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Comorbid social phobia does not predict the outcome in alcohol use disorder outpatient treatment

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Highlights

- Among 3,197 alcohol use disorder (AUD) outpatients, 15% had social phobia (SP).
- Patients with and without SP had a similar treatment course and dropout rates.
- SP was not associated with inferior alcohol-related treatment outcomes.

Abstract

Background: Social phobia (SP) is one of the most prevalent anxiety disorders among patients entering treatment for alcohol use disorders (AUD). However, few studies have examined the association between SP and alcohol-related treatment outcomes in naturalistic settings.

Aims: The aims of this study were to estimate the prevalence of co-morbid SP and to investigate the impact of the co-morbidity on the treatment course, dropout rates and treatment outcomes in a large sample of AUD patients treated in an outpatient alcohol treatment clinic.

Methods: The study was conducted as an observational cohort study. A consecutive sample of 3,197 treatment-seeking outpatients, with an AUD diagnosis according to the ICD-10 Diagnostic Criteria for Research, was assessed by means of the Addiction Severity Index at treatment start and at treatment conclusion.

Results: Approximately 15% of the patients suffered from SP when entering treatment and patients with and without SP did not differ on the treatment course, compliance or dropout rates. SP did not predict any alcohol-related treatment outcomes either, where no association
was found on change scores for abstinence, drinking days and days with excessive drinking relative to AUD patients without co-morbidity.

**Conclusion:** AUD patients with and without co-morbid SP were equally likely to achieve benefits when treated similarly with evidence-based pharmacological and psychosocial approaches in a naturalistic setting.

**Keywords:** alcohol use disorders, social phobia, treatment, outpatient

1. **Introduction**

Previous studies have reported high rates of co-morbidity between anxiety disorders and alcohol use disorders (AUD) (Grant et al., 2004; Modesto-Lowe and Kranzler, 1999). Social phobia (SP), characterized by the intense fear of being the focus of attention and/or behaving in a way that could be embarrassing and humiliating in specific or diffuse social situations (WHO, 1992), is one anxiety disorder that often co-occurs in individuals with AUD (Kessler et al., 1997; Morris et al., 2005; Terra et al., 2006) SP normally appears at a very early age, with 50% of those who develop SP having developed it by age 11, and 80% having developed it by age 20, (Stein and Stein, 2008), which contrasts to other anxiety disorders such as panic disorder (PD) and generalized anxiety disorder (GAD) that typically appear after the age 20 (Moreno-Peral et al., 2014). In the general population, 4.3% of the individuals with AUD have suffered from SP in the past 12 months (Grant et al., 2005), and in the clinical AUD population, the prevalence rates are even higher, with estimates ranging from 13–34% (Bakken et al., 2005; Burns et al., 2005; Kushner et al., 2005; Terra et al., 2006).
Although the prevalence of SP in the clinical AUD populations has been reported to be high, few studies have investigated how the presence of SP affects alcohol treatment outcomes. Observational empirical studies have mainly investigated the overall impact of phobic and non-phobic anxiety disorders (including SP), where some indicate that anxiety may have a negative impact on alcohol treatment outcomes (Burns et al., 2005; Driessen et al., 2001; Kushner et al., 2005; Schellekens et al., 2015), but other studies found that the presence of anxiety does not impact treatment outcomes (LaBounty et al., 1992; Marquenie et al., 2006; Mellentin et al., 2015) and may even be associated with positive alcohol treatment outcomes (Mann et al., 2004; Tomasson and Vaglum, 1997). However, the majority of the studies did not differentiate between anxiety subcategories; one reason for the mixed findings may be that some anxiety disorders have a bigger impact on treatment outcomes than others.

It has been theorised that due to the early age of onset SP may be a predisposition for the subsequent development of AUD, whereas it has been suggested that other non-phobic anxiety disorders, such as PD and GAD, might be a result of AUD (Kushner et al., 1990; Kushner et al., 2000; Swendsen et al., 1998; Terra et al., 2006). Furthermore, it has been argued that anxiety disorders that precede the onset of AUD may have a negative impact on alcohol treatment outcomes (Brady and Lydiard, 1993; Kushner et al., 1990; Kushner et al., 2000; Marquenie et al., 2006). Because SP is a predisposition, hence preceding AUD, we may expect patients suffering from SP to be particularly refractory in their treatment response, given that their symptoms might be more persistent, even though their AUD is treated. Therefore, patients experiencing SP might attempt to self-medicate, making them even more vulnerable to relapses than other AUD patients (Carrigan and Randall, 2003; Chutuape and de Wit, 1995).

