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Aims: To assesses the extent of the gender gap among the treated population of drug users across Europe.
Methods: This analysis reports data on 363,170 clients from 4647 treatment units in 23 countries (22 European Union member states and Switzerland).
Findings: Overall, males outnumber females by four, but the gender ratio varies not only by geographical region/country, but also by drug. In the majority of countries, the most common primary problem drug is opioids, and the overall gender ratio mirrors the gender ratio of opioid users. In some countries, a considerable proportion of treated drug users have cannabis and stimulants (cocaine/amphetamines/methamphetamines) as primary problem drugs. Stimulants other than cocaine and other drugs have lower, while cannabis has a higher than overall male-to-female gender ratio.
Conclusions: The very high male-to-female gender ratios may reveal differential access to treatment. Our findings highlight the need to assess access to treatment for women problem drug users and to make women-focussed programmes more available to increase the proportion of women in drug treatment programmes across Europe.

INTRODUCTION

Gender differences are an important aspect of substance abuse treatment (Wiechelt, 2008).

Although there are more men than women in substance abuse treatment, which is mostly attributable to a higher male-to-female gender ratio among problem drug users, women drug users may have special needs relevant for treatment outcome. Some physical and mental health problems are also more common among substance abusing women than men (Greenfield et al., 2007). In addition, women advance from first drug use to drug addiction faster than men, but their addiction severity parallels that of men when they enter treatment (Hernandez-Avila, Rounsaville, & Kranzler, 2004). While women are less likely than men to enter treatment for substance abuse, after treatment entry gender is no longer associated with treatment, retention or outcome (Greenfield et al., 2007). Finally, women's response not only to drugs but also to substitution treatment is different during different phases in their menstrual cycle (Justice & de Wit, 1999; Sofuoglu, Dudish-Poulsen, Nelson, Pentel, & Hatsukami, 1999).

To provide policy support for an evidence-based public health response, European drug policy has acknowledged the importance of gender in the treatment of substance abuse. Objective 9 of the EU Drugs Action Plan 2005–2008 drew attention to developing prevention programmes that take into account gender differences (European Commission, 2005). Furthermore, the EU Drugs Action Plan 2009–2012 addresses the issue of gender in substance abuse treatment. Objective 8 of section II underlines the relevance of gender in drug demand reduction, indicating the need for the European member states to 'enhance the quality and effectiveness of drug demand

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reduction activities, taking account of the specific needs of drug users according to gender' (European Commission, 2008). The recommended actions through which this objective should be realized include the development and implementation of gender-specific good-practice guidelines for prevention, treatment, harm reduction and rehabilitation services.

Little is known about the extent of the gender gap among the treated population of drug users across Europe, which is important to assess in order to provide a basis for gender-specific treatment according to the EU Drugs Action Plans. The aim of this analysis was to describe the patterns of gender distribution, overall and by primary problem drug, among clients of outpatient treatment centres in the EU and Switzerland.

METHODS

The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA, 2009e) was established in 1993 by the European Council (The Council of the European Union, 1993) to provide objective, reliable and comparable information at the European level concerning drugs and drug addiction and their consequences. Reporting countries supply their data to the EMCDDA *via* REITOX, which is the network of the EMCDDA's National Focal Points (European Monitoring Centre for Drugs and Drug Addiction [EMCDDA], 2009d). Each of the reporting states have an agency, called the National Focal Point, which was nominated by the government and is responsible to provide the most up-to-date available information on drugs and drug addiction.

As mandated by the Council of the EU, the EMCDDA annually collects data on the basis of five key epidemiological indicators: prevalence and patterns of drug use in the general population, prevalence of problem drug use, demand for treatment by drug users, drug related deaths and mortality among drug users, and drug-related infectious diseases (The Council of the European Union, 2001, 2006). In addition, other data and information are also collected by means of standard tables, structured questionnaires and national reports on the drug situation in each country.

