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Perceived Risk of Medical Cannabis and Prescribed Cannabinoids for Chronic Pain: A Cross-Sectional Study Among Quebec Clinicians

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ABSTRACT

Objective: An increase in medical cannabis and prescribed cannabinoids use for chronic pain management has been observed in Canada in the past years. This study aimed to: 1) Describe clinicians' perceived risk associated with the use of medical cannabis and prescribed cannabinoids for the management of chronic pain; and 2) Identify sociodemographic and professional factors associated with perceived risk of adverse effects. **Method:** A web-based cross-sectional study was conducted in Quebec, Canada in 2022. A convenience sample of 207 clinicians was recruited (physicians/pharmacists/nurse practitioners). They were asked to rate the risk of adverse effects associated with medical cannabis (e.g., smoke, or oil) and prescribed cannabinoids (e.g., nabilone) on a scale of 0 to 10 (0: no risk, 10: very high risk), respectively. Multiple linear regression was performed to identify factors associated with perceived risk. **Results:** Average perceived risk associated with medical cannabis and prescribed cannabinoids were 5.93 ± 2.08 (median:6/10) and 5.76 ± 1.81 (median:6/10). Factors associated with higher medical cannabis perceived risk were working in primary care (β = 1.38, p = .0034) or in another care setting (β = 1.21, p = .0368) as compared to a hospital setting. As for prescribed cannabinoids, being a pharmacist (β = 1.14, p = .0452), working in a primary care setting (β = 0.83, p = .0408) and reporting more continuing education about chronic pain (β = 0.02, p = .0416) were associated with higher perceived risk. No sex differences were found in terms of perceived risk. **Conclusions:** Considering the clinician's experience provide insights on cannabis risk as these professionals are at the forefront of patient care when they encounter adverse effects.

Key words: = chronic pain; healthcare professionals; physician; pharmacist; nurse; factors

Medical cannabis is legal in Canada since 2001 (Gagnon, 2019) and can be used in the treatment of several conditions such as chronic pain (CP; most common reason of use), anxiety, and depression (Kosiba et al., 2019). Non-medical (recreational) cannabis has been legalized in Canada since 2018 (Government of Canada., 2023), and has increased the accessibility of these products for the general population (Clarke & Fitzcharles, 2023; Statistics Canada, 2020).

A recent meta-analysis concluded that medical cannabis was used for CP management by 67% of users (Kosiba et al., 2019). In Canada, approximately one third of people living with CP report using cannabis for pain management (medical or non-medical; Godbout-Parent et al., 2022), and 15-62% of people with CP self-medicate

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with cannabis (use of cannabis for therapeutic purposes without guidance; Audet et al., 2024; Ware et al., 2003). Following non-medical cannabis legalization, an increase in medical cannabis (e.g., smoke, or oil) and prescribed cannabinoids (e.g., nabilone) use for CP management has been observed in Canada in the past years (≤10% in pre-legalization (Ste-Marie et al., 2016; Ware et al., 2003) vs. ≥30% in post-legalization (De Clifford-Faugère et al., 2023; Godbout-Parent et al., 2022)).

Medical cannabis and prescribed cannabinoids are considered a third-line treatment for CP (Häuser et al., 2018; Mu et al., 2017). The current scientific evidence on its efficacy and safety for CP management is limited (McDonagh et al., 2022). Medical cannabis and prescribed cannabinoids may provide short-term improvement for people living with neuropathic CP (Häuser et al., 2018; McDonagh et al., 2022). However, to our knowledge, mid- and long-term effects have not yet been investigated. To date, the International Association for the Study of Pain (IASP) Presidential Task Force and other national organizations do not recommend the use of cannabis and prescribed cannabinoids for CP management because of the lack of knowledge on efficacy and on short- and long-term safety (Fitzcharles et al., 2019; Haroutounian et al., 2021; NICE, 2019). However, certain expert panels support the utilization of cannabis for pain management, provided that it is accompanied by cautious monitoring (Busse et al., 2021).

