

Which drugs of choice are on the rise or in decline? A trend analysis of Belgium's treatment settings (2015-2019)

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Abstract

Purpose – *The opioid epidemic in the USA, the new psychoactive substances emerging on the market and the recent increase in cocaine treatment demands in Western Europe, all emphasise the importance of monitoring the use and harms of drugs over time. To be informed about new consumption patterns, this study aims to study the trends among people entering treatment for substance use in Belgium.*

Design/methodology/approach – *Belgian data from the Treatment Demand Indicator collected between 2015 and 2019 were used. A reference group of treatment units was selected to allow for comparisons between the different years. Trend analysis was performed by using a joinpoint regression among different regions and groups of clients.*

Findings – *The drugs of choice that were most frequently mentioned among the 23,000 analysed treatment episodes were alcohol and cannabis. Both remained relatively stable over time. Heroin seemed to be decreasing significantly at the national level, but increased in Brussels. Benzodiazepines decreased significantly in Flanders and Brussels, but not in Wallonia. On the other hand, reports of crack cocaine increased significantly in the three regions with a more pronounced trend in Wallonia and Brussels. Substances such as fentanyl, methamphetamine, ketamine or volatile inhalants have been mentioned significantly more by people entering treatment in 2019, although their contribution to the total number is still limited.*

Originality/value – *To the best of the authors' knowledge, this study is the first to evaluate trends for all drugs of choice at a national and regional level. These results might not only benefit national policymakers but also other countries with similar alcohol or drug use patterns.*

Keywords *Treatment, Belgium, Alcohol, Illicit drugs, Substance abuse, Addictive behaviour*

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Introduction

To assess the magnitude of negative consequences related to substance use, it is essential to study the evolution of psychoactive substance use over time, as well as the demand for treatment and the occurrence of substance-related disorders. These studies have proven to be essential for establishing evidence-based health policies (WHO, 2000).

The importance of monitoring trends over time has recently been demonstrated for the prescription opioid epidemic in the USA (Kolodny *et al.*, 2015), for the emergence of new psychoactive substances on the market during the past decade (Vaiano *et al.*, 2019), and for the recent increase in cocaine treatment demands in Western Europe (Antoine *et al.*, 2020). Such trends in drugs of choice are commonly investigated in specific sub-groups of the population such as adolescents (Khan, 2019; Tai *et al.*, 2021), older adults (Chhatre *et al.*, 2017) and prisoners (Cannon *et al.*, 2019; Lintonen *et al.*, 2012) or are examined for a specific substance only (Hasin *et al.*, 2019; Jones *et al.*, 2020; Manthey *et al.*, 2021).

Often used epidemiological approaches include health or targeted drug surveys (Han *et al.*, 2017; Seitz *et al.*, 2019), treatment admissions registers (Bello *et al.*, 2020; Chhatre *et al.*, 2017), mortality registers (Fugelstad *et al.*, 2019; Lynn *et al.*, 2018) or qualitative studies (Edland-Gryt *et al.*, 2017; van der Poel *et al.*, 2009).

However, information collected when people enter treatment for substance use appears to be an efficient way to provide insights into the prevalence of substances that may lead to treatment (Montanari *et al.*, 2019). For the past 25 years, the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) has been coordinating a European epidemiological tool, the treatment demand indicator (TDI), to gain insight into the socio-demographic profile and illicit drug patterns of those entering drug treatment (Montanari *et al.*, 2017).

More recently, TDI has been used to evaluate trends at the European level (Antoine *et al.*, 2020; Barrio *et al.*, 2013; Manthey *et al.*, 2021; Montanari *et al.*, 2017). The EMCDDA publishes an annual report analysing trends and developments of all drug aspects in Europe (EMCDDA, 2021), using data from the TDI amongst other sources (EMCDDA, 2012; Montanari *et al.*, 2019). Although these reports are extremely valuable, they remain general and do not conduct any statistical trend analysis.

To date, only a few studies have analysed trends at a national level, among a large population group and taking into account all substances (Seitz *et al.*, 2019).

Therefore, using the Belgian TDI data, we aimed to provide a broad overview of the trends in or combination of substances reported by people entering alcohol or drug treatment in Belgium, among different groups of clients and regions.

Materials and methods

This study used data from the Belgian TDI register collected from a broad variety of alcohol or drug treatment units across all parts of the country. Since its creation in 2011, there has been an evolution in terms of registration coverage and protocol. In 2015, a new protocol was set up establishing the systematic registration of all drugs of choice by the client in addition to the primary substance. Additionally, the registration was extended to a more substantial number of treatment units in the country (~200) gathering around 30,000 treatment episodes annually (Antoine *et al.*, 2016). The participating units cover the largest alcohol or drug services and the majority of the hospitals in the country, providing a representative picture of the national alcohol or drug treatment demand. They include a variety of services ranging from general and psychiatric hospitals, over inpatient and outpatient addiction services to mental health services. For this analysis, data collected between 2015 and 2019 were used. The register gathers cross-sectional data about all treatment episodes started during a specific year for an alcohol or drug-related problem. A treatment episode is formally defined as the period between the start and the termination of a treatment for an alcohol or drug problem. The termination is defined when the client leaves the center in case of a residential setting or when the client does not come into contact with an ambulant setting for six months. Data is self-reported by the client during a face-to-face interview with a clinician, following a fixed questionnaire. It does not include information on the length nor on the success of the treatment. The register encourages the use of the national identification number to identify clients, although this is not mandatory. About 70% of the treatment episodes are registered using this form of identification, allowing individual counting of clients. Here we decided to focus on the number of treatment episodes rather than the number of unique clients to retain all reported treatment episodes. Selecting treatment episodes based on the use of the national identifier would likely have resulted in a bias, as shown by the correlation between this characteristic and the type of substances mentioned by the client, the region and the type of treatment unit (Antoine and Renard, 2017).