One of the key epidemiological indicators is the treatment demand indicator (TDI; EMCDDA, 2009e). The purpose of the TDI is to obtain comparable and reliable information on the number and characteristics of problem drug users presenting for treatment in the EU Member States. Information based on the TDI provides a measure of treatment demand and an indicator of trends in problem drug use, and identifies patterns in the use and uptake of treatment facilities (EMCDDA, 2009c). The TDI annually collects data on client characteristics at, or close to, their point of entry into treatment facilities for problems with one or more drugs. Data are collated at the national level and transmitted from the treatment centres to the National Focal Point, and from there in aggregate form (and not

as individual cases) to the EMCDDA. This process may result in as much as 2 years of a delay between collection of local data and availability in the EMCDDA database.

Data are collected on all clients entering treatment for the first time during the year (annual first visit), and, within that, on new clients entering treatment for the first time in their life (lifetime first visit). Treatment demand data are collected in six types of centres specialized for the treatment of drug-related problems: outpatient treatment centres, inpatient treatment centres, low threshold agencies, treatment units in prison, general practitioners and other types of treatment units. All countries report the data to the EMCDDA stratified by the type of treatment facility with the exception of three countries, Spain, Malta and the Netherlands, who report treatment data that are not stratified by the type of treatment. In Spain, such unstratified data include outpatient centres and treatment units in prison, and in Malta and the Netherlands the data assess outpatient and inpatient centres and low threshold agencies. Since outpatient treatment centres are generally considered to be the most representative among all treatment types of the total population of drug users entering substance abuse treatment in Europe (EMCDDA, 2008, 2009b), this analysis focuses on and utilizes annual first visit data from outpatient centres in all reporting countries, except Spain, Malta and the Netherlands, for which countries all aggregate data are used.

Measures and variables

The TDI collects data by the drug that causes the client the most problems (primary problem drug, excluding alcohol) and by up to four secondary problem drugs, as reported by the clients. The drug categories are the following: opioids (heroin, methadone misuse and other opioids: including buprenorphine and pain killers), cocaine (cocaine hydrochloride and crack), stimulants other than cocaine (amphetamines, meth-amphetamines and ecstasy), cannabis (herbal cannabis and resin), and other drugs (hypnotics and sedatives [barbiturates, benzodiapzepines, GHB, others]), hallu-cinogens (LSD, ketamine, others), volatile substances and inhalants and others (not included in these categories). This analysis focuses on the primary problem drug and uses data on the following client characteristics: the number of clients who have entered outpatient treatment, the proportion of outpatient clients according to their primary problem drug, the male-to-female ratio of outpatient clients and the male to female ratio of outpatient clients by their primary problem drug.

Of the 27 EU member states, Estonia has not so far collected any TDI data, and data are not comparable with this analysis for Poland (no breakdown by types of drugs was provided), Latvia and Portugal (only data on lifetime first visits were collected) and Lithuania (for 94% of cases gender was not reported). Data from the year of 2006 were available in the EMCDDA database

in 2008. Three countries reported comparable data only from a year other than 2006: data from Belgium are from 2005 and data from Slovenia and Romania are from 2007. Although neither a member of the EU nor a reporting country to the EMCDDA, Switzerland participated in this analysis, providing EMCDDA-comparable data from 2006. Thus, this analysis is based on data from altogether 23 countries (22 EU member states and Switzerland).

Data analysis

A frequency table presents the number of clients who have entered outpatient treatment. In this table, countries are listed in the European Commission protocol order, which refers to the order of the country names in the original national language. The maps were created in SAS (Zdeb, 2002).

To test the association between primary problem drugs, gender and geographical regions, log-linear analysis was conducted. The reason for including primary problem drug in the analysis was that while an unstratified analysis gives an overall picture for all treated drug users, country differences in main problem drug types and within-country differences in the reasons why drug users enter treatment exist. For example, the prevalence of problem amphetamines use in Sweden, Finland and the Czech Republic have historically been high (sometimes higher than problem opiate use), while cannabis users in Hungary are sent to treatment as an alternative to imprisonment (which may be viewed as compulsory treatment).

