

The Impact of an Inpatient Treatment on the Psychodynamic and Symptomatology in Couples Concordant for Substance Use: An Exploratory Study

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Abstract

Background: Much literature deals with patients who use drugs and have partners who are drug-free. However, concordant couples, in which both partners are consuming drugs, are sparsely examined in the literature. This might be due to the fact, that couples are rarely treated together in healthcare services. Despite that fact we propose that it is feasible and clinically meaningful to treat concordant couples in the same ward. Consequently, this study pursues the goal to expand the body of knowledge in the treatment of concordant couples investigating the research question: is it feasible, clinically and prognostically meaningful to treat these patients in the same ward?

Method: This exploratory study included five concordant couples (ten patients), which were simultaneously treated between August 2013 and November 2014 in a specialised substance use ward at the Psychiatric Hospital Münsterlingen, Switzerland. All patients passed through a psychodynamic characterisation based on the OPD-II interview and the Structured Interview for Personality Organization. Symptom load was measured with the Brief Symptom Inventory at admission and termination of treatment. We calculated comparisons at the individual level using t-tests for paired samples.

Results: We showed that it is feasible and clinically meaningful to treat couples concordant for substance use in the same ward. The psychodynamic characterization of the five concordant couples revealed recurring patterns of collusion, involving divided roles between dependence and independence, caregiving and neediness, activity and passivity, control and submission, strength and deficiency as well as superiority and inferiority. The patients didn't change significantly on the BSI between pre- to post-treatment, although men ($d = 1.64$) benefited to a greater extent than women ($d = 0.10$).

Conclusion: Treating concordant couples together in the same inpatient setting is unusual, but feasible and clinically useful, because it makes it possible to take into account the couples dynamics in the treatment.

Background

Scientific literature deals mostly with patients who use drugs and have partners who are drug-free [1], although there is evidence that romantic partners show high levels of similarity in terms of substance use. In the following, we define couples in which both partners have a substance use disorder as concordant couples [2].

Concordant substance abuse in intimate relationships is a frequent phenomenon. Cavacuiti et al. [2] give an overview of the concordance of substance abuse in couples and conclude that couples display similar patterns of substance abuse that cannot be explained by sociodemographic factors alone. Low et al. [3] found in 121 married adults with a substance use disorder that more than a third of the spouses also had a lifetime history of a substance use disorder. Pivnick et al. [4] showed that this is the case not only for illicit drug use, but also for methadone maintenance treatment. They found that 57% of methadone-addicted women had partners with a substance use disorder.

The dynamics of concordant substance use in romantic relationships is very complex. Concordant couples are involved in relationship patterns of dependence and dysfunctionality [5]. On the one hand intimate partner violence often arises in these couples as a consequence of substance use, on the other hand substance use of one partner may promote the maintenance or exacerbation of the problematic behaviour in the other [6]. Concordant couples often constitute a dyad of collusion [7]. The concept of collusion refers to a dynamic and interpersonal defence mechanism, where both partners unconsciously interplay on the basis of a common conflict [8], which helps to compensate for former frustrations and to repress fears of intimacy [9]. Often a role division in the relationship can be observed, for example between dependence and independence, caregiving and neediness, activity and passivity, control and submission, strength and deficiency as well as superiority and inferiority. Collusion may stabilize the relationship, but often couples enter into an escalation of the dysfunctional interactional pattern [9]. Commonly, concordant couples constitute a shared identity of drug use, which may foster, maintain and stabilize addiction. Drug use may be the common ground serving as a basis of the relationship, especially when the drugs are of the same type. It can be assumed that the dynamics of collusion and drug use intertwine strongly in concordant couples.

Nevertheless, the dynamics of concordant couples are sparsely examined and described in the literature. This might be a consequence of the fact, that concordant couples are rarely treated together in healthcare services, for example in the same ward. It is even frequently advised not to treat concordant couples at the same time and place [10].

