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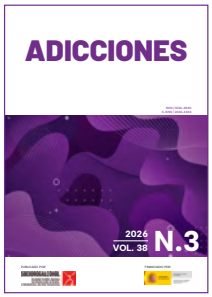

ORIGINAL

One-year outcomes of inpatient treatment for alcohol use disorder: A seven-week programme in the Czech Republic

Resultados al año del tratamiento hospitalario del trastorno por consumo de alcohol: Un programa de siete semanas en la República Checa

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Abstract

Long-term outcomes of inpatient treatment for alcohol use disorder (AUD) remain insufficiently studied in Central and Eastern Europe. This study examined 12-month post-treatment outcomes following a seven-week inpatient psychotherapeutic programme at Pilsen University Hospital and analysed factors associated with abstinence and relapse. A single-group prospective cohort of 62 patients (41.9% women) diagnosed with alcohol dependence or harmful use (ICD-10) was assessed using standardised instruments (WHOQOL-BREF and EuropASI) and followed up at the 6-month and 12-month follow-ups, with collateral informant verification. Continuous one-year abstinence was observed in 23 patients (37.1%), with an additional 5 (8.1%) reporting a single lapse; point abstinence at one year was 56.5%. Relapse occurred predominantly during the first 6 months after discharge. Initiation of facility-based aftercare within one month after discharge was associated with more favourable outcomes, while higher baseline alcohol severity was associated with earlier relapse. Quality of life, as measured by the WHOQOL-BREF, improved over time, and higher quality of life at the 6-month follow-up was associated with more favourable abstinence outcomes. These findings suggest that the early post-treatment period represents a particularly vulnerable phase of recovery and that aftercare participation, dependence severity, and quality of life may be relevant correlates of treatment outcomes.

Keywords: alcohol use disorder, inpatient treatment, abstinence, relapse, quality of life, treatment outcomes

Resumen

Los resultados a largo plazo del tratamiento hospitalario del trastorno por consumo de alcohol (TCA) siguen siendo insuficientemente estudiados en Europa Central y Oriental. Este estudio examinó los resultados a los 12 meses posteriores al tratamiento tras un programa psicoterapéutico hospitalario de siete semanas en el Hospital Universitario de Plzeň y analizó los factores asociados con la abstinencia y la recaída. Se evaluó una cohorte prospectiva de un solo grupo compuesta por 62 pacientes (41,9 % mujeres) diagnosticados con dependencia del alcohol o consumo perjudicial (CIE-10) mediante instrumentos estandarizados (WHOQOL-BREF, EuropASI), con seguimiento a los 6 y 12 meses y verificación colateral. Se observó abstinencia continua durante un año en 23 pacientes (37,1 %), mientras que otros 5 (8,1 %) informaron un único episodio puntual de consumo; la abstinencia puntual al cabo de un año fue del 56,5 %. Las recaídas ocurrieron predominantemente durante los primeros seis meses. El inicio de la atención de seguimiento en un programa hospitalario especializado dentro del primer mes tras el alta se asoció con resultados más favorables, mientras que una mayor gravedad inicial del consumo de alcohol se relacionó con una recaída más temprana. La calidad de vida, medida mediante el WHOQOL-BREF, mejoró con el tiempo, y una mayor calidad de vida en el seguimiento a los 6 meses se asoció con resultados de abstinencia más favorables. Estos hallazgos sugieren que el período temprano posterior al tratamiento representa una fase particularmente vulnerable de la recuperación y que la participación en cuidados de seguimiento, la gravedad de la dependencia y la calidad de vida pueden ser correlatos relevantes de los resultados del tratamiento.

Palabras clave: trastorno por consumo de alcohol, tratamiento hospitalario, abstinencia, recaída, calidad de vida, resultados del tratamiento

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With an annual per capita consumption of 13.3 litres of pure alcohol, the Czech Republic ranks among the countries with the highest alcohol consumption in the European Union, where the average in 2019 was 11.0 litres (World Health Organization, 2023). According to the 2024 National Survey, 7.4% of Czech adults fall into the category of harmful drinking (Králíková et al., 2024). In addition, alcohol contributes to 6,000–7,000 deaths annually, which accounts for approximately 6% of all-cause mortality in the Czech Republic (National Monitoring Centre for Drugs and Addiction, 2024).

Current neurobiological evidence supports the understanding of substance use disorders (SUD), including alcohol use disorder (AUD), as chronic, relapsing conditions. Accordingly, increasing emphasis is placed on long-term and continuous care (the Chronic Care Model), integrating treatment for comorbid mental and physical conditions (Volkow et al., 2017). Previous findings, including our own, indicate that patients with AUD are at greater risk of relapse and mortality within the first years after treatment compared with illicit drug users (Dawson et al., 2007; Tibenská et al., 2016; Volkow et al., 2017). Quality of life has increasingly been recognised as an important recovery-oriented outcome (Laudet, 2011).

The system of substance use treatment in the Czech Republic involves outpatient, detoxification, and inpatient care, including therapeutic communities. These services form an integrated network in which medium-term inpatient programmes, typically lasting from 5 to 14 weeks, play a key role (Miovský et al., 2013). Despite the wide range of services, up to 93% of individuals with severe AUD are not engaged in any form of treatment. The treatment gap thus remains extremely high (Kågström et al., 2019).

