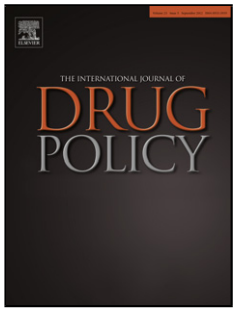

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PII: S0955-3959(14)00173-X
DOI: http://dx.doi.org/doi:10.1016/j.drugpo.2014.07.005
Reference: DRUPOL 1418

To appear in: *International Journal of Drug Policy*

Received date: 18-4-2014
Revised date: 4-7-2014
Accepted date: 7-7-2014

Please cite this article as: Hakkarainen, P., Frank, V. A., Barratt, M. J., Dahl, H. V., Decorte, T., Karjalainen, K., Lenton, S., Potter, G., and Werse, B.,Growing medicine: Small-scale cannabis cultivation for medical purposes in six different countries, *International Journal of Drug Policy* (2014), http://dx.doi.org/10.1016/j.drugpo.2014.07.005

Growing medicine: Small-scale cannabis cultivation for medical purposes in six different countries

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Growing medicine: Small-scale cannabis cultivation for medical purposes in six different countries

Keywords: Cannabis, Small-scale cannabis cultivation, Medical use of cannabis, Cross-cultural study, Web survey

Abstract

Background: The production and consumption of cannabis for the treatment of medical conditions is of increasing importance internationally; however, research on different aspects of the phenomenon is still scarce. In this article, we report findings from a cross-cultural study of small-scale cannabis cultivation for medical purposes. This kind of comparative study has not been done previously.

Methods: The data were gathered with a help of web surveys conducted by the Global Cannabis Cultivation Research Consortium (GCCRC) in Australia, Belgium, Denmark, Finland, Germany and the UK (N=5,313). In the analysis we compare reports of medical motives, for what conditions cannabis is used, whether users have diagnoses for these conditions and whether the use of cannabis been recommended as a treatment of those conditions by a medical doctor. Descriptive statistics are used to show the main commonalities and noteworthy disparities across different countries.

Results: Findings from countries were quite similar, even though several national differences in details were found. Growing cannabis for medical purposes was widespread. The majority of medical growers reported cultivating cannabis for serious conditions. Most of them did have a formal diagnosis. One fifth had got a recommendation from their doctor, but in most cases cannabis use was self-medication which was not discussed with their doctors.

Conclusion: There is a wider demand for licit access for medical cannabis than currently available in these countries. Ideologically, medical growers can be seen distancing themselves from both the legal and illicit drug markets. From a harm reduction perspective, it is worrying that, in the context of present health and control policies in these countries, many medical growers are using cannabis to treat serious medical conditions without proper medical advice and doctor's guidance.

Introduction

The interest in medical cannabis, i.e. use of cannabis for therapeutic purposes, has increased immensely since the early 1990s. Four factors have triggered this development. Firstly, a social movement has developed which has fought for legal access to medical cannabis. This movement has been most visible and powerful in the USA (Geluardi, 2010; Dyer, 2013) but also appeared in some other countries like Canada (Penn, 2014) and Germany (Grotenhermen, 2002). Secondly, the pressure created by the medical cannabis advocacy has led to changes in official policy. In California, USA, the passing of Proposition 215 legalized medical marijuana in 1996, and subsequently many other states have decided to follow the Californian example (Geluardi, 2010). Thirdly, the growing significance of medical cannabis has garnered interest from the pharmaceutical industry which has been developing alternative products to herbal cannabis: e.g. since the mid-1980s synthetic THC (dronabinol, marketed as Marinol®) has been available and since 2004; Sativex®, a plant-based extract has become a registered pharmaceutical product in a number of countries. Also, the state authorities are involved in many ways in the production of medical cannabis (e.g. Crawford, 2013). Fourthly, a growing body of research on the therapeutic value of cannabis has been published (e.g. AMA, 2009; CMCR, 2010; Grant, Atkinson, Gouaux, & Wilsey, 2012; Kalant & Porath-Waller, 2012; Borgelt, Franson, Nussbaum, & Wang, 2013). Even though the topic is controversial, support for the use of cannabis for medical purposes might be increasing among clinicians internationally as shown in the recent Clinical Decision of the New England Journal of Medicine (Adler, & Colbert, 2013). In short, we are experiencing a formative period in policy and practice around medical cannabis.

