

Viewpoint

Cannabis use in Europe: Current trends and public health concerns

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ABSTRACT

In this contribution, I summarize recent trends of cannabis use in Europe and their public health implications. The first trend refers to an increase of treatment demand for cannabis problems by 76% while prevalence of cannabis use remained largely stable in the same period, based on available data. There are good reasons to assume that this trend reflects increases in the prevalence of cannabis use disorders, however, data to support this claim are not available. Potential drivers for a rising prevalence of cannabis use disorders comprise changes in consumption patterns and increasing levels of THC in available cannabis products. While an increasing prevalence of cannabis use disorders seem likely, the estimates of the Global Burden of Disease studies suggest the opposite. The second trend refers to an emerging market for cannabidiol (CBD) products in European countries, where regulations on CBD are lacking. Given the lack of data on users of CBD products, it can hardly be assessed if current abstainers will initiate using other cannabis products after trying CBD products for medicinal or recreational purposes. However, regulations should be implemented and enforced in order to make CBD products safer for consumers, for instance by ensuring reliable potency levels and by reducing the presence of toxic substances through quality control measures. In summary, a substantial transition of the epidemiology of cannabis use is under way, accompanied by changes in potency, treatment demand and new products. In order to assess the public health implications of this transition, data on population exposure of specific cannabinoids are required.

Trend 1: cannabis use prevalence and treatment demand

The United Nations Office on Drugs and Crime estimates that in 2016, about 28 million adults (aged 15 to 64) have used cannabis in the past year in the European region (equivalent to a prevalence of 5.1%) (United Nations Office on Drugs & Crime, 2018). As reported by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), the prevalence of cannabis use in Europe varies largely by country, with higher prevalence in Mediterranean and Central-Western, and lower prevalence in Eastern and Northern countries. Similarly, trends on prevalence of cannabis use varied by country as well (see Fig. 1, (European Monitoring Centre for Drugs & Drug Addiction, 2018)). A regional variation of trends in cannabis use prevalence has also been identified in European high school students between 1999 and 2015 (Kraus et al., 2018). A conclusive statement of trends in cannabis use in Europe cannot be made due to lack of systematic data concerning adult cannabis use in the largest European countries including France, Germany, and Italy (making up 40% of the EU population). However, based on available data, the EMCDDA reports that cannabis use has remained largely stable in Europe in recent years. In contrast, the

number of users seeking treatment for cannabis problems has increased by 76% within ten years based on available data from 25 countries (see Fig. 2; (European Monitoring Centre for Drugs & Drug Addiction, 2018)).

The most pressing explanation for an increase of treatment demand would be an increase of the prevalence of cannabis use disorders. While survey data on trends of cannabis use disorders are not available at the European level, there are good reasons to assume that this prevalence has increased in recent years. First, given the lag of several years to develop cannabis use disorders (for estimates in a US sample, see (Lopez-Quintero et al., 2011)), the current increase in treatment demand might be the result of an increase of use prevalence in the late 1990s and early 2000s. In Australia, a decrease in the prevalence of cannabis use in the 1990s was only followed by a decrease in treatment demand around eight years later (Roxburgh et al., 2010). Second, an increase in the prevalence of cannabis use disorders could be the result of changes in use patterns, which are a core determinant for incidence of cannabis use disorders (World Health Organization, 2016). For Europe, prevalence of near daily use varies largely in European countries (European Monitoring Centre for Drugs & Drug Addiction, 2012),