Systematic evaluation of inpatient AUD treatment outcomes in the Czech Republic remains limited. There are only few studies and they are methodologically heterogeneous, particularly from the perspective of abstinence definitions, follow-up procedures, and handling of attrition (Skorkovský et al., 2023). Similar limitations, particularly the small number of studies, high dropout rates, and inconsistent follow-up intervals, have been observed internationally, as highlighted in a systematic review of the effectiveness of therapeutic communities (Suárez-Castro et al., 2024).

International research suggests that post-treatment outcomes in alcohol use disorder are primarily associated with baseline severity of alcohol-related problems, continuing care following discharge, and with a broader recovery-related functioning, including quality of life. Greater clinical severity has been linked to poorer prognosis and earlier relapse (López-Goñi et al., 2012; Stohs et al., 2019), whereas continuing care and better treatment retention are associated with more favourable long-term outcomes (Blevins et al., 2017; Dacosta-Sánchez et al., 2022; McKellar et al., 2003). Increasing attention has also been paid to patient-centred recovery indicators, particularly quality of life, which may reflect not only treatment outcome but also the stability of remission and the capacity to sustain behavioural change over time (Carlon et al., 2022; Dayal et al., 2024; Laudet, 2011).

The aim of the present prospective study was to examine 12-month post-treatment outcomes of patients with alcohol use disorder following participation in a specialised residential programme in the Czech Republic, with particular focus on abstinence outcomes, relapse timing, aftercare participation, and quality of life. Based on previous research, we hypothesised that (1) relapse risk would be highest during the first 6 months after treatment, (2) greater baseline severity of alcohol use would be associated with poorer outcomes, (3) aftercare participation in the facility-based programme would be associated with more favourable abstinence outcomes, and (4) quality of life, measured using the WHOQOL-BREF questionnaire, would improve during follow-up and would be associated with more favourable abstinence outcomes.

Method

A single-group longitudinal pre-test-post-test study was conducted to examine 12-month outcomes following a seven-week inpatient treatment programme. Follow-up data were collected through telephone interviews with patients and their collateral informants at two time points: the 6-month and 12-month follow-ups. The response rate for abstinence data was 96.8%. The primary outcome measures were abstinence rate and quality of life. We used the term single lapse for a single, time-limited episode of alcohol use followed by a return to abstinence, whereas relapse denotes repeated or sustained alcohol use beyond a single lapse. A single-group design was used due to ethical and organisational constraints. In the given healthcare setting, waiting times for inpatient alcohol use disorder treatment are substantially shorter than the 12-month follow-up period, making a waiting-list control group infeasible. In addition, withholding or delaying indicated treatment for research purposes would raise ethical concerns given the morbidity and mortality associated with untreated alcohol use disorder.

Participants

The study included all adult patients (≥ 18 years) who were hospitalised at the Addiction Treatment Ward of the Department of Psychiatry of Pilsen University Hospital for ≥3 days between March 2022 and February 2024 and who met ICD-10 criteria for F10.1 (harmful use of alcohol) or F10.2 (alcohol dependence syndrome). Patients with current harmful use or dependence on other substances

(e.g., stimulants or opioids; F19.1/F19.2) were not eligible for inclusion in the study, although they could be admitted to the ward. Patients with a history of other substance use disorders who met diagnostic criteria only for harmful use of or dependence on alcohol at the time of admission were eligible for inclusion.

96.9% of eligible patients approached for inclusion agreed to participate in the study. No study-specific exclusion criteria were applied.

The ward applies standard clinical contraindications to admission to the inpatient psychotherapeutic programme, including severe physical illness requiring urgent care, acute psychosis (F2X.X according to ICD-10) requiring prioritised treatment, organic brain disorders (F01.X, F02.X, F03, F04 according to ICD-10), and intellectual disability (F70.X according to ICD-10), as these conditions limit suitability for intensive group-based psychotherapy.

Comorbid psychiatric disorders other than psychotic disorders were not exclusion criteria for admission or study participation and were assessed as part of the baseline psychiatric examination.

During the study period, no patient meeting the inclusion criteria was excluded from participation either for study-related reasons or due to these clinical contraindications.

Collateral informants

Almost all patients (90.3%) identified a collateral informant for telephone verification of follow-up data. These were typically family members, most commonly partners (50.8%), parents (24.6%), or adult children (14.8%); less frequently, they were more distant relatives or close friends (9.8%). If patients' life circumstances changed during follow-up, the collateral informant could be replaced by another suitable contact person. Informant reports were used either as an alternative data source when patients could not be reached or as a means of verifying self-reported information.

Data collection during hospitalisation

During the first week of the treatment programme, all enrolled patients underwent baseline assessment using standardised tools. Quality of life was measured using the WHOQOL-BREF questionnaire (WHOQOL Group, 1998), yielding an overall WHOQOL-BREF score reflecting participants' perceived quality of life.

Multidimensional assessment of substance use–related problems was performed using the EuropASI instrument (a European adaptation of the Addiction Severity Index, 5th Edition) (Kokkevi & Hartgers, 1995; Kubička & Csémy, 1998). Although the instrument assesses several domains (Medical Status, Employment/Support Status, Alcohol Use, Legal Status, Family and Social Relationships, and Psychiatric Status), the present study focused specifically on the Alcohol Use domain. For this domain, two indicators were obtained:

- *Composite Score (CS):* a quantitative indicator of severity in the given domain, calculated from selected questionnaire items combining objective indicators and the patients' subjective perception. Scores range from 0 to 1, with higher values indicating greater severity.
- *Interviewer Severity Rating (ISR):* a clinical rating of severity in the given domain on a 0–9 scale based on a combination of data gathered during the interview, patients' subjective self-assessment, and the clinician's professional judgement.