A hierarchical model was estimated with backward elimination using SPSS. The process estimates the saturated model, including all main, pair-wise and third order effects, and compares the relative fit of this model to a simpler model, all main and pair-wise effects, using a likelihood ratio test. There was a significant loss of fit between the saturated model and any less complex models, suggesting no evidence for accepting any of the pair-wise or main effects models over the model containing all three variables. Chi-square was used to assess country differences in the overall- and drug-specific gender distribution, Pearson correlation was used to assess correlation between the overall gender ratio and drug-specific gender ratios. Due to the large sample size, significance level was set at $p < 0.0001$.

RESULTS

Altogether 4647 treatment units reported data from the participating 23 European countries during the data collection period (Denmark did not specify the number of units; Table I). The number of reporting treatment units in a given country ranges between 5 (Malta) and 1390 (United Kingdom). The reporting units represent between 21.4% (Slovakia) and 100% (Denmark, Cyprus, Luxembourg, Hungary, Malta and Romania) of all outpatient treatment centres in the

Table I. Data coverage in outpatient treatment centres in Europe: number of units reporting, percentage of total units covered and number of all clients reported.

Country	Units covered	Percentage of total units covered	Total number of clients reported
Belgium[a]	33	84.6	3569
Bulgaria	12	54.5	797
Czech Republic	123	80.4	2185
Denmark	N/A	100	4805
Germany	744	79.7	55,134
Ireland	146		3920
Greece	44	95.7	2653
Spain[b]	497	N/A	50,424
France	125	63.1	35,931
Italy	514	94.5	47,823
Cyprus	11	100	360
Luxembourg	7	100	287
Hungary	329	100	10,509
Malta[c]	5	100	757
Netherlands[d]	150	93.8	9623
Austria	110	82.7	4200
Romania[e]	47	100	495
Slovenia[e]	17	89.5	689
Slovakia	65	21.4	826
Finland	60	N/A	1440
Sweden	92	23	1859
United Kingdom	1390	N/A	121,202
Switzerland	126	48.3	3682
Total	4647	N/A	363,170

Notes: Year of 2006, unless noted otherwise.
[a]Data refer to 2005, outpatient centres and low-threshold agencies; [b]Data refer to outpatient centres and treatment units in prisons; [c]Data refer to clients entering treatment in outpatient and inpatient treatment centres and treatment units in prison; [d]Data refer to clients entering treatment in outpatient and inpatient treatment centres and low threshold agencies; and [e]Data refer to 2007.

participating countries. (No percent coverage was reported in Spain, Finland and the United Kingdom). Altogether 363,170 clients were reported to have entered treatment for the first time during the year. The number of clients reported in any given country range between 287 (Luxembourg) and 121,202 (United Kingdom).

Distribution of clients by primary problem drug

In all countries, except for Spain, the Netherlands, the Czech Republic, Sweden, France and Hungary, the most often reported primary problem drug is opioids. The most frequently reported primary problem drug is cocaine in Spain, cocaine and cannabis in the Netherlands, methamphetamines in the Czech Republic, amphetamines and cannabis in Sweden and cannabis in France and Hungary. Figure 1(a)–(e) are maps that show the proportion of clients in the responding countries that report opioids, cocaine,

stimulants other than cocaine, cannabis and other substances, respectively.

The proportion of clients that report opioids as the primary problem drug is 50% or above in the majority (15 out of 23) of the countries; between 20% and under 50% in six countries; and between 10% and under 20% in two countries (Figure 1a). The proportion of cocaine clients is between 20% and under 50% in three countries; between 10% and under 20% in six countries; and under 10% in the majority (14 out of 23) of the countries (Figure 1b). The proportion of clients that