Although the implementation of the TDI registration is mandatory in most of the Belgian treatment units, administrative or technical issues might occasionally lead to a lack of reporting data for a specific year or to the reporting of very different numbers compared to

other years. To overcome this bias, a group of 113 units participating in a regular and stable way over the five-year period was selected for this trend analysis. Selected units had an annual number of treatment episodes not exceeding 50% of the five-year average.

[Table 1](#) compares the characteristics of the total TDI data set with the subset of data used for the trend analysis.

About 79% (~23,000 yearly) of the complete data set was used in this trend analysis. This subset of data was extremely similar with the complete data set. It included a similar proportion of data from the different regions, a marginally higher proportion of treatment episodes from outpatient and inpatient treatment units and a non-significantly lower proportion from centres of mental health services and hospitals. Age, gender and proportion of the clients entering treatment for the first time were similar between both data sets. The subset had a lower proportion of clients with alcohol as primary substance and a larger proportion of clients reporting cannabis, stimulants or hypnotics problems as primary substance. On average over the five-year period, 20.6% of the treatment episodes identified with a national identification number concerned a client already recorded during that year.

Two types of information on substances are collected in TDI. First, the client is asked about all the substances currently causing them problems. These substances will further be referred to as “drugs of choice”. Second, among those drugs of choice, the client is asked about the substance causing them most problems or for which the treatment was initiated. This unique substance will further be named “primary substance”. If a client has problems with several substances and cannot identify a single primary substance, this field is left blank. In this analysis, only trends in all mentioned drugs of choice were analysed. Substances are classified based on the EMCDDA protocol ([EMCDDA, 2012](#)). If the substance category is known but not the specific substance within this category, the broader category can be selected. Alcohol and cannabis are each considered as a substance category on their own. The “opiates” category includes heroin, methadone (misused), buprenorphine (misused), fentanyl (misused) and other opiates. The “cocaine” category is divided into powder cocaine, crack cocaine and other cocaine products. “Other stimulants than cocaine” includes amphetamines, methamphetamines, MDMA/ecstasy, mephedrone and other substances with stimulant effects. Barbiturates, benzodiazepines (misused), GHB and other hypnotics belong to the “hypnotics” category. LSD, ketamine and other hallucinogens to the “hallucinogens”. A last category of substances is “volatile inhalants”. Substances reported in the categories “other” were not studied in this analysis, as lack of information on the substance itself limited accurate interpretation. We further verified trends for the most commonly reported combinations of substance use.

In Belgium, competences for prevention, harm reduction, health care, including mental health and health promotion are regionalized, with the federal state retaining certain competences in health, security and justice. Belgium is also composed of multiple communities with different traditions and behavioural patterns, that may influence drug use practices. Therefore, both national findings and a regional breakdown of the results is described. Based on the location of the treatment unit, a distinction was made between the regions of Flanders, Wallonia and the Brussels-Capital. Information about the place of residence of the clients is not available in the TDI.

Comparisons of several sub-groups of individuals were also studied, namely, those entering treatment for substance use for the first time versus those who have already been treated before, males versus females and persons aged less than 30 versus those aged 30 years and older. Missing data for these variables were excluded from further analysis.

A joinpoint regression was implemented for the trend analysis to calculate the direction and magnitude of trends fitting linear segments. The technique fits a log-linear model using Poisson regression and Monte Carlo permutation to test whether a trend is significant. The model tests the hypothesis that the annual percent of change (APC in % per year) is equal to zero. The APC assumes that rates that yearly change at a constant percentage change linearly on a log scale. A separate joinpoint regression was performed for every sub-group.

Table 1 Characteristics of the total TDI data set and the subset including stable centres used for trend analysis for the years 2015–2019

Characteristic	Total data set	Trend subset
<i>Number of treatment centres, by registration year (n)</i>	191	113
2015	189	113
2016	189	113
2017	185	113
2018	178	113
2019		
<i>Number of treatment episodes, by registration year (n)</i>	29,439	23,456
2015	30,322	23,959
2016	30,195	23,919
2017	29,635	23,386
2018	29,672	23,284
2019		
<i>Proportion of treatment episodes, by type of centre (%)</i>	26	30
Outpatient specialized	7	6
Centre of mental health	7	9
Inpatient specialized	59	55
Hospital	1	0
Other		
<i>Proportion of treatment episodes by location of centre (%)</i>	63	63
Flanders	26	25
Wallonia	11	12
Brussels	0	0
Unknown		
<i>Proportion of treatment episodes by sex (%)</i>	72	73
Men	28	27
Women		
<i>Mean age of patients (years)</i>	39.7	39.2
<i>Proportion of treatment episodes by treatment history (%)</i>	29	29
Never been to treatment before	67	67
Ever treated before	4	4
Unknown		
<i>Proportion of treatment episodes, by primary substance (%)</i>	52	49
Alcohol	14	15
Cannabis	11	11
Opiates	11	12
Cocaine	5	5
Other stimulants	3	4
Hypnotics	1	1
Other	3	3
Unknown		
<i>Proportion of treatment episodes, by substance of abuse (%)</i>	64	62
Alcohol	30	31
Cannabis	15	16
Opiates	23	24
Cocaine	11	12
Other stimulants	12	12
Hypnotics		

Results

Figure 1 shows the trends for the different drugs of choice at a national and regional level, whereas Table 2 focuses on the trends among the different categories of clients (age, gender and treatment history).