The baseline assessment also included an analysis of data from the psychiatric examination, focusing on substance use history, previous therapeutic interventions, and the presence of comorbid psychiatric diagnoses according to ICD-10.

Follow-up

After discharge, the patients were contacted by telephone at two follow-up time points: the 6-month and 12-month follow-ups. The WHOQOL-BREF questionnaire was administered again, along with a structured questionnaire covering abstinence, continuing care, psychosocial functioning, and treatment-related variables. The telephone format was chosen to maximise the response rate and enable clarification of the participants' answers. At the same intervals, collateral informants were also contacted and asked to complete a shortened version of the same questionnaire addressing abstinence and continuing care.

Abstinence was defined as complete abstinence from alcohol during the respective follow-up period, with a single lapse distinguished from relapse. Point abstinence was defined as abstinence from alcohol for at least one month (30 days) prior to the 6- month and 12-month follow-up assessments. Self-reported abstinence was verified by collateral informants whenever available; in cases of discrepancy, the less favourable information was used for analysis. No biological verification (e.g., biomarkers) was performed; abstinence outcomes therefore rely on structured self-report corroborated by collateral information.

All follow-up telephone interviews were conducted by the first author, a physician involved in the treatment programme. The interviewer was aware of baseline clinical information; however, all assessments were based on structured questionnaires with standardised wording to minimise interviewer-related bias. Collateral informants were not informed about the patients' responses and provided their reports independently.

Site description

The Addiction Treatment Ward at the Psychiatric Department of Pilsen University Hospital offers a seven-week inpatient programme intended for men and women

diagnosed with alcohol use disorder (AUD), substance use disorder (SUD), or pathological gambling. Patients are either admitted after undergoing detoxification at the department's detoxification unit or, less commonly, directly referred to the addiction treatment ward if they can prove a minimum of three weeks of abstinence.

The programme is based on open group psychotherapy, with an emphasis on the individual therapeutic plan and work on the client's personal treatment goals. The optimal group size is ten patients. The core modality is an open (rolling) psychotherapy group with limited weekly turnover (typically 0–2 patients entering/leaving per week), which allows continuity of group processes while maintaining admission flexibility. The therapeutic approach combines elements of cognitive-behavioural therapy, motivational techniques, and the 12-step model (Alcoholics Anonymous World Services, 2001), complemented with family sessions, training in relaxation techniques, occupational therapy, physiotherapy, and – where indicated – administration of psychiatric medication (including disulfiram and anti-craving agents). In addition to group sessions, patients complete a set of structured therapeutic assignments (e.g., formulation of an initial treatment request, a more detailed list of problems and treatment goals, a motivational balance exercise, identification of high-risk situations and coping strategies, and a structured contact with a significant other – usually the closest family member). Selected elements of the 12-step approach (notably Steps 1 and 4) are integrated into the programme. Where appropriate and agreed with the patient, craving-management strategies (including imaginal exposure) may be used as an optional component.

The programme is characterised by fewer structured routine-based elements, particularly the absence of a points system and collective sanctions, and places the emphasis on patients' active cooperation and their intrinsic motivation. Where a clearly formulated individual therapeutic contract exists, treatment duration may be extended to ten weeks with predefined target areas and tasks.

Within the Czech context, the seven-week programme represents a short-term inpatient format compared with the more common medium-term programmes lasting approximately 3–4 months. Compared with more traditionally structured inpatient models used in the Czech Republic, the present programme is characterised by a higher emphasis on psychotherapeutic work and individual goal setting, and by a lower reliance on rigid regime-based elements or sanction systems.

Following discharge, patients are encouraged to participate in aftercare groups provided by the same treatment facility. These groups are organised as weekly group psychotherapy sessions intended primarily for abstinent graduates of the inpatient programme, but may also be attended by patients who completed inpatient treatment at other facilities. Prior to each session, abstinence is typically verified using a breath alcohol test. The aftercare programme represents the most common form of continuing care offered by the department and aims to support maintenance of abstinence, relapse prevention, and ongoing therapeutic work after completion of inpatient treatment.

Ethical approval

The study was approved by the Ethics Committee of Pilsen University Hospital and the Faculty of Medicine, Charles University in Pilsen (approval no. 408/21; 4 November 2021). All participants received oral and written information about the study and those who agreed to participate signed an informed consent. The participants also provided written consent for the involvement of collateral informants.