The increased interest in medical cannabis can be seen as a revival of historic use of cannabis for medical purposes. Indeed, the use of cannabis and cannabis-based preparations for therapeutic purposes has a long history and has been known in many cultures all over the world (Aldrich, 1997; Grinspoon & Balakar, 1997; Russo, 2007). In the West, cannabis did not play any significant role until the 19th century when it became a popular ingredient in medicines and commercial

preparations in Europe and the United States. However, by the end of the century, cannabis was already falling out of favour and it was replaced by new synthetic pharmaceuticals such as aspirin and barbiturates (Fankhauser, 2008). Furthermore, as cannabis was included under the international narcotics control system and classified in Schedule I of the Single Convention in 1961, it was described as having only a limited medical value, but a high potential for abuse. This scheduling frames discussion about medical cannabis even today.

In fact, the renewed interest in medical cannabis is hotly debated. Physicians, health authorities and politicians still ask for more evidence before recognizing cannabis as an approved treatment. At the same time, there is much resistance towards legalizing cannabis for medical purposes by state powers, since they are concerned that a creation of a category of licit (medicinal) cannabis use would blur the boundaries between illegal and legal drugs and thereby challenge the ideology of prohibition in drug policy. Consequently, with the exception of some US states, in most countries where medical cannabis has been made formally available, it has often been implemented under a strictly regulated system where a patient needs a recommendation from a specialized doctor and the variety of the available products is strongly limited. Moreover, in practice physicians in health care might be sceptical and reluctant to suggest medical cannabis for their patients (Grotenhermen, 2002; Dahl & Frank, 2011; Pedersen & Sandberg, 2013). Further, there are also concerns about smoking as a mode of administration. Whilst delivery systems such as vaporization remain a possibility, it is extremely unlikely in many countries that a product that is smoked will be approved as a medicine.

Furthermore, our understanding of the characteristics and practices of those who use cannabis for medical purposes is limited. While there is a growing body of studies of authorized patient populations (e.g. Reinarman, Nunberg, Lanthier, & Heddleston, 2012; Walsh et al., 2013) in the countries where medical cannabis has become legal, little is known about self-medication and how and why individuals define their cannabis use as medical in the countries where access to medical cannabis is denied or strongly limited (Ogborne, Smart, Weber, & Birchmore-Timney, 2000; Ware,

Adams, & Guy, 2005; Dahl & Frank, 2011; Pedersen & Sandberg, 2013). Specifically, our understanding of how medical cannabis users cope with legal barriers and restricted access is limited.

One recognised way to deal with a lack of legal access is to turn to home-growing or to rely on home-grown cannabis supplies from others. For example, in surveys conducted in Belgium, Denmark and Finland on cannabis growing 2 %, 24 % and 59 % of the respondents, respectively, gave 'medical use' as a reason for growing (Decorte, 2010; Hakkarainen, Frank, Dahl, & Perälä, 2011). However, in these studies no further details were available on the underlying medical conditions for which the cannabis was being used. This is important since the boundary between medical and recreational use of cannabis is contested (Potter, 2010; Dahl & Frank, 2011; Hakkarainen, Perälä, & Metso, 2011; Reinarman et al., 2012; Pedersen & Sandberg, 2013).

The present article takes up the challenge of investigating medical cannabis use from the perspective of those who grow cannabis to supply themselves or others with medicinal cannabis. In this contribution we use the terms 'medical growing' and 'medical growers' to refer to this phenomenon. We compare the appearance of medical motives in the samples of cannabis growers from six different countries, including the medical conditions for which cannabis is used, , whether users have a diagnosis for these conditions, and whether their use of cannabis has been recommended as a treatment of those conditions by a doctor. Samples of cannabis growers are included from Australia, Belgium, Denmark, Finland, Germany and the UK.

