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RESEARCH ARTICLE

Changes in patterns of alcohol consumption in young psychiatric outpatients: two comparable samples assessed with 10 years apart

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ABSTRACT

Aims: Over the past 20 years, a trend towards non-drinking and less use of alcohol has been reported among young adults. This study aimed to investigate if a similar trend in alcohol consumption can be seen among young adult psychiatric outpatients.

Methods: This was a cross-sectional study based on two comparable samples of young adult (18–25 years) psychiatric outpatients recruited approximately 10 years apart in 2002–2003 ($N=197$) and 2012–2016 ($N=380$). The Swedish version of the Alcohol Use Disorders Identification Test (AUDIT) was used to assess alcohol consumption. Psychiatric diagnoses were based on diagnostic interviews. Differences between the two samples in alcohol consumption and a number of alcohol-use disorder diagnoses were analysed. Cramer's V was chosen as the effect size measure.

Results: Mean AUDIT scores and prevalence of diagnosed alcohol-use disorder in the two samples did not differ significantly. The number of non-drinkers was larger among patients in the mid-2010s (15.8% vs. 8.1%; $\chi^2=6.76$, $p<0.01$, $\Phi=0.11$), but when non-drinkers were excluded, the alcohol consumption was higher among females in the later sample.

Conclusion: The mean level of alcohol consumption seems not to have changed to the same extent among young psychiatric patients as in the general population. However, some young psychiatric patients have followed the trend of non-drinking, while others consume more alcohol. Further studies on both non-drinking and high alcohol consumption in psychiatric patients are needed to understand their mechanisms.

1. Introduction

Alcohol use is a leading risk factor for disease burden globally, health loss among the population, and societal costs [1,2]. However, over recent decades, a trend towards less use of alcohol and even non-drinking among adolescents in Western countries has been observed [3–6]. The European School Survey Project on Alcohol and Other Drugs (ESPAD) reported decreased use of alcohol among adolescents in all 35 participating European countries between 2003 and 2015 [7]. Epidemiological research also shows that alcohol consumption has decreased among young adults (18–24 years) in Western countries [8,9].

The trend of lower alcohol use among young persons is also seen in Sweden. One of the main results of a repeated Swedish cross-sectional study between 1997 and 2018 was that the younger age group (17–27 years) reported a lower total alcohol consumption after 2009, particularly among men [10]. This marked decrease in youth drinking in Sweden is present at all consumption levels [11]. However, alcohol consumption differs between groups. It is more common in males, in university students and in the socially disadvantaged, as well as in those with psychiatric disorders [12].

Few studies have investigated whether alcohol consumption in young psychiatric patients has changed over time in the same way as in the general population. Decreased alcohol consumption among adolescents might alter the future prevalence of AUD among adults [13,14]. Moreover, if AUD decreases in psychiatric patients, it could change the clinical picture since comorbidity, for example, between depressive/anxiety disorders and AUD, is associated with greater impairment and more suicidal thoughts [15]. Furthermore, those with AUD are more likely to drop out mental health treatment [16,17]. Alcohol or drug problems were common and negatively associated with treatment completion among adults when anxiety and depression were treated with internet-delivered cognitive behaviour therapy (ICBT) [18]. Comorbidity between AUD and depression/anxiety, therefore, constitutes a major risk among psychiatric patients. Swedish studies reporting on alcohol consumption over time in young psychiatric patients are lacking.

The aim of this study was to examine alcohol consumption in two comparable samples of young psychiatric outpatients, examined in 2002–2003 and 2012–2016, to see if alcohol consumption had changed over time in the same

way as in the general population and whether any gender differences could be seen. As alcohol consumption is known to be higher among psychiatric patients, we hypothesized that consumption would be high in both samples and that the change over time would therefore be less pronounced than as reported in the general population.

2. Methods

2.1. Participants and procedure

A cross-sectional design was used based on two comparable clinical samples of young adult (18–25 years) psychiatric outpatients from Uppsala, Sweden, recruited approximately 10 years apart. Clinical characteristics are presented in Table 1.

