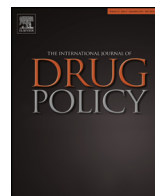




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Research paper

Barriers to access for Canadians who use cannabis for therapeutic purposes

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ABSTRACT

Background: There is increased interest in the therapeutic potential of cannabis in recent decades. Canada, the Netherlands, Israel and some states in the United States have developed programs to allow access to cannabis for therapeutic purposes (CTP). In Canada, enrollment in the federal CTP program represents fewer than 5% of the estimated users of CTP. The discrepancy between the number of Canadians who report using CTP and the rate of utilization of the federal CTP program suggests the existence of barriers to access to this program.

Methods: In the present study we employ a health services analytical framework to examine barriers to access to CTP among 628 current CTP users. We define barriers to access as areas of poor fit between clients and services. We use five dimensions of *accommodation, accessibility, availability, affordability, and acceptability* to examine access to CTP.

Results: Our findings reveal that it is difficult for Canadians to find a physician to support their application to access CTP. Accessing CTP from unauthorized sources was common; only 7% of respondents accessed CTP exclusively from authorized sources. Access to CTP was positively associated with the presence of medical cannabis dispensaries, which were not included in the regulatory regime. Access to CTP varied by medical condition and general quality of health. Affordability of CTP was a substantial barrier to access.

Conclusions: Strategies need to be developed to encourage scientific inquiry into CTP and address the barriers to access to CTP and the stigma and controversy that surround CTP and strain patient–physician relationships.

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Background

After a period of marginalization, recent decades have witnessed increased interest in the therapeutic potential of cannabis (Holland, 2010). Canada, the Netherlands, Israel and some states in the United States have developed programs to allow access to cannabis for therapeutic purposes (CTP) (Shelef, Mashiah, Schumacher, Shine, & Baruch, 2011). An estimated one million Canadians, or 4% of

those aged 15 and older, reported using cannabis in the previous 12 months to treat self-defined medical conditions (Adlaf, Begin, & Sawka, 2005; Belle-Isle & Hathaway, 2007). Court cases in Canada have confirmed the constitutional right of Canadians to choose cannabis as medicine without fear of criminal sanction (e.g. *R. v. Parker*, *Wakeford v. Canada*, *Hitzig et al. v. Canada*, *R. v. Mernagh*, *R. v. Smith*), and in 2001, the *Marihuana Medical Access Regulations* (MMAR) established guidelines for Canadians to obtain legal authorization to possess CTP. As of December 2012, 28,115 Canadians had obtained an authorization under these regulations to possess CTP and obtain CTP from a legal source (Health Canada, 2013). Although uptake of the federal program has increased in recent years, this enrollment represents fewer than 5% of the estimated users of CTP in Canada. The discrepancy between the number of Canadians who report using CTP and the rate of utilization of the

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federal CTP program suggests the existence of barriers to access to this program.

To obtain authorization to legally possess CTP under the MMAR, Canadians are required to obtain the written support of a physician on an application form and then apply to a federal authority. Those authorized can purchase dried cannabis from Health Canada, produce their own cannabis, or designate a person to grow cannabis on their behalf. In 2014, the MMAR are scheduled to be replaced by the *Marihuana for Medical Purposes Regulations* (MMPR). Under the MMPR, Canadians who wish to use CTP will need to obtain a medical document directly from a physician or nurse practitioner, similar to a prescription, which they will then submit to a commercial licensed producer. No onsite dispensing is allowed. Orders are shipped to patients. Both personal and designated licences to produce cannabis obtained under the MMAR will be phased out. These imminent changes, coupled with growing international interest, make it timely to analyse barriers to access to CTP under the current regulatory regime and to examine how new programs might address or exacerbate existing barriers.

In addition to authorized sources of CTP, medical cannabis dispensaries, also known as compassion clubs, represent a parallel source of CTP, providing CTP and related services to over 40,000 patients in Canada ([Canadian Association of Medical Cannabis Dispensaries, 2013](#)). Medical cannabis dispensaries arose in Canada in 1997 in response to demand for a community-based, safe, and quality controlled source of CTP ([Capler, 2010](#)). These dispensaries predate, and are not officially recognized by, the MMAR and operate under a legally ambiguous status ([Belle-Isle, 2006](#)). Additionally, many Canadians access CTP through friends, illicit self-production, and the street market.

The present study draws on data from the largest survey of Canadians who use CTP to date, the Cannabis Access for Medical Purposes Survey (CAMPS). We employ a health services analytical framework, developed to define the concept of ‘access’ and its relationship to patient satisfaction ([Penchansky & Thomas, 1981](#)), to examine barriers to access to CTP under the current program.

A health services analytical framework to examine barriers to access

[Penchansky and Thomas \(1981\)](#) offered a framework to define ‘access’ and its relationship to patient satisfaction in the context of health services research. Others have adapted this framework to examine barriers to health care and health services ([Jacobs, Ir, Bigdeli, Annear, & Van Damme, 2012](#); [Peters et al., 2008](#)). For the purposes of our study, and in keeping with [Penchansky and Thomas \(1981\)](#), we define barriers to access as areas of poor fit between clients and services and use five dimensions to examine access to CTP: *accommodation*, *accessibility*, *availability*, *affordability*, and *acceptability*. Our study uses these dimensions as a lens through which to consider both access to authorization to possess CTP, as well as access to a source of CTP.

Accommodation refers to the “relationship between the manner in which the supply resources are organized to accept clients... and clients’ ability to accommodate to these factors and the clients’ perception of their appropriateness” ([Penchansky & Thomas, 1981](#), p. 128). We conceptualize accommodation as an overarching dimension that broadly taps the appropriateness of the current model of CTP access in Canada with regard to meeting patients’ needs. *Accessibility* refers primarily to the geographic location of services in relation to the location of the people in need of those services ([Penchansky & Thomas, 1981](#); [Peters et al., 2008](#)). With regard to CTP, we examine the influence of provincial region of residence and community type (i.e. rural, suburban, and urban) on access both to physicians to obtain support to possess CTP, and to a source of

cannabis. *Availability* refers to the adequacy of available services according to the nature of patient needs ([Penchansky & Thomas, 1981](#); [Peters et al., 2008](#)). In the CTP context, we examine how medical conditions and general quality of health impact availability of physicians to support applications, the responsiveness of the administrative process required to obtaining authorization to possess CTP, and the availability of sources of CTP. *Affordability* reflects the relationship between the costs of services and products and the patients’ willingness and ability to pay for them ([Penchansky & Thomas, 1981](#); [Peters et al., 2008](#)). We address this dimension by examining associations among income, costs associated with CTP, and ability to access CTP. *Acceptability* covers patients’ attitudes regarding service providers and how they perceive their service providers’ attitudes toward them ([Penchansky & Thomas, 1981](#); [Peters et al., 2008](#)). To examine this dimension we review indices of patient–physician communication, stigma with regard to communication with physicians, and patients’ attitudes to the federal program.