Medical cannabis policy in these six countries has been evolving since the mid-1990s. However, while there are differences in how these countries have dealt with medical cannabis, formal laws and policies in all six countries were still very similar at the time of writing this article. Some pharmaceutical cannabis products like Marinol® and Sativex® are available in all countries except Australia. Products of herbal cannabis (e.g. Bedrocan®) are accessible in Finland and Germany with a special authorization, and there are a few ongoing clinical trials in the UK. In general, access to cannabis treatment is strictly regulated and predominantly limited to certain specified medical

conditions. Furthermore, authorised cannabis treatment seems to be relatively expensive for an individual user, especially when health insurance providers do not reimburse the costs (Grotenhermen, 2002). It is also apparent that many medical authorities and GPs are reluctant to widen access to medical cannabis, especially beyond these limited number of approved pharmaceutical products to the consumption of herbal cannabis. In the context of limited access, reserved attitudes and expensive costs of the official cannabis medication, the illicit market and a supply based on home growing are likely to appear as attractive alternatives (Grinspoon, 2001; Grotenhermen, 2002).

With the exception of industrial hemp and licenced growing for scientific purposes cannabis growing is illegal in all six countries. In Belgium, however, a joint guideline issued by the Minister of Justice and the College of Public Prosecutors in 2005 sets out that the lowest prosecution priority is to be given to the possession by adults of an amount of cannabis suitable for personal use, which is to say quantities not exceeding three grams or one cultivated plant (without aggravating circumstances or causing disturbance of the public order). In other words, in the case of growing not more than one plant, the person concerned will not receive a criminal record. Another exception was recently made by Germany: in December 2012 the Federal Administrative Court ruled that seriously ill patients may grow their own cannabis for medicinal uses (German medical marijuana patients allowed to grow their own, 2013). Patients who wish to take part can apply to the Federal Institute for Drugs and Medical Devices for permission to treat themselves with homegrown cannabis, with use monitored by a medical doctor.

Data for this study stems from national web surveys conducted by the Global Cannabis Cultivation Research Consortium (GCCRC). Surveys were designed to compare data on cannabis growers, including growing for medical purposes (Barratt et al., 2012). This created an opportunity to study and compare whether, and in what ways, growers cultivating cannabis for medical purposes are alike in different national contexts. While there are some studies dealing with medical cannabis

cultivation within a national context (e.g. Hough et al., 2003; Potter, 2010; Dahl & Frank, 2011) this kind of comparative study has not been done previously.

Data and methods

Data gathered during 2012-2013 was based on the International Cannabis Cultivation Questionnaire (ICCQ) developed by the GCCRC to measure patterns of small-scale cannabis cultivation (Decorte et al., 2012). In addition to the questions incorporated in the ICCQ-questionnaire, individual countries inserted their own items or modules. Detailed questions about growing cannabis for medical purposes were an additional module employed by those six countries included in this analysis.

The methodology of the GCCRC study has been described in some depth elsewhere (Barratt et al., 2012) and a more detailed report of methods and data can be found in another article in this volume (xxxx, this volume). Hence, just a short overview is provided here. A broad-based recruitment strategy and techniques to maximise the breadth of recruitment coverage were used. However, in practice the mix of strategies varied from country to country, and it became apparent that in some countries recruitment of cannabis growers into the study was more challenging than in other countries. This can also be seen in the variation of the number of respondents in different countries. Consequently, we cannot precisely estimate how comparable the samples from each country are to each other. On the other hand, it has been noted that subjects responding web surveys are comparable to those responding traditional modes of data collection based on volunteering in terms of age, gender, income, and health status (West et al., 2006; van Gelder, Bretveld, & Roeleveld, 2010). Furthermore, our recruitment strategies and use of a web-based questionnaire has provided us with larger samples of cannabis cultivators than we would have been able to recruit using traditional research methods.

Eligibility criteria for inclusion in the analysis were that the respondent had grown cannabis during the past five years and had filled at least 50 per cent of the questionnaire. The number of eligible respondents across the six countries which asked about medical cannabis totalled 5,313. A fuller description of sample characteristics can be found in Potter, Barratt, Malm, Bouchard, Blok et al., this volume.

Measurements

In order to measure *the prevalence of medical growing* the respondents were asked reasons for growing. The respondents were allowed to select as many answers as relevant for describing their motivation for growing from 20 response alternatives (Potter, Barratt, malm, Bouchard, Blok et al., this volume). Two of the different response options concerned medical growing. They were (a) “to provide others with cannabis for medical reasons”, and (b) “to provide myself with cannabis for medical reasons”.

To know *for which types of conditions cannabis was used as medicine* the respondents were offered a list of health problems, typically linked in the literature to medical cannabis, and an open field to add other conditions for which they used medical cannabis.