Treating concordant couples is a challenging task. Several problems may arise treating these patients together. A significant number of patients have a comorbid personality or affective disorder which complicates the treatment in couples [11, 12]. Furthermore, there is an increased risk for Hepatitis C in patients with a substance use disorder [13-15]. The dysfunctional patterns of concordant couples may challenge the therapy of both partners. Psychotherapy, which helps to gain abstinence, may lead to a destabilization of the relationship. Fals-Stewart et al. [10] found that the relationship became more unstable with a higher percentage of abstinent days. Consequently, it is possible, that concordant couples form an alliance against therapy. Patients may perceive therapy as an attack on the relationship which could lead to a conscious or unconscious refusal of the therapy or bringing it to an end. Abstinence could lead to a "wake-up" and to a new evaluation of the partner and the relationship, causing either person to return to drug use or to a break-up of the relationship. The problems in the treatment of concordant couples can also lead to different reactions of the therapist. Therapists may dismiss neutrality and consciously or unconsciously scrutinise or even ban the romantic relationship, which may lead to a defence by the patient, and possibly to an end of the therapy.

Despite these obstacles, there are several arguments in favour of treating concordant couples at the same time in the same ward. There is evidence that romantic relationship bonds are generally more influential on drug use than employment bonds [16]. Newcomb et al. [17] showed that the quality of intimate relationships are significant predictors for drug use, so it makes sense to integrate the couples dynamics directly into the therapeutic process. Moreover there is evidence that romantic partners can

play a positive role by facilitating desistance from using substances [18]. In sum it can be said, that there are several arguments for including the dynamics of couples into therapy.

To the best of our knowledge, we are not aware of any study that investigated the psychodynamics and outcomes of concordant couples in inpatient treatment, that were treated simultaneously at the same ward. The first aim of the current exploratory study was to show that it is feasible to treat concordant couples at the same ward. The second aim was to outline the relevance of understanding the psychodynamics and symptom change of these couples over the course of an inpatient treatment.

Methods

2.1. Ethics

The present study was performed according to Good Clinical Practice [19] on the basis of applicable legal framework conditions in Switzerland and in accordance with the Ethics Committee of Canton Thurgau. All procedures were conducted by trained staff in accordance with the Declaration of Helsinki [20].

2.2. Measures

2.2.1. Demographic and clinical variables

Demographic and clinical variables consisted of age, length of partnership, education, housing, substance use, comorbidity, presence of Hepatitis B and C and treatment length.

- *Length of partnership:* Patients were inquired about the length of their partnership in years.
- *Housing:* Patients were asked if they had a fixed abode or not.
- *Education:* The patients were asked whether they have completed a vocational training, which requires a completed school education of nine years as admission.
- *Diagnoses and Comorbidity:* Diagnoses were given on the basis of ICD-10-GM [21]. All patients were asked about the use of the following substances: Alcohol, Benzodiazepines, Cocaine, Heroin, Cannabis or Other. Diagnoses were given by the corresponding therapist.
- *Hepatitis B and C.* The patients were tested by a standardized serum antibody screening test.

- *Treatment length*: Treatment length was defined as the number of treatment days between pre- (t_1) and post-treatment (t_2) including holidays.

2.2.2. Process variables

Psychodynamic characterisation was accomplished on the basis of two psychodynamic interviews:

- The OPD-II interview [22], which is based on the model of the Operationalized Psychodynamic Diagnosis [23].
- The Structured Interview for Personality Organization [24], which is based on the model of personality organization [25, 26].

It included conscious and unconscious motives of the choice of the partner, collusive, regressive and progressive aspects of the partnership, dominance or equality within the couple, dominant affects, aggression as well as defence mechanisms. Psychodynamic characterisation was accomplished by the supervising registrar, which is a certified specialist in transference focussed psychotherapy [27]. During patients' treatment on the ward, he continuously monitored the patients and kept detailed records on their progress in therapy.

2.2.3. Outcome variables

Symptom load: Symptom load was measured with the Brief Symptom Inventory [BSI; 28, 29]. It includes 53 items from the patient's perspective, measuring physical and psychological impairments. Answers are given on a 5-point Likert scale ranging from "not at all" (0) to "extremely" (4). The inventory consists of a global value (Global Severity Index, GSI) and the subscales Somatization, Obsession-Compulsion, Interpersonal Sensitivity, Depression, Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism. Cronbach's α ranged from .39 to .90 and the test-retest reliability from .73 to .92 [29, 30].

Construct validity was supported, the correlations between the BSI and the long version, the Symptom-Checklist-90-R [31], ranged between $r = .92$ and $r = .99$ [29, 30].