In recent years, qualitative and quantitative studies have focused on clinicians' perceptions of medical cannabis use for CP including attitudes and beliefs (Abo Ziad et al., 2022; Jacobs et al., 2019; Karanges et al., 2018; Kondrad & Reid, 2013; Narouze et al, 2020; Ng et al., 2021; Schauer et al., 2022; Sharon et al., 2018; Zolotov et al., 2018), knowledge (Abo Ziad et al., 2022; Ebert et al., 2015; Jacobs et al., 2019; Karanges et al., 2018), clinical practices/ experience (Carlini et al., 2017; Ebert et al., 2015; Schauer et al., 2022; Sharon et al., 2018), training needs (Carlini et al., 2017), perceived efficacy for CP management (Cooke et al., 2019), and barriers/facilitators for prescribing cannabis (Hachem et al., 2022; Withanarachchie et al., 2023). Previous studies focusing on the risk of adverse effects associated with the use of cannabis for CP highlighted that clinicians are most concerned with the risk of addiction, misuse, mental health risk, dizziness and sedation, as well as drug interaction (Cooke et al., 2019; Hachem et al., 2022; Karanges et al., 2018; Kondrad & Reid, 2013; Ng et al., 2021; Withanarachchie et al., 2023). To our knowledge, no study, however, has focused on quantifying and comparing physicians, pharmacists and nurse practitioners' perceived risk associated with the use of medical cannabis. Also, little is known about sociodemographic and professional factors associated with a higher perceived risk of medical cannabis and prescribed cannabinoids use for CP management. Comparing the perceived risk of cannabis among physicians, pharmacists, and nurse practitioners, and understanding the factors predicting these perceptions, is relevant for tailoring continuing education and support tools to ensure a consistent and informed approach to cannabis management in healthcare.

This study thus aimed to describe and compare physicians', pharmacists' and nurse practitioners' perceived risk associated with the use of medical cannabis and prescribed cannabinoids for the management of CP. Sociodemographic and professional factors associated with those perceived risk were also explored. We hypothesized that differences would be found between types of clinicians in terms of perceived risk associated with the use of medical cannabis and prescribed cannabinoids. We also expected factors such as sex at birth, continuing education, years of practice, and personal experience with chronic pain to be associated with the perceived risk.

METHODS

Study Design and Population

This study was conducted in the context of a larger initiative about perceived risk towards medications used for CP management (De Clifford-Faugère et al., 2024). A web-based cross-sectional study was conducted from March 1 to May 28, 2022, in Quebec (Canada), and 207 clinicians (physicians, pharmacists, and nurse practitioners) were recruited. To be eligible, clinicians had to: 1) dispense and/or adjust prescriptions for the treatment of CP in their clinical practice, 2) hold a valid license, 3) practice in a Canadian setting, and 4) be able to complete a questionnaire in French. The project has obtained ethical approval from the

Research Ethics Board of *Université du Québec en Abitibi-Témiscamingue* (#2020-01–Diallo, M.).

Recruitment

Clinicians were recruited through various web platforms held by Quebec professional associations and research networks. The invitation to participate in the study was shared via associations' and networks' newsletters, but also on social media (Facebook [Meta Inc, Cambridge, MA]) and through emails sent by the team members ("snowball" sampling). In all dissemination platforms, the invitation contained the URL to access the anonymous online questionnaire on the SurveyMonkey platform (SurveyMonkey Inc, San Mateo, CA). The landing page allowed for free and informed electronic consent.

Measured Variables

Perceived risk of medical cannabis and prescribed cannabinoids. Participants were asked to assign a score between 0 and 10 for the risk of adverse effects for medical cannabis and then prescribed cannabinoids, 0 representing no risk and 10 a very high risk (De Clifford-Faugère et al., 2024). The risk of adverse effects was defined in the questionnaire as organ-specific or systemic toxicity (gastrointestinal symptoms, central nervous system), medication interactions, physical/psychological dependence potential, abuse potential, insomnia, tolerance, increased pain perception over time (hyperalgesia), and memory or concentration problems. In Quebec, nabilone is the only synthetic prescribed cannabinoids reimbursed by the public prescription drug insurance. Medical cannabis is available through a medical authorization under the Cannabis Act in various forms such as dried marijuana or cannabis oil.