However, the empirical studies, having specifically attempted to disentangle the influence of SP from other anxiety disorders, have also produced conflicting results with
regard to the self-medication hypothesis. One study found that SP was the single best predictor of relapse compared to other phobic and anxiety disorders (Kushner et al., 2005). Two other studies did not find an association between SP and treatment outcome (Terra et al., 2006; Schellekens et al., 2015), albeit one of them also found that the relapse rate of SP was much higher relative to patients with PD and GAD, which could indeed indicate a more refractory treatment response (Schellekens et al., 2015). Finally, an older study reported better treatment outcomes for SP and GAD, whereas no association was found for PD (Tomasson and Vaglum, 1997). Prior observational cohort studies are few and limited by sample size and therefore, large scale studies are warranted to clarify whether SP is associated with a worse treatment outcome.

The aims of this study were to estimate the prevalence of SP and to investigate whether the presence of SP predicts the treatment course and alcohol-related treatment outcomes among a large sample of patients seeking outpatient treatment for AUD. Based on the theory and conflicting empirical evidence, we hypothesized that patients with co-morbid SP will have worse alcohol-related treatment outcomes relative to those with selected non-phobic anxiety disorders, specifically PD and GAD, or without anxiety disorders at all.

2. Materials and methods

2.1. Design and study population

The study was conducted as an observational cohort study, and the population consisted of alcohol abusing or dependent patients seeking outpatient treatment for AUD. Data stemmed from the clinical database in the treatment clinic, covering all patients who entered psychosocial treatment. All patients entering treatment were required to complete a baseline assessment interview at treatment start and routine procedures for follow-up assessment after treatment conclusion. A total of 3,197 unique patients entered and finished treatment during the period of 2006 to 2015.
2.2. Study setting

Individuals suffering from AUD are typically treated in outpatient treatment facilities. Thus, the study setting was an operating outpatient alcohol treatment clinic located in Odense, Denmark. Public outpatient treatment is free of charge, open for self-referral and patients can remain anonymous during treatment. If patients mainly suffer from illegal drug abuse, treatment takes place elsewhere. If patients suffer from major psychiatric disorders (schizophrenia, bipolar disorders), treatment also takes place elsewhere.

2.3. Treatment at the outpatient alcohol clinic

The clinic cooperated closely with the University Hospital Unit of Clinical Alcohol Research. Pharmacological and psychosocial treatment offered at the clinic was evidence-based and provided in accordance with the national clinical recommendations (National Institute for Health and Care Excellence, 2011; Danish Health Authority, 2015).

At treatment start, patients were provided a medical consultation by a psychiatrist and other pharmacological treatment targeting the AUD and withdrawal symptoms as necessary. The most common pharmacological treatments offered was disulfiram, acamprosate and naltrexone. Treatment for withdrawal symptoms consisted of benzodiazepines and mainly occurred in the outpatient treatment setting, but in cases of severe withdrawal symptoms, part of the detoxification process took place in an inpatient psychiatric treatment setting. This was rare and less than 5% of the included patients were detoxified by these means. After detoxification, psychiatrists would refer the patients to psychosocial treatment, which constituted the main component of the treatment and was carried out by a team of therapists, comprising nurses and social workers educated within the treatment range. A baseline assessment interview was carried out. The treatment offer consisted of either cognitive behavioural therapy (CBT) or supportive consultations and focused on AUD. All treatments were carried out during one-hour individual or group sessions. At the beginning of the
treatment course, sessions were offered once a week and, after a few months, once or twice a month. The length of the treatment course was decided together with the patient on an individual basis and could be extended as long as agreed upon. Frequent supervision of the staff took place, and the psychiatrists were monitoring the treatment course regularly.

2.4. Assessment and assessment instruments

The baseline assessment interview was carried out by means of the ICD-10 Diagnostic Criteria for Research (DCR-10) and the European Addiction Severity Index (WHO, 1993; McLellan et al., 1980; McLellan et al., 1992).