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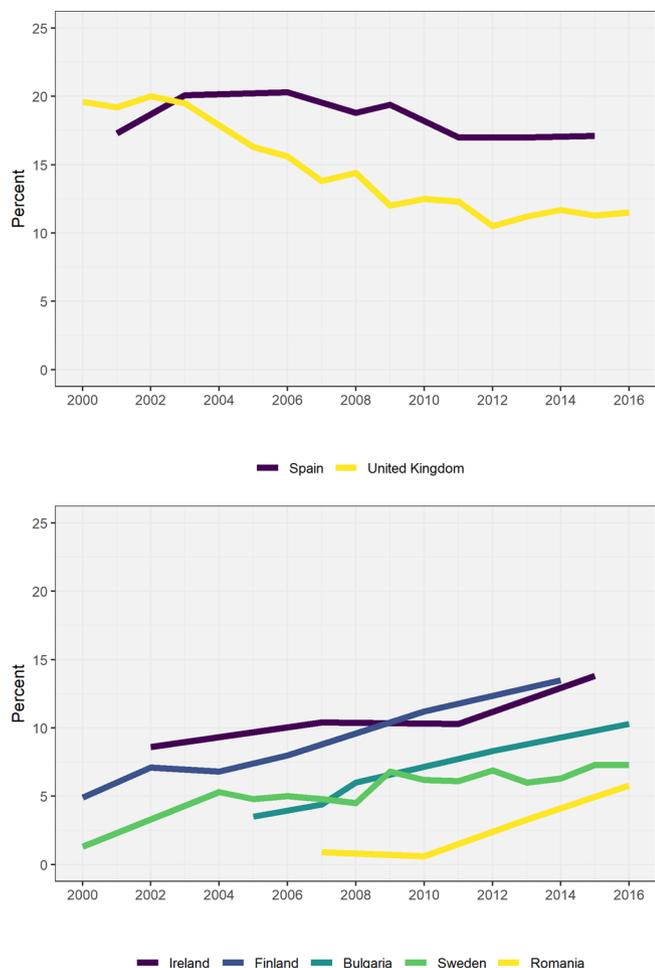


Fig. 1. Last year prevalence of cannabis use among young adults (15–34) in selected countries (obtained from (European Monitoring Centre for Drugs & Drug Addiction, 2018)).

however, systematic trend data are lacking. Yet, in the United States of America, the proportion of daily users has increased substantially between 2003 and 2014 (Caulkins, 2017) and similar trends may have occurred in European countries, as well.

Third, preliminary evidence suggest that the prevalence of cannabis use disorder might also be associated with cannabis potency levels. The main constituents found in natural cannabis products are tetrahydrocannabinol (THC) and cannabidiol (CBD). Higher THC concentrations have been associated with severity of cannabis dependence (Freeman & Winstock, 2015) and in a recent study, changes in the concentration of THC have been positively associated with treatment admission rates in the Netherlands (Freeman, van der Pol et al., 2018). In contrast, CBD might act as antagonist to THC in several ways, for instance by attenuating the negative effects of THC on cognition (Colizzi & Bhattacharyya, 2017) and by reducing the risk of developing psychotic symptoms (Iseger & Bossong, 2015). While the research on the interaction of THC and CBD is still in its infancy and further experimental evidence is needed, the currently available data suggests that cannabis products with a high THC:CBD ratio pose an additional risk to users. Mainly drawing upon data of seized cannabis, notable increases have been recorded for THC (Freeman, Groshkova et al., 2018) but not for CBD (for a meta-analysis, see (Cascini, Aiello, & Tanna, 2012); for more recent data from France, see (Dujourdy &