Participants' characteristics. Various sociodemographic and professional variables were measured in the web-based questionnaire. Sociodemographic variables include sex at birth (female/male), gender identity (women, men, gender fluid, non-binary, trans man, trans woman, two-spirited, or none of these options), and region of residence (list of the 17 administrative regions in Quebec). Also, participants were asked if they or a loved one had CP (Lacasse et al., 2017). Professional variables included years of clinical practice (0-5/6-10/11-20/≥20 years), type of practice (e.g., pain clinic, primary care, community pharmacy, hospital setting), self-identification as a CP treatment specialist (yes/no), comfort level in dispensing or adjusting prescriptions for CP treatment (0-10 scale, 0: very uncomfortable, 10: very comfortable), proportion of past year continuing education activities related to CP and its treatment (0 to 100%), and country of initial education (Canada, North America excluding Canada, South America, Europe, Asia, Africa, Oceania, Antarctica).

Stasticial Analysis

Descriptive statistics were used to describe participants' sociodemographic and professional profile (means and standard deviations for continuous variables; numbers and proportions for categorical variables). Clinicians' perceived risk associated with medical cannabis and prescribed cannabinoids were described (median, interquartile range) by type of clinicians (nurse practitioners, physicians, and pharmacists). Kruskall-Wallis tests were then performed to investigate the difference between clinicians perceived risk. Bivariable and multivariable linear regression models were used to identify participants' sociodemographic and professional profile associated with perceived risk associated with medical cannabis and prescribed cannabinoids. Crude and adjusted ß, p values, and confidence intervals (CI) were reported. All independent variables to be included in the multiple linear regression analyses were identified based on a literature review and clinical considerations. Based on the more recent recommendation, an a priori selection of variable was applied instead of other criticized selection techniques such as relying on bivariate regression analyses p values (Sourial et al., 2019). Multicollinearity was tested according to variance inflation factors (VIFs), which were below 4.0 (Vatcheva et al., 2016) for all variables included in the multivariable models (sex at birth was kept instead of gender identity as they differed in 0.96% of participants). All statistical analyses were

performed using SAS® version 9.4 (SAS Institute, Cary, NC, USA).

RESULTS

Participants' Sociodemographic and Professional Characteristics.

In total 207 clinicians including 66 nurse practitioners, 83 physicians, and 58 pharmacists responded to the survey. Table 1 presents participants' characteristics. Clinicians were mostly females (86.0%), many practising in primary care clinics (44.0%) and working in different regions of Quebec (remote and near large urban centres; all administrative regions represented). Most of them (95.7%) had an initial education in Canada. The majority of our sample (74.9%) had more than 5 years of experience, and 10.6% of them considered themselves specialists in the treatment of CP. Also, these clinicians felt an average of 6.1 ± 1.9 points of comfort (0: very uncomfortable, 10: very comfortable) in dispensing or adjusting prescriptions for the treatment of CP. Regarding their continuing education activities in the past year, the average percentage of activities related to CP and its treatment was 23.4% ± 18.9. More than a quarter of clinicians (27.5%) reported living with CP and 37.2% had a loved one living with CP.