The baseline assessment was conducted after treatment of withdrawal symptoms, typically 14 days after the first contact to the outpatient clinic, to ensure that the patient was sober and not affected by withdrawal symptoms during the assessment. The follow-up assessment was also carried out by means of the ASI at the end of treatment. Both assessments were carried out by the team of therapists in the treatment institution and, in some cases, the therapist might be the same as the one delivering the psychosocial intervention.

The DCR-10 was applied to assess the ICD-10 diagnoses of the following psychiatric disorders: alcohol harmful use and dependence (AUD), social phobia (SP), panic anxiety (PA) and generalised anxiety disorder (GAD). All therapists were trained in psychiatric diseases and the DCR-10 procedure. The therapists ticked off the criteria while interviewing the patient during the assessment, and if the patient fulfilled the diagnostic criteria for SP, PA or GAD (in addition to AUD), the psychiatrist would subsequently confirm the diagnosis (WHO, 1992, 1993).

The ASI, a standardized international assessment instrument, was used to calculate drinking measures and work out an addiction severity profile for each patient for the last 30 days. The profile in the European version covers nine areas of the patient’s life: alcohol use,
drug use, medical status, psychiatric status, family status, other social status, economy, job satisfaction and legal status. A composite score can be calculated in each area based on the overall presence of problems within the specific area, and can range from 0 to 1, where 0 denotes no problems, and 1 denotes severe problems in the specific area. The alcohol and drug composite scores consist of items addressing the consumption pattern, alcohol- or drug-related problems, and perceived need for pharmacological and psycho-social treatment. The medical and psychiatric status composite score consists of items addressing days with somatic and psychiatric symptoms, degree of concern about the symptoms and perceived importance of receiving relevant treatment. The family and other social status composite score addresses possible relational problems with family, friends, at work etc., and the perceived need of professional help to solve these problems. The economy and job satisfaction composite score consists of items addressing the patients work status as well as work-related problems, degree of concern and perceived need of counselling. Finally, the legal status composite score addresses whether the patient has been involved in criminal activities and the perceived severity of the criminal activity (McLellan et al., 1992; McLellan et al., 1980; McGahan et al., 1986).

To ensure data quality, therapists performing the assessment interviews were well trained in the use of these instruments and performed regular, supervised test interviews throughout the project period.

2.5. Treatment outcome measures

Drinking-related outcomes were derived from the ASI alcohol-use concern area, question A: days with any alcohol consumption in the past 30 days and question B: days with excessive drinking (5 units) in the past 30 days. Based on these two questions, the following drinking variables were calculated: abstinence, drinking days and days with excessive drinking.
2.6. Data analysis

The descriptive analysis of data was carried out by means of chi-squared tests for
categorical data and Kruskal Wallis rank models for continuous data. The inferential analysis
was carried out using logistic regression models, as all outcome variables were too skewed
for assumptions for linear models to be met. Hence, the assumptions for linear models were
not met, and all variables were transformed to dichotomous outcomes. The dichotomous
outcomes were coded to reflect whether an improvement from baseline to follow-up was
observed, and the models were adjusted for age and gender. The models were not adjusted for
other confounding baseline variables, since they may be seriously influenced by an
association to or directly caused by SP (e.g., cohabiting, education, employment, several ASI
composite scores). An intention to treat analysis approach was adopted in the adjusted and
unadjusted models.

The incomplete outcome data were assumed to be missing at random and were
addressed by the multivariate imputation by chained equations method of multiple
multivariate imputation. The number of drinking days and heavy drinking days at follow-up
was imputed using predictive mean matching. Additionally, the following auxiliary variables,
associated with at least one of the two outcome variables with missing data, were included in
the imputation model: age, cohabiting with a partner, higher or continuing education, dropout
of treatment, baseline drinking days, and baseline heavy drinking days. A total of 50 imputed
datasets were generated and analysed separately. Finally, results were combined using the
Rubin’s rules (Rubin, 1987). All analyses were conducted using Stata, version 15.

3. Results

3.1. Sample characteristics
Of the 3,197 AUD patients undergoing a baseline assessment, 20.55% (n = 657) fulfilled the diagnostic criteria for an anxiety disorder: 14.54% for SP and 6.00% for PA/GAD. Baseline characteristics of the sample are shown in Table 1.

