Early Screening for Posttraumatic Stress Disorder in Inpatient Detoxification and Motivation Treatment: Results and Consequences

Margit G. Proescholdt^a Sandra E. Müller^a Marc Vogel^a Undine Lang^a
Gerhard A. Wiesbeck^a Wilhelm Breit^b Andreas Linde^b Marc Walter^a
Michael Odenwald^{c, d}

^aUniversity of Basel, Psychiatric Hospital, Basel, Switzerland; ^bPsychiatric Services Aargau, Brugg, Switzerland;

^cDepartment of Psychology, University of Konstanz, Konstanz, Germany; ^dVivo International e.V., Konstanz, Germany

Keywords

PTSD · Substance use disorders · Subsyndromal PTSD · Trauma · Inpatient detoxification treatment

Abstract

Aims: Posttraumatic stress disorder (PTSD) is a significant comorbidity in substance use disorders (SUDs). While most studies have addressed trauma/PTSD in abstinent patients, little is known about trauma/PTSD in early detoxification treatment. The current study therefore addresses the systematic evaluation of trauma/PTSD in early inpatient detoxification. **Methods:** A cross-sectional survey was accomplished in three German-speaking clinics ($n = 134$) specialized in inpatient detoxification and motivation treatment. All measures are based on self-report using trauma-specific questionnaires and measures for general psychopathological burden. **Results:** Participation rate was 60.1% and patients did not show clinically obvious psychological distress during or after assessment. DSM-IV traumatic events were reported by 66.4%. Of the total sample, 38.1% screened positive for PTSD, and 14.9% screened positive for subsyndromal PTSD. PTSD patients reported significantly more child-

hood adversities and significantly higher scores in depression and general psychopathology compared to subsyndromal PTSD and SUD-only patients. **Conclusions:** Early and systematic evaluation of PTSD in SUD inpatient detoxification treatment is largely safe and yields important information for individual treatment. The high PTSD-rate and the high symptom load in SUD patients during inpatient detoxification treatment highlight the need for a more stringent address of trauma/PTSD in early SUD treatment.

© 2018 S. Karger AG, Basel

Introduction

Posttraumatic stress disorder (PTSD) is a significant comorbidity in patients with alcohol and substance use disorders (SUDs) with high prevalence rates ranging from 15 to 41% for current and 26 to 52% for lifetime PTSD in clinical SUD samples [1].

Patients with SUDs and comorbid PTSD are clinically more severely affected, have higher rates of other comorbid mental disorders, more medical, psychosocial and interpersonal problems and worse treatment-outcomes

[1–4]. Prior to the present study, an evaluation of trauma/PTSD in Swiss SUD inpatients has not been performed.

Despite the evidence, however, PTSD is still underdiagnosed in clinical SUD treatment [5], and particularly systematic evaluation of trauma/PTSD using validated measures is rarely performed [6]. Possible reasons include PTSD-inherent avoidance to report traumatic experiences on the patients' side [7, 8], as well as feeling discomfort in inquiring trauma/PTSD and fears of triggering negative reactions on the clinicians' side [6, 9, 10].

Evaluation of trauma/PTSD appears to be an even greater challenge during inpatient detoxification treatment, which is primarily recommended for and used by more severely ill and often comorbid patients and complicated by high dropout rates that are in turn associated with a poorer treatment-outcome [11]. At this early time in treatment, patients usually are in an unstable physical and mental condition and the therapeutic relationship is fragile, both of which are sometimes considered adverse circumstances for the exploration of trauma/PTSD [12]. In addition, there is a substantial overlap between symptoms of withdrawal and some symptoms of PTSD [13], thus favoring the delay of diagnostic procedures into abstinence.

However, it also has been suggested that the arousal stemming from substance withdrawal may exacerbate PTSD symptoms prompting relapse to substance use and thus influence retention in treatment [14]. Therefore, early evaluation of trauma/PTSD may be crucial for successful detoxification and planning of further treatment. Notably, it has been shown that retention rates may be improved among patients with a high trauma load by a short trauma-specific psychoeducational intervention [11].

Thus, in view of high PTSD rates in SUD inpatients and high dropout rates during detoxification treatment [11], not addressing trauma/PTSD in early detoxification treatment bears a substantial risk of leaving patients without adequate diagnosis and treatment and putting them at an increased risk for dropout and a less favorable treatment outcome [15, 16].

The current study therefore systematically evaluates trauma/PTSD by self-report in early SUD inpatient detoxification and motivation treatment. Specific questions were whether the patients were willing to participate, whether the assessment would cause obvious psychological or other distress, and whether our trauma/PTSD screening outcomes in early detoxification treatment

would be comparable to findings in the literature obtained at later time-points of treatment and after longer periods of abstinence.

Methods

Procedures and Participants

The study was performed at two Swiss psychiatric hospitals (Center A and Center B), and one German hospital, located at the border of Switzerland (Center C). The study was approved by the Ethics Boards of the Universities of Basel and Constance.