Table 1. *Professional's and Sociodemographic Profile*

Variables	Nurse practitioners (*n* = 66)	Physicians (*n* = 83)	Pharmacists (*n* = 58)	Total (*n* = 207)
	Mean ± *SD*	Mean ± *SD*	Mean ± *SD*	Mean ± *SD*
Comfort level in dispensing or adjusting prescriptions for CP treatment (0-10 scale, 0: very uncomfortable, 10: very comfortable)	5.1 ± 1.8	6.4 ± 1.8	6.6 ± 1.8	6.1 ± 1.9
Proportion of past year continuing education activities related to CP and its treatment*	18.6 ± 13.6	29.7 ± 23.8	20.5 ± 14.4	23.4 ± 18.9
	n (%)	*n* (%)	*n* (%)	*n* (%)
Sex at birth				
Females	60 (90.9%)	75 (90.4%)	43 (74.1%)	178 (86.0%)
Males	6 (9.1%)	8 (9.6%)	15 (25.9%)	29 (14.0%)
Gender Identity**				
Women	60 (90.9%)	74 (89.2%)	43 (74.1%)	177 (85.6%)
Men	6 (9.1%)	9 (10.8%)	14 (24.1%)	29 (14.0%)
Other	0 (0%)	0 (0%)	1 (1.7%)	1 (0.5%)
Region of residence				
Nonremote regions	56 (84.9%)	72 (86.6%)	47 (81.1%)	175 (84.6%)
Remote resource regions***	10 (15.1%)	11 (13.4%)	11 (18.9%)	32 (15.4%)
Years in practice				
0 – 5	12 (18.2%)	23 (27.7%)	17 (29.3%)	52 (25.1%)
6 – 10	11 (16.7%)	18 (21.7%)	7 (12.1%)	36 (17.4%)
11 – 20	32 (48.5%)	32 (38.6%)	24 (41.4%)	88 (42.5%)
21 and +	11 (16.7%)	10 (12.0%)	10 (17.2%)	31 (15.0%)
Type of practice setting				
Primary care clinic	48 (72.7%)	37 (44.6%)	6 (10.3%)	91 (44.0%)
Hospital setting****	9 (13.6%)	27 (32.5%)	11 (18.9%)	47 (22.7%)
Community pharmacy	0 (0.0%)	0 (0.0%)	41 (70.7%)	41 (19.8%)
Pain clinic	0 (0.0%)	9 (10.8%)	0 (0.0%)	9 (4.3%)
Local community services centre (CLSC)	3 (4.5%)	4 (4.8%)	0 (0.0%)	7 (3.4)
Long-term care residence (CHSLD)	3 (4.5%)	0 (0.0%)	0 (0.0%)	3 (1.4%)
Other	3 (4.5%)	6 (7.2%)	0 (0.0%)	9 (4.3%)
Self-identification as a CP treatment specialist				
Yes	2 (3.0%)	18 (21.7%)	2 (3.4%)	22 (10.6%)
No	64 (97.0%)	65 (78.3%)	56 (96.6%)	185 (89.4%)
Living with CP				

Yes	25 (37.9%)	22 (26.5%)	10 (17.2%)	57 (27.5%)
No	41 (62.1%)	61 (73.5%)	48 (82.8%)	150 (72.5%)
Having a loved one living with CP				
Yes	31 (47.0%)	29 (34.9%)	17 (29.3%)	77 (37.2%)
No	35 (53.0%)	54 (65.1%)	41 (70.7%)	130 (62.8%)
Country of initial education				
Canada	65 (98.5%)	79 (95.2%)	54 (93.1%)	198 (95.7%)
Other	1 (1.5%)	4 (4.8%)	4 (6.8%)	9 (4.4%)

Note. * 4.8% of missing data. 0% for all other variables. ** Gender identity differed from sex at birth for 0.96% of participants. *** Revenu Quebec defines remote resource regions as: Bas-Saint-Laurent (region 01), Saguenay–Lac-Saint-Jean (region 02), Abitibi-Témiscamingue (region 08), Côte-Nord (region 09), Nord-du-Québec (region 10), Gaspésie–Îles-de-la-Madeleine (region 11). Non-remote regions are near a major urban centre. CP = Chronic pain; SD = Standard Deviation. **** Includes emergency department

Perceived Risk Among Clinicians for Medical Cannabis and Prescribed Cannabinoids.