Figure 1 Trends in the number of treatment episodes reporting specific drugs of choice between 2015 and 2019 among a group of stable centres in Belgium, by region

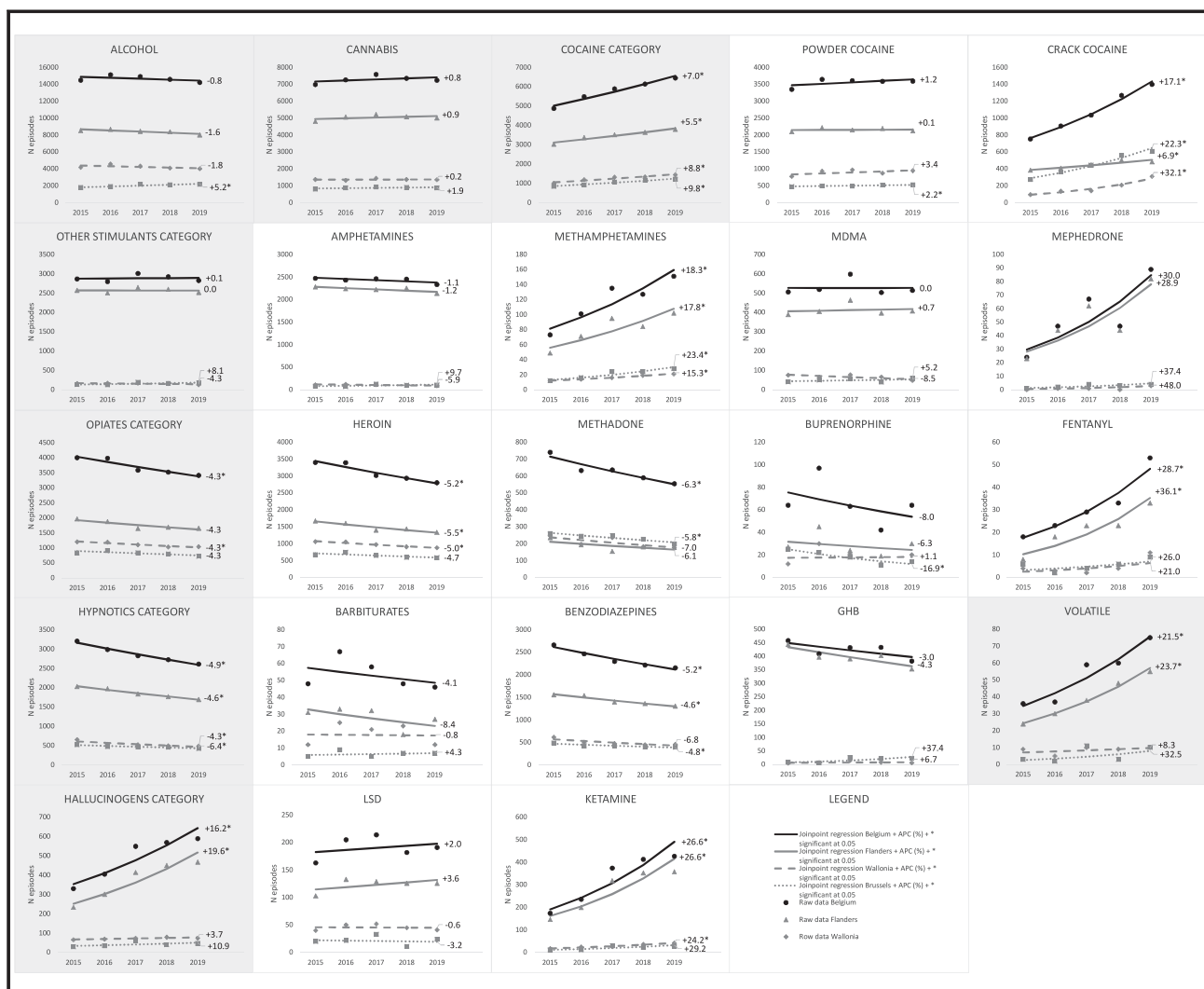


Table 2 shows trends in the number of treatment episodes reporting specific substances of abuse between 2015 and 2019 among a group of stable centres in Belgium, by treatment history, gender and age groups

Figure 2 compares the top 10 most frequently reported substance combinations in Belgium in 2015 and in 2019.

Alcohol and cannabis

The number of treatment episodes mentioning alcohol or cannabis as drugs of choice was highest and was stable over the period 2015–2019 in Belgium as a whole. Specifically in Brussels, a significantly increasing trend was observed in the number of treatment episodes reporting alcohol (+5.2% per year). For cannabis, significant increases were reported among females (+1.8% per year) and among clients aged 30 years and older (+4.6% per year). Overall, the combination of alcohol and cannabis remained the most frequently cited combination of substances in both Belgium and each of the regions individually.