A few studies have touched on issues related to barriers to access to CTP in Canada. In 2005, the Canadian AIDS Society conducted a survey of people living with HIV/AIDS which revealed that the majority of those who used or wanted to use CTP had spoken to their physician about CTP, and that only a small minority reported lack of physician support to be a substantial barrier to access ([Belle-Isle & Hathaway, 2007](#)). That study also found that just over one third of respondents had applied to the federal medical cannabis program, with many respondents describing barriers including the onerous, complicated or intimidating requirements of the program, mistrust of government, concerns about the repercussions, negative impression of the program, and lack of awareness of the program. Further, 86% of respondents reported obtaining CTP from unauthorized sources, including friends, dispensaries, unauthorized self-cultivation, and street dealers, whereas 8% had a license to produce their own CTP, 4% had a licensed designated grower and fewer than 2% reporting purchasing CTP from Health Canada. A more recent survey that was limited to federally authorized users of CTP reported similarly low levels of obtaining CTP from Health Canada, and high levels via dispensaries and licenced self-cultivation; however, these respondents reported generally high levels of satisfaction with the federal program ([Lucas, 2012a](#)).

Studies of physicians’ attitudes and practices have identified their substantial concerns with the current state of CTP use and regulation in Canada. [Jones and Hathaway \(2008\)](#) found that the majority among a sample of family physicians, medical residents and medical students felt that, with regard to CTP, they “did not have access to the quality of evidence to which they are accustomed and with which they felt comfortable” (p. 170). The investigators also found that physicians tended not to ask their patients about their cannabis use and patients tended not to tell. A recent survey conducted by the Canadian Medical Association ([Canadian Medical Association, 2012](#)) revealed similar results; the majority of physicians believe they lack sufficient information on risks, benefits, and appropriate use of CTP. The same survey reported that one third of physicians never support their patients’ request for CTP, whereas more than half do so only occasionally or seldom.

In sum, findings regarding CTP use in Canada indicate relatively low uptake of the authorized program on the part of patients and substantial discomfort on the part of physicians, suggesting a generally poor degree of “fit” between client and service. The present study presents a theoretically informed examination of the extent and nature of barriers to accessing CTP as experienced by Canadians. In light of the internationally expanding role of cannabis within the medical pharmacopeia, the elucidation of these barriers has the potential to inform and refine the development of CTP

programs, and might more broadly contribute to the understanding of barriers to access for emerging and potentially stigmatized therapies.

Methods

The study was approved by the Behavioural Research Ethics Board of the University of British Columbia. The research team consisted of academic researchers, representatives from community-based organizations and non-governmental organizations, and people who use CTP. The research thus borrowed from a participatory approach. The survey collected cross-sectional data from 628 self-identified current users of CTP in 2011–2012, both online at the *national* level and at a *local* British Columbia medical cannabis dispensary. Organizations and media that serve people who use CTP as well as dispensaries assisted with promoting the *national* survey (e.g., Canadian AIDS Society, Canadian Aboriginal AIDS Network, social media). No identifying data (i.e. IP addresses) were collected, to ensure confidentiality. Participants in the *local* group received \$10 compensation and participants in the *national* group were not financially compensated. Of the 702 *national* participants, 541 (77%) reported current CTP use. Participants in the *local* group were recruited via advertising posters and word of mouth at the medical cannabis dispensary where data were collected. All 87 *local* participants who completed the consent form reported current CTP use. The *local* group consisted of members of the dispensary who were either authorized to possess cannabis through Health Canada or had documented confirmation of a medical condition for which CTP is indicated. This recruitment design allowed a comparison of the online *national* condition with the confirmed CTP users' queried in-person in the *local* condition, and preliminary analyses indicated broad similarity between local and national respondents (see Walsh et al., 2013 for a detailed comparison of local and national groups). Participants in the *local* group completed the survey online on a tablet provided by an onsite researcher assistant and received help as needed from research assistants.

The questionnaire consisted of 414 questions designed to be completed in less than one hour. It queried demographics, detailed CTP use, communications with health care providers, access to and experiences with the federal medical cannabis program and a supply of CTP and general indicators of health and well-being. The questionnaire also included questions drawn from the Barriers Questionnaire (Ward et al., 1993) and from prior studies of CTP use (Belle-Isle & Hathaway, 2007; Lucas, 2012a). It was administered online, and organized in a hierarchical manner such that exposure to many items was contingent on prior responses. As a result, the number of recorded responses varies across items and no participants completed all items. All reported percentages are based on number of responses to given items rather than on the entire sample. In order to enhance clarity we accompany all reported percentages with number of responses.

Analyses were conducted in a manner that reflected the health services framework that guided this investigation. Specifically, to address *accommodation* we use descriptive statistics to broadly represent the extent to which patient needs for access were met by the program with a focus on general obstacles, physician access, the application process and source of CTP. To analyse *accessibility* we compare patients across regions and types of community. To analyse differences in *availability* we examine variability in access across medical conditions and global health status. To analyse the *affordability* of CTP, we compare access across income groups and examine the extent to which the impact of cost-related barriers varied according to global health status. Finally, to examine *acceptability* we describe patient perceptions of caregiver attitudes and communication. All comparisons involved discrete groups for both

Table 1
Demographic information about study participants.