Statistical analysis

As the primary outcome of the study, abstinence was evaluated in three ways: 1) continuous 12-month abstinence (dichotomous variable): patients either remained fully abstinent for 12 months or experienced relapse (i.e., alcohol use beyond a single lapse, those with a single lapse were excluded from this analysis); 2) time to first relapse (survival-like time-to-event analysis of the relapse-free proportion of patients over the course of the follow-up): the number of months immediately post-discharge during which the patient remained continuously abstinent (rounded down to whole months, intervals reported as 30 days or 4 weeks were considered equal to 1 month); 3) point abstinence at the 12-month follow-up (dichotomous variable): whether the patient was abstinent for at least one month prior to the 12-month follow-up assessment. Continuous abstinence and point abstinence were analysed using Mann-Whitney U-test (in relation to quantitative variables, most of which were non-normally distributed) and Fisher's exact test (in relation to categorical variables and also for the comparison of relapse rates between the first and second half of the follow-up). The time to first relapse was assessed using methods of survival analysis, i.e. univariable Cox proportional hazards model (continuous variables) and Kaplan-Meier analysis with two- or multiple-sample Gehan-Wilcoxon test (categorical variables).

As aftercare (facility-based programme at the Addiction Treatment Ward of Pilsen University Hospital) is initiated only after discharge from treatment and its initiation is intrinsically linked to continued abstinence, a potential immortal time bias would arise from a simple survival analysis assessing its association with outcomes. To prevent this, a landmark approach was used, defining a one-month post-discharge period for aftercare initiation and starting the survival analysis from this landmark (including only patients who remained abstinent at that time point). Regular participation in the facility-based aftercare

programme was not required for inclusion in the "aftercare" group (i.e., a single initiation of aftercare was sufficient), in order to reduce the bias originating from the intrinsic association between continuous abstinence and consistent participation in continuing care. Participants attending Alcoholics Anonymous or other external continuing care programmes were excluded from this analysis because the timing of initiation was not available, which precluded their inclusion in the landmark design.

The secondary outcome was the change in the WHOQOL-BREF score, calculated by subtracting the baseline score from that at 12-month follow-up. The comparison of quality of life between baseline and the 6-month and 12-month follow-ups was performed using Wilcoxon's matched-pairs test (without Bonferroni correction for the two tests).

To explore whether data missingness was consistent with MCAR, we created missingness indicators for each variable with incomplete data and tested their associations with fully observed baseline characteristics using Mann–Whitney U tests for continuous variables and chi-square or Fisher's exact tests for categorical variables. Missingness was concentrated in follow-up variables, most notably WHOQOL-BREF score at the 12-month follow-up (19.4%) and the 6-month follow-up (17.7%), and showed associations with baseline characteristics, particularly with dependence severity, suggesting that missingness was unlikely to be completely at random. Missing data were omitted from each test individually in a pair-wise manner.

In order to assess the false discovery rate (FDR), a Benjamini-Hochberg procedure covering all statistical tests performed throughout our analysis of the dataset was done. At the baseline significance level of $\alpha = 0.05$, the estimated FDR is 26%, and, in order to achieve the actual conservative FDR of 5%, the individual-test significance threshold needs to be reduced to 0.004.

All reported p-values are two-tailed and the significance level was set at $\alpha = 0.05$. The statistical analysis was done using STATISTICA (version 11Cz, TIBCO Software Inc., Palo Alto, CA, USA).

Results

Sample characteristics and follow-up completeness

The study sample comprised 62 patients. Abstinence data were available for 60 participants (96.8%) due to the use of collateral informants. Four patients (6.5%) died during the follow-up period, all following relapse. WHOQOL-BREF data were available for 90.3% of patients at the 6-month follow-up and 88.7% at the 12-month follow-up.

The sample showed a balanced male/female ratio (41.9% women) with a mean age of 47.8 years. The mean daily alcohol consumption was 122.2 g/day, with substantial variability across participants. Detailed sociodemographic and consumption characteristics are presented in Tables 1 and 2.

Discrepancies between patient and collateral informant reports were infrequent (6.5%), suggesting acceptable reliability of self-reported outcomes.

Table 1
Sample Sociodemographics (N = 62)

Variable	Value
Number of patients	62
Gender – male	36 (58.1%)
Gender – female	26 (41.9%)
Mean age (all)	47.8 years
Age range	23–71 years
Mean age – male	47.9 years
Mean age – female	47.6 years
Family history of alcohol use (at least one parent)	35 (56.5%)
Duration of perceived excessive drinking	mean 6 years
Number of patients with premature termination of treatment	4 (6.5%)
Number of patients in the first treatment episode	41 (66.1%)
Mean age of patients in the first treatment episode	46.6 years
Number of patients with previous treatment episodes	21 (33.9%)
Mean number of treatment episodes (entire sample)	1.76
Maximum number of treatment episodes	8

Table 2
Daily alcohol consumption (30 days prior to treatment admission)

Daily alcohol consumption	g/day
Mean	122.2
95% CI lower bound	97.7
95% CI upper bound	146.8
Median	59.5
Minimum	0.0
Maximum	390.0
>200 g/day (m) or >140 g/day (w)	15 (24.2%)
120–200 g/day (m) or 80–140 g/day (w)	20 (32.3%)
<120 g/day (m) or <80 g/day (w)	27 (43.5%)

Abstinence outcomes, relapse and predictors

Continuous one-year abstinence was observed in 23 patients (37.1%, 95% CI: 25.9–49.8%), with an additional 5 patients (8.1%, 95% CI: 3.0–18.2%) reporting a single lapse. Point abstinence at the 12-month follow-up (i.e. abstinence maintained for at least one month at the time of the one-year follow-up) was achieved by 56.5% of participants.