In order to collect information about the relationship between medical growers and the national medical practice questions were included concerning *diagnoses and advice given by medical doctors*. In Australia, Denmark and the UK the question about diagnosis allowed several fixed-choice response alternatives: (1) medical doctor or medical specialist, (2) other medical professional, (3) alternative health practitioner, (4) friend, and (5) self-diagnosed. In the analysis only the first category was coded as having a diagnosis whereas other options were reduced into the category “not diagnosed by a doctor”. Regarding whether or not the use of cannabis as medicine was suggested or recommended by the doctor response options were as follows:

a) Yes, the doctor has suggested or recommended use of cannabis as a medicine

b) No, the doctor has refused to recommend cannabis use even though I have asked for it

c) No, the doctor did not suggest or recommend cannabis use and I have not asked for it

d) No, on the contrary, the doctor advised me to avoid using cannabis

Options b, c, and d were not asked in Belgium and Germany.

Due to variations in the medical cannabis modules in the six countries, all questions were not asked in an identical way. Australia, Denmark and the UK used exactly the same additional module, whereas Belgium, Finland and Germany each applied a slightly different version of the module. Furthermore, in Australia the additional module was not included until a few weeks after the survey had launched, and in Denmark there was a technical glitch in the questionnaire which ruled out last two questions for the majority (71 %) of respondents. Therefore, the number of valid responses varies in each question. Results are presented so that only comparable information is included in tables. Analysis is kept on a descriptive level showing the main commonalities and noteworthy disparities across different countries, but we will also point out some more general themes for discussion.

Findings

Prevalence of medical growing

The prevalence of medical growing in different country samples is presented in Table 1. The category “other reasons” covers respondents who did not report any medical reasons.

Insert table 1 about here

Firstly, as Table 1 suggests, medical reasons were reported by sizeable proportions of the cannabis growers recruited in this study. Altogether 45 per cent of all respondents (N=2,346) reported providing either themselves or others with cannabis for medical purposes. Some 67 per cent of them were providing only themselves, 9 per cent provided only others, and 23 per cent both themselves and others. Methodologically, the relatively large number of medical growers in the sample creates a reasonable ground for more detailed comparisons.

Secondly, even if growing cannabis for medical purposes seems to be a relatively widespread practice among the small-scale cannabis growers in these samples there were also substantial differences between country samples. The prevalence of reporting medical growing as a reason for growing was highest in Australia, Finland and the UK where a majority of the respondents reported that they were growing for medical purposes either providing themselves or others. The samples from Denmark and Germany formed another group where proportions of medical growers were close to half of the respondents. Appearance of medical growing was clearly lowest in the Belgian sample.

Altogether 88 per cent of medical growers were males, and there were no significant differences in this gender ratio between the countries. The mean age of the total sample of medical growers was 32.2 years. It was highest in the Australian sample (39.0 years), although the total (medical and non-medical growers) Australian sample was older than other countries (see Potter et al, this volume), and lowest in the Finnish sample (26.4 years), respectively 32.3 years in Belgium, 33.1 years in Denmark, 30.9 years in Germany and 35.8 years in in the UK. Differences in mean age were statistically significant (Table 2). In comparison to non-medical/recreational growers (mean age 29.3) medical growers were somewhat older.

Insert table 2 about here

The five most popular options among the other reasons for growing selected by the medical growers were: “it provides me with cannabis for personal use” (89 %); “I get pleasure from growing cannabis” (85 %), “to avoid contact with criminals” (85 %); “the cannabis I grow is healthier than the cannabis I can buy” (77 %); and ”it’s cheaper than buying cannabis” (75 %). In Germany this question also included an option “the cannabis I can grow will never contain adulterants” which was chosen as an important motivation by 95 per cent of local medical growers. Hence, in addition to personal use, aesthetic motivations and economic austerity medical growers were showing a deep distrust of the street marked and criminal networks. This finding corresponds to previous literature classifying medical cultivators into the cluster of ideological growers who are clearly distinguishable from those growing for financial gain (Potter, 2010). Indeed, only 9 per cent of medical growers expressed a selling motivation as a reason of growing, with variation between countries from 6 (Australia and Denmark) to 12 per cent (Finland). The selling motivation was somewhat more prevalent among those who provided themselves with medical cannabis than among those who provided others in Demark, Finland and the UK. In Australia and Belgium this ratio was the other way, and there was equality between the groups in Germany.