Perceived risk associated with medical cannabis and prescribed cannabinoids are presented for each type of clinician in Table 2. The median and IQR range score for medical cannabis and prescribed cannabinoids were similar (both score at a median of 6/10). For medical cannabis, no statistically significant differences were found between nurse practitioners and physicians (p = .853), between nurse practitioners and pharmacists (p = .843), or between physicians and pharmacists (p = .966). For prescribed cannabinoids, nurse practitioners had a higher perceived risk median score compared to physicians (p = .039); no statistically significant differences were found between the other groups (nurse practitioners vs. pharmacists' p = .535; physicians vs. pharmacists p = .175).

Table 2. *Risk Perception by Clinicians for Medical Cannabis and Prescribed Cannabinoids*

	Nurse practitioners (n = 66)		Physicians (n = 83)		Pharmacists (n = 58)		Total (n = 207)	
	n	Median (*IQR*)	*n*	Median (*IQR*)	*n*	Median (*IQR*)	*n*	Median (*IQR*)
Medical cannabis	58	6(3)	77	6(2)	55	6(2)	190 [a]	6(2.25)
Cannabinoids (nabilone)	59	6(3)[b]	78	5(3)[b]	57	6(2)	194 [c]	6(2)

Note. IQR: Interquartile range

[a]17 missing (8.2%)

[b]Kruskall-Wallis's test: significant difference between nurse practitioners vs. physicians (p = .039)

[c]13 missing (6.3%)

Predictors of Higher-Risk Perception by Clinicians for Medical Cannabis and Prescribed Cannabinoids.

Bivariable and multivariable linear regression analyses aimed at identifying participants characteristic associated with perceived risk associated with medical cannabis and prescribed cannabinoids (one model for each) are presented in Table 3. Factors associated with higher perceived risk associated with medical cannabis were working in primary care clinics (adjusted ß = 1.38, p = .0034) or another setting (adjusted ß = 1.21, p = .0368; as compared to working in a hospital setting). For prescribed cannabinoids (nabilone), the analysis revealed that working in primary care clinic (adjusted ß = 0.83, p = .0408), being a pharmacist (adjusted ß = 1.14, p = .0452), and having a higher proportion of continuing education on CP and its treatment (adjusted ß = 0.02, p = .0416) were associated with higher perceived risk. No sex differences were found in terms of perceived