Subsequent therapy: We defined seeking subsequent therapy after treatment termination as a positive treatment outcome because of three reasons: First, addicted patients need an intensive therapy, but have a negative treatment prognosis and are at high risk to drop-out from treatment [32]. Second, therapy motivation and insight into illness are critical for a positive prognosis of the disorder [33, 34]. Third, relapses are very common in addicted patients, which can lead to persistent psychological strain [35], where a subsequent therapy may help.

2.2.4. Measurement time points of the study

The study design was based on a prospective, naturalistic analysis of five concordant couples, who were treated in an inpatient psychotherapy. Outcome data were collected within two days after admission (t_1) of therapy, post-treatment data within two days before treatment termination (t_2) and follow-up data 12 months after treatment termination (t_3) via telephone. Psychodynamic characterisation was done between the time range t_1 and t_2 .

Table 1 shows the measurement time points of the study.

Table 1. Measurement time points of the study.

Variable	t1	t2	t3
Symptom load (BSI)	x	x	
Seeking subsequent therapy			x
Psychodynamic characterization	During psychotherapy		

Note. BSI = Brief Symptom Inventory

2.3. Subjects

Study site: The study took place at the Psychiatric Hospital Münsterlingen (PHM). The PHM provides psychiatric services to Thurgau, a Swiss canton with approximately 260000 inhabitants [36]. Thurgau is considered to be a rural canton. However, with major centres like Zurich and St. Gallen in close proximity, it also deals with problems like illicit substance use. Methadone can be obtained via enrollment in a specialised program, but there is no heroin program available. With 4.8/1000 arrests for illicit drug use, the incidence is, in comparison with other cantons, rather low [36]. It also has a low unemployment rate and a big industrial sector.

The PHM has 210 beds and compulsory admission for psychiatric patients in Canton Thurgau in Switzerland. The field of recruitment for the study was a specialised substance use ward in the PHM. The ward is open with a maximum of 15 patients and a low admission threshold.

Treatment concept: Our treatment model consisted of a specialised substance use treatment including detoxification, withdrawal treatment and a psychodynamic psychotherapeutic concept. Psychodynamic theory and psychotherapy is not only eligible to understand the genesis and maintenance of substance abuse [37], but it also highlights the unconscious conflictual processes of the disorder, for example collusive relationships [38]. Our treatment model is influenced by Yalisove et al. [39], who recommended the use of modified psychoanalysis as a treatment for addiction. He suggested modifications to traditional psychoanalysis for persons with addiction including an initial phase of treatment that is supportive and didactic, followed by more psychoanalytically oriented treatment; a therapist who is active rather than passive; the forestalling of transference; and the recommendation for participation in a self-help group. Important for the concept of the ward is also Khantzian's self-medication hypothesis of substance use disorders [40]. Prochaska et al. [41] state that change processes traditionally associated with experiential, cognitive and psychoanalytic traditions are most helpful during contemplation and pre-contemplation stages whereas change processes associated with behavioural and existential processes are most suitable during action and maintenance stages. In the review on evidence-based practice for substance use disorders McGovern and Carroll [42] found

psychodynamic supportive–expressive psychotherapy with cognitive elements as developed by Luborsky [43] to be an effective intervention for opiate use disorders, especially when delivered by skilled therapists.

The unique characteristic of our ward is that we applied a psychodynamic model to treat patients with substance use disorders not only at the individual level, but also on the couples level, which allows to study the psychodynamics and outcomes of couples simultaneously.

Treatment plan: All patients were assigned to the same therapy scheme: Regular individual consultations with physicians and nursing personnel, sports therapy, ergotherapy, qualified pharmaceutical treatment, acupuncture by the protocol of the National Acupuncture Detoxification Association (NADA), and various group therapies (e.g., social skills, dialectic-behavioral therapy, addiction education). Moreover, couples therapy was provided by a specialised therapist upon request. The weekly schedule at the ward is shown in *Table 2*. The typical duration of treatment at the ward was four to twelve weeks.

