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Article

People with Alcohol Use Disorders in Specialized Care in Eight Different European Countries

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Abstract

Aim: To provide a description of patients receiving alcohol treatment in eight different European countries, including the level of comorbidities and functional limitations.

Methods: Drinking behaviours, DSM-IV alcohol use disorder (AUD), mental and somatic comorbidities, disability and health services utilization of 1767 patients from various specialized treatment settings were assessed as representative for regions of eight European countries. Severity of alcohol dependence (AD) in terms of drinking level was compared with a large representative US sample.

Results: Patients in specialized care for AUDs showed high levels of consumption [average level of daily ethanol intake: 141.1 g, standard deviation (SD): 116.0 g], comorbidity [e.g. liver problems: 19.6%, 95% confidence interval (CI): 17.5–21.6%; depression: 43.2%, 95% CI: 40.7–45.8%; anxiety: 50.3%, 95% CI: 47.8–52.9%], disability and health services utilization (average number of nights spent in hospital(s) during the last 6 months: 8.8, SD: 19.5 nights). Severity of AD was similar to the US sample, but European men consumed on average more alcohol daily.
Conclusions: High levels of consumption, somatic and mental comorbidities, disability and functional losses were found in this representative treatment sample, indicating that treatment was initiated only at severe stages of AUDs. Earlier initiation of treatment could help avoid some of the health and social burden.

INTRODUCTION

Alcohol use disorders (AUDs) in general and alcohol dependence (AD) in particular are highly prevalent and disabling conditions in the European Union (EU). AUD here is defined as fulfilling the diagnostic criteria of AD and/or alcohol abuse, as defined in the DSM-IV. Regarding prevalence, the most recent overview (Rehm *et al.*, 2015b) found a prevalence of AD 3.4% for both sexes combined in 2010 for people aged 18–64 (1.7% among women and 5.2% among men), which translates into an estimated 11 million people with AD in the EU. For all AUD, the estimate was about 23 million people affected (Rehm *et al.*, 2015b). It should be noted that these numbers are based on general population surveys with standardized instruments which do not include people with AD or AUD among the homeless (Fazel *et al.*, 2008), the prison population (Fazel *et al.*, 2006) or in mental institutions (Shield and Rehm, 2012), meaning that the numbers are likely underestimates. In addition, a large study in primary care in six EU countries showed that standardized instruments may underestimate the true prevalence of AUD, especially in age groups 40 and above (Rehm *et al.*, 2015a).

With respect to disability and burden of disease, recent studies have revealed not only a high degree of comorbidity and disability (Samokhvalov *et al.*, 2010; Rehm *et al.* 2014b, 2015a), but also a surprisingly high rate of fatalities (for meta-analyses, see Roerecke and Rehm, 2013, 2014).

Despite this burden, treatment rates for AD or AUDs have been low, especially rates in specialized treatment. Alonso and co-workers found a treatment rate of 8.3% among people with AUD in the general population in six countries in western Europe, who participated in the World Mental Health Survey between January 2001 and August 2003 (Alonso *et al.*, 2004); and Rehm and colleagues, with different methods, 10 years later, estimated about the same proportion for the EU as a whole (Rehm *et al.* 2012, 2013c). The high treatment gap was also corroborated by Drummond *et al.* (2011).

While we can estimate treatment rates based on aggregate statistics, not much is known about the characteristics of people who seek treatment for AUD or AD in the EU. There are two main sources of information on patients in AUD treatment: (a) official statistics on patients treated for substance use disorders (including alcohol) in different institutions (e.g. Agència de salut pública de Barcelona, 2012; Italian Ministry of Health, 2013), and (b) single studies in selected in- or outpatient facilities, not representative for an entire region or country (e.g. Röske *et al.*, 2004; Picci *et al.*, 2012). However neither source could give detailed characteristics of a representative sample of treated AUD patients for larger regions or countries in Europe for characteristics such as, but not limited to, comorbidity or problem severity indicators.