30 out of 60 patients with available abstinence data experienced relapse (50.0%, 95% CI: 45.9–72.6%) during the first 6 months after treatment, compared with only 2 of the remaining 30 patients (6.7%) during the second 6-month period ($p < 0.001$; difference in proportion 43.3 percentage points, 95% CI: 24.2–56.5%). This temporal pattern is also reflected in the Kaplan–Meier analysis, which shows a steep early decline in relapse-free survival (Fig. 1a).

Higher baseline severity in the EuropASI Alcohol domain assessed by the Interviewer Severity Rating (ISR) was associated with shorter time to relapse ($p = 0.001$). Similar associations were observed for point abstinence and continuous 12-month abstinence ($p = 0.007$ and $p = 0.002$, respectively; Fig. 3). Associations for the Composite Score showed a similar direction but were generally weaker and less consistent across outcomes.

Figure 1

Proportion of patients without relapse after treatment. Shown for the entire sample (a) and according to participation in aftercare (AOD groups = aftercare groups for alcohol and other drug disorders) initiated within one month after discharge (b)

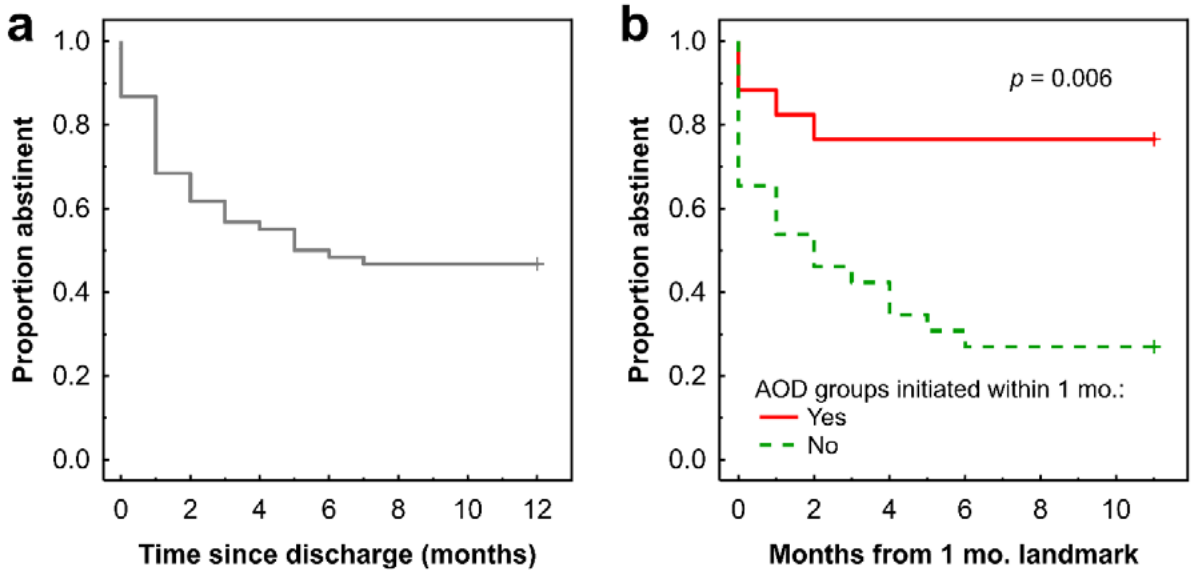


Figure 2

WHOQOL-BREF scores at different study phases (a), WHOQOL-BREF scores at the 6-month follow-up in relation to continuous abstinence (b), and change in WHOQOL-BREF scores at the 12-month follow-up according to the number of previous treatment episodes (c)

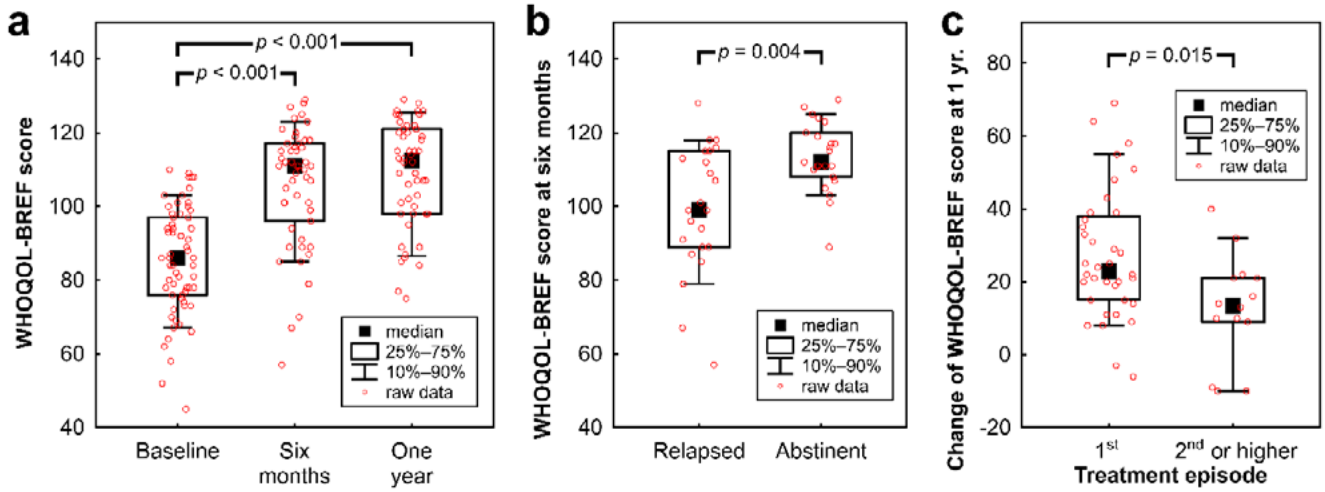


Figure 3
Relationship between severity of dependence, measured by ISR (EuropASI, Alcohol domain), and continuous 12-month abstinence