Table 3. *Simple and Multiple Linear Regression*

	Medical cannabis								Prescribed cannabinoids							
Characteristics	Crude ß	*p* value	95% CI		Adjusted ß	*p* value	95% CI		Crude ß	*p* value	95% CI		Adjusted ß	*p* value	95% CI	
Sex Females (vs. males)	0.506	.2350	-0.332	1.344	0.748	.1169	-0.189	1.684	0.474	.2001	-0.253	1.202	0.661	.1061	-0.142	1.465
Residing a remote region (vs. non-remote region)	0.339	.4286	-0.503	1.180	0.081	.8563	-0.805	0.968	0.279	.4533	-0.453	1.010	-0.055	.8872	-0.823	0.712
Years of practice (vs. ≤5 years)																
6 – 10 years	-0.481	.2330	-1.275	0.312	-0.499	.3102	-1.466	0.469	-0.140	.6820	-0.815	0.5345	-0.114	.7853	-0.942	0.713
11 – 20 years	0.443	.1482	-0.159	1.043	0.154	.7119	-0.667	0.975	0.242	.3591	-0.277	0.760	0.073	.8419	-0.645	0.790
≥21 years	-0.590	.1660	-1.427	0.247	-0.914	.0815	-1.944	0.116	-0.351	.3304	-1.059	0.358	-0.593	.1802	-1.463	0.277
Type of practice* (vs. hospital setting)																
Primary care clinic	0.658	.0308	0.061	1.254	1.377	.0034	0.463	2.292	0.541	.0390	0.028	1.054	0.830	.0408	0.035	1.625
Community pharmacy	-0.167	.6534	-0.898	0.564	0.369	.5936	-0.992	1.730	-0.040	.9014	-0.668	0.589	-0.073	.8991	-1.200	1.055
Other	0.339	.4341	-0.514	1.191	1.212	.0368	0.075	2.348	-0.112	.7666	-0.853	0.630	0.696	.1700	-0.301	1.693
Type of clinicians (vs. physicians)																
Nurse practitioners	0.173	.5986	-0.474	0.820	0.010	.9803	-0.814	0.834	0.633	.0245	0.082	1.184	0.576	.1086	-0.129	1.282
Pharmacists	-0.032	.9244	-0.689	0.626	0.841	.2096	-0.477	2.159	0.137	.6319	-0.426	0.700	1.138	.0452	0.024	2.253
Specialist in CP management (yes vs. no)	-0.084	.8624	-1.035	0.867	-0.189	.8035	-1.685	1.307	-0.809	.0478	-1.611	-0.008	-1.011	.1246	-2.305	0.282
Living with CP (yes vs. no)	0.335	.3264	-0.336	1.006	0.290	.4358	-0.443	1.023	0.145	.6211	-0.431	0.720	0.067	.8319	-0.554	0.687
Having a loved one living CP (yes vs. no)	0.132	.6736	-0.484	0.748	0.091	.7859	-0.570	0.752	0.178	.5085	-0.353	0.709	0.096	.7389	-0.472	0.665
Comfort level with dispensing or adjusting prescriptions for CP treatment (0 to 10)	0.064	.4281	-0.094	0.222	-0.045	.6874	-0.267	0.176	-0.057	.4051	-0.193	0.078	-0.088	.3548	-0.275	0.099
Proportion of continuing education activities related to CP and	0.006	.5052	-0.011	0.022	0.016	.1934	-0.008	0.040	-0.002	.8057	-0.016	0.012	0.021	.0416	0.001	0.042

its treatment (0 to 100%)															
Country of initial education (Canada vs. others)	0.978	.1688	-0.419	2.375	0.904	.2468	-0.632	2.440	0.926	.1566	-0.358	2.211	0.746	.3024	-0.677	2.169

Note. Multicollinearity: for all variables included in the multiple linear regression model, variance inflation factors were bellow <4.
CP: chronic pain, CI: confidence interval.
* Clinical setting was grouped to have a sufficient number of participants in each group. Other settings are constituted of pain clinics, local community services centre, long-term care residence and other settings.

DISCUSSION

The present study conducted among clinicians in Quebec, Canada, aimed to describe perceived risk associated with the use of medical cannabis and prescribed cannabinoids for CP management and then to identify sociodemographic and professional factors associated with perceived risk. Participating clinicians perceived a 6 out of 10 median risk of adverse effects associated with medical cannabis and prescribed cannabinoids used for CP management. Type of practice setting, the type of clinicians and continuing education about CP were factors associated with perceived risk.

Prescribed Cannabinoids

Our results show that prescribed cannabinoids such as nabilone, despite being approved by Health Canada, are not considered less risky than medical cannabis. There might be a prevailing societal or professional perception that medications like nabilone, despite approval, carry risk similar to medical cannabis. This perception could be influenced by historical stigma surrounding cannabis (Brochu et al., 2019; Zolotov et al., 2018). Also, there may be limited strong evidence comparing the safety profiles of prescription cannabinoids and medical cannabis (McDonagh et al., 2022). Without robust evidence, clinicians might rely on personal experiences or anecdotal information, leading to varied perceptions of risk (Daei et al., 2020, Dawes & Sampson, 2003). Finally, we could think that Health Canada's approval of nabilone doesn't necessarily dictate clinicians' opinion. The regulatory approval process may focus on specific criteria related to efficacy and safety, but clinicians' perception might be influenced by societal stigma associated with cannabis.