There have been some indications that AD in specialized health care (SC) is more severe in Europe compared with North America (e.g. in terms of more DSM-IV symptoms experienced; more standard drinks per occasion and more heavy drinking days in the German version of the Combine study compared with the US original study; Mann *et al.*, 2013), but we do not know how representative the study populations showing differences had been (Bottlender *et al.*, 2006), and whether other factors such as age are the main determinants on such differences. The latter seems plausible (albeit not for the Mann *et al.*, 2013, study), as prevalence of AD in adolescence and early adulthood seems to be considerably higher in North America (especially the US, cf. Grant *et al.*, 2004; Caetano and Babor, 2006;) compared with Europe (Rehm *et al.*, 2005), at least in general population samples.

The objective of this contribution was to fill the above-described gap in the literature, and to describe representative samples from specialized treatment in European regions or countries. More specifically, we wanted to characterize SC patients with respect to:

- sociodemographics;
- their alcohol consumption, symptoms of DSM-IV AUD and severity of AUD;
- mental and somatic comorbidity, and associated disability;
- health service utilization.

In addition, we wanted to compare patients from different treatment settings (inpatients vs. outpatients vs. rest) and examine whether our treatment sample differed from a representative sample in the US with respect to average daily drinking.

MATERIALS AND METHODS

This assessment of AUDs in SC facilities was complementary to the Alcohol Dependence in Primary Care (APC) study (Manthey *et al.*, 2014; Rehm *et al.*, 2015a), which assessed prevalence and detection of AUDs in primary care settings. While the first part was restricted to regions in six European countries, the second part extended its scope to regions in eight European countries, namely Austria (Carinthia), France (sampling was based on whole country), Germany (Saxony & Berlin-Brandenburg), Hungary (whole country), Italy (Friuli-Venezia Giulia & Tuscany), Latvia (whole country), Poland (Pomorskie, Warminsko-Mazurskie, Dolnoslaskie, Podlaskie, Podkarpackie & Malopolskie) and Spain (Catalonia). In total, 1767 patients from 45 SC facilities and various self-help groups were recruited for this study. Monetary compensation of goods or vouchers was offered to the clinics and/or professionals participating in the

study in Austria, France, Latvia and Poland. Interviews were conducted between January 2013 and March 2014.

Sampling of AUD treatment providers in eight European countries

Treatment provision for AUD in Europe differs greatly, with variations being understudied (European Commission, 2004; Drummond *et al.*, 2011; Rehm *et al.*, 2013b). However, we tried to account for and represent country- or region-specific characteristics and included patients receiving various types of treatments for their alcohol problems. Broadly, institutionalized and non-institutionalized treatment options have been identified. A brief description of sampled treatment facility types is available in Supplementary Appendix 1.

The type of treatment facility as sampled by each country is summarized in Table 1. Most commonly, patients included in this study were admitted as inpatients (55.9%), followed by those in outpatient treatment (34.0%). Some patients were also treated by a registered psychiatrist (4.2%) or were recruited from other non-institutionalized treatment providers (5.9%), mostly self-help groups. However, marked differences between countries could be observed: in Austria, all patients received inpatient treatment, whereas all Spanish patients were recruited from outpatient treatment facilities (reflecting the organization of the Catalonian treatment system for AUD; see Supplementary Appendix 1). Regarding non-institutionalized treatment, patients in treatment with a psychiatrist were recruited foremost in Hungary (28.4% of Hungarian patients) and self-help groups were most highly represented in Italy (31.9% of Italian patients).

Patient interview

In most countries, all patients aged 18–64 years receiving current interventions for their alcohol problems on a given day were asked to be interviewed. Interviewees in Friuli-Venezia Giulia (Italy) were contacted if they were present on a given day, and were called if not present but registered on a SC list. In Poland, admission to the SC facility implied participation in this study. Hence, all newly admitted patients could be recruited there with interviews being conducted within 1–2 weeks after admission.

More than 9 out of 10 patients were interviewed in the respective SC facility. All interviews were conducted by trained interviewers across all countries. Computer-assisted personal interviews were used in Austria, Germany, Latvia and Spain. In the remaining countries, paper and pencil were used to document the interview.