| | <i>n</i> | % |
|------------------------------|----------|------|
| Gender | | |
| Male | 443 | 70.8 |
| Female | 180 | 28.7 |
| Transgender/other | 3 | 0.5 |
| Ethnic origin | | |
| Caucasian | 581 | 92.5 |
| First Nation | 31 | 4.9 |
| Metis | 16 | 2.5 |
| Age distribution | | |
| 18–24 | 98 | 16.4 |
| 25–34 | 158 | 26.5 |
| 35–44 | 115 | 19.3 |
| 45–54 | 141 | 23.6 |
| 55 and over | 85 | 14.2 |
| Completed level of education | | |
| Elementary school | 27 | 4.3 |
| Secondary school | 234 | 37.3 |
| Technical college | 225 | 35.8 |
| University – undergraduate | 108 | 17.2 |
| University – graduate | 34 | 5.4 |
| Yearly household income | | |
| Under \$20,000 | 206 | 33.2 |
| \$20,000–\$39,999 | 165 | 26.6 |
| \$40,000–\$59,999 | 103 | 16.6 |
| \$60,000 and over | 146 | 23.6 |
| Area of residence | | |
| Urban | 289 | 46.5 |
| Suburban | 196 | 31.5 |
| Rural or remote | 137 | 22.0 |
| Provincial region | | |
| British Columbia | 221 | 35.4 |
| Prairies ^a | 88 | 14.1 |
| Ontario | 242 | 38.7 |
| Quebec | 30 | 4.8 |
| Maritimes ^b | 44 | 7.0 |
| Health status | | |
| Excellent | 22 | 4.6 |
| Very good | 114 | 24.0 |
| Good | 177 | 37.3 |
| Fair | 107 | 22.5 |
| Poor | 55 | 11.6 |

^a Prairies include Alberta, Saskatchewan, Manitoba and Northwest Territories.

^b Maritimes include New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador.

selection and outcome variables and were therefore conducted using χ^2 tests.

Results

Demographics

The 628 respondents were 71% male, 29% female and 0.5% transgender and other genders, 92% Caucasians and 7% First Nations and Metis. Mean age was 39.10 years (SD = 13.12), median household income was \$30,000–\$39,999, 96% had completed secondary school and 58% had completed some post-secondary education. Responses were obtained from all ten Canadian provinces and one of the three territories, and respondents reported living in urban (47%), suburban (32%), and rural or remote areas (22%) (Table 1). Respondents reported using CTP for anxiety and depression, pain, arthritis, spinal pain, HIV/AIDS, multiple sclerosis, cancer, epilepsy and a variety of other illnesses. Medical use of cannabis was mainly reported for the treatment of pain, followed by nausea, mood, spasticity and other symptoms. A detailed description of the demographic and medical characteristics of this sample is available elsewhere (Walsh et al., 2013).

Table 2
 Accommodation: Appropriateness of the current model to meeting patients' needs.

| |
|---|
| Obstacles |
| <ul style="list-style-type: none"> • 86% (n = 420) experienced obstacles in accessing CTP |
| Physicians |
| <ul style="list-style-type: none"> • 32% (n = 156) sought another physician in relation to use of CTP ◦ 57% (n = 89) of whom changed physicians more than once • 29% reported that physician recommended CTP but refused to endorse application for authorized access (n = 143) |
| Application for authorization |
| <ul style="list-style-type: none"> • 48% (n = 245) had applied for authorized access ◦ 59% (n = 145) of whom found the process difficult or very difficult ◦ 47% (n = 114) of whom reported being somewhat or completely unsatisfied with the program |
| Access to an authorized source of CTP^a |
| <ul style="list-style-type: none"> • 31% (n = 139) accessed CTP from an authorized source ◦ 76% (n = 106) of them also accessed CTP from unauthorized sources^b • 7% (n = 33) accessed CTP exclusively through authorized sources • 31% (n = 155) reported self-producing CTP for personal use, of whom 50% (n = 77) were licensed • 34% (n = 42) of self-producers reported that it was difficult or very difficult to learn to cultivate cannabis; 16% (n = 24) reported arrests; 12% (n = 19) reported break ins • Reported reasons for not self-producing CTP (n = 339) included: lack of space (43%, n = 146), expense of set up (37% n = 124), and legal concerns (32%, n = 108). • The most important reason for self-producing was quality (39%, n = 52), followed by price (36%, n = 47), avoiding the black market (29%, n = 40), selection of a specific strain of cannabis (24%, n = 33), and safety (12%, n = 15). • Of those who reported that someone else produced CTP for them (18%, n = 90), 67% (n = 60) had designated producers who were licensed. 39% (n = 35) of respondents with designated producers reported difficulties in finding one. |

^a Under the MMAR, authorized sources were limited to licensed self-production, licensed designated producer or direct purchase from the federal program.
^b Unauthorized sources include medical cannabis dispensaries, friends, street market, unlicensed self-production, and unlicensed designated producers.

Accommodation

Accommodation refers to the appropriateness of the MMAR model of CTP access (in effect at the time of this study) to meeting patients' needs. Table 2 summarizes the key findings related to accommodation. The majority of respondents experienced obstacles to accessing CTP. Respondents described obstacles as affecting their mood, enjoyment of life, sleep, general activity, normal work outside or inside the home, and relationships (Fig. 1). Most respondents (81.1%; n = 489) reported discussing the use of CTP with a physician, and almost one third of respondents (Table 2) reported that they had sought a new physician in relation to their use of CTP, with the majority of those changing physicians more than once. Respondents reported equivocation on the part of physicians with regard to recommending and authorizing use of CTP. Among respondents who discussed CTP with their physicians, more than a

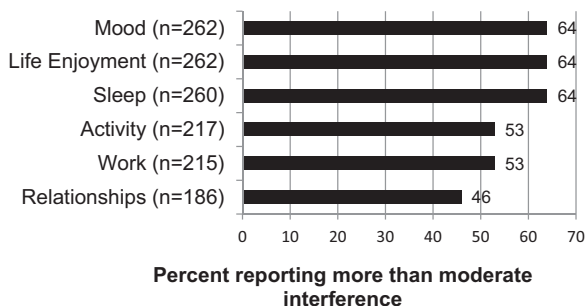


Fig. 1. Effects of barriers to access to cannabis for therapeutic purposes on life domains.

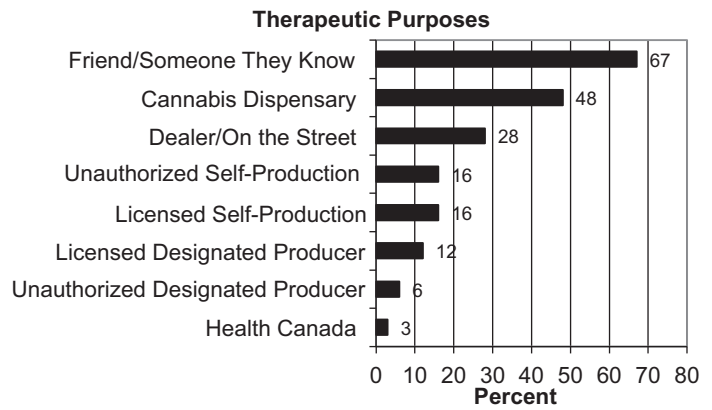


Fig. 2. Reported sources of cannabis for therapeutic purposes.

quarter of them reported that physicians recommended they access CTP but refused to endorse their application for authorized access.