reported stimulants other than cocaine as their primary problem drug is between 20% and under 50% in Finland and Sweden (predominantly amphetamines) and Slovakia and the Czech Republic (predominantly methamphetamines); between 10% and under 20% in Belgium; and under 10% in the majority (18 out of 23) of the countries (Figure 1c). The proportion of primary cannabis users is above 50% in Hungary; between 20% and under 50% in 10 countries; between 10% and under 20% in nine countries; and under 10% in three countries (Figure 1d). The proportion of those whose main drug is
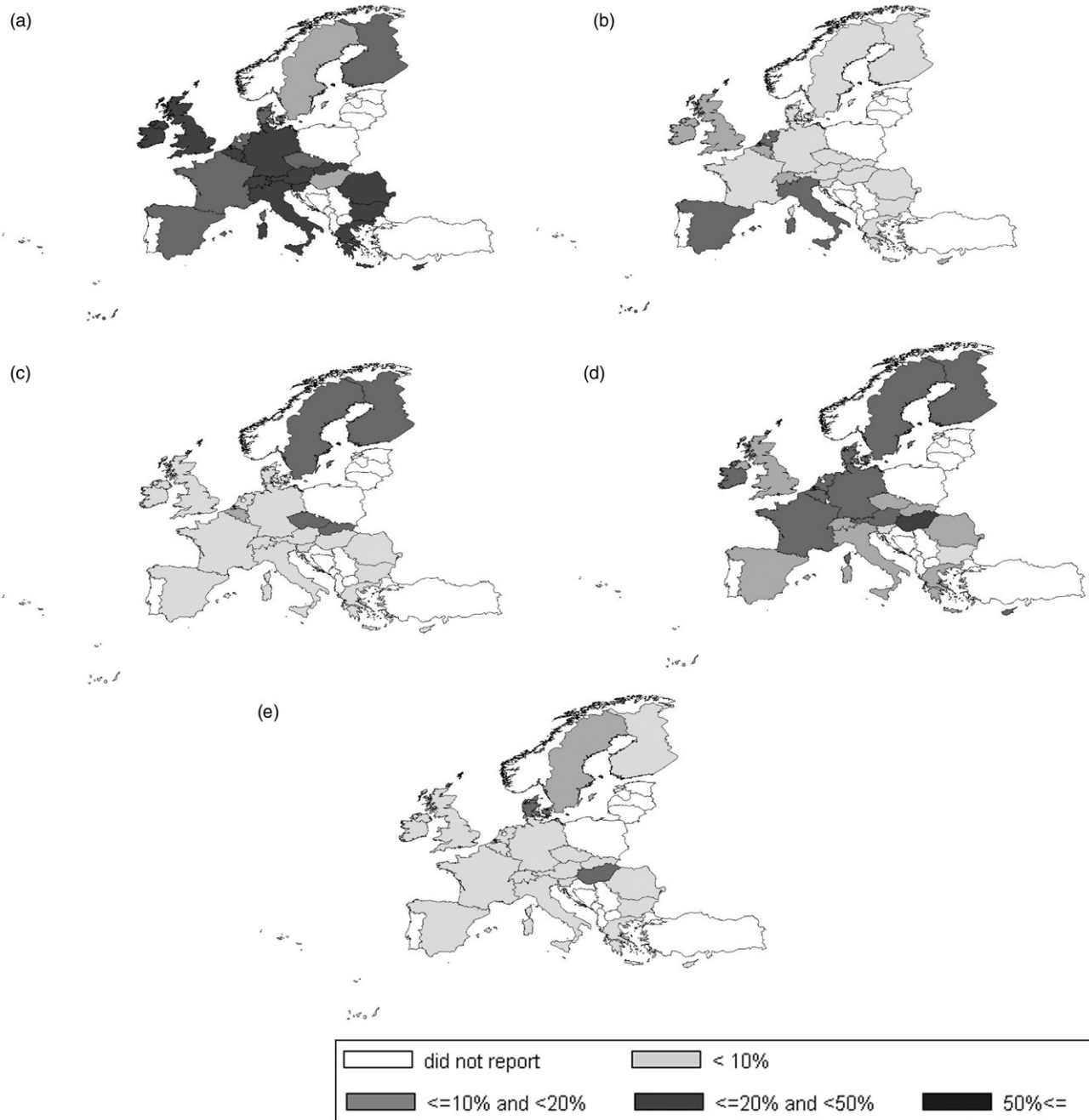

Figure 1. Proportion of clients that report (a) opioids as the primary problem drug among drug treatment clients in Europe, (b) cocaine as the primary problem drug among drug treatment clients in Europe, (c) stimulants other than cocaine as the primary problem drug among drug treatment clients in Europe, (d) cannabis as the primary problem drug among drug treatment clients in Europe and (e) drugs other than opiates, cocaine, stimulants other than cocaine or cannabis as the primary problem drug among drug treatment clients in Europe.

other substances is just above 20% in Denmark (primarily sedatives) and Hungary (primarily hypnotics), between 10% and under 20% in Sweden, and under 10% in the majority (20 out of 23) of the countries (Figure 1e).