Illnesses, injuries or conditions to be treated with cannabis

Results presented in Table 3 show that medical growers were using cannabis for a wide variety of serious conditions. Three out of four of the respondents were suffering more than one condition. In Belgium, Finland and Germany fewer conditions were included in the list than in Australia, Denmark and the UK.

Insert table 3 about here

The most frequently reported conditions fell into two basic categories: *physical illnesses* like chronic pain, inflammation of the joints and migraine/headache on the one hand, and *mental health problems* like depression, anxiety and panic disorders on the other. The majority of medical growers were cultivating cannabis for these conditions. In the open response option insomnia and sleeping problems were mentioned relatively often in every country.

Multiple Sclerosis (MS), which is probably the condition for which medical cannabis is most widely recognised, officially, as being beneficial, was not often mentioned by medical growers in our samples. This probably just reflects the low prevalence of MS in the general population. On the other hand, MS has been recognized as a condition for legal access to Marinol® or Sativex® medication in most of the countries. It is also interesting to note that while HIV/AIDS patients have been a visible patient group for medical cannabis in the USA (Mack & Joy, 2000; Geluardi, 2010; Reinarman et al., 2011), they were not very prevalent in our data. This is undoubtedly related to the fact that we recruited a wider population in our study than represented by the American medical marijuana patients. Similarly, there was a relatively small proportion of respondents who reported use for cancer or nausea after chemotherapy. On the other hand, the proportion of respondents using cannabis as medicine for depression and other mood disorders was much higher in our data than among American medical marijuana patients (Reinarman et al., 2011). Actually it was the most prevalent single health condition for which participants reported cannabis use, and this held for each country.

There were some interesting differences between countries. First, figures in the Belgian sample seem to be lower than in other countries which may relate to how the question was structured in the Belgian questionnaire. Second, Scandinavian growers seemed to use cannabis for the treatment of ADHD more often than growers in other countries. Third, inflammation of joints as a reason for use was much more prevalent in Australia and the UK than in other countries, and same was true for the bowel problems as well as for anxiety and panic disorders. Fourth, a few respondents were using cannabis as medicine for dependence and withdrawal from other drugs,

but in Finland, where the proportion was highest, several respondents informed in the open response option that they were using cannabis to manage alcohol problems. This may be seen reflecting the high prevalence of drinking problems in Finland.

Diagnoses and recommendations by medical doctor

Table 4 shows that a definite majority of the medical growers had a diagnosis from a doctor. This confirms the observation from table 3 that many of them were suffering serious and medically established maladies. This is interesting, because there has been some suspicion whether most of those who define themselves as medical cannabis users are just justifying their recreational use by claiming for medical purposes (e.g. Wilkinson & D'Souza, 2014). Our data are based on self-reporting and our knowledge about the patterns of use among our respondents is limited, but never-the-less, in these samples of medical growers across six countries three out of four reported having an authorized medical record for their conditions, and therefore a valid basis for their medical use of cannabis.

Insert table 4 about here

Table 5 presents data on those who reported that they had been given a diagnosis. An important observation is that only a minority of the growers with a formal diagnosis had discussed the use of cannabis as medication with their doctors. Almost sixty per cent of the medical growers with a diagnosis reported that their doctor had not recommended cannabis and that they had not asked for it. Hence, in this sample of growers the use of cannabis in the treatment of diagnosed conditions was mostly a choice of the individual 'patient' rather than a clinical decision. This "practice of silence" was most prevalent in Finland where as many as 67 per cent of the

respondents reported they had not taken up the issue of cannabis use when meeting their doctors. That might be due to the strict restrictive drug policy tradition in Finland (Kainulainen, 2009).

Insert table 5 about here

It is also interesting to note that approximately one in five respondents reported that their doctor had suggested the use of cannabis. In the context of limited legal access to medical cannabis treatment this is rather a high number. However, in 8 per cent of cases the doctor had refused to recommend cannabis even though the respondent had asked for it, and in 9 per cent the doctor had advised respondents against using cannabis. In sum, also nearly one in five of the medical growers with a formal diagnosis were treating their health problems with cannabis against their doctor's advice.