Nearly half of respondents had applied for a federal authorization to possess CTP, of whom 68% (n = 167) received authorization, 5% (n = 13) reported they did not, and 26% (n = 63) had applications that were under review at the time of the survey. Among applicants to the federal CTP program, more than half found the process difficult or very difficult, and almost half reported being somewhat or completely unsatisfied with the program.

Incongruent accommodation between patients and services is further evidenced in access to a source of CTP; the federal program makes available a single strain of dried cannabis, whereas 93% (n = 415) of respondents identified access to a specific preferred strain, a variety of strains, and/or alternative CTP products (e.g. baked goods, tinctures) as important options. Indeed, less than one third of respondents (Table 2) accessed CTP from authorized sources (i.e. licensed self-production, licensed designated producer, direct purchase from the federal program), and more than three quarters of respondents who had access to authorized sources also accessed CTP from unauthorized sources (i.e. dispensary, friend, street, unlicensed self-production, unlicensed designated producer). Overall, only 7% of respondents accessed CTP exclusively through authorized sources. Fig. 2 provides a detailed breakdown of sources of CTP.

Almost one third of respondents reported self-producing CTP, of whom half were licensed to produce CTP for personal use (Table 2). Approximately one third of self-producers reported that it was difficult or very difficult to learn to cultivate cannabis. Other reported difficulties associated with self-production included arrest and break-ins. Among respondents who provided reasons for not self-producing CTP, the most prominent reasons were lack of space, expense of set up, and legal concerns. The most important reason for self-producing was quality, followed by price, avoiding the black market, selection of a specific strain of cannabis, and safety. Of those who reported that someone else produced CTP for them, two thirds had designated producers who were licensed. More than a third of them reported having difficulties finding a designated producer.

Accessibility

Accessibility refers to the influence of provincial region of residence and community type (i.e. rural, suburban, and urban) on access both to physicians to obtain support for an authorization to possess CTP and to a source of CTP. Table 3 summarizes the key findings for accessibility. The rate of experiencing obstacles to access to CTP did not differ according to provincial region or community type. The proportion of those who had spoken to a physician regarding CTP use varied according to region, with the highest level

Table 3
 Accessibility: Influence of provincial region and community type on access.

Obstacles

- No difference in rate of experiencing obstacles to access to CTP by provincial region^a ($\chi^2 = 5.32$ (4), $p = .27$) or community type^b ($\chi^2 = 1.39$ (2), $p = .50$).

Physicians

- Regional differences in proportion of respondents who had spoken to a physician regarding CTP use ($\chi^2 = 16.58$ (4); $p < .01$); highest in British Columbia (88%, $n = 191$) and lowest in the Maritimes (71%, $n = 29$).
- Rural respondents more likely than urban and suburban respondents to discuss CTP with physicians ($\chi^2 = 7.59$ (2); $p = .02$): 89% ($n = 116$) rural, 80% ($n = 224$) urban, 77% ($n = 144$) suburban
- No difference in the proportion of respondents who reported changing physicians for reasons related to CTP across provincial regions ($\chi^2 = 3.11$ (4); $p = .54$) or community types ($\chi^2 = .19$ (2); $p = .67$).

Application for authorization

- Rural residents more likely to report having received federal authorization to possess CTP compared to suburban and urban dwellers ($\chi^2 = 8.69$ (2), $p = .01$): 41% ($n = 45$) rural, 36% ($n = 58$) suburban, 26% ($n = 63$) urban.

Access to a source of CTP

- Regional differences in the proportion of respondents who accessed CTP from a medical cannabis dispensary ($\chi^2 = 62.61$ (4); $p < .01$), with higher levels in British Columbia (70%, $n = 118$) and Ontario (41%, $n = 68$) and lower levels in the Prairies (18%, $n = 11$) and Maritime (25%, $n = 7$).
- Complementary regional differences in the proportion of respondents who accessed CTP from a friend or acquaintance ($\chi^2 = 18.23$ (4), $p < .01$), with higher levels in the Prairies (80%, $n = 52$) and Maritimes (88%, $n = 28$) and lower levels in British Columbia (58%, $n = 106$).
- Self-production of cannabis differed by community type ($\chi^2 = 18.25$ (2); $p < .01$), with the highest level among respondents from rural areas (48%, $n = 51$), followed by suburban (31%, $n = 46$) and urban residents (25%, $n = 58$).

^a Provincial regions include British Columbia, the Prairies (Alberta, Saskatchewan, Manitoba and the Northwest Territories), Ontario, Quebec, and the Maritimes (New Brunswick, Nova Scotia, Newfoundland and Labrador and Prince Edward Island).

^b Community type refers to self-reported urban, suburban or rural area of residence.

in British Columbia and lowest in the Maritimes. Across regions, respondents from rural areas were more likely than urban or suburban respondents to discuss CTP with physicians. The proportion of respondents who reported changing physicians for reasons related to CTP use was stable across provincial regions and community types. Rural residents were more likely to report having received

federal authorization to possess CTP relative to suburban and urban dwellers.

With regard to accessibility to sources of CTP, regional differences were identified in the proportion of respondents who accessed CTP from a medical cannabis dispensary, with higher levels among respondents from British Columbia and Ontario and lower use among residents of the Prairies and Maritimes. A complementary pattern of results emerges from examining access to cannabis from a friend or acquaintance, with higher levels among residents of the Prairies and Maritimes and lower levels from British Columbia. Fig. 3 provides a detailed breakdown of sources of CTP by provincial region. Self-production of cannabis differed by community type, with the highest level of self-production among respondents from rural areas, followed by suburban and urban residents.

Availability

Availability in this context refers to how medical conditions and general quality of health impact availability of physicians to support applications to access CTP, the responsiveness of the federal government’s administrative process required to obtaining authorization to possess CTP, and the availability of sources of CTP. Table 4 summarizes key findings related to availability. The rate of experiencing obstacles to access to CTP differed across medical conditions, such that individuals who identified HIV/AIDS as their primary condition were less likely to report obstacles. Physician communication also varied according to medical conditions, such that a greater proportion of individuals with HIV/AIDS and arthritis discussed CTP with physicians, whereas respondents with anxiety/depression as primary condition were less likely to discuss CTP with physicians. Respondents with HIV/AIDS were also relatively less likely than other patients to change physicians for reasons related to CTP. Having physicians recommend CTP but refuse to endorse applications for authorized access was less prevalent among respondents with HIV/AIDS, and more common among respondents with chronic pain that was not due to spinal injury or arthritis.