The basic structure and content of the patient interview was similar to the interview conducted in the APC study (see Manthey *et al.*, 2014) and began with obtaining informed consent and comprised a socio-demographic part, the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0; Üstün *et al.*, 2010), the Kessler Psychological Distress Scale (K10) to identify severe mental problems (Kessler *et al.*, 2002), the Composite International Diagnostic Interview—CIDI (Robins *et al.*, 1988) and the UK alcohol treatment trial health service utilization questionnaire (UKATT Research Team, 2005). We also assessed self-reported height, weight and select somatic (hypertension, liver) and mental comorbidities. Monetary compensation for interviewees was offered in most countries: Austria (15€), Germany (20€), Hungary (2€ gift coupon), Latvia (3€) and Spain (20€).

Comparison with US sample

We compared our sample with the treated subsample of the large ($N = 43{,}093$) NESARC study, representative for the US for the years 2001/2002, with respect to the level of consumption among current drinkers (in g/day with a cap of 500 g/day and excluding current abstainers as defined by less than 10 g/day) via linear regression for men and women separately, controlling number of AD criteria. Additionally we analysed differences in the number of AD criteria between samples via a quasi-poisson regression for men and women separately. All regression models took into account the complex sampling design of the NESARC survey and were performed using R version 3.1.1 (R Development Core Team, 2014) and the R survey statistical package (Lumley, 2004). The NESARC sample has been described in detail elsewhere (Grant *et al.*, 2003).

Statistical methodology

Missing values were imputed for scales if only single items were missing. Other missing cases were not included in the analyses. All analyses other than the comparison with NESARC were conducted using Stata 12 (Stata Corporation, 2011). In order to test for country differences on key drinking variables we carried out ANOVAs (for average daily intake of ethanol) and logistic regressions (for percentage of patients with weekly binge drinking or chronic heavy drinking habits), both adjusted by age and sex. If the overall model was significant, each country was compared against the remaining countries using the same procedure. In order to account for multiple testing, the significance level was Bonferroni-adjusted.

RESULTS

Response and refusals

Table 2 reports the countries and regions for which the selected SC facilities are representative. Most treatment centres were willing to take

Table 1. Type of treatment facility by country

Country	Inpatient ($N = 988$)	Outpatient ($N = 600$)	Psychiatrist ($N = 75$)	Other ($N = 104$)	Such as
Austria ($N = 33$) % (CI)	100 (100.0–100.0)	0 (0.0–0.0)	0 (0.0–0.0)	0 (0.0–0.0)	NA
France ($N = 284$) % (CI)	73.2 (68.1–78.4)	26.8 (21.6–31.9)	0 (0.0–0.0)	0 (0.0–0.0)	NA
Germany ($N = 232$) % (CI)	81.9 (76.9–86.9)	12.1 (7.9–16.3)	0.4 (0.0–1.3)	5.6 (2.6–8.6)	Counselling, self-help groups
Hungary ($N = 254$) % (CI)	27.6 (22.0–33.1)	42.5 (36.4–48.6)	28.7 (23.2–34.3)	1.2 (0.0–2.5)	Family physician
Italy ($N = 276$) % (CI)	13.8 (9.7–17.8)	54.0 (48.1–59.9)	0.4 (0.0–1.1)	31.9 (26.4–37.4)	AA & CAT clubs
Latvia ($N = 250$) % (CI)	64.0 (58.0–70.0)	36.0 (30.0–42.0)	0 (0.0–0.0)	0 (0.0–0.0)	NA
Poland ($N = 289$) % (CI)	100 (100.0–100.0)	0 (0.0–0.0)	0 (0.0–0.0)	0 (0.0–0.0)	NA
Spain ($N = 149$) % (CI)	0 (0.0–0.0)	100 (100.0–100.0)	0 (0.0–0.0)	0 (0.0–0.0)	NA
Total ($N = 1{,}767$) % (CI)	55.9 (53.6–58.2)	34.0 (31.7–36.2)	4.2 (3.3–5.2)	5.9 (4.8–7.0)	See above

CI = 95% CI based on standard error. AA = Alcoholics Anonymous. CAT = Club of Alcoholics in treatment.