All three hospitals provide acute care to individuals with psychiatric conditions. Patients seeking inpatient withdrawal treatment are admitted to specialized substance use treatment units that provide inpatient detoxification and motivation treatment (i.e., "qualified withdrawal treatment," [17]) as recommended by national guidelines. SUDs are diagnosed upon admission according to ICD-10 diagnostic criteria [18], and patients are treated according to standard detoxification procedures, including withdrawal medication if needed (e.g., benzodiazepines for alcohol withdrawal, opioids for opioid withdrawal, or opioid maintenance treatment, etc.). Pre-established medication to treat somatic diseases or other psychiatric conditions is continued and adapted, if needed.

All patients admitted to the respective treatment units and treated as usual, were informed about and asked to participate in the study within 1 week following admission during a 6-week period. Patients were excluded from the study, if they showed clinically obvious cognitive impairment, acute psychosis, or were unable to read and understand German language. Participation was delayed by at most 1 week in cases where severe withdrawal symptoms hindered participation during the first week of inpatient detoxification treatment.

Following written informed consent, patients completed self-report questionnaires by paper and pencil in small groups of 3–10 persons (once a week) under supervision of study personnel. Questionnaire completion required around 60 min. Local medical staff were in the background to guarantee management of any critical reactions displayed by the patients in the course of the questionnaire completion and thereafter.

Aversive reactions upon study participation were registered by the study personnel and reported to the clinical staff. Aversive reactions were any severe deterioration of symptoms and/or discontinuation of treatment clearly related to study participation.

Assessment and Questionnaires

All data were evaluated by self-report using German versions of well-established assessment instruments. For basic sociodemographic and substance use data, respective parts of the European Addiction Severity Index interview [19] were adapted for self-report. For the remainder, the following self-report assessment instruments were used: the Alcohol Use Disorders Identification Test (AUDIT) for severity of alcohol use [20]; the Childhood Trauma Questionnaire (CTQ) [21] for traumatic life events during childhood and adolescence; the 53-item Brief Symptom Checklist [22] for general psychopathological burden in the last 7 days; and the "Allgemeine Depressionsskala" (ADS-K), the short version of the Center for Epidemiologic Studies Depression Scale [23] for depressive symptoms.

For screening of PTSD an adapted version of the Posttraumatic Stress Diagnostic scale (PDS) for DSM-IV was used [24]. Adaptation consisted in applying the Life Event Checklist for traumatic life events [25, 26] instead of the original event list. The PDS for DSM-IV was used, since the German version of the PDS for DSM-5 (PDS-5) was not available at the time of our study. Based on a study by Kilpatrick et al. [27], the changes in the diagnostic criteria from DSM-IV to DSM-5 are expected to have minimal impact on PTSD prevalence.

The PDS for DSM-IV is a 49-item self-report questionnaire that assesses all DSM-IV criteria (Criteria A to F), and thus allows for screening of PTSD according to DSM-IV diagnostic criteria. The 17 items referring to criteria B to D are rated on a 4-point scale ("0 = not at all/only one time"; "1 = once a week or less/once in a while"; "2 = 2 to 4 times a week/half the time"; "3 = 5 or more times a week/almost always") present within the last month. Each of the 17 items is met when rated 1 or higher.

A categorical screening diagnosis of PTSD was made when the individual's responses met the following criteria: The report of a traumatic event that involved actual or threatened death or serious injury (Criterion A1), and the report of feeling intense fear, helplessness, or horror upon the event (Criterion A2). Endorsement (rating of 1 or higher) of at least one re-experiencing symptom (Criterion B, 5 items); three avoidance symptoms (Criterion C, 7 items); and two arousal symptoms (Criterion D, 5 items); duration of at least 1 month (Criterion E, 2 items); and impairment in at least one area of functioning (Criterion F, 9 items) [24].

PTSD symptom severity was calculated on the basis of the ratings for the 17 items referring to DSM-IV criteria B to D. Accordingly, the total score of PTSD symptoms ranges from 0 to 51, and cut-offs for symptom severity rating are "no rating 0," "mild 1–10," "moderate 11–20," "moderate to severe 21–35," and "severe above 36." A PDS score of 11 or more indicates moderate, and a score of 21 or more indicates severe PTSD symptomatology [24].

Group Allocation

Patients were first divided into two groups: patients meeting DSM-IV screening diagnosis of PTSD and patients not meeting screening diagnosis of PTSD. Since 43.8% of the latter patients showed at least moderate PTSD symptomatology (PDS total scores ≥ 11), an additional group with positive screening for subsyndromal PTSD was introduced. Subsyndromal PTSD was defined as patients reporting traumatic events fulfilling DSM-IV criterion A (A1 + A2) and A1 only. In addition, patients had to meet DSM-IV criteria B, C, or D, as well as criteria E and F [28, 29]. Criterion A2 was not included into the screening criteria for subsyndromal PTSD because empirical studies have shown that the self-report of A2 is not necessary for PTSD diagnosis [30, 31]. The resulting groups were termed "PTSD" (patients with positive screening for PTSD), "subsyndromal PTSD" (patients with positive screening for subsyndromal PTSD), and "SUD-only" (patients with neither PTSD, nor subsyndromal PTSD).