To maximize power and facilitate interpretation we dichotomized health status into fair to poor (34%, $n = 162$) and

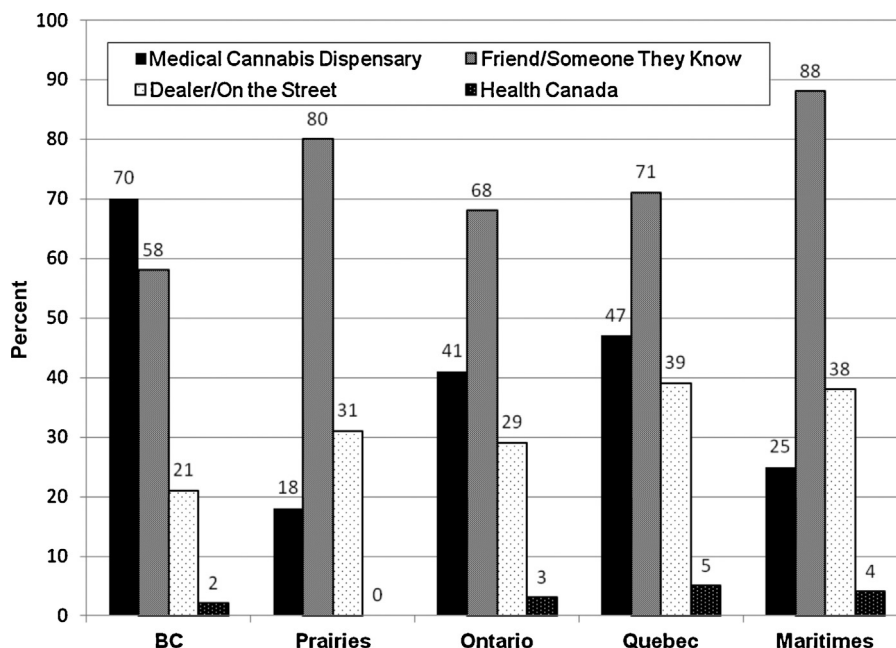


Fig. 3. Sources of purchased cannabis for therapeutic purposes by provincial region.

Table 4
Availability: Impact of medical conditions and general quality of health on access.

| Obstacles |
|--|
| <ul style="list-style-type: none"> Individuals who identified HIV/AIDS as their primary condition were less likely to report experiencing obstacles to access to CTP than other respondents (70%, $n = 33$) ($\chi^2 = 10.29$ (1), $p < .01$). No differences in experiencing obstacles to access to CTP according to reported general health status ($\chi^2 = .16$ (1); $p = .68$). |
| Physicians |
| <ul style="list-style-type: none"> Compared to respondents with other medical conditions, respondents living with HIV/AIDS were: <ul style="list-style-type: none"> more likely to discuss CTP with physicians (93%, $n = 55$) ($\chi^2 = 5.51$ (1); $p = .02$). less likely than other patients to change physicians for reasons related to CTP (11%, $n = 6$) ($\chi^2 = 13.14$ (1); $p < .01$). less likely to have physicians recommend CTP but refuse to endorse applications for authorized access (13%, $n = 7$) ($\chi^2 = 10.90$ (1); $p < .01$). Respondents with arthritis were also more likely than other respondents to discuss CTP with their physician (91%, $n = 80$) ($\chi^2 = 4.54$ (1); $p = .02$). Respondents with anxiety/depression were less likely to discuss CTP with a physician (64%, $n = 69$) ($\chi^2 = 27.68$ (1); $p < .01$). Respondents who reported <i>fair to poor</i> general health were more likely than respondents who reported <i>good to excellent</i> general health to discuss CTP with a physician (91%, $n = 147$) (77%, $n = 240$) ($\chi^2 = 13.59$ (1); $p < .01$). No differences according to general health status in changing physicians related to CTP ($\chi^2 = .39$ (1); $p = .57$), or having physicians recommend CTP but refuse to endorse an application for authorization ($\chi^2 = .08$ (1); $p = .81$). Respondents with chronic pain that was not due to spinal injury or arthritis were more likely to have physicians recommend CTP but refuse to endorse applications for authorized access (51%, $n = 40$) ($\chi^2 = 12.43$ (1); $p < .01$). |
| Application for authorization |
| <ul style="list-style-type: none"> Respondents who reported <i>fair to poor</i> general health were more likely than respondents who reported <i>good to excellent</i> general health to have obtained federal authorization (42%, $n = 68$) (27%, $n = 85$) ($\chi^2 = 10.59$ (1); $p < .01$). |
| Access to an authorized source of CTP |
| <ul style="list-style-type: none"> Respondents who reported <i>fair to poor</i> general health were more likely than respondents who reported <i>good to excellent</i> general health to access CTP through authorized means (36%, $n = 57$) (25%, $n = 76$) ($\chi^2 = 6.00$ (1); $p = .02$). The proportion of licensed versus unlicensed self-producers was consistent across medical conditions ($\chi^2 = 2.01$ (8); $p = .98$). Self-producers of CTP who reported <i>fair to poor</i> general health were more likely to be licensed (64%, $n = 30$) than were those who reported <i>good to excellent</i> general health (42%, $n = 43$) ($\chi^2 = 6.05$ (1); $p = .01$). The proportion of self-producers who reported difficulty in learning to cultivate was consistent across medical conditions ($\chi^2 = 9.04$ (8); $p = .34$) and general health quality ($\chi^2 = .39$ (2); $p = .58$). The proportion of respondents reporting difficulties finding a designated producer was stable across medical conditions ($\chi^2 = 7.14$ (8); $p = .52$) and health quality ($\chi^2 = .27$ (1); $p = .66$). |

good to excellent (66%, $n = 313$), based on a median split and parsimony. Respondents who reported *fair to poor* general health were more likely than respondents who reported *good to excellent* general health to discuss CTP with a physician, to have obtained federal authorization, and to access CTP through authorized means. However, comparisons according to general health of respondents identified no differences with regard to experiencing obstacles, changing physicians related to CTP, or having physicians recommend CTP but refuse to endorse an application for authorization.