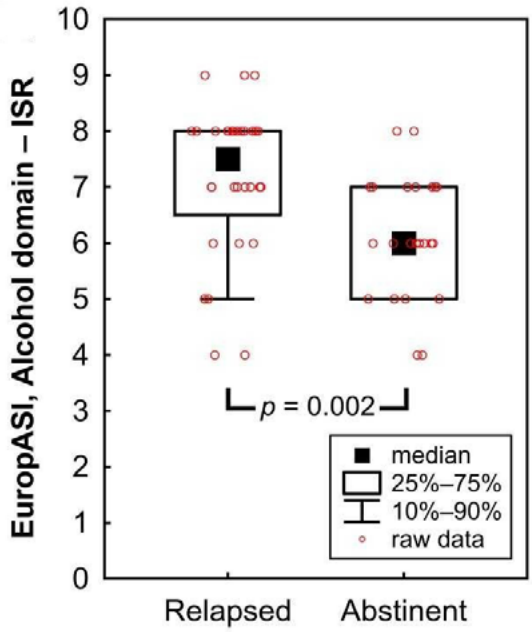
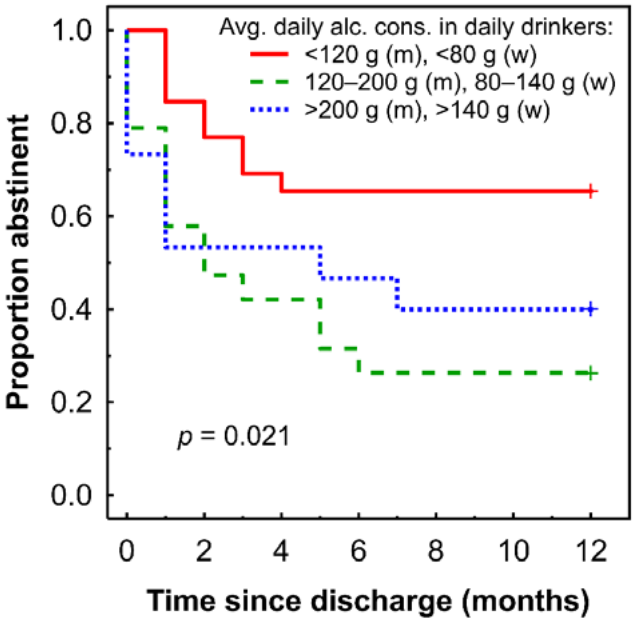


Figure 4
Proportion of relapse-free patients over time after discharge in relation to average daily alcohol consumption, as categorized according to individual thresholds for men (m) and women (w)



Higher mean daily alcohol consumption was weakly associated with shorter time to relapse (p = 0.021; Fig. 4), whereas the self-reported duration of excessive alcohol use was not associated with abstinence outcomes.

Patients who initiated aftercare within one month after discharge (in the same treatment facility) showed a significantly longer time to first relapse than those who did not (p = 0.006; Fig. 1b). Point abstinence at the 12-month follow-up was also markedly higher in the aftercare group: 16/16 patients (100%, 95% CI: 76.6–100%) remained abstinent, compared with 8/23 patients (34.8%, 95% CI: 18.5–55.6%) without aftercare initiation (p < 0.001; difference 65.2 percentage points, 95% CI: 37.1–81.2). Patients who relapsed within the first month (n = 8) or attended external programmes only (n = 11) were excluded from this analysis. Participants who died during follow-up (n = 4) were included only in the landmark survival analysis.

Quality of life and its association with abstinence

Quality of life, as measured by the WHOQOL-BREF total score, improved significantly at both the 6-month and 12-month follow-ups compared with baseline (all p < 0.001; Fig. 2a). Better quality of life at the 6-month follow-up was associated with a longer time to first relapse (p = 0.009, relapse occurrence decreasing by 3.0%, 95% CI: 0.8–5.3%, with each WHOQOL-BREF score point gained), as well as with continuous abstinence throughout the one-year follow-up (p = 0.004; Fig. 2b), and with point abstinence at the 12-month follow-up (p = 0.031). No such association was observed for quality of life at the 12-month follow-up. Patients with repeated previous treatment episodes showed smaller improvements in quality of life compared with first-time treated patients (p = 0.015; difference of median change 9.5 points, 95% CI: 0.5–21; Fig. 2c).

Discussion

Continuous abstinence, early relapse risk and mortality

At the 12-month follow-up, just over one third of the patients achieved continuous abstinence, while nearly one half remained abstinent when patients reporting a single lapse during the study period were also included. These findings are in line with the results of our earlier work reviewing available Czech studies on the effectiveness of medium-term inpatient treatment for alcohol-dependent patients, which found one-year abstinence rates ranging from 34% to 60% (Skorkovský et al., 2023).