Discussion

A central limitation of our study is connected to the general characteristics of internet-based research methods. Respondents for this study were not selected at random and hence, we don't know the representativeness of the data. To minimize sampling limitations a wide variety of recruitment and promotion strategies were used (see xxxx, this volume). Moreover, in the case of researching hidden populations purposive, self-selected sampling procedures are a relevant and well established option, particularly since the basic population is unknown and could hardly be determined with representative surveys (Barratt et al., 2012). Even though our data cannot be said to represent all cannabis growers the relatively large number of respondents, 5,313 (2,346 of them medical growers) in these six countries, gives a reasonable basis for a descriptive analysis. In fact, this kind of procedure is common in cross-national comparisons (Strauss, 2009).

In general, the results from countries were quite similar, even though several national differences in details were found. However, these differences may be reflections of the different sampling strategies and resultant sample compositions (see xxxx, in this volume). This being the case it is reasonable to put more emphasis in commonalities and general features than disparities between the countries.

Our data from six countries show that growing cannabis for medical purposes (either for oneself or for others) is a widely spread motivation among small-scale cannabis growers. Over the years a number of researchers have produced typologies of cannabis cultivators and some of these classifications also note medical growers as a distinctive category of cultivators (Hough et al., 2003; Potter, 2010; Potter, Bouchard, & Decorte, 2011). However, the place of medical growers within the range of cannabis cultivators has been seen as relatively minor. Results of this study indicate that the prevalence and social importance of medical growing might be more substantial in the cannabis growing community than has previously been recognised.

Medical growers in our samples reported cultivating cannabis for wide variety of illnesses, injuries and conditions. As noted, the occurrence of different conditions was very different in our samples than in the samples of medical marijuana patients in the USA (Reinarman et al., 2011). The list of conditions in our samples seems to reflect more general public health problems, but less common diseases like AIDS or Multiple Sclerosis. The coverage of conditions in our samples also went far beyond the lists of officially approved conditions in these six countries.

The majority of medical growers in our study reported cultivating cannabis for serious conditions. Most of them also had a medical diagnosis. Hence, according to their self-reporting they were suffering medically established maladies which they were treating through illicit activity.

An alternative interpretation – especially regarding the high prevalence of medical motivation – is that there may be policy, law-enforcement and social desirability related reasons for citing medical reasons for cannabis growing and use by some respondents (Swift, Gates, & Dillon, 2005). Indeed,

invoking medical purposes may also be seen as a neutralization of the stigma created by the illegal social position of cannabis. Growing for medical purposes may not be as subject to stigma as growing for pleasure and recreation. However, while there are studies suggesting that some users claiming medicinal use do not hesitate also to take advantage of the recreational potentialities of cannabis (Hakkarainen, Perälä & Metso, 2011b; Pedersen & Sanberg, 2013) other studies show that the use of cannabis is very different depending on whether it is for medical or recreational purposes (Dahl & Frank, 2011). In practice, as Reinarman et al. (2011, p. 134) argues, "it is not clear where a border line between medical and nonmedical marijuana or other drug use might be drawn nor how it might be effectively policed".

While we know that respondents suffering medically established maladies use cannabis to self-medicate these conditions, it was a shortcoming of our questionnaire that our data did not allow exploration of how this self-medication related to their use of pharmaceutical drugs for these conditions. Future research on medical cannabis should also include questions addressing the medical, rather than recreational, use of pharmaceutical drugs.

However, there is some evidence from other studies. A medical marijuana patient study in the USA suggested that around half of the patients are using marijuana as a substitute for prescription drugs (Reinarman et al., 2011). Even though cannabis might not be as effective an analgesic as the strongest pharmaceutical pain killers, it may be experienced as having fewer unpleasant side effects (see also Swift, Gates, & Dillon, 2005; Ware et al., 2005; Dahl & Frank, 2011). This argument of less unpleasant side-effects is also known in the cases of mental disorders (Dahl & Frank, 2011). Furthermore, using cannabis as a substitute for prescription medicines may also reflect a general mistrust towards pharmaceuticals. As it has recently turned out, the criticism and uncertainty towards the widespread use of pharmaceuticals has increased and, for example, it has been said that anti-depressants may not have much more than a placebo effect (Abraham, 2010; Horgan, 2011; Greenslit & Kaptchuk, 2012). Actually the medical cannabis movement as "an embodied health movement" challenges the existing medical knowledge and paradigmatic

scientific methodology by emphasising intimate, first-hand knowledge of their own bodies and conditions (Penn, 2014). Hence, by this account, medical growers can be seen as not only distancing themselves from the illicit drug markets but also from the licit pharmaceutical medicines markets.