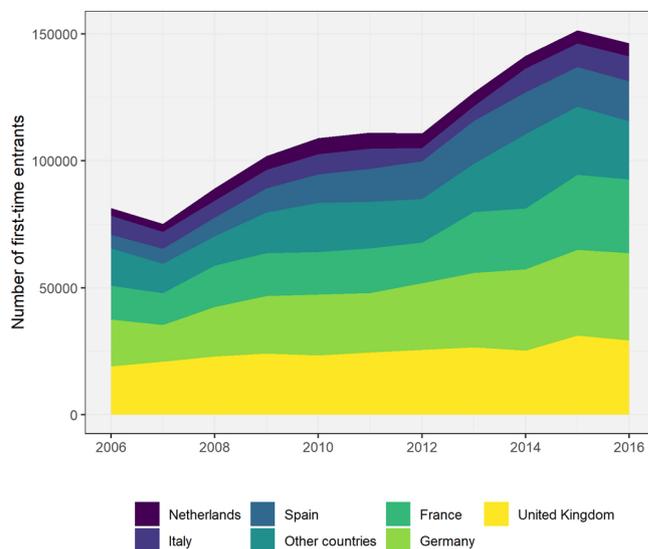


Fig. 2. Trend of first-time entrants for cannabis use disorders in selected European countries (obtained from (European Monitoring Centre for Drugs & Drug Addiction, 2018)).

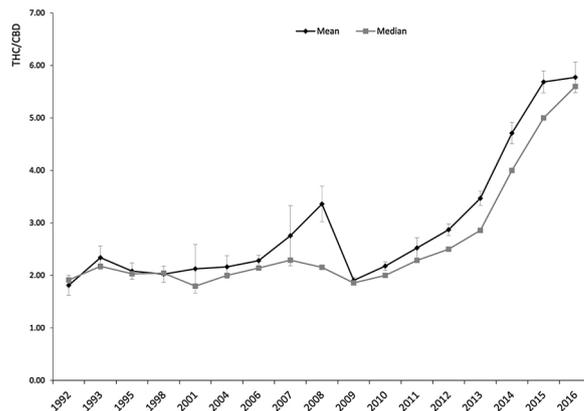


Fig. 3. Evolution of THC/CBD ratio (mean and median) by year, from 1992 to mid-2016 (obtained from (Dujourdy & Besacier, 2017)).

Besacier, 2017)) and not in all European jurisdictions (a slight decrease of THC was observed in the Netherlands (Niesink, Rigter, Koeter, & Brunt, 2015)). For most European countries, systematic data on CBD concentration levels are not available. However, an unfavourable trend in the THC:CBD ratio as observed in France (Fig. 3) may contribute to explain the recent rise in treatment demand in European countries.

In summary, the diverging trends of cannabis use prevalence and treatment demand may be explained by several potential mechanisms. However, more data are required to identify and disentangle the underlying factors. While it is plausible to assume that the prevalence of cannabis use disorders has increased in recent years, this assumption needs empirical evidence as it has been challenged by the recent update of the Global Burden of Disease study. According to their estimates, the prevalence of cannabis use disorders in the European Union has decreased between 2005 (0.42%) and 2017 (0.35%) (Institute for Health Metrics & Evaluation, 2018). This is in sharp contrast to treatment statistics and to the outlined pathways suggesting an increase of the prevalence of cannabis use disorders in Europe.

Trend 2: an emerging market for CBD products

In several European countries, a new market for products (e.g. herbal cannabis, oils) containing only CBD or mainly CBD with very low

THC levels (called CBD products hereafter) is emerging. CBD products can be legally distributed if the THC concentration remains below a specified level. As there are no regulations on CBD concentration, products with remarkably high CBD concentrations are legally marketed. For example, CBD products can be sold in Switzerland if the THC concentration remains below 1% (Swissmedic, 2017). In Austria and Germany, the upper THC levels are lower (0.3% and 0.2%, respectively; for an overview of legislative aspects around CBD, see (Hazekamp, 2018)). To date, CBD products can be purchased in form of herbs, resin, oils, e-liquids, food supplements, and cosmetics.