With regard to sources of CTP, the proportion of licensed versus unlicensed self-producers was consistent across medical conditions. However, self-producers who reported *fair to poor* general health were more likely to be licensed than were those who reported *good to excellent* general health. The proportion of self-producers who reported difficulty in learning to cultivate was consistent across medical conditions and general health quality. The proportion of respondents reporting difficulties finding a

Table 5
Affordability: Ability to pay for access to CTP according to income.

| Physicians |
|---|
| <ul style="list-style-type: none"> Income was not associated with discussing CTP with a physician ($\chi^2 = 1.48$ (3); $p = .69$) or with changing physicians for reasons associated with CTP ($\chi^2 = 1.14$ (3); $p = .79$). 40% ($n = 98$) of applicants were charged by physicians for the service of having their application completed, with charges ranging from \$10 to \$800. a relatively smaller proportion of the lowest income group ($\leq \\$20,000/\text{yr}$) were charged (30%, $n = 26$, $\chi^2 = 7.18$ (1); $p < .01$), and a larger proportion of the \$40,000–60,000/yr group were charged (62%, $n = 21$, $\chi^2 = 6.76$ (1); $p = .01$). |
| Application for authorization |
| <ul style="list-style-type: none"> 40% ($n = 68$) of respondents in the lowest income group obtained authorization compared to 28% ($n = 95$) of respondents from higher income groups ($\chi^2 = 6.86$ (1); $p = .01$). |
| Access to a source of CTP |
| <ul style="list-style-type: none"> Among participants who reported buying CTP ($n = 433$), the median amount reportedly spent was \$200 (Inter-quartile Range = \$100–\$400) per month. 54% ($n = 278$) of respondents reported that they were <i>sometimes or never</i> able to afford to buy sufficient quantity of CTP to relieve their symptoms Respondents in the lower income group were most likely to report that they were <i>sometimes or never</i> able to afford to buy sufficient quantity of CTP (72%, $n = 123$) and those in the highest income group ($\geq \\$60,000/\text{yr}$) were least likely (30%, $n = 36$) ($\chi^2 = 51.26$ (3); $p < .01$). 33% ($n = 173$) reported that they often or always choose between cannabis and other necessities (e.g. food, rent, other medicines) because of lack of money, with the highest levels of reporting among lowest income (51%, $n = 88$) and lower levels at highest income (11%, $n = 13$) ($\chi^2 = 56.93$ (3); $p < .01$). 67% ($n = 107$) of respondents who reported <i>fair to poor</i> general health were <i>sometimes or never</i> able to afford sufficient CTP compared to 48% ($n = 147$) of respondents who reported <i>good to excellent</i> health ($\chi^2 = 15.56$ (1); $p < .01$). Respondents reporting poorer health were nearly twice as likely to report choosing between CTP and other necessities (48% ($n = 78$) versus 25% ($n = 79$), $\chi^2 = 25.85$ (1); $p < .01$). Income was not associated with accessing CTP from an authorized source ($\chi^2 = 2.61$ (3); $p = .46$). |

designated producer was stable across medical conditions and health quality.

Affordability

Affordability refers to costs associated with CTP and ability to pay according to income. Costs to access CTP occur both in the process of obtaining physician support for authorization to possess CTP and in obtaining a supply of cannabis. Table 5 summarizes the key findings related to affordability. Many applicants were charged by their physician for the service of having their application completed, with charges ranging from \$10 to \$800. A relatively smaller proportion of the lowest income group and a larger proportion of the \$40,000–60,000/year group were charged.

Among participants who reported buying CTP, the median amount spent was \$200 (Inter-quartile Range = \$100–\$400) per month. More than half of respondents reported that they were *sometimes or never* able to afford to buy sufficient quantity of CTP to relieve their symptoms, and approximately one third reported that they often or always choose between cannabis and other necessities (e.g. food, rent, other medicines) because of lack of money. The proportion of respondents who reported that they were *sometimes or never* able to afford to buy sufficient quantity of CTP differed according to income such that it was most frequently reported by the lower income group and least frequently reported by the highest income group. The frequency of reports of choosing between CTP and other necessities followed a similar pattern, with highest levels of reporting among lowest income and lower levels at highest income.

Table 6
Acceptability: Patients' perceptions of physicians' attitudes with regard to CTP.**Physicians**

- 48% ($n = 277$) reported that they had at some time wanted to discuss CTP with a physician but had not done so.
- 38% ($n = 105$) had not discussed CTP with any physician.
- The most frequent reason for not discussing CTP despite a desire to do so was "don't feel comfortable" (62%, $n = 172$), followed by "illegal" (46%, $n = 127$), and "can't afford cannabis" (9%, $n = 25$).
- Reported reasons for respondents avoiding CTP in the past included: "I could be discriminated against" (60%, $n = 326$), "Doctors might find it annoying to be asked about cannabis" (51%, $n = 275$), "Discussing cannabis could distract a doctor" (17%, $n = 90$) and "It could make me drowsy" (17%, $n = 90$).
- Reported perceived negative responses from physicians to CTP included: "After multiple negative responses from doc, I've stopped broaching the subject."; "He shut me down every time I brought it up."
- Respondents feared a negative impact on their patient/physician relationship: "fear of getting no treatment at all"; "fear of losing my doctor"; "I am afraid they will black list me as a patient and I would not have access to health care!"
- Compared to their communication with their physician regarding other medical issues, 50% ($n = 235$) of respondents were less satisfied with their communication about the use of CTP, and 31% ($n = 146$) reported that they often or always felt discriminated against by their physician because of their use of CTP.

The proportion of respondents who reported financial strain associated with CTP varied according to health status such that approximately two thirds of respondents who reported *fair to poor* general health were *sometimes or never* able to afford sufficient CTP compared to almost half of respondents who reported *good to excellent* health. Respondents reporting poorer health were also nearly twice as likely to report choosing between CTP and other necessities.

The proportion of respondents who obtained authorization varied according to income, such that a greater proportion of respondents in the lowest annual income group obtained authorization compared to respondents from higher income groups. Income was not associated with discussing CTP with a physician or with changing physicians for reasons associated with CTP. Income was also not associated with accessing CTP from an authorized source.

Acceptability

Acceptability refers to patients' perceptions of physicians' attitudes regarding CTP and of the federal program, as well as indices of patient–physician communications. Table 6 summarizes the key findings related to acceptability. Respondents reported some reluctance regarding communication with physicians related to CTP. Approximately half of the respondents reported that they had at some time wanted to discuss CTP with a physician but had not done so. Among respondents who wanted to discuss CTP but refrained, more than one third had not discussed CTP with any physician. The most frequent reason for not discussing CTP despite a desire to do so was "don't feel comfortable", followed by "illegal", and "can't afford cannabis".