According to the self-reports of the growers in our samples, significant proportions were using cannabis for treatment of conditions, which research suggests cannabis use can actually exacerbate (e.g. depression and other mood disorders). Whilst acknowledging that there is some disagreement in the literature regarding the role of anxiolytic effects from cannabidiol (CBD) and the implications for treatment of such disorders (e.g. Walsh et al., 2013), there are questions about the implications of these findings. Similar issues exist for using cannabis to treat pain related disorders although there is a growing scientific literature on the analgesic effectiveness of cannabis and cannabis products (Cooper, Comer, & Haney, 2013). In fact, from health policy and harm reduction perspectives, it can be seen as a worrying practice that many medical growers are using cannabis to treat serious medical conditions without medical advice and doctor's guidance, or even against their doctor's advice.

Even though our data do not prove or disprove the medical effectiveness of cannabis it raises questions about the relevance of these findings for policy and the status of cannabis as an approved treatment option for some of these conditions. The high prevalence of medical growing and self-medication in our samples indicates that there is a wider demand for a licit access for medical cannabis than available in these countries today. This would require changes as well in official policy (drug control and medical policies) as in present attitudes among clinicians. In any case, more research is needed. For example, the results of this study would suggest that further research on the therapeutic effects of cannabis should widen the scope of the studied conditions, particularly to the risks and benefits of anxiolytic and sedative use of cannabis. Investment in the development of safe – herbal and synthetic – preparations is also important.

Another interesting issue is the role of policy in the decisions that people make with regards to using an illicit drug for medical purposes. For example, to what extent do patients using cannabis without medical advice do so because they fear the risks of law enforcement and/or express the denial by their doctor? This possibility complicates the issue of inadequate cannabis medication. While using medical cannabis without a doctor's recommendation could be risky for individual health, it might also be the result of difficulty obtaining medical cannabis products and the criminalization and stigma of cannabis use in general. Comparative research is needed to evaluate how users from countries or regions with a more liberal practice of medical cannabis use differ from those researched here.

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Tables

Table 1. Prevalence of medical growing in Australia, Belgium, Denmark, Finland, Germany and the UK, %

	Countries						
Growing for medical reasons	Australia (N=491)	Belgium (N=1065)	Denmark (N=813)	Finland (N=1179)	Germany (N=1347)	UK (N=418)	Total (N=5313)
Provide others	19.6	7.8	17.5	17.0	12.3	18.2	14.4
Provide oneself	53.6	19.2	42.6	52.8	34.8	52.4	40.0
Other reasons*	42.4	77.6	51.5	43.7	58.8	42.3	55.3
I don't want to answer	0	0.2	0	0	0.1	0	0.1

*Not growing for medical purposes

Table 2. Mean and median age of medical growers Australia, Belgium, Denmark, Finland, Germany and the UK

	Countries								
Age	Australia (N=283)	Belgium (N=237)	Denmark (N=393)	Finland (N=664)	Germany (N=533)	UK (N=236)	Total (N=2346)	F-test	p-value
Mean (yrs)	39.0	32.3	33.1	28.4	30.9	35.8	32.2	47.125	<0.001
Median (yrs)	38	29	30	26.5	28	36	29		
Range (yrs)	18-71	18-71	18-69	18-61	18-74	18-63	18-74		

Table 3. Illnesses, injuries or conditions for which cannabis was used as medicine in Australia, Belgium, Denmark, Finland, Germany and the UK, %