Male-to-female gender ratio by primary problem drug

The mean of the male-to-female gender ratio pooled for all 23 countries is 4.0 overall (pooled for all drugs; $SD = 1.9$; range: 1.9–10.3); it is 3.9 ($SD = 2.2$; range: 1.5–11.7) for opiates, 4.2 ($SD = 2.2$; range: 0.5–10.0) for cocaine, 3.1 ($SD = 2.0$; range: 1.3–11.0) for stimulants other than cocaine, 6.0 ($SD = 2.2$; range: 3.2–11.0) for cannabis and 2.1 ($SD = 0.9$; range: 1.1–5.0) for other drugs. Figure 2(a)–(f) are maps that show the male-to-female gender ratio among clients in the responding countries that report opioids, cocaine, stimulants other than cocaine, cannabis and other substances, respectively.
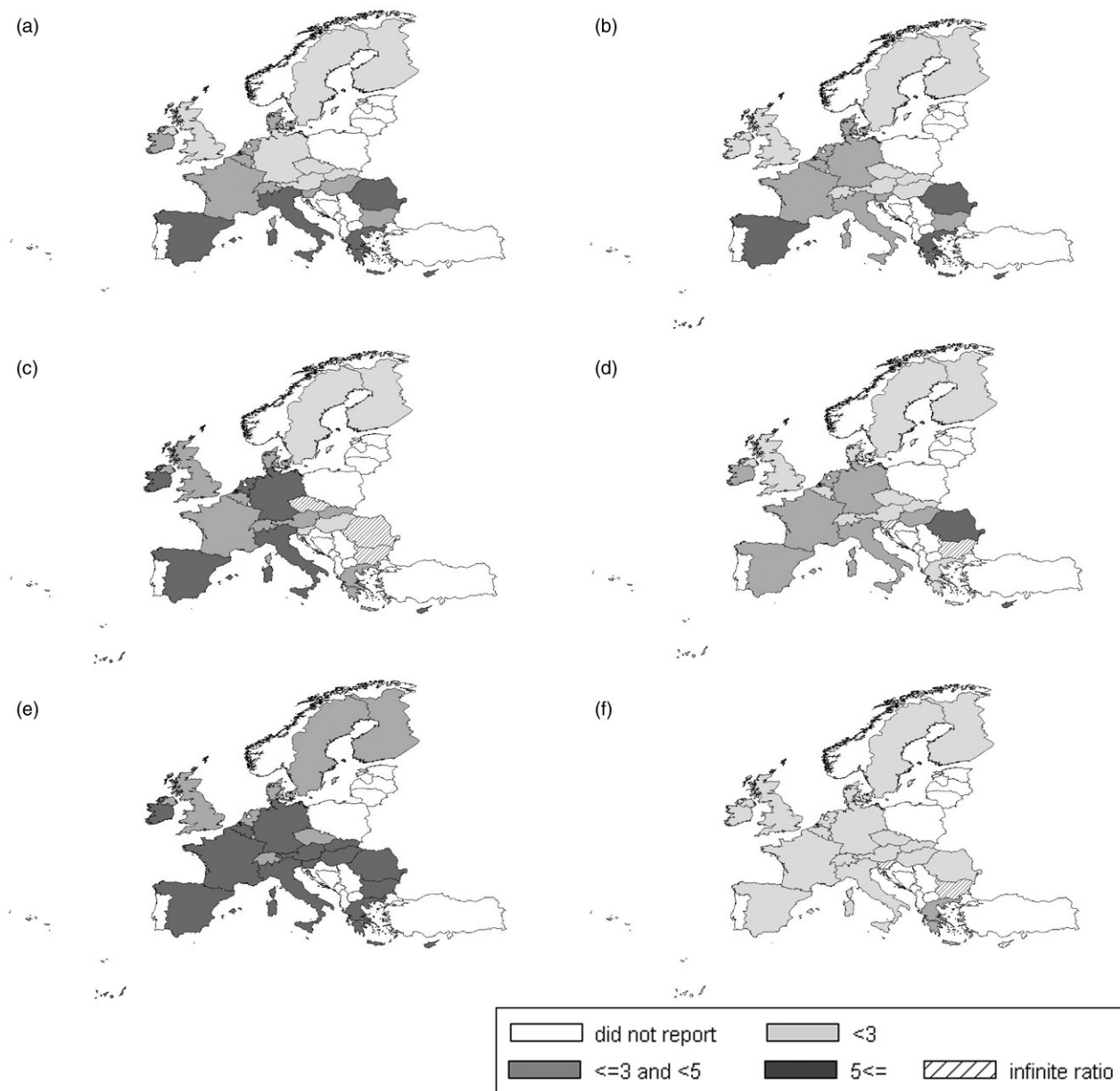