Table 2. Selected regions and countries, population size, number and refusal rates of specialized care facilities and number of patients recruited

Country	Represented region	Population size	Number of facilities included	Refusal rate of contacted facilities	Number of patients included	Refusal rate of contacted patients
Austria	Carinthia	556,845	1	0%	33	17.0%
France	Entire country	63,070,344	6	60%	284	20.0%
Germany	Saxony & Berlin-Brandenburg	9,847,937	5	75.0%	232	30.3%
Hungary	Entire country	9,957,731	7	12.5%	254	10.6%
Italy	Friuli-Venezia Giulia	1,221,860	5	16.7%	129	Not available
	Tuscany	3,692,202	5	16.7%	147	19.3%
Latvia	Entire country	2,023,825	7	0%	250	Not available
Poland	Pomorskie	2,295,811	1	0%	46	0%
	Warminsko-Mazurskie	1,446,915	1	0%	48	0%
	Dolnoslaskie	2,909,997	1	0%	48	0%
	Podlaskie	1,194,965	1	0%	48	0%
	Podkarpackie	2,129,951	1	0%	49	0%
	Malopolskie	3,360,581	1	0%	50	0%
Spain	Catalonia	7,553,650	3	0%	149	25.1%
Total		111,262,614	45	37.5%	1,767	17.3%

part in our study (average response rate on institutional level: 62.5%), with refusal rates being 0% in Austria, Latvia, Poland and Spain; and around 15% in Hungary and Italy. Higher refusals were encountered in France (60%) and Germany (75%). Patient non-response rates ranged from 0% in Poland to 30.3% in Germany (average response rate on individual level: 82.73%). The sample of treatment providers is thought to be representative for a total general population of over 110 million people (for details see Table 2).

Socio-demographic characteristics

About 72.4% [95% confidence interval (CI): 70.3–74.4%] of all patients in specialized care were men (see Table 3). The average age was 46.3 years (standard deviation—SD: 10.1 years). A considerable portion of patients was from lower socio-economic strata (44.3%; 95% CI: 41.9–46.6%), and more than one-third of the patients were unemployed (36.0%; 95% CI: 33.7–38.2%), considerably more than in the adult general population in the EU which is slightly above 10% (http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&language=en&pcode=teilm020).

Alcohol consumption and criteria of AD

With respect to alcohol-related variables, there were some patients who did not consume alcohol or had (compared with the average patient) very low alcohol consumption during the past year before the interview. This surprising result was due to the definition of treatment system in the various countries, which for instance included people in AA self-help groups, requiring abstention. Of those drinking, as defined by a consumption of 10 g or more per day, the level of drinking was very high: 58.0% of male patients (95% CI: 55.0–60.9%) and 41.6% of female drinkers (95% CI: 36.5–46.6%) had an average daily volume of alcohol consumption of 100 g pure alcohol or higher, with 152.5 g (SD: 122.9 g) among men and 108.2 g (SD: 85.0 g) among women as average daily consumption, and 46.6% (95% CI: 43.6–49.6%) of men and 28.2% (95% CI: 23.6–32.7%) of women had at least one binge drinking occasion consuming 200 g or more per week.

At least one DSM-IV AD or abuse criterion was present in 9 out of 10 of the patients (see Table 4). The average number of DSM-IV AUD symptoms present was 5.4 (SD: 3.3 symptoms), with tolerance and role failures having the highest prevalence, being present in two-thirds or three-fourths of the patients, respectively (see Table 4).

Variability of key alcohol consumption measures by study site and treatment setting

Differences in daily amount of alcohol used by drinking patients in the 12 months before treatment were observed between study sites (see Table 5). In Germany (223.5 g; SD: 133.7 g), patients drunk more than the overall average while in Latvia (96.9 g; SD: 97.9 g) and Poland (91.0 g; SD: 83.2 g), the mean daily consumption was less than average. The same pattern of differences could be observed regarding chronic heavy drinking, i.e. using at least 100 g pure alcohol daily. Patients in Germany reported weekly binge drinking occasions more frequently (67.3%; 95% CI: 61.1–73.4%), i.e. more than 200 g ethanol, than average. Only Polish patients were found to experience less binge drinking occasions (25.2%; 95% CI: 19.5–30.9%) compared with the group mean. No differences in alcohol measures were found across type of treatment setting after Bonferroni adjustments (see Supplementary Appendix 2).