Table 2. Treatment plan for the patients on the specialised substance use ward

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Morning circle					
8.30-9.45 Ergotherapy	9.00-10.00 Psychodynamic group therapy	9.00-10.00 Addiction education group	9.00-10.00 Psychodynamic group therapy	9.00-10.00 Social Skills group therapy	8.30-11.00 Brunch
10.00-11.45 Medical rounds	10.30-11.30 Recovery group therapy ^a	10.15-11.45 DBT group therapy	10.00-12.00 Interdisciplinary rounds	10.45-11.45 Mindfulness group therapy	
11.45	11.45	11.45	11.45	11.45	11.45
Lunch, distribution of medication, vital sign control					
14.30-16.00 Sport therapy	13.30-15.00 Trauma education therapy	13.30-15.00 Sport therapy	14.00-14.45 NADA	13.00-14.00 Body Dynamic group therapy	12.00-13.00 Weekly reflection and perspective
From 16:00 Individual therapy	From 15:00 Individual therapy	From 15:00 Individual therapy	From 14:45 Individual therapy	From 14:00 Individual therapy	
18.00 Dinner, distribution of medication, vital sign control					

Note. DBT = Dialectic-Behavioral Therapy. NADA = Acupuncture by the protocol of the National Acupuncture Detoxification Association.

^awith a peer employee.

Participants: A total of 10 patients (five couples) were hospitalized between August 2013 and November 2014 on the specialised substance use ward. They all agreed to participate in the study. All partners declared themselves as a couple in a stable relationship at the beginning of the therapy. All couples were heterosexual. The mean age of the participants was 28.70 years (Range: 22 to 40 years, $SD = 5.98$). The length of the partnership ranged from 8 months to 3 years ($M = 2.35$ years, $SD = 0.94$). The partnerships had no discontinuations before or during the stay. Three patients had a stable home situation, three had completed a vocational training. All patients smoked and eight patients used multiple substances. Of the ten patients, seven had a psychiatric comorbidity. Among these, six were additionally diagnosed with a personality disorder. All patients were tested negative for Hepatitis C and three patients were tested positive for Hepatitis B. The length

of the stay at the ward ranged from 41 to 235 days ($M = 112.3$, $SD = 61.24$). Demographic and clinical variables are shown in *Table 4, 5, 6, 7 and 8*.

2.4. Statistics

All calculations were computed using IBM SPSS Version 25. We ran t -tests for paired samples for women and men separately. The Shapiro-Wilk test of normality showed that all scores were normally distributed in the sample of women (with p -values ranging from .161 to .995). Also, for the men all scores were normally distributed (with p -values ranging from .571 to 1.000) except for the subscales Depression, Hostility and Paranoid Ideation. For the interpretation of the results of the BSI we calculated the Reliable Change Index [RCI, 44]. According to Franke [29] we classified the results of the therapy as follows: (a) clinically significant improvement: improvement of at least 0.53 points in the GSI between admission and termination of therapy and crossing the cut-off-value between clinical and non-clinical samples (cut-off-value: 0.62), (b) reliable improvement: improvement of at least 0.53 points in the GSI between admission and termination of therapy, (c) no change: change less than 0.53 points in the GSI between admission and termination of therapy and (4) reliable deterioration: decrease of at least 0.53 points in the GSI between admission and termination of therapy. The Cohen's effect sizes for paired samples d_z were calculated using the formula by Rosenthal [45] with T for the t -value und df for the degrees of freedom:

$$d_z = T/\sqrt{(df + 1)}$$

The effect sizes were interpreted as follows: $d = 0.20$ small, $d = 0.50$ medium and $d = 0.8$ large [46].

Results

3.1. Case studies of the couples

In the following, the case studies of the concordant couples are described. For each couple the psychodynamics over the course of the treatment and relations to demographic and clinical variables and symptom improvements are worked out.

Case study of Couple 1: At admission of therapy we detected a collusion between the female and male patient. The female patient largely took care of the male patient. She also took the lead and organized their social life. During clinical visits, she often spoke for him. Furthermore, she often cut him short during conversations or commented on his ideas as ridiculous. The dominant affects of the male patient were insecurity and subliminal anger. Due to his insecure self-perception he handed over the responsibility to his partner, simultaneously he felt worthless, insufficient and dependent of his partner, which made him angry. The female patient enjoyed to be needed from her partner. She felt self-confident, when she could support him. However, she felt burdened because she had to organize everything. He seemed socially dependent on her, which seemed to increase her self-esteem. The psychodynamic characterization revealed a characteristic pattern: the male patient seemed to have the position of inferiority, neediness, submission, deficiency and passivity and the female patient the position of caregiving, activity, control, strength and superiority.