Conditions	Countries							
	Australia (N=208)	Belgium (N=205)	Denmark (N=346)	Finland (N=623)	Germany (N=469)	UK (N=219)	Total (N=2070)	
Depression/other mood disorders	46.6	18.0	44.8	40.4	48.8	52.5	42.8	
Chronic pain (e.g. fibromyalgia)	31.7	15.6	38.7	27.8	44.1	31.1	32.9	
Anxiety or panic disorders	45.2	-	24.6	26.8	-	36.1	30.4	*
Migraines and headaches	24.0	-	33.5	18.0	-	26.5	24.1	*
ADHD	11.1	-	21.1	16.5	-	6.8	15.3	*
Bowel problems	16.8	-	11.0	-	-	16.4	14.1	*
Inflammation of the joints (arthritis)	31.3	7.8	15.9	6.1	9.6	29.7	13.7	
Post Traumatic Stress Disorder (PTSD)	14.9	-	10.1	-	-	9.1	11.1	*
Asthma	7.2	2.9	9.5	11.1	13.6	8.2	9.9	
Dependence and withdrawal from other drugs	7.7	2.0	6.6	10.8	5.8	6.4	7.3	
Autism and Asperger's syndrome	5.3	-	5.5	-	-	5.5	5.4	*
Hypertension	6.7	0.0	4.0	4.2	7.2	7.8	5.1	
Anorexia	3.8	1.0	4.0	7.5	-	2.7	4.8	*
Cancer	6.3	-	8.7	1.3	-	4.1	4.3	*
Schizophrenia	1.4	-	5.5	-	-	0.5	3.0	*
Eye disease (glaucoma)	3.4	1.0	3.2	1.4	5.1	2.3	2.8	
Hepatitis	4.8	-	1.4	-	-	1.8	2.5	*
Nausea e.g. after chemotherapy	1.9	0.5	6.1	0.3	2.3	2.3	2.1	
Multiple Sclerosis	0.0	1.5	3.8	1.0	3.2	2.3	2.0	
Tourette Syndrome	0.5	1.0	2.9	-	1.5	0.5	1.5	*
HIV/AIDS	0.5	-	1.4	-	-	0.9	1.0	*
Parkinson's disease	0.5	0.5	1.4	0.0	1.1	0.0	0.6	
Other	35.6	36.1	32.1	12.2	36.5	40.2	28.7	
I don't know	0.0	-	0.6	4.0	0.6	0.5	1.7	*
I don't want to answer	1.0	-	0.3	1.1	4.9	1.4	1.9	*

- Information is lacking, not included as a category

* Total N is the sum of the N's of countries with the information of disease at issue, i.e. less than 2070

Table 4. Diagnosis of illnesses, injuries or conditions among medical growers in Australia, Belgium, Denmark, Finland, Germany and the UK, in %

	Countries						
Diagnoses	Australia (N=195)	Belgium (N=179)	Denmark (N=100)	Finland (N=604)	Germany (N=443)	UK (N=209)	Total (N=1730)
Have a diagnosis	89.7	64.8	88.0	69.0	77.0	90.4	76.6
Not diagnosed by a doctor	9.7	35.2	12.0	22.0	19.4	9.6	19.2
I don't know	0.0	0.0	0.0	6.0	1.1	0.0	2.4
I don't want to answer	0.5	0.0	0.0	3.0	2.5	0.0	1.7

Table 5. Doctor's recommendations on medical cannabis use as reported by medical growers having a diagnosis in Australia, Belgium, Denmark, Finland, Germany and the UK, %

	Countries							
Doctor's recommendation	Australia (N=175)	Belgium (N=102)	Denmark (N=87)	Finland (N=415)	Germany (N=341)	UK (N=187)	Total (N=1307)	
Doctor not recommended and person not asked for	50,3	-	54,0	67,5	-	49,7	58,8	*
Doctor suggested cannabis	23,4	25,5	13,8	8,9	22,6	15,5	17,0	
Doctor advised to avoid using cannabis	6,9	-	9,2	10,4	-	7,5	8,9	*
Doctor refused to recommend even though asked for it	5,7	-	3,4	9,2	-	10,7	8,2	*
Doctor is aware of my cannabis use and does not object**	9,1	-	4,6	-	-	6,4	7,1	*
Other	3,4	-	12,6	-	-	8,0	7,1	*
I don't know	0,6	-	1,1	3,1	4,7	0,5	2,7	*
I don't want to answer	0,6	-	1,1	1,0	5,0	1,6	2,2	*

- not asked
* Total N is the sum of the N's of countries with the information at issue, i.e. less than 1307
** This category was created based on recording the other text responses

Highlights

- Growing cannabis for medical purposes was a widespread motivation among the small-scale cannabis growers in six countries.
- The majority of medical growers reported using cannabis for serious illnesses, injuries or conditions.
- According this self-reporting data most of medical growers did have a formal diagnosis of their medical condition.
- In most cases this self-medication was not taken up in the meetings with their doctors.