Types of Practice Setting

Results of this study highlights that working in primary care clinic compared to a hospital setting was associated with higher perceived risk of adverse effects for medical cannabis and prescribed cannabinoids. These differences are likely due to the numerous distinctions that exist between the primary care practice context versus the hospital setting. For example, primary care clinicians often manage chronic conditions over long periods, whereas hospital-based clinicians frequently deal with acute care (Government of Canada, 2024). Additionally, interdisciplinary collaboration can vary greatly between these settings depending on organizational, team, and individual factors (Wei et al., 2022).

Type of Clinican

It was expected that perceived risk of adverse effects with prescribed cannabinoids may vary according to the role and responsibilities of clinicians. In this study, pharmacists had a higher perceived risk towards prescribed cannabinoids than other clinicians. This could be explained by the role of the pharmacist in Canada who is in charge of dispensing medications, and therefore may be more often exposed to adverse effects reported by patients (Dassieu et al., 2022; Khaira et al., 2020). For patients in the United States of America (USA), collaboration with their community pharmacist (high accessibility as compared to other primary care clinicians) makes them a preferred choice for pharmacological treatments-related issues (Gonzalvo et al., 2012). Also, pharmacists are the clinicians with the most knowledge about medications, their possible interactions, the mode of action of cannabinoids and their associated risk (Dassieu et al., 2023), which may increase their perceived risk. A recent Canadian study has highlighted that pharmacists found many challenges to monitor drug interactions with cannabis because of the lack of scientific research (Dassieu et al., 2023). In Quebec, pharmacists are considered experts in medication, and must complete a 4-year university course to ensure the appropriate use of medications. Despite their extensive knowledge, the insufficient research on cannabis interactions limits pharmacists' ability to provide safe and effective guidance to patients, which could contribute to increasing their perceived risk.

Continuing Education

Our results highlight that clinicians with the most continuing education about CP and its treatment have a higher perceived risk associated with prescribed cannabinoids use. These results may be explained by the possibility that continuous education exposes clinicians more to

the latest recommendations regarding the efficacy and safety of cannabis and cannabinoids. In fact, prominent international and national organizations do not recommend the use of cannabis and prescribed cannabinoids for CP management because of the lack of knowledge on efficacy and on short- and long-term safety (Fitzcharles et al., 2019; Haroutounian et al., 2021; NICE, 2019). Clinicians have the responsibility to ensure a safe use of treatments in a perspective of minimizing risk for the patient and increase shared decision-making (Coronado-Vázquez et al., 2020; Wilson et al., 2021). Cannabis and cannabinoids are increasingly being used by people living with CP, both through medical and non-medical channels (Audet et al., 2024; De Clifford-Faugère et al., 2023; Godbout-Parent et al., 2022). Given this trend, it is crucial for clinicians to be well-informed about the potential benefits and risk associated with these medications to support informed patient choices and enhance the safety of their treatment plans.

Regarding CP management, continuing education for clinicians is an integral part of the Canadian Action Plan for Pain recommendations (Campbell et al., 2021), and it is essential for clinicians to keep their scientific knowledge up to date and improve patient health outcomes (Campbell et al., 2021; Cervero & Gaines, 2015; Samuel et al., 2021). It is important to note that in several studies of clinicians' perceptions of cannabis use, continuing education is a clinical recommendation (Carlini et al., 2017; Hachem et al., 2022; Karanges et al., 2018; Kondrad & Reid, 2013; Ng et al., 2021). To this end, clinical practice guidelines and webinars appear to be the preferred way to reach physicians on the topic of cannabis (Hachem et al., 2022). In Canada, almost one third of clinicians (including physicians, nurses, and pharmacists) report not knowing the requirements for obtaining cannabis (Hachem et al., 2022).