In Uppsala, patients can refer themselves to general psychiatry clinics, or they can be referred by healthcare professionals. After referral, when the diagnostic procedures were finalized, the patients were asked about participation in the study. Those in need of special services could thereafter be referred further to one of the special clinics, including the addiction clinic. Some characteristics differed between the two groups, the later samples were younger and had more comorbidity. The mean age in Sample 2002–2003 compared to Sample 2012–2016 was 22.4 vs. 21.4 years, and the number of diagnoses was 2.2 vs 2.7.

2.1.1. Participants 2002–2003

During the period 1 October 2002, to 30 September 2003, all patients between 18 and 25 years of age attending the Flogsta psychiatric outpatient clinic at Uppsala University Hospital, Sweden, were consecutively asked to take part in the 'Young Adult study' [19]. This means that all patients were asked about participation, and this was done in the same order as they came for diagnostic assessments. During the year of study enrolment, 217 young adults who came to the clinic for an initial appointment were invited to participate. After receiving a detailed description of the study, 200 (92.2%) patients provided written informed consent. Two later withdrew their consent. Among the 198 remaining participants, one had a missing AUDIT. Thus, 197 (90.8%) participants made up Sample 2002–2003. There were no significant differences in age or gender between the 197 included patients (mean age 22.4 years, 20% male) and the 20 dropouts (mean age 21.8 years, 15% male). Among participants,

16% received financial support such as sickness benefits, disability pension or social security benefits. Most patients had mood disorders and anxiety disorders, see Table 1. More anxiety disorders were noted among participants than among dropouts, 67% vs. 45% ($\chi^2 = 4.07$; $p < 0.05$), but no differences regarding the frequency of substance abuse, mood disorder or eating disorder were seen. The Young Adult study was approved by the Regional Ethical Review Board in Uppsala in 2002 (Dnr 2021-07070-01).

2.1.2. Participants 2012–2016

During the period 12 June 2012, to 21 April 2016, all patients between 18 and 25 years of age attending the young adult psychiatric outpatient clinic at Uppsala University Hospital, Sweden, were consecutively asked to take part in 'Uppsala Psychiatric Patient Samples' (UPP) [20]. During this period, approximately 35% of the eligible patients consented to participate, creating a sample of 676 patients. Of these, 380 filled out the full version of AUDIT and therefore were included in Sample 2012–2016. There were no significant differences in age or gender between these 380 included patients and the 296 who lacked data on AUDIT (mean age 21.4 vs. 21.3 years, 23.9% vs. 24.0% male). Among participants, 13% received some financial support such as sickness benefit, disability pension or social security benefits. Most patients had mood disorders and anxiety disorders, see Table 1. More anxiety disorders were noted among participants than among those who lacked data, 65% vs. 56% ($\chi^2 = 6.34$; $p < 0.05$). UPP was approved by the Regional Ethical Review Board in Uppsala in 2022 (Dnr 2021-07070-01).

2.2. Study measures

2.2.1. Diagnostic interviews

All patients from Sample 2002–2003 were diagnosed using the Structured Clinical Interview for DSM-IV, axis I disorders, clinical version (SCID-I-CV), diagnosing psychiatric syndromes based on the Diagnostic and Statistical Manual of Mental Disorders, fourth version, DSM-IV [21]. Two trained medical doctors working at the clinic, one a specialist in psychiatry, the other resident in psychiatry, performed all interviews. The interviewers showed an inter-rater reliability of $\kappa = 1.0$ based on eight randomly selected SCID-I-CV interviews. Diagnoses were reported in accordance with the SCID-I-CV protocol. In

Table 1. Descriptive data of two comparable samples of young adult psychiatric patients recruited approximately 10 years apart (2002–2003 vs. 2012–2016).