Table 2 Trends in the number of treatment episodes reporting specific substances of abuse between 2015 and 2019 among a group of stable centres in Belgium, by treatment history, gender and age groups

Substance of abuse	Treatment history		Gender		Age group	
	First treatment	Already treated	Male	Female	Less 30 years old	30 years old and older
	Annual percent of change between 2015 and 2019 (%) + significance level ($p < 0.05$)					
Alcohol	+0.1 (ns)	-1.1 (ns)	-0.9 (ns)	-0.6 (ns)	-2.2 (ns)	-0.6 (ns)
Cannabis	-0.1 (ns)	+1.4 (ns)	+0.6 (ns)	+1.8 (*)	-2.8 (ns)	+4.6 (*)
Cocaine (category)	+7.8 (*)	+6.3 (*)	+6.7 (*)	+7.6 (*)	+1.6 (ns)	+10.0 (*)
Powder cocaine	+2.7 (ns)	+0.7 (ns)	+1.1 (ns)	+1.9 (ns)	-3.7 (ns)	+4.1 (*)
Crack	+13.8 (*)	+16.8 (*)	+18.0 (*)	+12.8 (*)	+4.2 (ns)	+22.4 (*)
Other stimulants (category)	-2.9 (ns)	+1.1 (ns)	+0.0 (ns)	+0.4 (ns)	-6.7 (ns)	+5.3 (*)
Amphetamine	-5.3 (ns)	+0.3 (ns)	-1.4 (ns)	-0.3 (ns)	-9.6 (*)	+4.7 (*)
Methamphetamine	+15.9 (ns)	+18.3 (*)	+19.3 (*)	+12.8 (ns)	+12.2 (ns)	+23.2 (*)
MDMA	-1.9 (ns)	+0.4 (ns)	-0.8 (ns)	+2.5 (ns)	-3.5 (ns)	+5.7 (ns)
Mephedrone	+24.9 (ns)	+30.8 (ns)	+26.5 (ns)	+54.8 (ns)	+33.4 (ns)	+17.5 (ns)
Opiates (category)	-6.3 (ns)	-3.9 (*)	-4.4 (*)	-4.2 (*)	-14.6 (*)	-1.4 (ns)
Heroin	-8.3 (ns)	-4.7 (*)	-5.5 (*)	-4.0 (*)	-16.1 (*)	-1.9 (ns)
Methadone	-11.1 (ns)	-5.3 (*)	-5.6 (*)	-8.9 (ns)	-17.2 (*)	-3.7 (ns)
Buprenorphine	-15.9 (ns)	-7.4 (ns)	-6.8 (ns)	-16.4 (ns)	-30.4 (ns)	-2.6 (ns)
Fentanyl	+59.5 (*)	+28.0 (*)	+32.8 (*)	+20.9 (ns)	+39.0 (*)	+26.6 (*)
Hypnotics (category)	-3.3 (ns)	-5.3 (*)	-4.3 (*)	-6.1 (*)	-7.2 (*)	-4.2 (*)
Barbiturates	-9.1 (ns)	-2.0 (ns)	-0.5 (ns)	-8.6 (ns)	-6.1 (ns)	-3.6 (ns)
Benzodiazepines	-2.9 (ns)	-5.7 (*)	-4.6 (*)	-6.3 (*)	-6.3 (ns)	-4.8 (*)
GHB	-5.0 (ns)	-3.0 (ns)	-2.1 (ns)	-5.2 (ns)	-11.5 (*)	+4.2 (ns)
Volatile inhalants	+27.4 (ns)	+19.8 (*)	+22.0 (*)	+17.1 (ns)	+15.6 (ns)	+25.6 (*)
Hallucinogens (category)	+17.6 (*)	+15.9 (*)	+15.4 (*)	+19.2 (*)	+18.2 (*)	+12.7 (*)
LSD	+1.9 (ns)	+2.5 (ns)	+2.2 (ns)	+0.0 (ns)	+2.7 (ns)	+1.3 (ns)
Ketamine	+29.5 (*)	+25.0 (*)	+25.9 (*)	+28.8 (*)	+28.1 (*)	+22.9 (*)

Cocaine

The number of treatment episodes involving substances in the “cocaine” category significantly increased in Belgium and in every region. The increase typically involved crack cocaine. The increase was stronger in Wallonia (+32.1% per year) and Brussels (+22.3% per year) than in Flanders (+6.9% per year). The increasing trend for crack cocaine was significant in every group of clients, with the exception of those aged less than 30 years old. Reports of powder cocaine did not increase significantly, except for Brussels and among clients aged 30 and over. However, several substance combinations including powder cocaine did increase: with alcohol at a national and regional level, with alcohol and cannabis and with heroin at a national level. Particularly for Brussels, increases of combinations of substances including crack cocaine were noted: with alcohol, with heroin, with cannabis and with cannabis and alcohol.