Other Factors

No association was found between the number of years of practice or the level of comfort in dispensing/adjusting prescriptions for CP treatment and the perceived risk of using cannabis and cannabinoids. This is surprising because it was expected that clinicians with more experience or greater comfort in managing chronic pain treatments would have different perceptions of the risk associated with cannabis and cannabinoids. These findings suggest that factors other than experience and comfort level may play a more significant role in shaping clinicians' risk perceptions. No sex differences were found in clinicians' perceived risk of using cannabis and cannabinoids. Recently, Narouze et al. (2020) conducted a cross-sectional study in the USA highlighting that physicians have mostly attitudes in favor of medical cannabis use. Similar to our results, they did not find an association between age, sex/gender, years of experience and attitudes in favor of medical cannabis (Narouze et al., 2020). Literature suggests that people living with CP have better knowledge and more positive attitudes towards other people living with CP than those without CP (Lacasse et al., 2017). Contrary to our expectations, living with CP or having a loved one living with CP were not associated with the perceived risk of medical cannabis or prescribed cannabinoids use among our participating clinicians. Indeed, people living with CP are more aware of the challenges regarding CP treatment and may have tried medical cannabis (with or without experience of adverse effects), which could theoretically influence their perception.

Recommendations for Research

It seems relevant to continue research aiming to evaluate clinicians' perceptions of the use of medical cannabis (effects and risk) as the prevalence of medical cannabis and prescribed cannabinoids is increasing in people living with CP. Investigating the experiences of clinicians can provide new data on its usage and risk, particularly in subpopulations, such as women vs. men or <65 vs. ≥ 65 years old clinicians. Indeed, these professionals are at the forefront of patient care when they encounter adverse effects (Clarke & Fitzcharles, 2023), and can provide relevant information to guide clinical research on the risk associated with cannabis use in pain management. Thus, educational interventions could be conceptualized for the different clinicians to increase their knowledge about medical cannabis and prescribed cannabinoids for pain management (mode of action, indication, effects, risk of adverse effects).

Strengths and Limitations

With web surveys, it is not always possible to know who is responding, but several aspects of our methodology helped ensure that registered clinicians participated. These included the announcement of eligibility criteria in the invitations, confirmation of these criteria within the survey questions, and sharing the survey in dedicated groups on social media (e.g., associations, professional networks, and support groups for clinicians). The invitation was not broadly distributed on general public social media platforms. Our sample was composed of different clinicians authorized to prescribe or adjust prescriptions in Quebec and from both urban, remote and rural areas, and only 11% of CP specialists, supporting the external validity of our study. While cannabis regulation is federal, a previous study demonstrated that residing outside Quebec was a predictor of cannabis initiation (Ashoorion et al., 2023). Additionally, healthcare and the organization of professional orders fall under provincial jurisdiction, highlighting the importance of specifically characterizing the context of Quebec. However, our results may not be representative of all Canadian prescribers and further studies could explore provincial differences.

The cross-sectional design of the study limits assessment of causal relationships between participants characteristic and perceived risk associated with medical cannabis and prescribed cannabinoids. For example, an association between continuing education and a higher perceived risk of adverse effects with the use of prescribed cannabinoids was found in this study. However, the direction of the association cannot be defined, i.e., whether doing continuing education raises awareness and contributes to higher perceived risk, or whether those who had higher perceived risk at baseline are those who do more continuing education to better understand the risk. Our participants were mostly identified as women (86%), which is not surprising, as women tend to participate in surveys more often than their men counterparts (Becker, 2022; Cull et al., 2005). Although women were over-represented among pharmacists (74% in our study vs 67% in Quebec; Ordre des pharmaciens du Québec, 2023), this factor did not, however, emerge as associated with perceived risk of adverse events in the simple linear regression model.

Conclusion

Considering the increasing use of medical cannabis and prescribed cannabinoids for CP management and the lack of strong evidence towards their use for CP treatment, it seemed relevant to investigate perceived risk of adverse events. Indeed, clinicians' clinical practice is influenced by their own perceived risk. This study identified the type of practice setting, the type of clinicians and continuing education about CP as factors influencing perceived risk. Shared decision-making between the different clinicians and individuals living with CP in all settings is crucial to ensure quality of care.

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