Table 4 shows the demographic and clinical variables as well as the outcome changes for Couple 1. Both patients were in early adulthood and three years together. Both completed a vocational training, but had no stable housing. They used multiple-drugs, had no comorbid disorder and were Hepatitis B and C negative. According to the GSI the female patient didn't change reliable or clinically significant, but she made substantial improvements in Somatization, Paranoid Ideation and Psychoticism [29]. For the male patient we couldn't calculate the RCI due to data loss. Follow-up data showed that both partners received subsequent therapy after treatment termination at the ward. One year after treatment termination Couple 1 was still together and raised a family with two children.

Table 4. Demographic and clinical variables and outcome change for Couple 1.

	1W	1M
Demographic and clinical variables		
Age (years)	29	27
Length of partnership (years)	3	3
Education	+	+
Housing	neg.	neg.
Substance use	B, C, H	B, H, THC, Sirdalud
Comorbidity	none	none
Hepatitis B	neg.	neg.
Hepatitis C	neg.	neg.
Treatment length (days)	117	113
Outcome variables		
BSI	M_{t1} M_{t2}	M_{t1} M_{t2}
GSI	1.40 1.00	1.30 n.a.
Somatization	1.10 0.10	1.40 n.a.
Obsession-Compulsion	1.00 0.50	1.50 n.a.
Interpersonal Sensitivity	0.50 0.25	0.50 n.a.
Depression	1.00 0.50	0.70 n.a.
Hostility	0.30 0.20	1.00 n.a.
Phobic Anxiety	0.80 0.80	1.70 n.a.
Paranoid Ideation	0.80 0.20	1.60 n.a.
Psychoticism	0.80 0.00	1.20 n.a.
Seeking subsequent therapy	yes	yes

Note. W = woman, M = man, Education: + = completed a vocational training, - = completed no vocational training, Housing: neg. = no fixed abode, pos. = fixed abode, Substance use: B = Benzodiazepine, C = Cocain, H = Heroin, THC = Cannabis, M_{t1} = mean score at admission of therapy, M_{t2} = mean score at termination of therapy, GSI = Global Severity Index, n.a. = not available.

Case study of Couple 2: The couple was very dissimilar. She was the driving force for the treatment, and he was rather passive. She was dependent on his love, tolerated his rude behavior and couldn't tell him her opinion. He took advantage of her love and degraded her when she revolted. He fell into contempt and she was submissive. The dominant affects of the male patient were aggression and contempt, whereas for the female patient it was fear of loss. Primarily, she was emotionally dependent on him, whereas he was indifferent, exploitative and self-contained. The psychodynamic characterization revealed a pattern of collusion. The female patient fulfilled the dependent, submissive and inferior part, the male the independent, controlling and superior part.

Table 5 shows the demographic and clinical variables as well as the outcome changes for Couple 2. The couple was in early adulthood and two years together. Both partners didn't complete a vocational training and had no stable housing. They had a child, but no custody for it. Both used multiple-drugs, had a comorbid personality disorder and were Hepatitis B positive and Hepatitis C negative. The GSI of both partners was in the subclinical range at admission and termination of therapy. For the female patient the GSI didn't change reliable [29], but tended to deteriorate in Obsession-Compulsion, Interpersonal Sensitivity, Phobic Anxiety and Paranoid Ideation. The GSI of the male patient also didn't change reliable [29], no substantial changes were detected in all scales of the BSI. Follow-up data showed, that both partners received subsequent therapy after treatment termination at the ward. The couple got engaged after leaving the inpatient therapy.

Table 5. Demographic and clinical variables and outcome change for Couple 2.

	2W	2M	
Demographic and clinical variables			
Age (years)	23	35	
Length of partnership (years)	2	2	
Education	-	-	
Housing	neg.	neg.	
Substance use	C, H	A, C, H	
Comorbidity	PD	PD	
Hepatitis B	pos.	pos.	
Hepatitis C	neg.	neg.	
Treatment length (days)	94	93	
Outcome variables			
BSI	M_{t1} M_{t2}	M_{t1}	M_{t2}
GSI	0.150.55	0.26	0.17
Somatization	0.290.50	0.14	0.29
Obsession-Compulsion	0.0 0.50	0.33	0.00
Interpersonal Sensitivity	0.0 1.25	0.50	0.25
Depression	0.000.33	0.17	0.00
Hostility	0.000.00	0.00	0.00
Phobic Anxiety	0.000.60	0.20	0.40
Paranoid Ideation	0.200.80	0.60	0.40
Psychoticism	0.000.40	0.20	0.00
Seeking subsequent therapy	yes	yes	

Note. W = woman, M = man, Education: + = completed a vocational training, - = completed no vocational training, Housing: neg. = no fixed abode, pos. = fixed abode, Substance use: C = Cocaine, H = Heroin, M_{t1} =

mean score at admission of therapy, M_{t1} = mean score at termination of therapy, PD = personality disorder, GSI = Global Severity Index, n.a. = not available.