As illustrated in Table 1, the demographic variables varied between the groups. The co-morbid groups presented a lower age median and consisted of more women. Likewise, the co-morbid groups were less likely to be cohabiting, having a formal education or being employed; this was the case for the SP group in particular.

As can also be seen from Table 1, the groups differed in relation to the proportion regarding abstinence prior to treatment and the number of days with drinking and excessive drinking prior to treatment. Patients with co-morbidity were more likely to already be abstinent when entering treatment, compared to patients not suffering from co-morbidity. On the other hand, it seems that patients in the SP group who did drink prior to treatment generally drank more days and also had more days with excessive drinking. All but one of the composite scores differed between the groups: the SP group was the most impaired with higher scores on alcohol use, drug use, medical and psychiatric status. After the SP group, the other co-morbid group was the most impaired, particularly regarding family and employment status.

3.2. Treatment course

Characteristics of the treatment course in the three samples are shown in Table 2.

During the last month prior to treatment, pharmacological treatment with disulfiram was prescribed to approximately 40% of the study population, and no differences were seen between the groups regarding the initial prescription or the duration of the prescription of pharmacological treatment. As expected, more patients with SP and non-phobic anxiety were utilizing psychopharmacological treatment at treatment entry than the AUD group; half of the
samples with anxiety used antidepressants or other types of medication compared to one-quarter without such co-morbidity.

During the alcohol treatment course, approximately 60% received CBT, more than 10% received supportive therapy, and more than a quarter of the sample received treatment sessions not specified in the clinical database. The proportion of patients allocated to family therapy differed between the groups, where more than 10% of the patients without co-morbidity and less than 10% of the comorbid groups, particularly the SP group, received family therapy. Thus, patients without co-morbidity were more frequently allocated to family therapy, which corresponds to the fact that they were more likely to be cohabiting with a partner.

In all three groups, only half of the patients completed more than four treatment sessions following treatment for withdrawal symptoms, and the treatment course lasted eight months on average. Drop-outs from treatment were equally high between the groups, where approximately 37% of the entire sample dropped out of alcohol treatment before planned. More than a third (1188 of the 3197 patients) enrolled in the study did not complete the follow-up assessment and were handled with baseline observation carried forward (BOCF).

3.3. Treatment outcomes

All patients independent of co-morbidity status improved on the drinking-related outcomes. From pre- to post-treatment, the total sample exhibited an increase in abstinence (McNemar's $\chi^2$ 2 = 589.72, p = 0.000), decrease in drinking days ($z = 31.307$, p= 0.000) and days with excessive drinking ($z = 33.927$, p= 0.000). Abstinence increased from 18% to 66% in the SP group, from 17% to 66% in the PD/GAD group and from 13% to 63% in the AUD group. Number of drinking days in a month decreased from a median of 25 (IQR:16) to 5 (IQR:22) in the SP group, from 21 (IQR:20) to 4.5 (IQR:20) in the PD/GAD group and from 21 (IQR:20) to 4 (IQR:20) in the non-comorbid group.
The odd ratios (OR) and adjusted odd ratios (AOR) for the outcomes for the SP group and the PD/GAD group relative to the group without co-morbidity are reported in Table 3. The OR were adjusted for age and gender.

Table 3 shows that SP did not predict any decreased or increased improvements on the drinking outcomes in both the unadjusted model and adjusted model, as the improvements were similar to the non-comorbid reference group. Similar to the SP group, PD/GAD did not predict a decrease or an increase in the improvement of the alcohol-related outcomes.

Additionally, comorbidity did not predict whether AUD patients were successfully discharged. The three groups had similar OR and AOR for dropping out of the treatment before planned.

4. Discussion

The primary aim of this study was to estimate the prevalence of social phobia (SP) and to explore whether SP impacted the treatment course and alcohol-related treatment outcomes among a large sample of AUD outpatients. The overall prevalence rate of SP was estimated at 14.5% and did not impact the treatment course or drop-out rates. Moreover, SP did not predict any of the primary outcomes: abstinence, drinking days and days with excessive drinking, in reference to AUD patients without co-morbidity.