Because most of the relapses observed in this study occurred within the first 6 months after discharge, this period can be considered a particularly vulnerable phase of recovery. This temporal asymmetry is consistent with previous research findings (Dawson et al., 2007; Rolová

et al., 2023; Tibenská et al., 2008) and likely reflects the challenges that patients face when transitioning from a protected inpatient setting to everyday environments associated with conditioned alcohol cues, distress, and reduced external structure. This interpretation is consistent with contemporary evidence showing that cue reactivity and craving play an important role in return to substance use and relapse processes (Vafaie & Kober, 2022), as well as with findings that alcohol craving predicts relapse after residential treatment (Stohs et al., 2019). From a clinical perspective, our findings support the view that the first post-discharge months should be regarded as a critical intervention window, requiring close monitoring and rapid access to continuing care after discharge.

This interpretation is further supported by the observed association between early aftercare initiation and more favourable abstinence outcomes. Patients who initiated aftercare within the first month after discharge showed a significantly longer time to relapse and substantially higher rates of point abstinence at the 12-month follow-up compared to those who did not initiate aftercare. Similar findings have been reported in previous studies highlighting the importance of continuing care following inpatient treatment, whether in the form of aftercare groups, specialist addiction services, individual psychotherapy, or self-help groups such as Alcoholics Anonymous (Blevins et al., 2017; McKellar et al., 2003; Rolová et al., 2023; Tibenská et al., 2008). In the present study, the analysis focused specifically on aftercare groups provided by the same treatment facility, as this allowed precise determination of whether and when participation was initiated. Nevertheless, only about one third of patients in our sample initiated this form of structured aftercare, while approximately half did not engage in any continuing care after discharge.

Even though the one-month landmark approach employed in this analysis mitigates the potential immortal time bias by separating the time window for initiating aftercare from the subsequent observation period for relapse, the observed association should still be interpreted with caution. Patients who initiate aftercare may differ systematically from those who did not, which may partly contribute to their higher likelihood of achieving continuous abstinence. Previous research suggests that treatment engagement and retention are shaped by a complex interplay of motivational, clinical, and contextual factors, including readiness to change, perceived treatment relevance, social stability, and the quality of the therapeutic relationship (Brorson et al., 2013; Zemore et al., 2021). The observed association between early aftercare initiation and more favourable outcomes should therefore not be interpreted causally, but rather as part of a broader process of treatment engagement and recovery.

The mortality observed during follow-up further underscores the clinical significance of relapse. In the present sample, four patients (6.5%) died within one year after the treatment, and in all cases death was preceded by relapse. Similar findings were reported by Tibenská et al. (2016), who in a five-year follow-up of patients after residential treatment observed 28 deaths (13% of the sample), with only two deaths not preceded by relapse. These observations support the view that relapse should not be conceptualised merely as a failure to achieve continuous abstinence, but rather as a clinically serious event associated with markedly increased health risk and the need for timely intervention.

Severity of dependence, quality of life, and recovery-related outcomes

Our analysis showed that greater severity of alcohol-related problems, assessed by the EuropASI Alcohol domain, was associated with poorer post-treatment outcomes. In particular, higher Interviewer Severity Rating (ISR) scores were significantly associated with a shorter time to first relapse. A similar but only borderline non-significant trend was observed for the Composite Score (CS). Consistent findings were also obtained for categorical abstinence outcomes, where higher severity was associated with lower likelihood of sustained one-year abstinence and point abstinence. These findings are consistent with previous studies indicating that clinically assessed severity is an important correlate of post-treatment outcomes (López-Goñi et al., 2012; Stohs et al., 2019), and that interviewer-based severity ratings may provide stronger predictive validity than composite indicators alone.

In contrast, the self-reported duration of excessive alcohol use was not associated with abstinence outcomes, suggesting that retrospective estimates of drinking history may be less informative for relapse risk than structured assessment of current severity. A weak association was observed between higher mean daily alcohol consumption and shorter time to relapse, which corresponds with previously mixed findings regarding the predictive value of consumption-based indicators (Blevins et al., 2017).

Quality of life, assessed using the WHOQOL-BREF, improved significantly at both the 6-month and 12-month follow-ups compared with baseline levels. This finding supports the view that inpatient treatment is associated not only with changes in substance use behaviour but also with broader improvements in subjective well-being and psychosocial functioning. In line with previous literature, these results reinforce the concept of quality of life as an important recovery-oriented outcome in alcohol use disorder (Andersson & Nordfjærn, 2020; Carlon et al., 2022; Kirouac et al., 2017; LoCastro et al., 2009).

Importantly, better quality of life at the 6-month follow-up was associated with more favourable abstinence outcomes, including longer time to relapse and higher likelihood of sustained abstinence over the one-year follow-

up. In contrast, no significant associations were observed between quality of life measured at the 12-month follow-up and abstinence outcomes. One possible explanation is that early post-discharge quality of life may reflect the degree of psychosocial stabilisation and adaptation to everyday functioning after inpatient treatment, which may in turn support ongoing abstinence. By contrast, quality of life measured at the 12-month follow-up is more likely to represent the overall outcome of the recovery process rather than a predictor of subsequent relapse risk. However, given the exploratory nature of these analyses and the limited sample size, these interpretations should be considered tentative.

Taken together, these findings suggest that baseline clinical severity and early post-treatment quality of life may capture different but complementary aspects of recovery trajectories in alcohol use disorder. While severity appears to primarily reflect vulnerability to early relapse, quality of life may be more closely linked to psychosocial stabilisation during the early recovery period.