As there are no systematic data on CBD users, an emerging CBD market needs to be considered with great caution from a public health perspective. First, as a legal alternative to cannabis products with higher THC levels, it is possible that a number of current cannabis users may shift to CBD products. Such a shift will largely depend on the users' appreciation of the psychoactive properties of CBD products, which does not provoke the usual 'high'. As data on subjective experiences of CBD products are lacking, appreciation of the subjective effects by current cannabis users cannot be assessed. However, a large-scale shift of current cannabis users to CBD products seems unlikely given the trend of increasing THC levels in seized cannabis as outlined above. Second, it should be considered that some people who currently refrain from using (illegal) cannabis products may initiate use of (legal) CBD products for either recreational or medicinal purposes. Given the prevalent co-use of cannabis and tobacco in Europe (Hindocha, Freeman, Ferris, Lynskey, & Winstock, 2016), some new CBD users may initiate tobacco use or eventually use other types of cannabis as well, which could result in adverse net public health outcomes. Third, in addition to recreational use, some people may resort to CBD products to treat minor ailments (e.g. pain) or to cure chronic diseases (e.g. epilepsy, cancer) (Hazekamp, 2018). As of now, CBD has been linked to many medical benefits based on preliminary studies and self-medication experiments, but the evidence base for CBD as a therapeutic is still limited and there is currently no approved medicine with CBD as sole ingredient on the European market. For severe conditions, self-medication with CBD can become problematic if CBD is preferred to professional medical care, resulting in inadequate treatment (e.g. choosing CBD over chemotherapy for cancer).

To date, CBD products are hardly regulated in European countries. In the EU, the 'novel foods' regulation requires an extensive safety assessment of products which are enriched with CBD (Hazekamp, 2018). In Austria, food and cosmetics enriched with CBD have been banned altogether due to lack of approval as 'novel food' (Bundesministerium für Arbeit Soziales Gesundheit und Konsumentenschutz, 2018). However, CBD oil, resin, and herbs are neither regulated under this scheme nor classified as psychoactive substance or pharmaceutical. In order to avoid possible negative public health effects of CBD products, it would be advisable to introduce regulations for this emerging market as soon as possible. A prime example could be Canada, where the legalisation of recreational cannabis has been accompanied with advertising and marketing restrictions, minimum age regulations, packing and labelling requirements, and mandatory testing (for details, see Cannabis Act: <http://laws-lois.justice.gc.ca/eng/acts/C-24.5/>). Similar regulations apply to cannabis used for medical purposes, except for authorized patients having an increased access to cannabis products through licensed producers or by producing their own. While there are no specific regulations concerning CBD products, it is important to note that concentrates with higher potency levels are currently exempted from the legal market in Canada. Policymakers have acknowledged the unique risks pertaining to the potency of these products and seek to prepare a specific set of regulations before making concentrates legally available.

In European countries, the risks related to different potency levels in cannabis products have not been fully acknowledged to date. For CBD oil legally purchased in seven European countries, labelled and actual THC/CBD levels were found to diverge notably, in addition to presence of toxic substances (Hazekamp, 2018; Pavlovic et al., 2018), without

any known consequences for producers. In contrast, multiple recalls of cannabis products have been reported in Canada, due to deviations of labelled and actual THC or CBD content (see <https://www.healthycanadians.gc.ca/recall-alert-rappel-avis/index-eng.php?cat=3>) and due to mould on dried cannabis (<https://www.redecana.ca/consumer-alert/>). Thus, the implementation and enforcement of strict regulations can contribute to make commercially available CBD products safer for consumers.

Conclusions

Despite stable trends in cannabis use prevalence, the exposure of European cannabis users to THC and CBD is rapidly changing, which may contribute to the increase of treatment demand for cannabis problems. Among users of illegal cannabis products, exposure to CBD is declining relative to THC, while at the same time CBD is becoming increasingly popular through legal distribution channels. Moreover, medicinal cannabis is being made available in a growing number of European countries and recreational cannabis use has been announced to be legalised in Luxembourg in the near future. The impact of the latter policies on recreational cannabis use and available products is yet to be determined.

In summary, the epidemiology of cannabis use in Europe appears to undergo a substantial transition, which is marked by a diversification of markets including changes in the potency of available cannabis products. The public health effects of this transition cannot be determined in its entirety using traditional indicators only (prevalence of cannabis use, use disorders, and use patterns), but need to account for population exposure to specific cannabinoids, as well.

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Conflict of interest

The author declares no conflict of interest.

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