Comorbidity and disability

The prevalence of self-reported somatic and mental comorbidities was high. 73.7% (95% CI: 71.5–76.0%) indicated at least one occurrence of hypertension, liver cirrhosis, depression or anxiety disorders, 34.8% (95% CI: 32.3–37.2%) had at least one somatic co-morbid condition and 61.5% (95% CI: 59.0–64.0%) at least one mental. In terms of standardized assessment, more than one-third of all patients had serious mental distress, proportionally more females (43.0%; 95% CI: 38.6–47.4%) than male patients (33.3%; 95% CI: 30.7–35.9%). Most somatic and mental comorbidity measures were equally distributed across different types of treatment setting (inpatient vs. outpatient vs. remaining settings, see Supplementary Appendix 3 and 4), except for the K10 mental distress measure which was found to be higher in inpatients compared with outpatients ($P = 0.0004$; post hoc test) and all remaining settings ($P < 0.0001$; post hoc test).

Table 3. Patient characteristics and key health and alcohol variables by sex

	Male (*N* = 1,277)	Female (*N* = 488)	All (*N* = 1,767)
12-months AU prevalence[a] % (CI)	95.0 (93.8–96.2)	91.7 (89.2–94.2)	94.1 (93.0–95.2)
Age mean (SD)	46.1 (10.0)	46.7 (10.3)	46.3 (10.1)
SES—self classified % (CI)			
Above average	5.5 (4.2–6.8)	5.1 (3.2–7.1)	5.4 (4.3–6.5)
Average	48.7 (46.0–51.5)	54.5 (50.1–59.0)	50.3 (48.0–52.7)
Below average	45.8 (43.0–48.5)	40.3 (36.0–44.7)	44.3 (41.9–46.6)
Unemployed for health or other reason % (CI)	36.8 (34.2–39.5)	33.6 (29.4–37.8)	36.0 (33.7–38.2)
Smoking % (CI)	73.8 (71.4–76.3)	67.6 (63.4–71.7)	72.0 (70.0–74.2)
BMI[b] mean (SD)	25.5 (4.2)	24.3 (5.0)	25.2 (4.5)
Hypertension[b] % (CI)	21.9 (19.3–24.4)	18.6 (14.8–22.4)	20.9 (18.9–23.0)
Liver problems[b] % (CI)	21.1 (18.6–23.6)	15.6 (12.1–19.2)	19.6 (17.5–21.6)
Depression[b] % (CI)	38.8 (35.8–41.7)	54.7 (49.8–59.5)	43.2 (40.7–45.8)
Anxiety[b] % (CI)	46.9 (43.8–49.9)	59.3 (54.5–64.1)	50.3 (47.8–52.9)
K10			
Above cut-off for serious mental distress % (CI)	33.3 (30.7–35.9)	43.0 (38.6–47.4)	36.0 (33.8–38.3)
Total score mean (SD)	15.8 (9.8)	18.1 (9.9)	16.4 (9.9)
WHODAS 2.0 mean (SD)			
Total score	17.3 (18.3)	19.7 (20.0)	18.0 (18.8)
Number of days of inability to carry out usual activities or work due to health condition	3.9 (7.5)	4.2 (7.8)	4.0 (7.6)
Amount of ethanol used daily (in gram) by drinkers[a] mean (SD)	152.5 (122.9)	108.2 (85.0)	141.1 (116.0)
Chronic heavy drinking[a] % (CI) at least 100 g ethanol daily	58.0 (55.0–60.9)	41.6 (36.5–46.6)	53.7 (51.2–56.3)
Binge drinking [a] % (CI) at least one episode of 200 g ethanol consumption weekly	46.6 (43.6–49.6)	28.2 (23.6–32.7)	41.9 (39.3–44.4)

CI = 95% CI based on standard error. SD = standard deviation. SES = socio-economic status. BMI = Body Mass Index. K10 = Kessler Psychological Distress Scale; cut-off for severe mental distress was 21 points in a total score range from 0 to 40. WHODAS 2.0 = World Health Organization Disability Assessment Schedule 2—total score range: 0–100.