Although our sample was comprised of *current* users of CTP, queries regarding *past* avoidance of CTP also evinced patient concerns regarding potential reactions from physicians and others. The most frequently cited reason for avoiding CTP was "I could be discriminated against", followed by "Doctors might find it annoying to be asked about cannabis", "Discussing cannabis could distract a doctor" and "It could make me drowsy".

Answers to an open ended question related to physicians' perceived negative response to CTP included: "After multiple negative responses from doc, I've stopped broaching the subject."; "He shut me down every time I brought it up." Several responses also

indicated concern that discussing CTP with a physician might have a negative impact on their patient/physician relationship: "fear of getting no treatment at all"; "fear of losing my doctor"; "I am afraid they will black list me as a patient and I would not have access to health care!" Compared to their communication with their physician regarding other medical issues, half of the respondents were less satisfied with their communication about the use of CTP, and almost one third reported that they often or always felt discriminated against by their physician because of their use of CTP.

Discussion

Utilizing a health services analytical framework, we examine barriers to access to CTP in terms of dimensions of *accommodation, accessibility, availability, affordability, and acceptability*. This in-depth analysis of barriers to access to CTP provides insights into access to CTP under the MMAR and may more broadly inform the safe, efficient and equitable provision of CTP under future programs. Our results suggest that, under the MMAR, Canadians faced substantial barriers to both legal authorization to possess CTP and access to a source of CTP. In addition, based on our findings, we conclude that many of these barriers do not appear to be addressed by the new MMAR and that the MMAR may exacerbate some barriers to access, particularly with regard to affordability.

Finding a physician to support an application to access CTP is a challenge for many Canadians who use CTP. Obtaining authorization to possess CTP requires the support of a physician, and the majority of respondents had discussed the use of CTP with a physician. However, a large proportion of respondents spoke to several physicians and many changed physicians in order to access CTP. Ultimately, less than one third of respondents had obtained authorization that allowed them to legally possess CTP, suggesting that despite the existence of a legal framework, a substantial number of chronically and seriously ill Canadians continue to access CTP without legal authorization and from illegal sources. This discrepancy may point to poor *accommodation* of the federal CTP program to client needs. Indeed more than 85% of respondents reported experiencing obstacles to accessing CTP. Among the minority of respondents who engaged with the federal program, over half found the process difficult, and nearly half were dissatisfied with the program.

Under the new MMAR, Canadians will need to obtain a medical document similar to a prescription from a physician or a nurse practitioner in order to have legal access to CTP. Given the reservations physicians had with signing a medical declaration on the application form under the MMAR, it is possible that physicians will be even more reluctant to prescribe CTP within the new regulatory framework, as noted in a recent statement by the Canadian Medical Association citing insufficient clinical evidence regarding CTP (Canadian Medical Association, 2013). Our findings support the need to build a stronger body of evidence regarding the appropriate therapeutic uses of cannabis for specific conditions as well as the need to better inform physicians of the evidence that *does* exist. Nurse practitioners will be allowed to prescribe CTP under the new MMAR in jurisdictions where they can prescribe, though it remains to be seen whether this will result in better access to CTP.

The current system also fails to accommodate access to a legal source of CTP. Among those who managed to obtain access to authorized sources of CTP (direct purchase from Health Canada, licensed self-production or licensed designated production), three quarters also accessed unauthorized sources. Only 7% of our sample accessed CTP exclusively from authorized sources, which suggests substantial barriers to efficient and acceptable authorized access.

The MMAR did not include medical cannabis dispensaries within the regulatory system, now do the new MMAR. The omission of

dispensaries from the revised regulatory framework may serve to maintain barriers to access; our findings suggest that *accessibility* to CTP was associated with the presence of medical cannabis dispensaries. British Columbia and Ontario have numerous medical cannabis dispensaries, whereas other regions have few, if any, dispensaries. Our finding of regional differences in the *accessibility* to CTP, with residents in BC and Ontario more likely to access CTP from a dispensary, was expected. Other regional differences may also be attributable to the presence of dispensaries. Specifically, BC has the greatest density and longest history of dispensary activity (Lucas, 2012b), and BC residents were more likely to have discussed CTP with a physician and less likely to purchase CTP from a friend or acquaintance. Although the cross-sectional nature of our study prevents assertions regarding causality, these findings suggest that services offered by medical cannabis dispensaries may reduce barriers in terms of *accommodation* by increasing options for sources of CTP, available strains and products, *accessibility* in terms of geographic location and store front services, and *acceptability* in terms of increasing physician consultation around CTP and reducing prevalence of illegal access through friends and acquaintances.

Access to CTP varied by medical condition and general quality of health. In particular, our findings indicate that respondents living with HIV/AIDS experienced fewer obstacles, were more likely to discuss CTP with physicians, less likely to change physicians related to CTP, and less likely to have physicians recommend CTP but refuse to endorse authorization. The relatively lower levels of obstacles faced by people living with HIV/AIDS may be attributed to several factors, including the relatively more established efficacy of the therapeutic uses of cannabis for the management of symptoms related to HIV/AIDS, the long history of grassroots advocacy for the use of CTP by the HIV/AIDS movement, and the potentially greater alliance between health care providers and patients among this community. These findings suggest that further research into factors that have facilitated access to CTP among people living with HIV/AIDS might help develop strategies to improve access for other groups. These findings also raise the possibility that prior research that focused exclusively on HIV/AIDS patients who use CTP (e.g. Belle-Isle & Hathaway, 2007) may present an underestimate of the obstacles experienced by the broader community of people who use CTP.

Also related to the dimension of *availability*, individuals who identified anxiety and/or depression as primary reasons for using CTP were less likely to discuss CTP use with physicians. This difference may reflect characteristics of these conditions, as behavioral inhibition and reduced communication may be associated with depression and anxiety (Angélico, Crippa, & Loureiro, 2013; Tse & Bond, 2004). This finding may also reflect concerns regarding stigmatization as the stigmas associated with mental illness and with cannabis use may combine to create a formidable barrier to open patient–caregiver communication. Alternately, this finding may reflect perceived reluctance on the part of physicians to recommend CTP for psychiatric symptoms. Given the prevalence of anxiety and depression in the general population, and the substantial problems with extant pharmacological treatments such as benzodiazepines and SSRIs (Gartlehner et al., 2011; Uzun, Kozumplik, Jakovljević, & Sedić, 2010), our findings of high levels of unauthorized CTP use to address these conditions suggest that further effort is required to better determine the antidepressant and anxiolytic efficacy of CTP.