Data Analysis

The data of each center were normally distributed. There were no significant differences between the three centers, and in particular, no significant differences regarding trauma exposure and PTSD between patients treated in Switzerland and Germany respectively. Therefore, the data were merged for overall analysis. All

analyses were 2-tailed and the significance level was set at $p = 0.05$. For comparison of means of continuous data, univariate analysis of variance was used for conducting omnibus tests. The Bonferroni procedure was used for post hoc analyses to identify specific group differences. If homogeneity of variances was violated, the F-Welch was used for omnibus tests and the Games-Howell procedure for post hoc analyses. χ^2 tests were used for comparison of nominal data. To calculate the strength of relations between variables, bivariate Pearson correlations were used for continuous data. Data analyses were performed by using SPSS Version 25.0.0 (IBM SPSS Inc., 2017).

Twenty-nine patients were excluded from further analyses because they had more than 50% missing data ($n = 13$) or their data were insufficient for reliable group allocation ($n = 16$). A missing value analysis of the remaining 134 patients showed a percentage of missing values below 6%.

Results

Participation Rates and Adverse Reactions

The numbers of participants who fulfilled the inclusion criteria are shown in Figure 1. The average participation rate was 60.1% (Center A: 69.4%, Center B: 45%, Center C: 67.6%).

With the exception of one person, patients showed no clinically obvious symptoms of distress or psychological deterioration during or after study participation. The one person mentioned had to terminate prematurely for reasons of anxiety and fears directly related to the questions in the questionnaire and could be stabilized by a brief therapeutic intervention. Although reasons for nonparticipation were not explicitly asked and documented, some patients stated fears of confrontation with the past, whereas numerous patients explicitly welcomed the study and some stated: "finally you are asking."

Sociodemographic and Substance Use Characteristics

Basic sociodemographic characteristics are shown in Table 1. Patients with PTSD were significantly younger ($F(2,126) = 4.02, p = 0.020$) and had a significantly lower level of professional education ($\chi^2 = 8.34, p = 0.015$) compared to patients with subsyndromal PTSD and SUD-only (Table 1).

Substance use parameters (duration of substance use, age at onset of substance use, substance use within the last 30 days) did not show any significant differences between the groups. There was, however, a trend of higher proportions of cannabis use within the last 30 days among patients with PTSD (PTSD: 55.8%; subsyndromal PTSD 33.3%; SUD-only 38.2%).

Fig. 1. Flowchart of the patient recruitment process.

Table 1. Sociodemographic characteristics of the study sample

	Total (n = 134)	SUD-only (n = 63)	Subsyndromal PTSD (n = 20)	PTSD (n = 51)	Test statistics	p value
Age, years, mean (SD)	41.4 (11.1)	43.8 (11.5)	42.8 (10.2)	38.0 (10.3)	F = 4.02 (df = 2)	0.020 ^a
Female, n (%)	41 (30.6)	18 (28.6)	4 (20.0)	19 (37.3)	$\chi^2 = 2.24$	0.326
Family status, n (%)						
Married	14 (10.9)	7 (11.7)	2 (11.1)	5 (10.0)	$\chi^2 = 1.12$ (df = 4)	0.891
Divorced/living apart/widowed	48 (37.5)	25 (41.7)	6 (33.3)	17 (34.0)		
Never married/single	66 (51.6)	28 (46.7)	10 (55.6)	28 (56.0)		
Highest education level achieved, n (%)						
Primary school/no degree	21 (16.3)	7 (11.5)	2 (11.1)	12 (24.0)	$\chi^2 = 5.34$ (df = 6)	0.501
Middle school	72 (55.8)	37 (60.7)	12 (66.7)	23 (46.0)		
High school	16 (12.4)	8 (13.1)	1 (5.6)	7 (14.0)		
College/university	20 (15.5)	9 (14.8)	3 (16.7)	8 (16.0)		
Completed professional education, n (%)	94 (72.9)	48 (78.7)	17 (89.5)	29 (59.2)	$\chi^2 = 8.34$	0.015
Current occupation, n (%)						
Currently in employment or education	48 (36.9)	26 (43.3)	7 (35.0)	15 (30.0)	$\chi^2 = 4.97$ (df = 6)	0.548
Currently unemployed	50 (38.5)	20 (33.3)	10 (50.0)	20 (40.0)		
Housekeeping	12 (9.0)	4 (6.7)	1 (5.0)	7 (14.0)		
Pension	20 (15.4)	10 (16.7)	2 (10.0)	8 (16.0)		

^a Post-hoc Bonferroni; PTSD < SUD-only ($p = 0.019$).
PTSD, posttraumatic stress disorder; SUD, substance use disorder.

In the total sample, alcohol was the substance most frequently used during the last 30 days prior to admission (80.6%), followed by cannabinoids (44.0%), opioids (25.6%), cocaine (23.3%), benzodiazepines (21.7%), and stimulants (19.3%), as well as others (MDMA (13.0%), hallucinogens (9.4%), GHB (6.3%)). About 35% of the pa-

tients (35.8%) reported the use of more than one substance during the last 30 days. Alcohol was the substance used for the longest period (17.7 ± 11.8 years) followed by cannabinoids (13.4 ± 9.3 years), and opioids (9.7 ± 10.5 years), whereas the age at onset of regular use was lowest in cannabinoids (16.0 ± 3.6 years).