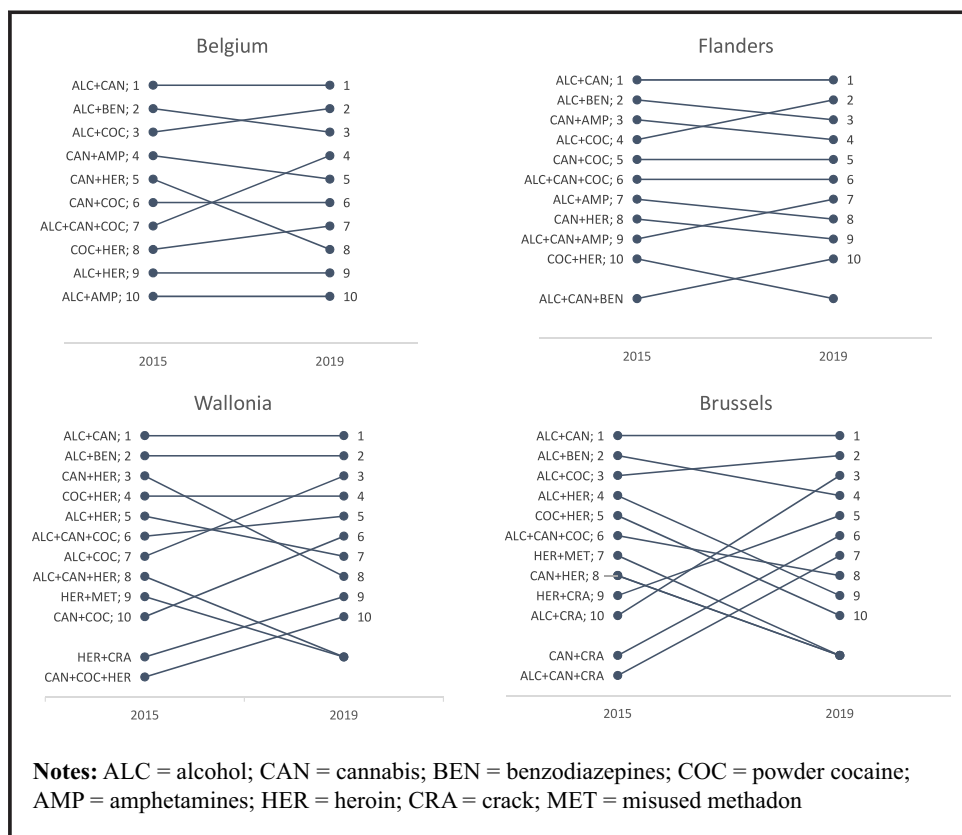
Other stimulants

The “other stimulants” category was relatively stable over time, except for methamphetamines for which a doubling of the number of notifications between 2015 and 2019 was observed. The trend was significant in all regions and among older age groups, male clients and those who had previously been in treatment. The reporting of amphetamines with cannabis and/or with alcohol was noticeable in Flanders but was declining over time.

Opiates

With the exception of fentanyl, there is a globally decreasing trend in the reporting of the “opiates” category and of specific substances within this category. The number of treatment episodes of clients mentioning heroin as drug of choice decreased with 5.2% per year between 2015 and 2019 in Belgium. The decrease was not significant in Brussels. This

Figure 2 Top 10 most frequent substance combinations reported in treatment episodes among a group of stable centres in Belgium in 2015 and in 2019, by region



decreasing trend was observed among people who have already been in treatment, among both males and females and among age groups below 30. In Wallonia and Brussels, heroin was less frequently cited in 2019 compared to 2015 in combination with alcohol, cannabis or methadone (misused). On the contrary, the combination of heroin with crack cocaine steeply increased in 2019 in these two regions.

A significantly increasing trend was observed for fentanyl in Flanders, although it concerned a limited number of treatment episodes per year only. This trend was significant in every population group except among females.

Hypnotics

The reporting of benzodiazepines significantly decreased in Belgium except in Wallonia. The decrease was significant among males and females, among people already having been treated previously and in clients aged 30 and older. The combination of benzodiazepines with alcohol decreased in a similar way.

Other substances

The reporting of ketamine as drug of choice more than doubled between 2015 and 2019 in Belgium. The increase was significant in Wallonia and Flanders and among all sub-groups of people studied.

Any mentions of volatile inhalants among treatment episodes increased significantly in Flanders, even though it concerned a small number of occurrences only. This increase was significant among people already having been treated before, older age groups and among males.

Discussion/conclusion

These results show the main trends in drugs of choice among people starting a treatment for substance use.

The stable trend in alcohol reported among treatment episodes in Belgium aligned with the results of the Global burden of disease study related to alcohol use disorders. For Belgium, results showed a slight but not significant decrease for the deaths rate between 2015 and 2019. In other Western European countries, the trend was stable during this period ([Global Burden of Disease Collaborative Network, 2021](#)). On the other hand, results on its prevalence of use from the Belgian Health Interview Survey showed a significant increase between 2013 and 2018 – except for Brussels – in the percentage of current drinkers aged 15 years and over ever experiencing problematic drinking ([Drieskens et al., 2020](#)). A possible explanation for this discrepancy could be the long delay between problematic drinking behaviour and seeking treatment. The median duration between the onset of the alcohol-related disorder and the first contact with a counsellor is 18 years ([Bruffaerts, 2011](#)). In relation to the recent COVID-19 pandemic, monitoring these figures in the future will be of high importance as this period of isolation might lead to a spike in alcohol misuse, relapse and potential development of an alcohol use disorder in at-risk individuals ([Clay and Parker, 2020](#); [Pabst et al., 2021](#)). These concerns were also expressed at the Belgian parliament where the necessity to set up a national alcohol plan has recently been stressed ([La Chambre des Représentants de Belgique, 2021](#)).

Contrary to what has been published by [Manthey et al. \(2021\)](#), our results did not show an increase in cannabis treatment demands in Belgium. This is likely caused by a difference in the methodology. Most other European countries do observe such an increase. The increase in the reporting of cannabis among older age groups mainly reflects the ageing population of cannabis users entering treatment. Similarly in the Belgian Health Survey an increase in cannabis use over the past year was also observed for older age groups (35–44) between 2013 and 2018 ([Drieskens et al., 2020](#)). Treatment demand data further showed a significant decrease in the proportion of clients entering treatment for cannabis referred by justice ([Antoine, 2020](#)). A change in the system of judicial referral to treatment might have had an impact on the treatment demand for cannabis among younger people.