Case study of Couple 3: In the therapy process it became obvious that the female patient took care of both partners. In a crisis, the roles switched, and he protected her from suicide. During this crisis, it came to a massive confrontation with verbal and physical aggression. The dominant affects were anger and fear of loss in both partners. He was highly dependent on her, whereas he was the main motivating factor behind abstinence and treatment motivation. The psychodynamic characterization revealed a role switch between care and neediness as well as between control and submission.

Table 6 shows the demographic and clinical variables as well as the outcome changes for Couple 3. The couple was middle-aged, three years together and had no stable housing. Both used multiple drugs, had a comorbid personality disorder and were Hepatitis C negative. In contrast to the female patient the male patient completed no vocational training and was Hepatitis positive. The GSI of the female patient improved clinically significant with substantial effects for all subdomains of BSI except for Paranoid Ideation [29]. The GSI of the male patient didn't change reliable or clinically significant [29], but he improved in Obsession-Compulsion and Interpersonal Sensitivity. Follow-up data showed, that both partners received subsequent therapy after treatment termination at the ward. In addition the data showed that the couple separated after being discharged from the ward. Both partners died, the male was found dead and the female died by suicide.

Table 6. Demographic and clinical variables and outcome change for Couple 3.

	3W	3M	
Demographic and clinical variables			
Age (years)	40	35	
Length of partnership (years)	3	3	
Education	+	-	
Housing	neg.	neg.	
Substance use	A, C	A, C, H	
Comorbidity	PD	PD	
Hepatitis B	neg.	pos.	
Hepatitis C	neg.	neg.	
Treatment length (days)	235	199	
Outcome variables			
BSI	M_{t1} M_{t2}	M_{t1}	M_{t2}
GSI	0.850.11	0.81	0.47
Somatization	0.570.0	0.57	0.29
Obsession-Compulsion	1.170.17	1.17	0.17
Interpersonal Sensitivity	1.000.00	1.00	0.25
Depression	1.170.17	0.50	0.00
Hostility	0.600.00	1.00	1.00
Phobic Anxiety	1.500.00	0.80	0.60
Paranoid Ideation	0.400.00	1.00	0.60
Psychoticism	0.800.00	0.80	0.40
Seeking subsequent therapy	no	no	

Note. W = woman, M = man, Education: + = completed a vocational training, - = completed no vocational training, Housing: neg. = no fixed abode, pos. = fixed abode, Substance use: C = Cocaine, A = Alcohol, H = Heroin, A = Alcohol, M_{t1} = mean score at admission of therapy, M_{t2} = mean score at termination of therapy, PD = personality disorder, GSI = Global Severity Index.

Couple 4: At the beginning of therapy a collusion between the female and male patient was apparent. The couple subdivided their roles, the female behaved like a caregiver, the male was dependent of her care. During the clinical visits, the female patient often spoke for both and corrected her partner. Sometimes she also motivated him. Both tried to make their relationship appear harmonious. It was also remarkable that both partners tried to euphemize or even repudiate the other's negative aspects. The dominant affects were subliminal anger and fear of loss in both partners. She felt good when she could support him and this bolstered her self-esteem. He was dependent on her because she organized everything for him, and he stayed rather passive in the interaction. Consequently, the psychodynamic characterization revealed a repetitive pattern between care and neediness

as well as between activity and passivity, whereas the female patient primarily filled a role of caregiving and the male patient the role of neediness and consumption.

Table 7 shows the demographic and clinical variables as well as the outcome changes for Couple 4. The couple was in early adulthood and were eight months together. The female patient completed a vocational training, had a stable housing, used multiple drugs, but had no comorbid disorder and was Hepatitis B and C negative. In contrast, the male patient completed no vocational training, had no stable housing, was Heroin dependant with a comorbid Attention Deficit Hyperactivity Disorder and was Hepatitis C positive. The GSI of the female patient did not change reliable or clinically significant [29]. She tended to deteriorate in GSI, Obsession-Compulsion, Interpersonal Sensitivity, Hostility, Paranoid Ideation and Psychoticism. The GSI of the male patient also didn't change reliable or clinically significant [29], but he tended to improve in Interpersonal Sensitivity, Phobic Anxiety and Psychoticism. Follow-up data showed, that both partners received subsequent therapy, but separated after treatment termination at the ward.