Figure 2. (a) Overall male-to-female gender ratio among drug treatment clients in Europe, (b) Gender ratio among clients that report opiates as the primary problem drug among drug treatment clients in Europe, (c) Gender ratio among clients that report cocaine as the primary problem drug among drug treatment clients in Europe. There were no female cocaine users in Bulgaria and Romania and no male cocaine users in the Czech Republic, so no gender ratio was calculated. (d) Gender ratio among clients that report stimulants other than cocaine as the primary problem drug among drug treatment clients in Europe. There were no female stimulant users in Bulgaria and Slovenia, so no gender ratio was calculated. (e) Gender ratio among clients that report cannabis as the primary problem drug among drug treatment clients in Europe. (f) Gender ratio among clients that report drugs other than opiates, cocaine, stimulants other than cocaine, or cannabis as the primary problem drug among drug treatment clients in Europe. No female users of other drugs were recorded in Bulgaria and Slovenia and no males in Cyprus.

The country-specific overall (pooled for all drugs) male-to-female gender ratio is 5 or above in six countries; between three and five in nine countries; and under three in eight countries (Figure 2a). The country-specific gender ratio for opiates has the same distribution categories as the country-specific overall (pooled for all drugs) gender ratio for most countries, except for Ireland, Hungary, Switzerland (under 3); and Germany, Italy and Malta (between 3 and under 5; Figure 2b). The gender ratio for cocaine is five or above in seven countries; between three and five in eight countries; and under three in five countries (Figure 2c). The gender ratio for stimulants other than cocaine was five or above in Romania and Cyprus; between three and five in eight countries; and under three in the majority (13 out of 21) of the countries (Figure 2d). The gender ratio for cannabis was five or above for the majority (15 out of 23) of the countries, except for the other eight countries it was between three and five (Figure 2e). The gender ratio for other drugs was five in Malta; three in Greece; and under three in the majority (18 out of 22) of the countries (Figure 2f).

The country-specific gender ratio was significantly different not only across countries, but also across regions: the highest overall (pooled for all drugs) male-to-female ratio was in the South of Europe (5.3), followed by the East (4.3) and the West (3.5), and the lowest was in the North (2.6). This pattern held for all drugs (non-pooled) as well. There was a significant strong correlation (Pearson correlation coefficient = 0.9678) between the overall gender ratio and the gender ratio for opioids.

DISCUSSION

This analysis described the patterns of gender distribution, overall and by primary problem drug, among clients of outpatient treatment centres in 23 countries of Europe. Our main findings are that, overall, males outnumber females by four, but the gender ratio varies not only by geographical region/country, but also by drug. Furthermore, in the majority of countries in Europe, the most common primary problem drug is opioids, and the overall gender ratio mirrors the gender ratio of opioid users. In some countries, however, a considerable proportion of treated drug users have primary problems drugs other than opiates, especially cannabis and stimulants (cocaine and amphetamines/methamphetamines). Stimulants other than cocaine and other drugs have a lower than overall, while cannabis has a higher than overall male-to-female gender ratio.