The decreased involvement of heroin in treatment episodes has been observed throughout Europe since the mid-2000s ([Barrio et al., 2013](#); [EMCDDA, 2020](#)). In Belgium, this trend is aligned with the observed decrease in the number of people undergoing opiate substitution treatment, which dropped from 17,700 in 2011 to just over 16,000 in 2019 (Pharmanet, comm.pers.). Around 60% of people entering treatment for heroin use as primary drug also mentioned problems with other substances, particularly cocaine. This proportion increased over the period 2015–2019, raising the question if people who previously entered treatment for heroin as primary substance might currently do so for crack cocaine ([Antoine, 2020](#)).

Over the past few years, there has been a sharp rise in the availability of new synthetic opioids such as fentanyl and its analogues in Europe ([EMCDDA, 2020](#)). The significant increase in the reporting of fentanyl in treatment demands should be viewed parallel to the substantial increase in the number of clients who received a prescription for fentanyl, reimbursed by social security, observed between 2005 and 2015 in Belgium. Since 2015, these numbers have gradually been decreasing ([Stévenot and Hogge, 2021](#)). It would be interesting to look at the type of fentanyl that is causing the problem (prescribed formulation or non-controlled derivatives) as the consequences and harms for the users might be different. Currently this information is lacking in TDI.

The increase in the use of other prescribed opioids (tramadol, oxycodone, tillidine, piritramide) in Belgium has been previously highlighted in a report from the national institute for health

insurance (De Cock, 2018). However, analysis of these substances through the TDI is limited as they are not individually reported in the list of substances but can only be classified in the broad category “other opioids”. In light of the recent observations in The Netherlands, further specialised studies on these “other opioids” are recommended (Kalkman *et al.*, 2019).

The significant increase in the reporting of crack cocaine in all regions and amongst most groups of people has also been observed in England, Ireland, Italy and Spain. This increase in cocaine treatment demands in Europe could be explained by the recent increase in cocaine production, its broad availability and the development of innovative purchasing techniques. Increased purity levels and changes in the patterns of use have also been reported as have increasingly widespread treatment offer (Antoine *et al.*, 2020). The fact that crack cocaine use is more often associated with heroin use might explain the regional difference in the trends. In Wallonia and Brussels, the proportion of people reporting heroin remains at a higher level compared to Flanders. As the combination of crack cocaine and heroin use increased in Wallonia and Brussels, whereas it is not present in Flanders in the top 10 most common substances combinations, this might also explain the stronger increase in crack cocaine reports. Further research is needed to also study longitudinal switches between various primary substances.

The decrease in the proportion of “hypnotics” as drugs of choice and in particular benzodiazepines in all three regions and amongst most sub-groups of people, is in contrast with consumption figures which – although recently progressively decreasing – remain at an excessive level in Belgium (De Donder, 2020; Stévenot and Hogge, 2021). The various campaigns of awareness that have been undertaken by the authorities in 2009, 2013 or 2018, mainly directed towards practitioners, might have influenced the prescription and therefore the use of these medicines. However, the COVID-19 pandemic has led to an increase in anxiety and sleep-related problems and therefore in the use of tranquilisers among younger people in particular (Sciensano, 2020).

Apart from these “classic” substances, some changes were also observed for substances such as methamphetamines or ketamine. Ketamine appears to be more frequently used notably among partygoers (Rosiers, 2019; Stévenot and Hogge, 2021). Furthermore, ketamine, mephedrone and methamphetamines are commonly used among men who have sex with men in the context of chemsex (Vanden Berge *et al.*, 2021). Additionally, seizures of ketamine and methamphetamines were on the rise between 2015 and 2019 in Belgium, suggesting greater availability of these substances (Stévenot and Hogge, 2021).

Limitations

The trend analysis was based on data extracted from a subset of the complete Belgian treatment demand register. The characteristics of the data in the subset are highly similar with the whole dataset. However, the national TDI database might also not be representative of the total treated population as several types of treatment providers do not participate in this registration (e.g. general practitioners, prisons, etc.). In addition, not every drug user in need of treatment is effectively seeking treatment, particularly among the most marginalised people who are not in contact with the health care system. Finally, TDI data collection only records people entering new treatment episodes but does not consider people in a continuous treatment plan.

The analysis used data from individual treatment episodes, which means that a singular client following several treatment episodes in a year may have been counted several times. This could have biased the results and overestimated substance of choice by a treatment population more likely to start multiple treatment episodes.

We were not able to identify the causes of these trends based on this analysis. The trends may have been linked to changes in substance use patterns, variations in the supply side of the drug market, changes in national or regional drug policy or changes in the treatment offer. Further specific studies are necessary to better interpret these evolutions.

This study focusses only on Belgian results and has therefore a limited interest for an international audience. However future similar analysis including different European countries collecting the same data could be of added value.

Conclusions

Based on a strong methodology, this paper provides information on the evolution over time in drugs of choice mentioned by people entering treatment in Belgium between 2015 and 2019. It provides for the first time results regarding trends at a national and regional level and among several groups of people. Alcohol and cannabis remained the most reported drugs of choice and their numbers were relatively stable over time. Opiates and particularly heroin but also benzodiazepines significantly decreased as drug of choice while crack cocaine increased. Some less frequent cited substances such as fentanyl, methamphetamine, ketamine or volatile inhalants have been observed more frequently. Based on these results, we recommend the more close monitoring of the use of crack cocaine, fentanyl, methamphetamine, ketamine and volatile inhalants in TDI but also in combination with other epidemiological indicators. These results are not only valuable at the national level but also for other countries that show similarities in alcohol or drug use patterns. Taking into account the limitation and scope of the data, this information might underpin the future planning, development and management of the treatment system and inform the commissioning of treatment services (UNODC, 2006).