Table 7. Demographic and clinical variables and outcome change for Couple 4.

	3W	3M	
Demographic and clinical variables			
Age (years)	25	26	
Length of partnership (months)	8	8	
Education	+	-	
Housing	pos.	neg.	
Substance use	C, H, THC	H	
Comorbidity	none	ADHD	
Hepatitis B	neg.	pos.	
Hepatitis C	neg.	neg.	
Treatment length (days)	86	100	
Outcome variables			
BSI	M_{t1} M_{t2}	M_{t1}	M_{t2}
GSI	2.042.53	2.25	2.06
Somatization	2.432.14	2.86	2.71
Obsession-Compulsion	2.172.83	1.33	1.83
Interpersonal Sensitivity	1.253.25	3.00	1.75
Depression	2.332.33	2.17	2.00
Hostility	2.003.60	2.40	2.00
Phobic Anxiety	1.801.40	1.80	1.00
Paranoid Ideation	1.202.60	1.80	1.40
Psychoticism	2.402.00	2.20	1.60
Seeking subsequent therapy	yes	yes	

Note. W = woman, M = man, Education: + = completed a vocational training, - = completed no vocational training, Housing: neg. = no fixed abode, pos. = fixed abode, Substance use: C = Cocaine, H = Heroin, THC = Cannabis, ADHD = Attention Deficit Hyperactivity Disorder, M_{t1} = mean score at admission of therapy, M_{t2} = mean score at termination of therapy, PD = personality disorder, GSI = Global Severity Index.

Couple 5: The couple behaved mostly harmonic and adjusted to each other. For example, they often shared the same topics. If one partner focused on medication, so did the other. The same could be said about their mood. On the one hand conflicts seemed to be repudiated, on the other hand, the couple sometimes entrapped in massive conflicts with mental and physical abuse. Here, the male partner was the submissive and the female the overt aggressive part. The interaction was conceptualized as an offender-victim relationship. The dominant affects of him were fear of loss, whereas she felt fury and guilt. They resolved these conflicts by caring of each other. Consequently, the psychodynamic characterization revealed a repetitive pattern between care and neediness and between control and submission.

Table 8 shows the demographic and clinical variables as well as the outcome changes for Couple 5. The couple was in early adulthood and were three years together. Both didn't complete a vocational training, but had a stable housing. They used multiple drugs. She had no comorbid disorder and was Hepatitis B and C negative, in contrast he had a comorbid Attention Deficit Hyperactivity Disorder and was Hepatitis B positive. For Couple 5 the BSI data are missing. Follow-up data showed, that both partners received subsequent therapy.

Table 8. Demographic and clinical variables and outcome change for Couple 5.

	5W		5M	
Demographic and clinical variables				
Age (years)	25		22	
Length of partnership (years)	3		3	
Education	-		-	
Housing	pos.		pos.	
Substance use	B, C, H, O, THC,		A, B, H	
Comorbidity	none		ADHD	
Hepatitis B	neg.		pos.	
Hepatitis C	neg.		neg.	
Treatment length (days)	86		100	
Outcome variables				
BSI	M_{t1}	M_{t2}	M_{t1}	M_{t2}
GSI	n.a.	n.a.	n.a.	n.a.
Somatization	n.a.	n.a.	n.a.	n.a.
Obsession-Compulsion	n.a.	n.a.	n.a.	n.a.
Interpersonal Sensitivity	n.a.	n.a.	n.a.	n.a.
Depression	n.a.	n.a.	n.a.	n.a.
Hostility	n.a.	n.a.	n.a.	n.a.
Phobic Anxiety	n.a.	n.a.	n.a.	n.a.
Paranoid Ideation	n.a.	n.a.	n.a.	n.a.
Psychoticism	n.a.	n.a.	n.a.	n.a.
Seeking subsequent therapy	yes		yes	

Note. W = woman, M = man, Education: + = completed a vocational training, - = completed no vocational training, Housing: neg. = no fixed abode, pos. = fixed abode, Substance use: C = Cocaine, H = Heroin, THC = Cannabis, B = Benzodiazepine, A = Alcohol, PD = Personality Disorder, M_{t1} = mean score at admission of therapy, M_{t2} = mean score at termination of therapy, GSI = Global Severity Index.

