently institutionalized persons, homeless persons, and cell-phone only households; 2) interviews were only carried out in English or French; 3) individuals with severe general or mental health issues were often unable to complete the survey; and 4) response rates to the surveys were low.

Drug and alcohol use were self-reported and hence possibly under-reported and possibly subject to recall bias. In spite of these limitations, self-reported measures of drug and alcohol use are the most efficient method for estimating these behaviours.[30]

With regard to the methodology, the combination of three years of the same cross-sectional survey could pose some risk of respondent duplication. The two-stage sampling technique employed, along with random-digit dialling and asking for the next person to celebrate their birthday within the household, greatly reduced the likelihood of respondent duplication.

CONCLUSION

Our study investigated the factors associated with whether one has ever used marijuana, whether one is a problematic user, and one's history of marijuana use within the Canadian population. By understanding the factors contributing to marijuana use, interventions in the form of policy development can be formulated to address problematic use within the Canadian population and prepare for its possible legalization. One key issue with research on problematic marijuana use is the very definition of what is considered problematic. Here we used WHO's ASSIST guidelines for defining problematic use. Our results suggest that: age, sex, mental health status, and co-addictions with tobacco, alcohol and/or other illicit drugs are strongly associated with trying marijuana, problematic marijuana use, and one's history of use. We found that age at first marijuana use plays an important role in whether an individual uses marijuana problematically and whether one continues using marijuana into adulthood. More research on this subject is needed, particularly in light of the potential legalization of marijuana in Canada.

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RÉSUMÉ

OBJECTIFS : Décrire la consommation de marijuana au Canada et explorer les facteurs associés à sa consommation abusive.

MÉTHODE : À l'aide des données des tirages 2010–2012 de l'Enquête de surveillance canadienne de la consommation d'alcool et de drogues, nous avons créé trois modèles de régression logistique afin d'identifier et de comparer les facteurs associés au degré de consommation de marijuana, déterminé selon le questionnaire ASSIST (*Alcohol, Smoking and Substance Abuse Involvement Screening Test*) de l'OMS (consommation non abusive, consommation abusive) et selon les méthodes de l'Observatoire européen des drogues et des toxicomanies (consommation expérimentale, récente, actuelle).

RÉSULTATS : Les Canadiens de 15 à 24 ans sont 15 fois ($p < 0{,}001$) plus susceptibles d'être des consommateurs actuels que les Canadiens de 65 ans et plus, et leur probabilité d'avoir une consommation abusive de marijuana est 10 fois plus élevée ($p < 0{,}001$). La probabilité qu'un homme ait une consommation abusive de marijuana est 2,46 fois supérieure ($p < 0{,}001$) à celle d'une femme. Les probabilités de consommation abusive de marijuana sont 41 % ($p = 0{,}031$) plus élevées chez les consommateurs de marijuana dont le revenu du ménage si situe entre 40 000 $ et 80 000 $, et 53 % ($p = 0{,}008$) plus élevées chez ceux dont le revenu est inférieur à 40 000 $, comparativement à ceux dont le revenu du ménage est supérieur à 80 000 $. L'âge précoce de la première consommation de marijuana est associé à la consommation abusive, mais pas nécessairement au fait d'être consommateur actuel.

CONCLUSION : La majorité de nos constatations sont conformes aux documents publiés; elles indiquent que les Canadiens qui sont de sexe masculin, adolescents ou jeunes adultes, fumeurs, buveurs excessifs, consommateurs d'autres drogues illicites et dont l'état de santé mentale est moins bon sont plus susceptibles de consommer de la marijuana, et en particulier d'avoir des niveaux de consommation élevés. Ces constatations peuvent servir à éclairer l'élaboration de politiques au Canada pour aborder la consommation abusive de marijuana et nous préparer à sa légalisation possible.

MOTS CLÉS : cannabis; politique de santé; tabagisme; santé mentale; troubles liés à une substance