References

- Antoine, J. (2020), "L'enregistrement TDI En Belgique. Rapport annuel. Année d'enregistrement 2019", No. D/2020/14.440/87, Sciensano, Bruxelles, p. 111.
- Antoine, J. and Renard, F. (2017), "Registration of treatment demands for substance use disorders in Belgium: why are some clients registered anonymously?", *presented at the Lisbon Addictions*, Lisbon.
- Antoine, J., De Ridder, K., Plettinckx, E., Blanckaert, P. and Gremeaux, L. (2016), "Treatment for substance use disorders: the Belgian treatment demand indicator registration protocol", *Archives of Public Health*, Vol. 74 No. 1, p. 27.
- Antoine, J., Berndt, N., Astudillo, M., Cairns, D., Jahr, S., Jones, A., Kuijpers, W., Llorens, N., Lyons, S., Maffii, E. and Magliocchetti, N. (2020), "Cocaine treatment demands in ten Western European countries: observed trends between 2011 and 2018", *Addiction*, Vol. 116 No. 5, p. 15237.
- Barrio, G., Montanari, L., Bravo, M.J., Guarita, B., de la Fuente, L., Pulido, J. and Vicente, J. (2013), "Trends of heroin use and heroin injection epidemics in Europe: findings from the EMCDDA treatment demand indicator (TDI)", *Journal of Substance Abuse Treatment*, Vol. 45 No. 1, pp. 19-30.
- Bello, J.K., Hearing, C., Salas, J., Weinstock, J. and Linhorst, D. (2020), "Trends in substance use by gender among participants in a jail-based substance use disorder treatment program: 1998–2016", *Journal of Forensic Sciences*, Vol. 65 No. 1, pp. 97-102.
- Bruffaerts, R. (2011), "Uitstelgedrag tot het zoeken van professionele hulp voor psychische stoornissen", *Kan Geestelijke Gezondheid Worden Gemeten? Psychische Stoornissen Bij de Belgische Bevolking*, Acco, Leuven, pp. 267-277.
- Cannon, A., Nally, F., Collins, A., Fay, R. and Lyons, S. (2019), "Trends in addiction treatment in Irish prisons using national surveillance data, 2009-2014", *International Journal of Prisoner Health*, Vol. 15 No. 2, pp. 105-113.
- Chhatre, S., Cook, R., Mallik, E. and Jayadevappa, R. (2017), "Trends in substance use admissions among older adults", *BMC Health Services Research*, Vol. 17 No. 1, p. 584.
- Clay, J.M. and Parker, M.O. (2020), "Alcohol use and misuse during the COVID-19 pandemic: a potential public health crisis?", *The Lancet Public Health*, Vol. 5 No. 5, p. e259.
- De Cock, J. (2018), "Antidouleurs: Notre Analyse à Propos de l'usage Inquiétant de 5 Opioides (Hors Hospitalisation)", INAMI, Bruxelles.

De Donder, E. (2020), *Factsheet Psychoactieve Medicatie*, VAD, Brussels.

Drieskens, S., Braekman, E., Charafeddine, R., Demarest, S., Berete, F., Gisle, L. and Van der Heyden, J. (2020), "Health interview survey, Belgium, 1997 – 2001 – 2004 – 2008 – 2013 – 2018: health interview survey interactive analysis", Sciensano, Brussels, available at: <https://hisia.wiv-isp.be/>

Edland-Gryt, M., Sandberg, S. and Pedersen, W. (2017), "From ecstasy to MDMA: recreational drug use, symbolic boundaries, and drug trends", *International Journal of Drug Policy*, Vol. 50, pp. 1-8.

EMCDDA (2012), "Treatment demand indicator (TDI) standard protocol 3.0: guidelines for reporting data on people entering drug treatment in European countries", Publications Office of the European Union, Luxembourg, available at: www.emcdda.europa.eu/system/files/publications/675/EMCDDA-TDI-Protocol-3.0_392671.pdf (accessed 8 February 2019).

EMCDDA (2020), "European drug report 2020: key issues", Publications Office of the European Union, Luxembourg.

EMCDDA (2021), "European drug report 2021: trends and developments", Publications Office of the European Union, Luxembourg.

Fugelstad, A., Thiblin, I., Johansson, L.A., Ågren, G. and Sidorchuk, A. (2019), "Opioid-related deaths and previous care for drug use and pain relief in Sweden", *Drug and Alcohol Dependence*, Vol. 201, pp. 253-259.

Global Burden of Disease Collaborative Network (2021), "Global burden of disease study 2019 (GBD 2019) results", Institute for Health Metrics and Evaluation (IHME), Seattle, United States, available at: <http://ghdx.healthdata.org/gbd-results-tool> (accessed 21 April 2022).

Han, B., Compton, W.M., Blanco, C. and DuPont, R.L. (2017), "National trends in substance use and use disorders among youth", *Journal of the American Academy of Child & Adolescent Psychiatry*, Vol. 56 No. 9, pp. 747-754.e3.

Hasin, D.S., Shmulewitz, D. and Sarvet, A.L. (2019), "Time trends in US cannabis use and cannabis use disorders overall and by sociodemographic subgroups: a narrative review and new findings", *The American Journal of Drug and Alcohol Abuse*, Vol. 45 No. 6, pp. 623-643.