The 14.5% prevalence rate of co-morbidity is, as expected, more than three times as high as prevalence estimates reported in epidemiological studies in the general population, in which 4.3% of individuals with AUD also show co-morbidity (Grant et al., 2004). However, compared to similar studies, our prevalence rate is in the low range, as much higher estimates have been found among other clinical AUD samples in both in- and outpatient settings (Bakken et al., 2005; Burns et al., 2005; Kushner et al., 2005; Terra et al., 2006).

Although the prevalence of SP in our study was relatively low compared to prior studies, it could have had an impact on the afflicted individuals’ treatment responses. Indeed,
we hypothesized patients with co-morbid SP to have worse alcohol-related outcomes relative to those without and with other anxiety disorders. We did not find support for this self-medication hypothesis, as all patients improved similarly on all drinking outcomes, independent of co-morbidity.

Our results are in line with prior research that reported similar results overall for patients with and without phobic and non-phobic anxiety disorders, including PD and GAD (LaBounty et al., 1992; Marquenie et al., 2006; Mellentin et al., 2015). Also, as mentioned in the introduction, a number of studies have specifically attempted to disentangle the impact of SP from other phobic and anxiety disorders, either by specifically focusing on SP (Terra et al., 2006) or conducting separate statistical analysis for subcategories (Kushner et al., 2005; Schellekens et al., 2015; Tomasson and Vaglum, 1997). The present study supports the line of evidence suggesting that patients with SP may archive similar results from treatment as those without (Terra et al., 2006; Schellekens et al., 2015). Terra et al. (2006) examined a sample of 300 detoxified AUD inpatients and found that SP was not significantly associated with either adherence to psychosocial interventions or alcohol use relapse (Terra et al., 2006). Also, a more recent study, conducted in an inpatient clinic with 189 patients, supported this notion with the finding that SP was not a significant predictor of relapse to alcohol use when disentangled from other phobic disorders. Nonetheless, the relapse rates were much higher relative to patients with PD and GAD (Schellekens et al., 2015), which could indicate a more refractory treatment response for SP patients compared to patients with non-phobic anxiety disorders.

In support of the self-medication hypothesis, Kushner et al. (2005) examined 82 inpatients with different phobic and other anxiety disorders and found that SP was the best predictor of any relapse to alcohol use, whereas GAD was not related to the alcohol-related treatment outcome. However, PD was associated with alcohol relapse to alcohol dependence,
and later to major relapse where the diagnostic criteria for this psychiatric disorder are met (Kushner et al., 2005). In contrast, Tomasson and Vaglum (1997) examined 351 inpatients and reported better treatment outcomes for both SP and GAD inpatients relative to other AUD patients, with and without anxiety disorders, whereas PD was not associated with the outcomes (Tomasson and Vaglum, 1997).

In sum, the present study and the majority of prior studies in this area indicate that SP patients achieve similar drinking-related treatment outcomes as those without non-phobic anxiety disorders. The findings pertaining to the disentanglement of SP to non-phobic anxiety disorders are rather mixed, and further large-scale studies in naturalistic out- and inpatient settings are warranted to further disentangle the effect of SP on treatment outcomes.

On the background of the currently available empirical evidence, it is plausible that AUD individuals with these co-morbidities do not need to receive additional treatment apart from initiatives and recommendations targeting AUD populations in general. However, as previously suggested, when SP patients relapse to alcohol use, it might rather be to self-medicate, at least in contrast to patients without anxiety disorders (Carrigan and Randall, 2003; Chutuape and de Wit, 1995; LaBounty et al., 1992). Therefore, treating SP might improve their treatment response.

Although there are efficacious treatments for both SP and AUD (Barkowski et al., 2016; Butler et al., 2006; Clark et al., 2006; Fuller and Hiller-Sturmholz, 1999; Miller et al., 1999; Rapee et al., 2009; Witkiewitz and Marlatt, 2011), when targeted separately, the possibility exists that disorders co-morbid with AUD require unique treatment approaches (Kushner et al., 2000; 2005). In support of this notion, two randomized clinical trials examining combined treatment for SP and AUD failed to find improved alcohol-related outcomes (Randall et al., 2001; Schadé et al., 2005), and even worse outcomes were reported by one of them (Randall et al., 2001). Nonetheless, it has been argued that sounder
methodological approaches in the treatment of co-morbid SP are needed (Baillie et al., 2013). It might indeed be highly relevant to develop unique treatment approaches to treat co-occurring psychiatric disorders, but it is also of importance to clarify, in the first place, if and how SP impacts AUD treatment in order to develop these approaches.