Table 2. Findings of the PDS among the patient groups

	PTSD criteria	Total (<i>n</i> = 134)	SUD-only (<i>n</i> = 63)	Subsyndromal PTSD (<i>n</i> = 20)	PTSD (<i>n</i> = 51)	Test statistics	<i>p</i> value
A	Traumatic exposure A1 + A2, <i>n</i> (%)	89 (66.4)	26 (41.3)	12 (60.0)	51 (100)	$\chi^2 = 44.0$	<0.001
B	Re-experiencing, mean (SD)	5.0 (4.2)	2.8 (3.2)	5.1 (3.4)	7.8 (4.1)	$F = 26.95$	<0.001 ^a
C	Avoidance, mean (SD)	7.1 (5.6)	4.1 (4.5)	7.3 (6.7)	10.8 (4.2)	$F = 27.68$	<0.001 ^b
D	Hyperarousal, mean (SD)	5.7 (4.2)	3.7 (3.6)	4.6 (2.2)	8.5 (3.8)	$F = 26.1^c$	<0.001 ^c
	PDS total score, mean (SD)	17.8 (12.4)	10.6 (10.1)	16.9 (9.4)	27.1 (9.9)	$F = 38.9$	<0.001 ^d
E	Duration >1 month, <i>n</i> (%)	107 (80.0)	36 (57.1)	20 (100)	51 (100)	$\chi^2 = 38.1$	<0.001
F	Impairment ≥ 1 , <i>n</i> (%)	114 (85.1)	43 (68.3)	20 (100)	51 (100)	$\chi^2 = 26.5$	<0.001
	PTSD, %	38.1			100		
	Subsyndromal PTSD, %	14.9		100			

^a Post-hoc Bonferroni: PTSD > SUD-only, ($p < 0.001$); PTSD > Subsyndromal PTSD ($p = 0.017$); Subsyndromal PTSD > SUD-only ($p = 0.041$).

^b Post-hoc Bonferroni: PTSD > SUD-only, ($p < 0.001$); PTSD > Subsyndromal PTSD ($p = 0.018$); Subsyndromal PTSD > SUD-only ($p = 0.033$).

^c Post-hoc Games-Howell: PTSD > SUD-only, ($p < 0.001$); PTSD > Subsyndromal PTSD ($p < 0.001$); Welch-Test: $F(2, 66.38) = 26.1$.

^d Post-hoc Bonferroni: PTSD > SUD-only, ($p < 0.001$); PTSD > Subsyndromal PTSD ($p = 0.001$); Subsyndromal PTSD > SUD-only ($p = 0.043$).
PDS, posttraumatic diagnostic scale; PTSD, posttraumatic stress disorder; SUD, substance use disorder.

Trauma Exposure

Of the total sample, 66.4% reported at least one DSM-IV traumatic event (A1 + A2), whereas 23.1% reported traumatic events that fulfilled either one of the DSM-IV A criterion (A1 or A2), and 10.5% disclosed no traumatic event. Among patients with subsyndromal PTSD, 60.0% reported a DSM-IV traumatic event (A1 + A2), whereas 40.0% reported a traumatic event that met the DSM-IV A1 criterion. Among SUD-only patients, 41.3% indicated a DSM-IV traumatic event (A1 + A2), and 36.5% reported a traumatic event that fulfilled either the A1 or A2 criterion (Table 2).

Findings of the Posttraumatic Diagnostic Scale

Based on the PDS, 51 patients (38.1%) fulfilled the screening diagnosis of PTSD, whereas 20 patients (14.9%) fulfilled the screening diagnosis of subsyndromal PTSD (Table 2). In PTSD patients, the onset of PTSD symptoms was delayed (>6 months) in 31.9%, and PTSD symptoms were chronic (lasting >3 months) in 80.4%.

PDS total scores and subscores of the DSM-IV criteria B, C, and D were significantly higher in PTSD patients compared to patients with subsyndromal PTSD and SUD-only (Table 2). PTSD symptom severity in patients with PTSD was moderate in 29.4% (PDS total score 11–20), moderate to severe in 52.9% (PDS total score 21–35), and severe in 17.6% (PDS total score >36). In patients with subsyndromal PTSD, PTSD symptom severity was mild in 35.0% (PDS total score 1–10), moderate in 35.0%, and moderate to severe in 30.0%.

CTQ and Psychopathological Symptom Load

CTQ total scores were significantly higher in PTSD patients compared to SUD-only patients ($p < 0.001$). While the CTQ subscores for “emotional abuse,” “physical abuse,” and “sexual abuse” were significantly higher in the PTSD group compared to the SUD-only group, the CTQ subscores for “emotional neglect” and “physical neglect” did not differ between the groups (Table 3).