	Sample 2002–2003 N = 197 n (%)	Sample 2012–2016 N = 380 n (%)	Test parameter	p
Females	158 (80.2)	289 (76.1)	$\chi^2 = 1.28$	0.26
Age (years), mean (SD)	22.4 (1.9)	21.4 (2.2)	$t = 5.79$	<0.001
GAF[a] rating, mean (SD)	54.7 (7.6)	55.9 (8.2)[b]	$t = 1.66$	0.10
Financial support[c] (sickness benefit, disability pension or social security benefits)	16 (9.1)[c]	44 (13.3)[d]	$\chi^2 = 1.91$	0.17
Mood disorder	151 (76.6)	285 (75.0)	$\chi^2 = 0.19$	0.66
Anxiety disorder	133 (67.5)	248 (65.3)	$\chi^2 = 0.29$	0.59
Number of diagnoses, mean (SD)	2.2 (1.3)	2.7 (1.8)	$\chi^2 = 3.34$	<0.001

[a]GAF = Global Assessment of Functioning.
[b]n = 334.
[c]n = 176.
[d]n = 332.

addition, the Global Assessment of Functioning (GAF) scale was used by the clinicians to make an overall rating between 1 and 100, with 100 meaning full function in all areas of life [22].

For Sample 2012–2016, trained psychiatrists and psychologists working at the clinic performed all diagnostic interviews as part of their regular work. In 56 cases (14.3%), SCID-I CV was used, in 326 cases (83.2%), the Mini International Neuropsychiatric Interview (MINI 6.0) [23] was used, and in 10 cases (2.6%), no structured diagnostic interview was used. No formal inter-rater reliability analysis was conducted. Interview results were reported in medical records and later retrieved for this study. When the medical records were reviewed and diagnoses collected for the database, the fidelity of the diagnostic process documentation was assessed and rated in four groups from high (72.6%) to low (2.8%) quality. In this sample, clinicians also rated patient overall functioning on the GAF scale.

The two separate diagnoses alcohol abuse and alcohol dependence from DSM-IV were merged into one alcohol-use disorder (AUD) in accordance with the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [24]. This was done for both samples.

2.2.2. Alcohol use disorders identification test

Alcohol Use Disorders Identification Test (AUDIT), developed by the World Health Organization, is a 10-item screening instrument sensitive to both severe alcohol problems and hazardous drinking [25]. It was developed for use in primary care [3,5,6]. The full version has also been recommended for detecting excessive drinking among psychiatric patients [26].

The Swedish version of AUDIT, validated in the general population and in a group of psychiatric patients, has shown high internal consistency and validity with a high correlation between total AUDIT score and an AUD diagnosis [27,28]. AUDIT scores have been tested in relation to the severity criteria of AUD from the DSM-5. Those with the highest level of severity according to DSM-5 had significantly higher average AUDIT scores [29]. AUDIT includes three domains: consumption (items 1–3), dependency (items 4–6) and alcohol-related harm (items 7–10). The 10 items have response options on a five-point scale (0 for 'never', 1 for 'rarely', 2 for 'sometimes', 3 for 'often' and 4 for 'very often'). Questions 1–8 are rated 0–4 points. Questions 9 and 10 are rated 0, 2 or 4 points. The total score is thus between 0 and 40; a higher score indicates more hazardous alcohol consumption. When screening for alcohol-related problems, a cutoff of 8 points is used for males and 6 points for females. Four levels of risk have been described based on AUDIT scores: Zone I (females 0–5 points, males 0–7 points) is abstinence or low-risk drinking, Zone II (females 6–13 points, males 8–15 points) corresponds to hazardous drinking, Zone III (females 14–17 points, males 16–19 points) is harmful alcohol consumption, and Zone IV (females >17 points, males >19 points) corresponds to alcohol dependence [25].

2.3. Statistical analyses

Statistical analyses were conducted using IBM SPSS Statistics for Macintosh, Version 28. The number of participants diagnosed with AUD, the mean sum of AUDIT score, and the distribution of participants in different risk zones were compared between the two samples. Further, non-drinkers (AUDIT = 0) were compared between the samples. Analyses were also made separately for male and female participants. Independent-samples t tests were used for continuous data and chi-squared tests of independence for categorical data. The Benjamini–Hochberg procedure was used to correct for the false discovery rate of 10%, due to the large number of tests in Table 2. To further explore whether non-drinkers were more common in the later samples, a binary logistic regression with sample membership as the outcome was performed. As independent variables, non-drinkers, age, sex and number of current diagnoses were included. Other relevant variables such as receiving financial support (sickness benefits, disability pension, or social security benefits) had too many missing data points to be included in the regression analysis. They are, however, presented as descriptive data. As a sensitivity analysis, we removed the non-drinkers from the groups and re-calculated group differences regarding mean AUDIT scores. A significance level of 0.05 was chosen for all analyses.