Indeed, it is likely that the heterogeneity in methodological approaches among this and prior observational studies might have influenced both the estimated prevalence and treatment results. First, the level of treatment of withdrawal symptoms and the assessment instruments used are crucial for estimating the prevalence of and which patients are regarded as the co-morbidity group in the follow-up. It is well-known that intoxication and withdrawal symptoms can cause anxiety symptoms, particularly reminiscent of PD and GAD, and it has been argued that a period of 1–2 months of abstinence is required before a valid diagnosis of co-morbid Axis I disorders can be reached (Schuckit and Monteiro, 1988). The period of abstinence ranged from none to one month, and the assessments were based on DSM or ICD classifications and a variety of structured clinical interviews relying on either one or the other of them. Additionally, there were huge variations on whether psychiatrists, psychologists, therapists or students performed the interviews, which may also influence the results. Second, the treatment setting could also have influenced the results; patients with the most severe AUD more often undergo inpatient treatment. Furthermore, some studies recruited their sample from inpatient clinics treating a variety of substance-use disorders, and polysubstance abuse was not necessarily an exclusion criterion (Tomasson and Vaglum, 1997; Kushner et al., 2005). Third, in observational studies, the treatment content is expected to vary considerably in contrast to other study types, where focus is on investigating the intervention itself rather than the outcomes of treating patients with and without co-morbidity similarly. Some studies did not describe the type of pharmacological (only whether they were detoxified) or psychosocial treatment the patients received (Kushner et al., 2005; LaBounty et
al., 1992; Marquenie et al., 2006; Tomasson and Vaglum, 1997), and the ones that did
described the treatment in broad terms as psychotherapy (Terra et al., 2006) or applied CBT
or AA meetings (Schellekens et al., 2015; Terra et al., 2006). Even though all approaches
targeted the AUD, some treatments may benefit SP patients more than others. Fourth, the
window from baseline to follow-up assessment might be another important factor influencing
the findings. Some studies, such as the present one, assess the treatment outcomes
immediately after treatment (Kushner et al., 2005), whereas others follow up months (Terra et
al., 2006) or years after treatment (Schellekens et al., 2015; Tomasson and Vaglum, 1997). It
should be noted, that the worst outcomes have been reported by Kushner and colleagues
(2005), who reassessed their sample immediately after treatment (Kushner et al., 2005).
Despite the findings of the present study, it is possible that more patients with SP might have
relapsed if followed up after a longer period of time, relative to those with and without other
anxiety disorders, which will be the subject of a later follow-up study.

Together, the above-mentioned differences in the methodological approaches might
have impacted the prevalence and treatment outcomes.

4.1 Strengths and limitations

The primary strength of this study is that it has been conducted using a large sample
of AUD patients and in an operating outpatient alcohol treatment clinic. The clinic cooperates
closely with the University Hospital Unit of Clinical Alcohol Research, the pharmacological
and psychosocial treatment offered in the clinic is evidence-based, and the staff receives
supervision and education on a regular basis. Nonetheless, a number of limitations should be
addressed. First, the study employed an observational cohort design, limiting the possibility
of making causal conclusions. Second, both the assessment and psychosocial treatment were
carried out by the same team of therapists in the clinic and in some cases, the therapist may
have conducted both. In addition, since the data is collected as part of the clinical routine, the
amount of missing follow up assessment data is relatively high; hence our conclusions are based on conservative calculations. Finally, although we do not have access to these data and this area is already relatively well investigated, it would have been of interest to examine whether SP indeed proceeded AUD and PD/GAD were consequences of AUD.

5. Conclusion

AUD patients, with and without co-morbid SP, did not differ on treatment course or dropout rates, and furthermore, SP did not predict a negative treatment outcome in a naturalistic outpatient setting. However, more large-scale studies investigating subcategories of phobic and non-phobic anxiety disorders are warranted, and perhaps further improvements could be achieved if co-morbidity was taken into consideration in operating alcohol treatment clinics.