In addition, the Brief Symptom Checklist global score (general psychopathological burden) was significantly higher in PTSD patients compared to patients with subsyndromal PTSD ($p = .011$), and SUD-only ($p < 0.001$). Similarly, the PTSD group had significantly higher scores in depressive symptoms (ADS-K) compared to the subsyndromal PTSD ($p = .041$), and SUD-only group ($p < 0.001$). Furthermore, the PDS total scores correlated significantly with the CTQ total scores ($r = 0.421$, $p < 0.001$), and the ADS-K scores ($r = 0.697$, $p < 0.001$). By contrast, the severity of alcohol use (AUDIT total score) did not differ significantly between the groups (Table 3).

Discussion

The current study assessed the systematic evaluation of trauma/PTSD by self-report measure in acute detoxification treatment. Specific questions were whether the patients were willing to participate, whether the evaluation would cause obvious distress or psychological harm, and whether our PTSD screening outcomes in early detoxification treatment would be comparable to findings

Table 3. Mean scores on measures of childhood trauma, general psychopathological burden, and alcohol use among the patient groups

	Total (<i>n</i> = 134)	SUD-only (<i>n</i> = 63)	Subsyndromal PTSD (<i>n</i> = 20)	PTSD (<i>n</i> = 51)	Test statistics (<i>F</i>)	<i>p</i> value
CTQ, mean (SD)						
Total score	50.7 (17.4)	44.8 (14.7)	53.1 (14.8)	57.2 (19.1)	8.27	<0.001 ^a
Emotional abuse	11.1 (5.2)	9.0 (4.3)	11.1 (5.2)	13.6 (5.2)	12.87	<0.001 ^b
Physical abuse	8.4 (4.7)	7.2 (3.1)	8.8 (3.9)	9.9 (6.1)	4.96 ^c	0.011 ^c
Sexual abuse	7.8 (5.1)	6.5 (3.1)	7.3 (4.4)	9.6 (6.6)	4.69 ^d	0.014 ^d
Emotional neglect	14.1 (5.4)	13.3 (5.7)	16.1 (4.4)	14.3 (5.1)	2.14	0.121
Physical neglect	9.4 (3.9)	8.8 (3.7)	9.9 (2.9)	9.9 (4.4)	1.24	0.293
ADS-K total score, mean (SD)	18.6 (10.3)	14.4 (9.3)	17.8 (7.8)	24.0 (10.1)	14.41	<0.001 ^e
BSCL global score, mean (SD)	57.9 (43.0)	44.1 (36.3)	47.8 (30.4)	78.9 (47.0)	11.46	<0.001 ^f
AUDIT total score, mean (SD)	18.6 (10.9)	18.6 (10.7)	17.2 (9.6)	19.3 (11.8)	0.25	0.776

^{a, b} Post-hoc Bonferroni: PTSD > SUD-only ($p < 0.001$).

^c Post-hoc Games-Howell: PTSD > SUD-only ($p = 0.012$), Welch-Test: $F(2, 49.1) = 4.96$.

^d Post-hoc Games-Howell: PTSD > SUD-only ($p = 0.009$), Welch-Test: $F(2, 46.82) = 4.69$.

^e Post-hoc Bonferroni: PTSD > SUD-only ($p < 0.001$); PTSD > Subsyndromal PTSD ($p = 0.041$).

^f Post-hoc Bonferroni: PTSD > SUD-only, ($p < 0.001$); PTSD > Subsyndromal PTSD ($p = 0.011$).

CTQ, Childhood Trauma Questionnaire; ADS-K, "Allgemeine Depressionsskala" – short form; BSCL, Brief Symptom Checklist; AUDIT, Alcohol Use Identification Test; PTSD, posttraumatic stress disorder; SUD, substance use disorder.

in the literature obtained at later time-points of treatment and after longer periods of abstinence.

The participation rate in our study was moderate (60.1%) compared, for example, to the participation rate reported by Dore et al. [32] (83%). In addition, we observed a much lower participation rate in one center compared to the other two. Although patients in all three centers were informed about the study in a group setting, patients in centers A and C were informed about the study by local and thus familiar staff, whereas in center B, patients were informed by non-local staff, that is, study personnel, which may be a possible reason accounting for the lower participation rate in center B. It is assumed that the differences in participation rates largely reflect methodological differences (e.g., individual vs. group assessment, length of questionnaires, recruitment by familiar or unfamiliar personnel), which might be overcome with a more personal setting and a shorter questionnaire. In addition, however, we suggest that disorder-inherent avoidance [8] played a role as well, since some patients explicitly stated fears of "confrontation with the past", thus supporting that patients "can and do decline to participate when they are concerned about upsetting memories" [10]. Importantly, one patient developed obvious distress and needed a brief therapeutic intervention for stabilization, thus indicating that evaluation of trauma/PTSD by self-report during early detoxification treatment is largely safe, but in individual cases, negative reactions may occur, which will then need specific attention. On the other hand, although feedback to the study was not explicitly asked, numerous

patients welcomed the study and even stated "finally you are asking", thereby supporting that information about traumatic events and sequelae must be explicitly asked [7].