[a]Analyses were computed on patients reporting alcohol use of at least 10 g ethanol daily during the past 12 months, excluding 285 patients.

[b]Not assessed in Poland.

Disability and health services utilization were high as well: on average, 4 days in the last 4 weeks before treatment, patients could not carry out their work or usual activities because of their health (see Table 3). Measured with the WHODAS 2.0, a standardized scale, there was a high level of disability approximately corresponding to the 80th percentile in the general population of the norming samples (Üstün *et al.*, 2010). Finally, health service utilization was high: in the last 6 months and excluding the current stay in specialized care, 57.5% (95% CI: 55.2–59.8%) of the patients were admitted at least once to a hospital. Those admitted to a hospital spent on average 14.1 nights (SD: 19.8 nights) as inpatient or in accident and emergency departments. Across all patients, the average number of nights spent in any service, also including specialized services for alcohol treatment, added up to 8.8 nights (SD: 19.5 nights). Further, 67.8% (95% CI: 65.6–70.0%) received some kind of service from their GP.

Comparison with US

The European treatment sample was compared with the US sample with respect to average drinking. While men showed higher drinking levels with on average 23.9 g more alcohol being consumed per day (95% CI: 1.1–46.7 g/day), there was no significant difference for women (with a tendency of European patients drinking less). When age was added to the regression equation, it did not significantly contribute to explaining average level of drinking. Furthermore the average numbers of criteria for AD in the European sample and US sample were not statistically significantly different.

DISCUSSION

Overall, patients from various specialized treatment facilities in eight European countries were interviewed with the following main characteristics:

- patients were predominantly men which is no surprise, given the fact that in all countries in Europe (World Health Organization, 2014) there are more alcohol consumers among men than among women, men have higher average levels of consumption, riskier drinking patterns and considerably more alcohol-attributable disease burden in general (Shield *et al.*, 2012);
- a high prevalence of lower socio-economic classes and unemployment, consistent with the fact that lower socio-economic status is associated with more negative consequences for the same amount of drinking compared with higher status (Mäkelä and Paljärvi, 2008; Probst *et al.*, 2014);
- high average consumption of alcohol, and extensive binge drinking episodes, which are much higher than found in people with AD or AUD in general population surveys even if controlled for number of diagnostic criteria [e.g. NESARC in the US (Rehm *et al.*, 2014a); or in Germany (Rehm *et al.*, 2014c)];
- high comorbidity, both somatic and psychiatric, with associated high level of disability and health services utilization (Holder, 1998; Samokhvalov *et al.*, 2010).
- Sampling from different treatment settings resulted in patients, who reported similar levels of consumption and comorbidity, except for severe mental distress which was found to be highest in inpatients.