3. Results

The prevalence of AUD, mean AUDIT scores and distribution of participants across risk zones did not differ between the samples. Since there were very few participants in zone III and IV these were merged in the statistical analyses. Interestingly, however, more patients in Sample 2012–2016 reported being non-drinkers. Alcohol consumption rates in the two samples are presented in Table 2. As shown in Table 2, more non-drinkers were found both among females and males but were only significant in females. A logistic regression showed that non-drinkers were associated with an increased likelihood of belonging to Sample 2012–2016 (OR = 2.16, 95% CI 1.21;3.86, $p = 0.01$). The association remained even after adjusting for age, sex and number of current diagnoses (OR = 1.89, 95% CI 1.04; 3.44, $p = 0.04$), see Supplementary Table 1.

Figures 1(a and b) present distributions of AUDIT scores in males and females separately, including both samples for comparison. In the sensitivity analysis, excluding non-drinkers, AUDIT scores were higher in the 2012–2016 Sample. This difference in AUDIT scores was explained by females, see Table 2.

4. Discussion

This study used two comparable samples recruited approximately 10 years apart with the aim to examine if the pattern of decreasing alcohol consumption in young adults, previously shown in the general population, could be demonstrated also in clinical psychiatric populations. We found no

Table 2. Alcohol consumption in two comparable samples of young adult patients from general psychiatry recruited approximately ten years apart (2002–2003 vs. 2012–2016).

	2002–2003 N=197	2012–2016 N=380	t	p	2002–2003 Females N=158	2012–2016 Females N=289	t	p	2002–2003 Males N=39	2012–2016 Males N=91	t	p
AUDIT score Mean (SD)	6.1 (5.3)	6.4 (6.1)	0.70	0.49	6.0 (5.3)	6.6 (6.3)	1.03	0.31	6.6 (5.1)	6.1 (5.5)	0.52	0.60
AUDIT score (non-drinkers excluded) Mean (SD)	6.6 (5.2)	7.7 (5.9)	2.03	<0.05	6.5 (5.3)	7.8 (6.2)	2.08	<0.05	7.1 (5.0)	7.5 (5.1)	0.32	0.75
AUDIT zones[a]	n (%)	n (%)	χ^2	p	n (%)	n (%)	χ^2	p	n (%)	n (%)	χ^2	p
			3.92	0.14			4.24	0.12			0.57	0.75
Zone I	120 (60.9)	231 (60.8)			94 (59.5)	165 (57.1)			26 (66.7)	66 (72.5)		
Zone II	60 (30.5)	97 (25.5)			50 (31.6)	79 (27.3)			10 (25.6)	18 (19.8)		
Zone III–IV	17 (8.6)	52 (13.7)			14 (8.9)	45 (15.6)			3 (7.7)	7 (7.7)		
Non-drinkers[b]	16 (8.1)	61 (16.1)	7.06	<0.01[c]	13 (8.2)	44 (15.2)	4.50	<0.05	3 (7.7)	17 (18.7)	2.53	0.11
AUD n (%)	12 (6.1)	33 (8.7)	1.21	0.27	10 (6.3)	28 (9.7)	1.48	0.22	2 (5.1)	5 (5.5)	0.00	0.93

AUD: alcohol-use disorder.
[a]AUDIT (Alcohol Use Disorders Identification Test) Zone I: females 0–5 points, males 0–7 points; AUDIT zone II = females 6–13 points, males 8–15 points; AUDIT zone III = females 14–17 points, males 16–19 points; AUDIT zone IV = females >17 points, males >19 points.
[b]AUDIT score = 0 points.
[c]This finding was consistently significant after Benjamini–Hochberg correction.

differences between the patients recruited in 2002–2003 and those recruited in 2012–2016 as regards the number of AUD diagnoses or AUDIT scores, neither in the total group nor among males or females when analysed separately. These findings were in line with our hypothesis. However, since the number of non-drinkers was larger in Sample 2012–2016, we repeated the analyses without the non-drinkers. Then there was a significant increase in AUDIT scores explained by the higher drinking patterns in females in the later sample.