Regarding trauma exposure, our patients frequently reported life-time traumatic events. Whereas the majority of SUD patients was treated in Switzerland (>80%), the rates of trauma exposure and PTSD did not differ between patients treated in Switzerland and Germany respectively. Notably, the proportion of DSM IV traumatic events (66.4%) reported by our patients during acute detoxification was almost identical to the rate of traumatic events reported by abstinent SUD patients in an earlier German multicenter study ("two-thirds of all patients", [3]). Although methodological issues must be considered [15], the proportion of reported traumatic events in our SUD patients is substantially higher than that reported for the Swiss (21–35%, [33]) and German general population (20–25%, [34]). Therefore, our results are in line with high proportions of traumatic events in SUD patients worldwide [5, 35, 36], emphasizing the particular burden of traumatic exposure in SUD patients.

In addition, the results support substantially increased prevalence rates for current PTSD in our SUD inpatients (38.1%) during early detoxification, which are within the range of PTSD rates reported in SUD patients after longer periods of abstinence [3, 5, 35].

Although it may be argued that assessing trauma/PTSD during early detoxification treatment possesses a risk of over-diagnosing PTSD due to the substantial

overlap between symptoms of withdrawal and PTSD [13, 37], our results include support for the validity of the early assessment of trauma and PTSD by replicating some well-established associations from previous studies assessing trauma/PTSD mainly in abstinent patients [3, 35, 36]: PTSD patients had significantly higher PTSD symptoms in all domains, that is, re-experiencing, avoidance, hyperarousal [3], and significantly higher values for depression and general psychopathological burden [32]. In contrast to some [3], but in agreement with others [5, 32], the positive PTSD screening in our patients did not differ by gender and there were no differences regarding principle substances of concern and number of substances used. While these differences cannot be explained at present, methodological differences may play a role, since our data rely on retrospective self-report.

Furthermore, PTSD patients reported significantly higher scores of emotional, sexual, and physical childhood abuse compared to SUD-only patients. In a previous study, we showed that self-reports of childhood trauma did not change from early to later stages of detoxification treatment [38]. Childhood adversities, particularly sexual abuse below the age of 16, but also having been raised in a foster home have recently been identified as specific contributors for the co-occurrence of PTSD and alcohol use disorders in a Swiss community sample [39]. Since childhood adversities and particularly childhood abuse are risk factors for both, the development of PTSD [40] and SUDs, our data add to the evidence linking childhood adversities and abuse to substance use and PTSD [2, 15, 39].

Among patients who did not qualify for a formal PTSD diagnosis, there was a substantial proportion of patients with a PDS total score of greater 11, indicative of at least moderate PTSD symptomatology. Further analysis showed that another 20 patients (14.9% of the total sample) fulfilled screening criteria for subsyndromal PTSD. Patients with subsyndromal PTSD showed PDS scores, comparable to the ones reported in an earlier German study [3]. Therefore, our findings clearly demand a thorough follow-up of trauma history and other trauma-related psychiatric sequelae in SUD patients with increased PDS scores, and underline the utility of determining PTSD symptom severity during detoxification treatment.

Altogether, the results are in line with studies that question the sequential diagnostic and treatment paradigm by showing that although PTSD symptoms decrease with time in abstinence, symptom load in abstinence remains high [41], and that diagnosis of PTSD remains stable throughout withdrawal treatment [38]. Furthermore, our findings indicate that SUD patients with PTSD and

subsyndromal PTSD form distinct patient groups during detoxification treatment that are more severely affected and stressed, and may require additional specific treatment early in detoxification treatment. Increased stress is a robust risk factor for relapse to substance use [42] and therefore, a risk factor for premature termination of treatment. Since SUD detoxification treatment is very short and insufficient for overcoming SUD, early information on comorbid PTSD is important to ensure adequate care during detoxification treatment, and to motivate patients for further trauma-specific treatment.

As a consequence of our study, we have increased our efforts to routinely screen our patients for PTSD, educate patients about trauma and trauma-related sequelae, inform them about treatment options, and refer them to trauma-specific treatments, if desired. Furthermore, we have implemented a trauma-specific treatment group (“seeking safety” [43]) into our therapeutic program.

The study has several limitations. In view of the moderate participation rate and the sole use of self-report, PTSD prevalence may have been over- or underestimated. Furthermore, the possible influence of medication on PTSD symptoms could not be determined. However, it is assumed that medication would have rather dampened symptoms, since medication used to treat withdrawal symptoms in general is sedative in nature. In addition, the findings are based on retrospective self-report. Thus, the results may be influenced by memory problems and recall bias, both of which may be further aggravated by the withdrawal situation. Finally, since there was no measure of withdrawal symptoms included, the extent by which the results may be influenced by withdrawal symptoms cannot be determined. Yet, there was no indication that severity of alcohol use (main substance used) – which may be viewed as an indicator of severity of withdrawal symptoms – had an influence, as AUDIT scores did not differ between the groups.

In conclusion, the findings show that systematic evaluation of trauma/PTSD in early SUD detoxification treatment is largely safe. Furthermore, they underscore the utility of assessing PTSD symptom severity during inpatient withdrawal treatment in order to identify patients with an increased symptom load and specific medical and psychotherapeutic treatment needs. Showing early on interest in the patient’s personal history may furthermore improve therapeutic alliance, which is a strong predictor of regular treatment completion [44].