Nature of the treatment programme and subjective factors of success

In the Czech Republic, inpatient addiction treatment has historically been influenced by highly structured, regime-based models characterised by hierarchical organisation of the therapeutic environment, fixed routines, and sanction systems. Within this context, the described programme represents a relatively short inpatient format with greater emphasis on psychotherapy, individual goal setting, and active patient cooperation. Rather than relying primarily on external structure and behavioural control, the programme places stronger emphasis on intrinsic motivation, therapeutic engagement, and individualised recovery planning.

This distinction may be relevant when interpreting treatment retention and abstinence outcomes. Previous research has consistently shown that dropout from addiction treatment is common and generally associated with poorer outcomes, although the strength of this association varies across treatment settings and substance use populations (Bottlender & Soyka, 2005; Brorson et al., 2013; Csémy et al., 2012; Haver et al., 2001; Lappan et al., 2019; Stark, 1992). At the same time, treatment retention alone should not be interpreted as a sufficient proxy of treatment effectiveness, as outcomes may partly reflect selective retention of patients who are more able or willing to adapt to programme demands (Dacosta-Sánchez et al., 2022; Kubička & Skála, 1982; Skorkovský et al., 2023).

Contemporary research increasingly conceptualises dropout not as a single event, but as a multifactorial and dynamic process shaped by the interaction of individual, treatment-related, and contextual factors. Qualitative findings suggest that dropout often develops gradually as patients weigh the perceived demands and relevance of treatment against their psychological burden, motivation, and personal circumstances (Ormbostad et al., 2021). This process may involve both more deliberate and more impulsive pathways depending on fluctuations in motivation, situational stressors, and the quality of the therapeutic relationship (Cooper et al., 2023). Broader theoretical models similarly emphasise the role of modifiable factors such as motivation, perceived treatment relevance, structural barriers, and therapeutic alliance, rather than static patient characteristics alone (Csémy et al., 2012; Kubička & Skála, 1982; Sirvent-Ruiz et al., 2025).

From this perspective, engagement in aftercare may represent a continuation of the same motivational and relational processes that influence treatment retention during the inpatient phase. The present findings therefore should not be interpreted as evidence that one inpatient model is universally superior. Rather, they suggest that treatment outcomes may depend on the fit between programme characteristics, patient needs, and continuity of care after discharge. In this context, the heterogeneity of inpatient programmes may facilitate individualisation of care, while at the same time limiting direct comparability of outcomes across treatment settings. The present programme nevertheless suggests that a shorter and less regime-based psychotherapeutic approach may be associated with clinically meaningful outcomes in a selected group of patients.

Strengths and limitations

This study represents one of the few prospective observational studies examining a residential treatment programme for alcohol use disorder in the Czech Republic. Major strengths include the high follow-up rate supported by collateral informants and the use of validated instruments assessing abstinence, relapse, and quality of life (WHOQOL-BREF, EuropASI). Limitations include the relatively small sample size, absence of a control group, and potential selection bias related to voluntary treatment participation. Another limitation is the relatively large number of exploratory analyses in relation to the sample size, although several outcome variables represent alternative operationalisations of the same underlying constructs rather than independent hypotheses. Specifically, continuous abstinence, point abstinence, and time to relapse capture different but complementary operationalisations of recovery rather than fully independent outcomes. The same applies to the use of multiple severity indicators (ISR and CS) within the EuropASI questionnaire. These factors should be considered when interpreting the findings. Nevertheless, the study provides useful data for further evaluation and optimisation of inpatient treatment programmes for alcohol use disorder.

Conclusion

This prospective observational study examined 12-month post-treatment outcomes following a seven-week residential treatment programme for alcohol use disorder. Continuous abstinence at the 12-month follow-up was observed in 37.1% of patients, increasing to 45.2% when single lapses were included. Lower baseline alcohol severity, participation in aftercare, and higher quality of life during the early post-treatment phase were associated with more favourable outcomes, while quality of life improved over time.

The findings highlight the multifactorial nature of recovery in alcohol use disorder and the potential importance of continuing care and multidimensional outcome assessment. However, given the observational design and absence of a control group, causal interpretations cannot be made.

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Conflicts of Interest

The authors do not report any conflict of interest associated with the present study.

Author Contributions

Tomáš Skorkovský: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – original draft, Visualization, Funding acquisition.

Milan Beniš: Investigation, Resources, Writing – review & editing.

Jiří Podlipný: Methodology, Validation, Writing – review & editing.

Petr Hošek: Formal analysis, Software, Visualization, Writing – review & editing.

Michal Miovský: Conceptualization, Methodology, Validation, Writing – review & editing, Funding acquisition.

Jan Vevera: Conceptualization, Methodology, Supervision, Validation, Writing – review & editing.

All authors reviewed and approved the final version of the manuscript.

Generative AI disclosure

Artificial intelligence tools were used exclusively to assist with language editing and manuscript refinement. The use of these tools was restricted to improving clarity, grammar, wording, and stylistic coherence in selected parts of the manuscript. Generative AI was not used for data generation, statistical analysis, interpretation of results, or formulation of scientific conclusions. All AI-assisted contributions were thoroughly reviewed and edited by the authors, who assume full responsibility for the final content.

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