Author Disclosures

Role of the Funding Source

This study did not receive any funding.

Contributors

Authors AIM, BN and ASN designed the study. Author AIM, and AM selected the statistical models, and author AM conducted the statistical analyses. Author AIM wrote the manuscript. All authors contributed to and have approved the final manuscript.

Conflict of Interest

There is no conflict of interest to declare.

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.
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Treat. 9, 199-213.


Table 1. Baseline sample characteristics of a consecutive outpatient treatment-seeking AUD sample, distributed on the presence or absence of selected phobic and non-phobic anxiety disorders

<table>
<thead>
<tr>
<th></th>
<th>AUD&lt;sup&gt;c&lt;/sup&gt; N=2540</th>
<th>AUD and SP&lt;sup&gt;e&lt;/sup&gt; N=465</th>
<th>AUD and PD/GAD&lt;sup&gt;ef&lt;/sup&gt; N=192</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, median (range; IQR)**</td>
<td>47 (15-82; 13)</td>
<td>44(17-75;15)</td>
<td>44(18-70;17)</td>
</tr>
<tr>
<td>Male, n(%)**</td>
<td>1803 (71.0%)</td>
<td>279 (60.0%)</td>
<td>101 (52.6%)</td>
</tr>
<tr>
<td>Cohabiting with partner n(%)**</td>
<td>1179 (46.4%)</td>
<td>166 (35.7%)</td>
<td>70 (36.5%)</td>
</tr>
<tr>
<td>Higher/continuing education n(%)**</td>
<td>1887(74.3%)</td>
<td>292 (62.8%)</td>
<td>135 (70.3%)</td>
</tr>
<tr>
<td>Employment&lt;sup&gt;a&lt;/sup&gt; n, (%) **</td>
<td>1113 (43.8%)</td>
<td>121 (26.0%)</td>
<td>60 (31.3%)</td>
</tr>
<tr>
<td><strong>Drinking measures&lt;sup&gt;b&lt;/sup&gt;</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstinent n(%) **</td>
<td>318(12.70)</td>
<td>82(17.75)</td>
<td>32(16.67)</td>
</tr>
<tr>
<td>Drinking days (median/IQR)&lt;sup&gt;d&lt;/sup&gt;**</td>
<td>21(20)</td>
<td>25(16)</td>
<td>21(20)</td>
</tr>
<tr>
<td>Days with excessive drinking (median/IQR)&lt;sup&gt;d&lt;/sup&gt;**</td>
<td>18(22)</td>
<td>23(17)</td>
<td>19(20)</td>
</tr>
<tr>
<td><strong>ASI composite scores (median, IQR)&lt;sup&gt;b&lt;/sup&gt;</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Value 1 (SD)</td>
<td>Value 2 (SD)</td>
<td>Value 3 (SD)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------</td>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Alcohol use**</td>
<td>0.670(0.355)</td>
<td>0.739(0.345)</td>
<td>0.675(0.333)</td>
</tr>
<tr>
<td>Drug use **</td>
<td>0 (0.348)</td>
<td>0.015(0.545)</td>
<td>0 (0.348)</td>
</tr>
<tr>
<td>Medical status**</td>
<td>0.277(0.666)</td>
<td>0.416(0.75)</td>
<td>0.347(.750)</td>
</tr>
<tr>
<td>Psychiatric status**</td>
<td></td>
<td>0.454(0.325)</td>
<td>0.409(0.345)</td>
</tr>
<tr>
<td>Social status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family status**</td>
<td>0(0.258)</td>
<td>0(0.406)</td>
<td>0(0.419)</td>
</tr>
<tr>
<td>Other social status**</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economy**</td>
<td>0.5(1)</td>
<td>1(0.5)</td>
<td>1(1)</td>
</tr>
<tr>
<td>Job satisfaction**</td>
<td>0.166(0.583)</td>
<td>0.333(0.750)</td>
<td>0.333(0.833)</td>
</tr>
<tr>
<td>Legal status</td>
<td>0(0.2)</td>
<td>0(0.2)</td>
<td>0(0.2)</td>
</tr>
</tbody>
</table>