Future studies should address the consequences of the increased PTSD symptom load in SUD patients during inpatient withdrawal treatment and seek to determine ap-

appropriate medical and/or psychotherapeutic interventions that can specifically help to decrease symptom load at this early point in treatment.

Acknowledgement

We greatly appreciate the supporting bachelor and master students (University of Constance): Ines Baur, Isabelle Bohnacker, Esther Erat, Marlene Flögel, Anne-Kathrin Göggel, Anja Haubold, Eva Herzog, Katja Klostermann, Julia Meyin-Chan, Freya Rzodeczko, Fabian Steffen, Katharina Zepf.

References

- Schafer I, Najavits LM: Clinical challenges in the treatment of patients with posttraumatic stress disorder and substance abuse. *Curr Opin Psychiatry* 2007;20:614–618.
- Blanco C, Xu Y, Brady K, Perez-Fuentes G, Okuda M, Wang S: Comorbidity of posttraumatic stress disorder with alcohol dependence among US adults: results from National Epidemiological Survey on Alcohol and Related Conditions. *Drug Alcohol Depend* 2013;132:630–638.
- Driessen M, Schulte S, Luedecke C, Schaefer I, Sutmann F, Ohlmeier M, Kemper U, Koesters G, Chodzinski C, Schneider U, Broese T, Dette C, Havemann-Reinecke U; TRAUM-AB-Study Group: Trauma and PTSD in patients with alcohol, drug, or dual dependence: a multi-center study. *Alcohol Clin Exp Res* 2008;32:481–488.
- Vogel M, Dursteler-Macfarland KM, Walter M, Strasser J, Fehr S, Prieto L, Wiesbeck GA: Prolonged use of benzodiazepines is associated with childhood trauma in opioid-maintained patients. *Drug Alcohol Depend* 2011;119:93–98.
- Gielen N, Havermans RC, Tekelenburg M, Jansen A: Prevalence of post-traumatic stress disorder among patients with substance use disorder: it is higher than clinicians think it is. *Eur J Psychotraumatol* 2012;3:17734.
- Young HE, Rosen CS, Finney JW: A survey of PTSD screening and referral practices in VA addiction treatment programs. *J Subst Abuse Treat* 2005;28:313–319.
- Solomon SD, Davidson JR: Trauma: prevalence, impairment, service use, and cost. *J Clin Psychiatry* 1997;58(suppl 9):5–11.
- Brown PJ, Stout RL, Gannon-Rowley J: Substance use disorder-PTSD comorbidity. Patients' perceptions of symptom interplay and treatment issues. *J Subst Abuse Treat* 1998;15:445–448.
- Back SE, Waldrop AE, Brady KT: Treatment challenges associated with comorbid substance use and posttraumatic stress disorder: clinicians' perspectives. *Am J Addict* 2009;18:15–20.
- Becker-Blease KA, Freyd JJ: Research participants telling the truth about their lives: the ethics of asking and not asking about abuse. *Am Psychol* 2006;61:218–226.
- Odenwald M, Semrau P: Reducing dropout among traumatized alcohol patients in detoxification treatment: a pilot intervention study. *Eur Addict Res* 2012;18:54–63.
- APA: American Psychiatric Association 2010. Practice Guideline for the Treatment of Patients with Acute Stress Disorder and Posttraumatic Stress Disorder, 2010.
- Sareen J: Posttraumatic stress disorder in adults: impact, comorbidity, risk factors, and treatment. *Can J Psychiatry* 2014;59:460–467.
- Jacobsen LK, Southwick SM, Kosten TR: Substance use disorders in patients with posttraumatic stress disorder: a review of the literature. *Am J Psychiatry* 2001;158:1184–1190.
- Potthast N, Catani C: Trauma und Sucht: Implikationen für die Psychotherapie. *SUCHT* 2012;58:227–235.
- Henslee AM, Coffey SF: Exposure therapy for posttraumatic stress disorder in a residential substance use treatment facility. *Prof Psychol Res Pr* 2010;41:34–40.
- Mann KF: Neue aerztliche Aufgaben bei Alkoholproblemen. *Deutsches Aerzteblatt* 2002;10:A632–A644.
- Dilling H, Mombour W, Schmidt MH (Hrsg.): Internationale Klassifikation Psychischer Störungen: ICD-10 Kapitel V (F). Klinisch-Diagnostische Leitlinien/Weltgesundheitsorganisation. Bern, Huber Verlag, 2013.
- Geellhofer B, Küfner H, Vogt M, Weiler D: European Addiction Severity Index Europa-SI: Manual für Durchführung und Training. Hohengehren Schneider, 1999.
- Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG: The Alcohol Use Disorders Identification Test. Guidelines for Use in Primary Care. Geneva, World Health Organization, 2001.
- Bernstein DP, Fink L: Childhood Trauma Questionnaire: A Retrospective Self-Report Questionnaire and Manual. San Antonio TX: The Psychological Corporation, 1998.
- Franke GH: BSI. Brief Symptom Inventory-Deutsche Version [Brief Symptom Inventory-German version]. Göttingen, Beltz, 2000.
- Hautzinger M, Bailer M: ADS – Allgemeine Depressionsskala. Weinheim, Beltz, 1993.
- Foa EB: Post-traumatic Stress Diagnostic Scale (PDS). Minneapolis, National Computer Systems, 1995.
- Schnyder U, Moergeli H: German version of Clinician-Administered PTSD Scale. *J Trauma Stress* 2002;15:487–492.
- Ehlers A, Steil R, Winter H, Foa E: Deutsche Übersetzung der Posttraumatic Stress Diagnostic Scale (PDS) [German Translation of the Posttraumatic diagnostic scale (PDS)]. Oxford University, Warneford Hospital, Department of Psychiatry, 1996.
- Kilpatrick DG, Resnick HS, Milanak ME, Miller MW, Keyes KM, Friedman MJ: National estimates of exposure to traumatic events and PTSD prevalence using DSM-IV and DSM-5 criteria. *J Trauma Stress* 2013;26:537–547.
- Schnurr PP: A Guide to the Literature on Partial PTSD. *PTSD Research Quarterly* 2014;25:1–8.
- Blanchard EB, Hickling EJ, Taylor AE, Loos WR, Gerardi RJ: Psychological morbidity associated with motor vehicle accidents. *Behav Res Ther* 1994;32:283–290.
- Hathaway LM, Boals A, Banks JB: PTSD symptoms and dominant emotional response to a traumatic event: an examination of DSM-IV Criterion A2. *Anxiety Stress Coping* 2010;23:119–126.
- Osei-Bonsu PE, Spiro A 3rd, Schultz MR, Ryabchenko KA, Smith E, Herz L, Eisen SV: Is DSM-IV criterion A2 associated with PTSD diagnosis and symptom severity? *J Trauma Stress* 2012;25:368–375.
- Dore G, Mills K, Murray R, Teesson M, Farrugia P: Post-traumatic stress disorder, depression and suicidality in inpatients with substance use disorders. *Drug Alcohol Rev* 2012;31:294–302.
- Krammer S, Linder Y, Maercker A: Classic and Complex PTSD in Switzerland: Prevalence and Theoretical Discussion; in Martin CR, Preedy VR, Patel VB (eds): *Comprehensive Guide to Post-Traumatic Stress Disorder Switzerland* Springer International Publishing, 2015, pp 1–13.