Jones, C.M., Underwood, N. and Compton, W.M. (2020), "Increases in methamphetamine use among heroin treatment admissions in the United States, 2008-17", *Addiction (Abingdon, England)*, Vol. 115 No. 2, pp. 347-353.

Kalkman, G.A., Kramers, C., van Dongen, R.T., van den Brink, W. and Schellekens, A. (2019), "Trends in use and misuse of opioids in The Netherlands: a retrospective, multi-source database study", *The Lancet Public Health*, Vol. 4 No. 10, pp. e498-e505.

Khan, L. (2019), "Substance use in adolescents: latest trends", *Pediatric Annals*, Vol. 48 No. 11, pp. e418-e422.

Kolodny, A., Courtwright, D.T., Hwang, C.S., Kreiner, P., Eadie, J.L., Clark, T.W. and Alexander, G.C. (2015), "The prescription opioid and heroin crisis: a public health approach to an epidemic of addiction", *Annual Review of Public Health*, Vol. 36 No. 1, pp. 559-574.

La Chambre des Représentants de Belgique (2021), "Compte-Rendu Intégral – Commission de La santé et de l'égalité des chances", No. CRIV 55 COM 506, available at: www.lachambre.be/doc/CCRI/pdf/55/ic506.pdf (accessed 14 July 2021).

Lintonen, T., Obstbaum, Y., Aarnio, J., von Gruenewaldt, V., Hakamäki, S., Kääriäinen, J., Mattila, A., Vartiainen, H., Viitanen, P., Wuolijoki, T. and Joukamaa, M. (2012), "The changing picture of substance abuse problems among Finnish prisoners", *Social Psychiatry and Psychiatric Epidemiology*, Vol. 47 No. 5, pp. 835-842.

Lynn, T.M., Lynn, E., Keenan, E. and Lyons, S. (2018), "Trends in injector deaths in Ireland, as recorded by the national drug-related deaths index, 1998-2014", *Journal of Studies on Alcohol and Drugs*, Vol. 79 No. 2, pp. 286-292.

Manthey, J., Freeman, T.P., Kilian, C., López-Pelayo, H. and Rehm, J. (2021), "Public health monitoring of cannabis use in Europe: prevalence of use, cannabis potency, and treatment rates", *The Lancet Regional Health – Europe*, Vol. 10, p. 100227.

Montanari, L., Guarita, B., Mounteney, J., Zipfel, N. and Simon, R. (2017), "Cannabis use among people entering drug treatment in Europe: a growing phenomenon?", *European Addiction Research*, Vol. 23 No. 3, pp. 113-121.

Montanari, L., Pirona, A., Guarita, B., Hedrich, D., Monteney, J. and Vicente, J. (2019), "The experience of the treatment demand indicator in Europe: a common monitoring tool across 30 countries", *Journal of Studies on Alcohol and Drugs, Supplement*, No. s18, pp. 139-151, available at: www.jsad.com/doi/10.15288/jsads.2019.s18.139

Pabst, A., Bollen, Z., Creupelandt, C., Fontesse, S. and Maurage, P. (2021), "Alcohol consumption changes following COVID-19 lockdown among French-speaking Belgian individuals at risk for alcohol use disorder", *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, Vol. 110, p. 110282.

Rosiers, J. (2019), "Uitgaan in vlaanderen: minder druggebruik, meer gezond verstand – Uitgaanonderzoek 2018", VAD, available at: www.vad.be/artikels/detail/uitgaan-in-vlaanderen-minder-druggebruik-meer-gezond-verstand (accessed 30 September 2020).

Sciensano (2020), "Cinquième Enquête de Santé COVID-19", No. D/2020/14.440/96, Sciensano, Brussels.

Seitz, N.-N., Lochbühler, K., Atzendorf, J., Rauschert, C., Pfeiffer-Gerschel, T. and Kraus, L. (2019), "Trends in substance use and related disorders: analysis of the epidemiological survey of substance abuse 1995 to 2018", *Deutsches Arzteblatt International*, Vol. 116 Nos 35/36, pp. 585-591.

Stévenot, C. and Hogge, M. (2021), "Tableau de Bord de l'usage de Drogues et Ses Conséquences Sanitaires En Wallonie", No. d/2021/10.063/1, Eurotox asbl, Brussels, p. 292.

Tai, H., Swartz, M.D., Marsden, D. and Perry, C.L. (2021), "The future of substance abuse now: relationships among adolescent use of vaping devices, marijuana, and synthetic cannabinoids", *Substance Use & Misuse*, Vol. 56 No. 2, pp. 192-204.

Vaiano, F., Pascali, J.P. and Bertol, E. (2019), "New psychoactive substances: an actual problem or an overestimated phenomenon?", *Forensic Science International*, Vol. 304, p. 109941.

van der Poel, A., Rodenburg, G., Dijkstra, M., Stoele, M. and van de Mheen, D. (2009), "Trends, motivations and settings of recreational cocaine use by adolescents and young adults in The Netherlands", *International Journal of Drug Policy*, Vol. 20 No. 2, pp. 143-151.

Vanden Berge, W., Deblonde, J., Detandt, S., Pezeril, C., Sergeant, M. and Barris, S. (2021), "The European men who have sex with men internet survey (EMIS) 2017", No. D/2021/14.440/07, Sciensano; Observatoire du sida et des sexualités (ULB), Brussels, p. 45.

WHO (2000), *Guide to Drug Abuse Epidemiology*, No. WHO/MSD/MSB/00.3, Department of Mental Health and Substance Dependence, Geneva.

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