General health status was also associated with difference in the availability of CTP, such that poorer health was associated with higher rates of physician communication and authorized access. Perhaps this finding indicates that Canadians wait until they are in desperate need of therapeutic options where other options have failed before they gather enough courage to speak to their physician

about CTP. Perhaps physicians are more comfortable supporting the use of CTP for Canadians who are in poorer health. Further inquiry could shed light on this finding. However, no differences according to general health status were observed with regard to experiencing obstacles to access, changing physicians related to CTP and physicians recommending CTP but refusing to endorse applications for authorized access. Nevertheless, our findings indicate that over a quarter of patients in poor health had the experience of physicians recommending CTP and refusing to assist with authorization. This finding points to the need for further education to address equivocation and reluctance on the part of physicians to assist patients in obtaining legal access to CTP.

Affordability of CTP is a significant barrier to access for many. Under the MMAR, Health Canada offered its cannabis at \$5 CDN per gram, plus applicable taxes. Cannabis on the street market ranges between as low as \$7 per gram to as high as \$28 per gram in Canada's northernmost region (priceofweed.com). Medical cannabis dispensaries tend to follow street market prices or offer cannabis at slightly lower cost, sometimes with sliding scale prices or limited donations for lower income clients (Lucas, P., pers. commun.). Commercial licensed producers offer cannabis between \$6 and \$12 per gram, confirming that the price of CTP increased as indicated in the government's Regulatory Impact Analysis Statement regarding the new MMPR (Government of Canada, 2012).

Our findings reveal that over half of respondents indicated that financial considerations interfered with their ability to treat symptoms with cannabis. Lower income individuals were most vulnerable to this obstacle, with approximately half of participants in the lowest income group reporting having to choose between CTP and other necessities. However, even a third of the highest income group reported difficulty affording CTP. Affordability appeared to disproportionately impact the most seriously ill patients, such that the group who reported fair to poor health were twice as likely as healthier patients to report having to choose between CTP and other necessities. Surprisingly, the lowest income group were more likely to have obtained authorization to possess, which suggests that it is the cost of cannabis per se, rather than the cost of obtaining authorization, that presents the primary barrier to affordability. The ubiquity of CTP-related financial strain highlights the need for developing approaches to mitigate financial barriers and integrate CTP within a subsidized medicine framework. This is increasingly important under the new MMPR, since Canadians who use CTP no longer have the cost-effective options of producing their own cannabis or obtaining a designated producer.

Finally, barriers to acceptability due to stigma and controversy that surrounds the use of CTP need to be addressed. In light of this stigma and controversy (Bottoroff et al., 2013), and evidence from surveys of physicians that indicate discomfort with CTP (Canadian Medical Association, 2012; Jones & Hathaway, 2008), we were not surprised that patients' perception of service providers' attitudes toward CTP users constituted substantial barriers to *acceptability* of services. Our findings allude to impeded frank and open discussions about CTP and a negative impact on continuity of care.

Indeed, almost half of the respondents had at some point wanted to discuss cannabis for medical purposes with a physician but avoided doing so, most commonly citing fear of discrimination and feelings of discomfort. Reports of patient–physician interaction suggest that such fears may not be unfounded; half of respondents were relatively less satisfied with CTP-related physician interactions than with interactions that were unrelated to CTP, and nearly one third reported experiencing CTP-related discrimination on the part of physicians. The large proportion of patients who changed doctors to access CTP, and who reported that physicians recommended CTP but would not sign official authorizations, provides further evidence of lingering discomfort related to CTP on the part of some physicians. This discomfort may stem from their stated

lack of knowledge about the medical use of cannabis (Canadian Medical Association, 2012; Jones & Hathaway, 2008) and their disapproval of smoking as a route of administration for any treatment (Canadian Medical Association, 2012). It may also stem from their personal views on cannabis use, which may be an interesting topic for further inquiry. Organizations such as the Canadian Consortium for the Investigation of Cannabinoids have developed programs to help educate physicians on the relative harms and benefits of CTP, and the past decade has witnessed a notable increase in the international acceptance of the therapeutic potential of cannabis. This increased prominence, together with the concerted efforts of CTP advocates and educators, may play a valuable role in helping to reduce barriers related to acceptability of services.

The ongoing prohibition of cannabis and associated anti-cannabis messages have tarnished its reputation as a potentially beneficial and safe therapeutic option, thwarted scientific inquiry and stigmatized both the plant and its users. Perhaps the current international climate of cannabis policy reform will bring about alternative policies to regulate cannabis and will slowly open doors for more rational and sensible investigation and education regarding its therapeutic uses.

Our study has several limitations. The cross-sectional nature does not permit causal inferences and it is possible that unmeasured factors may play an important role in determining access to CTP. Our sample consisted of mostly male, Caucasian and well educated respondents and our findings may not reflect the situation of other Canadians who use CTP. An additional limitation involves response biases related to participant self-selection, and recruitment through organizations that support people who use CTP. These factors likely resulted in overrepresentation in our sample by individuals who are strongly invested in increasing access to CTP. Conversely, barriers to access to CTP may be greater for those who may not have access to online resources or organizations that support people who use CTP. We also focused on barriers to access for those who are using CTP and did not delve into the barriers for people who may want to use CTP but are not able to overcome barriers to access. In light of these factors replication using a more systematic approach to recruitment is required to conclusively determine the extent to which the CTP users in our sample are representative of the broader community of Canadian CTP users. Also, our use of broad diagnostic categories and a single item measure of global health provide somewhat crude indices of health status. Although the use of discrete categories and single item measures of health are widely used (Bowling, 2005), future studies that employ more fine-grained assessments might provide additional valuable information.

These limitations are balanced by several strengths, including a relatively large national sample that tapped into both authorized and unauthorized CTP users across diverse medical conditions and health statuses. The engagement of both community and academic experts in the construction and dissemination of the survey is a further strength of our study, as it increased the breadth, relevance and validity of our queries. More broadly, our examination of issues related to access to CTP was guided by a theoretically informed analytical framework which added to our confidence regarding the dimensions that are central to access to health services.

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Conflict of interest statement

None declared.

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