Table 4. Current DSM-IV AUD criteria experienced by sex

	Male (*N* =1,277)	Female (*N* = 488)	All (*N* = 1,767)
At least one DSM-IV AUD criterion % (CI)	90.8 (89.2–92.4)	90.1 (87.5–92.8)	90.6 (89.3–92.0)
At least two DSM-IV AUD criteria % (CI)	84.1 (82.1–86.1)	82.5 (79.1–85.9)	83.7 (81.9–85.4)
Mean number of DSM-IV AUD criteria (range: 0–11) (SD)	5.5 (3.3)	5.2 (3.2)	5.4 (3.3)
DSM-IV AD % (CI)			
Need for markedly increased amounts of alcohol to achieve intoxication or desired effect; or markedly diminished effect with continued use of the same amount of alcohol	67.3 (64.7–69.8)	67.4 (63.2–71.5)	67.3 (65.1–69.5)
The characteristic withdrawal syndrome for alcohol; or drinking (or using a closely related substance) to relieve or avoid withdrawal symptoms	54.7 (52.0–57.4)	52.5 (48.0–56.9)	54.1 (51.8–56.5)
Drinking in larger amounts or over a longer period than intended	61.4 (58.7–64.1)	59.1 (54.7–63.5)	60.8 (58.5–63.1)
Persistent desire or one or more unsuccessful efforts to cut down or control drinking	59.3 (56.6–62.0)	59.7 (55.3–64.1)	59.4 (57.1–61.7)
Important social, occupational or recreational activities given up or reduced because of drinking	38.9 (36.3–41.6)	36.4 (32.1–40.7)	38.3 (36.0–40.6)
A great deal of time spent in activities necessary to obtain alcohol, to use it or to recover from the effects of drinking	41.5 (38.8–44.2)	41.5 (37.1–45.9)	41.6 (39.3–43.9)
Continued drinking despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to be caused or exacerbated by drinking	42.5 (39.7–45.2)	41.9 (37.5–46.3)	42.3 (40.0–44.6)
Mean number of DSM-IV AD symptoms (range: 0–7) (SD)	3.7 (2.3)	3.6 (2.4)	3.6 (2.4)
DSM-IV alcohol abuse % (CI)			
Recurrent use of alcohol resulting in a failure to fulfill major role obligations at work, school or home	75.5 (73.1–77.8)	73.2 (69.2–77.1)	74.9 (72.8–76.9)
Recurrent alcohol use in situations in which it is physically hazardous	45.7 (42.9–48.4)	33.6 (29.4–37.8)	42.4 (40.1–44.7)
Recurrent alcohol-related legal problems	23.3 (20.9–25.6)	14.2 (11.1–17.3)	20.8 (18.9–22.7)
Continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol	43.8 (41.1–46.6)	42.1 (37.7–46.5)	43.4 (41.1–45.7)
Mean number of DSM-IV alcohol abuse symptoms (range: 0–4) (SD)	1.9 (1.3)	1.6 (1.2)	1.8 (1.3)

DSM-IV = Diagnostic and Statistic Manual of Mental Disorders, 4th edition. AUD = Alcohol use disorder, comprised of AD or alcohol abuse diagnoses. CI = 95% CI based on standard error. SD = standard deviation.

Table 5. Variability of key alcohol measures by study site

	Amount of ethanol used daily (in gram) by drinkers[a] mean (SD)	*P*-value[b]	Chronic heavy drinking[a] at least 100 g ethanol daily % (CI)	*P*-value[c]	Binge drinking[a] at least one episode of 200 g ethanol consumption weekly % (CI)	*P*-value[c]
Austria	175.5 (121.1)	0.1700	76.9 (53.1–100.0)	0.0667	53.8 (25.6–82.1)	0.2312
France	139.4 (103.2)	0.9205	57.2 (51.3–63.1)	0.1643	36.9 (31.1–42.7)	0.1059
Germany	223.5 (133.7)	<0.0001*	81.0 (75.8–86.1)	<0.0001*	67.3 (61.1–73.4)	<0.0001*
Hungary	133.3 (116.0)	0.1404	49.8 (43.2–56.4)	0.0880	47.5 (40.9–54.1)	0.0914
Italy	149.7 (110.6)	0.2710	57.7 (50.4–65.1)	0.2662	34.9 (27.8–41.9)	0.0614
Latvia	96.9 (97.9)	<0.0001*	36.6 (29.6–43.5)	<0.0001*	37.1 (30.1–44.1)	0.0759
Poland	91.0 (83.2)	<0.0001*	33.6 (27.5–39.8)	<0.0001*	25.2 (19.5–30.9)	<0.0001*
Spain	148.5 (107.9)	0.4141	57.0 (49.1–65.0)	0.4034	42.3 (34.3–50.2)	0.9044
Total	141.1 (116.0)		53.7 (51.2–56.3)		41.9 (39.3–44.4)	

SD = standard deviation. CI = 95% CI based on standard error.