Previous studies have shown that among young adults in the Swedish general population, the mean AUDIT score has decreased from 6.3 in 2001 to 4.5 in 2018 [10]. In our study, young adult psychiatric patients reported a mean AUDIT score of 6.1 in 2002–2003 and 6.4 in 2012–2016. Thus, the mean scores indicated that psychiatric patients had not changed their alcohol consumption in the same manner as the general population. In fact, AUDIT scores were higher in the later sample when excluding non-drinkers. This finding indicates that more psychiatric patients abstain from alcohol, but that some consume more.

Our results corroborated previous reports of high alcohol consumption among individuals with depressive and anxiety disorders [13,14]. One Swedish study investigating motives for drinking among psychiatric outpatients showed that external drinking motives (to obtain social benefits and avoid social rejection) were less related to alcohol use than internal motives (to improve positive mood state and cope with negative mood) [30]. This indicates that psychiatric patients drink to cope with their psychiatric symptoms, which is in line with the self-medication hypothesis [31]. However, the relationship between alcohol and mental health is complex. An English study reported a marked increase in the odds of reporting both non-drinking and harmful drinking among those meeting criteria for particularly severe mental health problems [32].

There are several reasons to abstain from alcohol. For instance, the American National Alcohol Survey reported that religion was strongly associated with abstention [33]. Due to migration, there might have been a difference in religious reasons for abstaining from alcohol between the two samples. The participants in the two samples were not asked about religion. Since Muslims abstain from alcohol due to their religion, an increased number of immigrants from Muslim countries could increase non-drinkers among our participants. However, we know that immigrants are under-represented in Swedish psychiatric care. In the first sample, we asked about native country and the proportion of immi-grants was smaller than expected based on population data. Therefore, we do not think that our increased number of non-drinkers is explained by religious reasons.

Previous literature has highlighted other factors related to non-drinking in the population, such as the role of internet activities, parental monitoring, attitudes towards offspring drinking, and the norms surrounding youth drinking may be changing [6,34,35].

Other studies have shown that in the general population, the trend of non-drinking is strongest among adolescents [3, 5,6], but it is also present among young adults [8]. A large follow-up study of Swedish students born in 2001 showed that those who did not drink alcohol in adolescence had
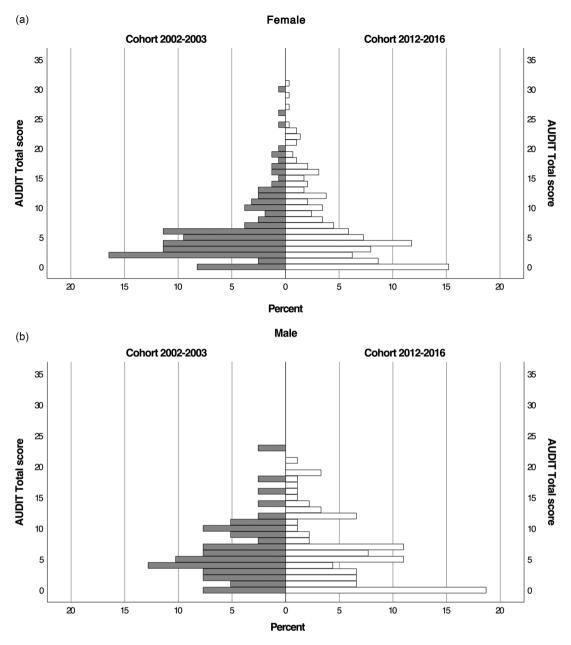
Figure 1. (a) Distribution of AUDIT scores in female young adult psychiatric outpatients in two samples recruited in 2002–2003 and 2012–2016, respectively. (b). Distribution of AUDIT scores in male young adult psychiatric outpatients in two samples recruited in 2002–2003 and 2012–2016, respectively.

better-self-assessed health, fewer psychosomatic symptoms, higher grades in school, were more satisfied with their social relationships and had higher scores on a pro-social scale [36]. Since young people with psychiatric disorders often have psychosocial problems, it was unexpected that they over time seem to follow the non-drinking trend.