*a Full or part time employed; *b Past 30 days; *c Patients with abstinence were not included; *d AUD = alcohol use disorders; *e SP = social phobia; *f PD = panic disorder

*g GAD = generalized anxiety disorder; *= p < 0.05; **=p < 0.01; ***= p < 0.001.
Table 2. Treatment course for a consecutive outpatient treatment-seeking AUD sample, distributed on the presence or absence of selected phobic and non-phobic anxiety disorders.
<table>
<thead>
<tr>
<th>Pharmacological treatment&lt;sup&gt;a&lt;/sup&gt;</th>
<th>AUD&lt;sup&gt;d&lt;/sup&gt; N=2540</th>
<th>AUD and SP&lt;sup&gt;e&lt;/sup&gt; N=465</th>
<th>AUD and PD/GAD&lt;sup&gt;f&lt;/sup&gt; N=192</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeting AUD (n, %)</td>
<td>526(37.57)</td>
<td>88(36.07)</td>
<td>38(42.70)</td>
</tr>
<tr>
<td>Targeting other psychiatric symptoms (n, %)**</td>
<td>649(25.82)</td>
<td>242(52.04)</td>
<td>109(56.77)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Psychosocial treatment received (n, %)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CBT</td>
<td>1436(56.54)</td>
<td>264(56.77)</td>
<td>115(59.90)</td>
</tr>
<tr>
<td>Supportive consultations</td>
<td>296(11.65)</td>
<td>66(14.19)</td>
<td>23(11.98)</td>
</tr>
<tr>
<td>Family therapy**</td>
<td>313(12.32)</td>
<td>35(7.53)</td>
<td>11(5.73)</td>
</tr>
<tr>
<td>Not specified</td>
<td>621(24.45)</td>
<td>124(26.67)</td>
<td>55(28.65)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of treatment sessions (n, %)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 sessions</td>
<td>1374(54.09)</td>
<td>255(54.82)</td>
<td>100(52.08)</td>
</tr>
<tr>
<td>&gt; 4 sessions</td>
<td>1166(45.91)</td>
<td>210(45.16)</td>
<td>92(47.92)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length of treatment, months (median, IQR)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8(7)</td>
<td>8(7)</td>
<td>8(8)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dropped out of alcohol treatment before planned (n, %)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>952(39.18)</td>
<td>164(37.02)</td>
<td>72(38.30)</td>
<td></td>
</tr>
</tbody>
</table>
a At treatment start; b Disulfiram; c SSRI, SNRI, TCA etc.; d AUD = alcohol use disorders; e SP = social phobia; f PD = panic disorder; g GAD = generalized anxiety disorder; *= p < 0.05; **=p < 0.01; ***= p < 0.001.
Table 3. Estimated OR and AOR of drinking-related treatment outcomes among patient groups with either AUD and SP, or AUD and PD/GAD in reference to AUD patients without this co-morbidity.

<table>
<thead>
<tr>
<th>Treatment outcomes</th>
<th>AUD and SP</th>
<th></th>
<th>AUD and PD/GAD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crude estimates</td>
<td>Adjusted estimates$^a$</td>
<td>Crude estimates</td>
<td>Adjusted estimates$^a$</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Abstinence</td>
<td>0.90</td>
<td>0.70, 1.17</td>
<td>0.91</td>
<td>0.70, 1.18</td>
</tr>
<tr>
<td>Drinking days</td>
<td>0.92</td>
<td>0.64, 1.33</td>
<td>0.94</td>
<td>0.65, 1.36</td>
</tr>
<tr>
<td>Days with excessive drinking</td>
<td>1.07</td>
<td>0.66, 1.75</td>
<td>1.17</td>
<td>0.72, 1.92</td>
</tr>
<tr>
<td>Successfully discharged</td>
<td>1.10</td>
<td>0.89, 1.35</td>
<td>1.17</td>
<td>0.95, 1.45</td>
</tr>
</tbody>
</table>

$^a$Adjusted for sex and age.; OR = odds ratio; AOR = adjusted odds ratio; AUD = alcohol use disorders; SP = social phobia; PD = panic disorder; GAD = generalized anxiety disorder; CI = confidence interval; *= p < 0.05; **=p < 0.01; ***= p < 0.001.