Our finding that males outnumber females among clients in substance abuse treatment may have two main reasons. First, the gender distribution of treatment clients may mirror the gender distribution of the problem drug user population, which would imply equitable treatment access for men and women. However, males may outnumber females among treatment clients to an even larger extent than what would be expected based on the gender ratio in the drug user population, suggesting inequitable access for women to substance abuse treatment. Unfortunately, there is limited Europe-wide data available on the gender distribution of problem drug user populations by problem drug. General population survey data on cannabis (from 25 European countries) and ecstasy (from 19 European countries) reported to the EMCDDA in 2006 (EMCDDA, 2006) show that the male-to-female ratio of among users of both these drugs are much lower than the male-to-female gender ratio among populations entering treatment. This suggests that women may have less access to treatment than men, at least for cannabis and ecstasy. In this case, countries in Europe should focus on increasing women drug users' access to treatment and prevention services, especially in countries or geographical regions (southern and eastern Europe) with high male-to-female gender ratios. However, little is known about the difference in gender distribution between problem users and treated users of drugs other than cannabis and ecstasy.

Our data shows clear country differences. First of all, the number of reported clients differs greatly between countries, which may depend on several factors, including the country size, the treatment availability, the data coverage and level of data monitoring system implementation. The number of reported clients is usually higher in big countries compared to small countries (e.g. United Kingdom vs. Luxembourg); treatment may be more available in some countries than in others even of similar size, leading to a higher number of reported clients (e.g. Greece vs. Hungary); and the level of data coverage may differ, influencing the number of reported clients (e.g. Denmark and Slovakia). The differences in data coverage may then depend on the level of development of the monitoring system at national level, the characteristics of monitoring system, the national activity aimed to increase the level of training and motivation, and the use of information by the professionals from the treatment centres. Some systems have been implemented for many years (United Kingdom), whilst others were implemented just a few years ago (Bulgaria). In some cases, the data collection is voluntary (e.g. Finland). Other countries have a federal organization which makes the national harmonization and aggregation of data difficult (e.g. Germany). Finally, some countries carry out regular activities of training, feedback and use of the information in the treatment field, which all improve the level of data compliance (Iversen, 2009).

This analysis highlights the need for more research on gender and drug treatment, especially because different treatment and intervention strategies may be adequate not only for different drugs but also for females versus males. For example, stimulant use is

associated with high-risk sexual behaviours, including unprotected sex, multiple sex partners, group sex and exchanging sex for money or goods (Colfax & Guzman, 2006; Corsi & Booth, 2008). Further research could reveal a need for female-specific intervention within substance abuse treatment among stimulant users in Europe among a potentially very high-risk group of sexually vulnerable and address issues such as condom use, group sex, casual or exchange partners and relationship dynamics to negotiate safe sex (Celentano, Latimore, & Mehta, 2008; van Empelen et al., 2003). Research should also identify the need for and the availability of gender-specific treatment that may increase participation in drug treatment, especially for women (Wechsberg, Luseno, & Ellerson, 2008). The Best Practice Portal of the EMCDDA (2009a) is a resource for professionals, policymakers and researchers, and presents evidence-based prevention intervention projects from European countries. More information is needed on gender-specific treatment options, and how men or women could benefit from such programmes.

Limitations of this analysis include that TDI data are collected by the EMCDDA at an aggregate level, which prohibits more in-depth, individual-level analysis. In addition, in four countries (Ireland, Spain, Finland and United Kingdom) the number of treatment units providing treatment in the country is not known either because a system to regularly monitor the number of treatment units at national level is not implemented (Ireland, Spain and United Kingdom) or because the system is voluntary and the data collection does not include information on the number of units (Finland). In addition, data coverage in some countries is not 100%, which means that the sample may not be representative of the entire population of treated drug users in those countries, however, the extent and direction of bias, if any, is unknown.

This study provides valuable information about the gender distribution, by drug, of clients in substance abuse treatment across EU member states. Such information is necessary for a focussed and appropriate public health response to problem drug use that incorporates gender differences. Our findings highlight the need to assess access to treatment for women drug users and to make women-focussed programmes more available to increase the proportion of women in drug treatment programmes across Europe.

ACKNOWLEDGEMENTS

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