One strength of this study is that the two clinical samples seem to be comparable, based on psychiatric diagnoses, gender distribution, psychosocial characteristics, and level of functioning. Furthermore, they were recruited from the same city and at the same hospital. Nevertheless, this study has weaknesses that need to be discussed. There were differences between the two samples the latter sample had more comorbidity and was younger. However, when adjusting for age and number of current diagnoses the difference in the number of non-drinkers between the samples remained. Also, only for

Sample 2002–2003, attrition analysis was possible. For Sample 2012–2016, however, it was possible to analyse internal but not external dropouts. Moreover, the number of dropouts was greater in Sample 2012–2016 and it is likely that some selection bias was present. The generalizability of the clinical groups could be questioned since both samples were recruited from a university town in Sweden. Traditionally, alcohol consumption among university students is high, meaning that the prevalence of alcohol consumption could differ from other parts of the country. In one Swedish study of alcohol use among university students, 86% of females and 87% of males reported hazardous alcohol consumption [37]. Another limitation is that the participants were not asked about religion, which is a major reason to abstain from alcohol [33].

A further problem is that both samples were recruited among patients with mainly mood and anxiety disorders, and

thus did not represent the entire spectrum of psychiatric patients. The alcohol patterns of patients with other diagnoses may differ. For example, one study that investigated alcohol use and misuse among young adults with impulsivity and trauma reported that young adults with high levels of impulsivity were at especially high risk of alcohol use/misuse [38]. That attention-deficit/hyperactivity disorder (ADHD) was not diagnosed in this study (it was not included in the diagnostic interviews used) is, therefore, a limitation. It became more common to be diagnosed with ADHD in childhood or young adulthood during the period between the early 2000s and the mid-2010s.

Another weakness is that the quality of the diagnostic process differed, with less control over diagnostic quality in the Sample 2012–2016. Even if the 11 (2.6%) cases with low quality were excluded, there was more comorbidity in the later sample. We do not know if this is true or not, but if were more disordered it could have influenced their alcohol consumption. However, the difference between the two samples regarding the number of non-drinkers remained after adjusting for a number of diagnoses, as well as for age, since the later sample was younger. Moreover, no biomarkers were used to validate AUDIT responses. Self-reported alcohol consumption can always be hampered by self-denial or other reasons for under-reporting true consumption. However, the AUDIT was filled out before the face-to-face meeting with the doctor/psychologist. This mimics how AUDIT is used both in epidemiological and clinical studies.

As regards gender representativity, that both psychiatric samples had fewer male participants is also a limitation. This also means that the results of the female group overshadow those of the male group when analysed together. This was partly compensated for by calculating the effect sizes, which indicated that the change in alcohol consumption was larger among males. However, it remains a strength that the gender distribution in the two samples was similar.

It is important that clinicians be aware of changing alcohol-use patterns among adolescents and young adults in the general population and pay attention to patients who go against the lower-consumption trend, since these may have a larger psychiatric burden. They may, for example, use alcohol to cope with their psychiatric symptoms [30]. We also need to investigate the reasons for non-drinking among adolescents and young adults both in psychiatric patients and in the general population, as well as reasons for not following this trend. Future research should involve larger groups of both genders. Moreover, a longitudinal case–control design could show how alcohol consumption develops over time among psychiatric and non-psychiatric samples.

In conclusion, the mean level of alcohol consumption seems not to have decreased to the same extent among young psychiatric patients as in the general population. However, while some young psychiatric patients have followed the trend of non-drinking, others seem to drink more.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The data that support the findings are not publicly available due to privacy and ethical restrictions. The data can be available on reasonable request from the corresponding author (SL), after discussion with the ethical review board.

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