[a]Analyses were computed on patients reporting alcohol use of at least 10 g ethanol daily during the past 12 months, excluding 285 patients.

[b]ANOVA run on amount of alcohol used daily, using study site, age and sex as factors. Overall model was significant and was followed by ANOVAs comparing overall mean with mean of each study site, including age and sex as further factors.

[c]Logistic regression run on proportion of patients reporting chronic heavy drinking/binge drinking, using study site (dummy coded), age and sex as predictors. Overall models were significant and were followed by logistic regressions using single study site dummy variables and sex and age as predictors (*P*-values presented).

*Significant Bonferroni-adjusted *P*-value < 0.01/9 (number of ANOVAs/logistic regressions): <0.0011.

The results of our study indicate a level of morbidity and severe loss of functionality, which explains why people after treatment have a much higher risk for mortality compared with people with AUD from the general population (Roerecke and Rehm, 2013). They are also consistent with the fact that heavy drinking is the underlying reason for the high level of comorbidity and disability [see also (Rehm *et al.*, 2013a, 2014a)], and if these drinking levels are not reduced during treatment, they will lead to higher level of mortality as well (Roerecke *et al.*, 2013). As this is the first large representative study on specialized care for AUD in several European countries, the average level of the drinking and comorbidity is surprising; this is underlined by the fact that daily drinking levels in men were higher than in the US (see above).

Limitations

Before we discuss the implications of our findings, we would like to point out limitations: while this study is to our knowledge the largest representative study on patients in AUD treatment in different European countries, the sampling was driven by the local systems, and the resulting samples had some degree of heterogeneity. Part of this reflects the reality of varying treatment systems and guidelines in Europe (Rehm *et al.*, 2013b), another part may also reflect decisions of the country's principal investigators in our study. To achieve statistical representativeness for the entire EU in the sense of a roster of all SC facilities and a probability sampling scheme across all possible facilities was not possible, as such a roster does not exist; and partly seems to be impossible due to different definitions of what constitutes specialized treatment in various countries. Nevertheless, we achieved regionally and for France, Hungary and Latvia even nationally representative samples with sufficient response rates of the most common treatment options available to people with AUDs in the selected regions.

The interpretation of associations presented above cannot be interpreted as to reflect causality, as we base all our conclusions on cross-sectional data. Furthermore, some of our comparisons are suffering from a general scarcity of natural history studies of AUDs [such as (Vaillant, 1995)], indicating that more research is needed in this area.

CONCLUSION

The present publication fills a gap in the literature giving characteristics about typical treatment populations in various European countries. While treatment systems vary considerably, one characteristic was consistent across all countries and regions: patients in European specialized care settings for AUDs had high average alcohol consumption and extended binges before entering treatment, and showed a high degree of comorbidity. As shown above, the levels of alcohol consumption and comorbidity in our sample were higher than the levels in samples of people with untreated AUDs (Rehm *et al.*, 2015a). In other words, treatment seems to be sought by patients and/or indicated by professionals only when problems with consumption and associated comorbidity move beyond a high threshold. This observation is consistent with the overall low treatment rate for AUD (Alonso *et al.*, 2004; Rehm *et al.*, 2013c). How could this rate be increased? Family physicians as the entry point to the health care system in many countries are a pivotal cornerstone to earlier detection of alcohol problems followed by brief intervention or referral to specialized care (Babor *et al.*, 2001, 2007). Even though there is evidence that early detection and brief interventions is effective in reducing drinking (Kaner *et al.*, 2007) and alcohol-attributable harm (Rehm and Roerecke, 2013; Rehm *et al.*, 2013c), implementation of screening for AUD in primary care has been slow in Europe. Catalonia seems to be leading the way here, with almost 1,500,000 people screened for problem use in 2012 (Generalitat de Catalunia, 2013), but studies on impact of these public health measures are still lacking. Overall, given the high comorbidity and disability shown here, health care systems in the EU should find a way to detect cases of AUD earlier and include them into the treatment system.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Alcohol and Alcoholism* online.

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