Disclosure Statement

The authors have no conflicts of interest to disclose.

Author Contribution

All the authors were involved in the study design, had full access to the survey data and analyses, and interpreted the data, critically reviewed the manuscript, and had full control, including final responsibility for the decision to submit the paper for publication.

- 34 Glaesmer H, Wittig U, Brahler E, Martin A, Mewes R, Rief W: [Are migrants more susceptible to mental disorders?]. *Psychiatr Prax* 2009;36:16–22.
- 35 Dragan M, Lis-Turlejska M: Prevalence of posttraumatic stress disorder in alcohol dependent patients in Poland. *Addict Behav* 2007;32:902–911.
- 36 Reynolds M, Mezey G, Chapman M, Wheeler M, Drummond C, Baldacchino A: Co-morbid post-traumatic stress disorder in a substance misusing clinical population. *Drug Alcohol Depend* 2005;77:251–258.
- 37 van der Kolk B, Greenberg M, Boyd H, Krystal J: Inescapable shock, neurotransmitters, and addiction to trauma: toward a psychobiology of post traumatic stress. *Biol Psychiatry* 1985; 20:314–325.
- 38 Herzog E, Odenwald M, Proescholdt M, Haubold A, Bohnacker I, Fogel M, Linde A, Muller S, Wiesbeck G, Lang U, Walter M, Vogel M: Stability of trauma-related symptoms during acute substance use treatment. *J Addict Dis* 2016;35:161–168.
- 39 Muller M, Vandeleur C, Rodgers S, Rossler W, Castelao E, Preisig M, Ajdacic-Gross V: Childhood adversities as specific contributors to the co-occurrence of posttraumatic stress and alcohol use disorders. *Psychiatry Res* 2015;228:251–256.
- 40 Brewin CR, Andrews B, Valentine JD: Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *J Consult Clin Psychol* 2000;68:748–766.
- 41 Coffey SF, Schumacher JA, Brady KT, Cotton BD: Changes in PTSD symptomatology during acute and protracted alcohol and cocaine abstinence. *Drug Alcohol Depend* 2007;87: 241–248.
- 42 Blaine SK, Sinha R: Alcohol, stress, and glucocorticoids: from risk to dependence and relapse in alcohol use disorders. *Neuropharmacology* 2017;122:136–147.
- 43 Najavits LM: Posttraumatische Belastungsstörung und Substanzmissbrauch: Das Therapieprogramm “Sicherheit finden”. Deutsche Übersetzung und Bearbeitung von Ingo Schäfer, Martina Stubenvoll und Anne Dilling. Göttingen, Hogrefe Verlag, 2009.
- 44 Meier PS, Donmall MC, McElduff P, Barrowclough C, Heller RF: The role of the early therapeutic alliance in predicting drug treatment dropout. *Drug Alcohol Depend* 2006; 83:57–64.