3.2. Symptom change

On average the patients didn't change significantly on the BSI between pre- to post-treatment. Only the patient 3W improved reliable and clinically significant. On the level of the couples, Couple 3 seemed to benefit most with regard to symptom reduction. *Table 9* presents the symptom change between pre- and post-treatment for women and men separately. None of the effects gained significance. For the men, all effect sizes were at least small in size. Large effects were found for the GSI, Interpersonal Sensitivity, Depression, Paranoid Ideation and Psychoticism. For women the effect sizes were also at least small in size, with the exception of the GSI and Obsession-Compulsion. The largest effect was found for Somatization. However, it should be noted, that for women Interpersonal Sensitivity, Hostility and Paranoid Ideation increased during inpatient therapy.

Table 9. Means, standard deviations and results of the paired sample *t*-test for the pre-post treatment comparisons on BSI for women and men

	differences	t_1		t_2		p	Cohen's d			Post Paired
		M	SD	M	SD		M	SE		
GSI	Women	1.11	0.80	1.05	1.05	0.06	0.30	0.21	n.s.	0.10
	Men	1.11	1.03	0.90	1.02	0.21	0.07	2.84	n.s.	1.64
Somatization	Women	1.10	0.95	0.69	0.99	0.41	0.25	1.63	n.s.	0.81
	Men	1.19	1.46	1.10	1.40	0.09	0.13	0.73	n.s.	0.42
Obsession-Compulsion	Women	1.09	0.89	1.00	1.23	0.09	0.40	0.21	n.s.	0.11
	Men	0.94	0.54	0.67	1.01	0.28	0.43	0.64	n.s.	0.37
Interpersonal Sensitivity	Women	0.69	0.55	1.19	1.48	-0.50	0.68	-0.73	n.s.	-0.37
	Men	1.50	1.32	0.75	0.87	0.75	0.29	2.60	n.s.	1.50
Depression	Women	1.13	0.95	0.83	1.01	0.29	0.29	1.00	n.s.	0.50
	Men	0.95	1.07	0.67	1.15	0.28	0.11	2.55	n.s.	1.47
Hostility	Women	0.75	0.85	1.13	1.67	-0.38	0.46	-0.82	n.s.	-0.41
	Men	1.13	1.21	1.00	1.00	0.13	0.13	1.00	n.s.	0.58
Phobic anxiety	Women	1.03	0.80	0.70	0.58	0.33	0.44	0.73	n.s.	0.37
	Men	0.93	0.81	0.67	0.31	0.27	0.29	0.92	n.s.	0.53
Paranoid ideation	Women	0.65	0.44	0.90	1.18	-0.25	0.46	-0.54	n.s.	-0.27
	Men	1.13	0.61	0.80	0.53	0.33	0.07	5.00	n.s.	2.89
Psychoticism	Women	1.00	1.01	0.60	0.95	0.40	0.28	1.41	n.s.	0.71
	Men	1.07	1.03	0.67	0.83	0.40	0.12	3.46	n.s.	2.00

Note. BSI= Brief Symptom Inventory, t_1 = admission of therapy, t_2 = termination of therapy, $n = 4$ for women. $n = 3$ for men, possible range: 0-4, M = Mean, SD = Standard deviation, GSI = Global Severity Index, SE = Standard error, T = t -value.

3.3. Association between demographic and clinical variables and symptom change

There were no associations between age, length of partnership, education, housing, substance use, comorbidity, presence of Hepatitis B and C, treatment length and symptom change in BSI.

Discussion

4.1. Summary of results

The present study described the psychodynamics of five concordant couples, symptom change and information about seeking subsequent therapy. We showed that it is feasible and clinically meaningful to treat couples concordant for substance use in the same ward. The psychodynamic characterization of the five concordant couples revealed recurring patterns of collusion, involving divided roles between dependence and independence, caregiving and neediness, activity and passivity, control and submission, strength and deficiency as well as superiority and inferiority. The patients didn't change significantly on the BSI between pre- to post-treatment, although men ($d = 1.64$) seemed to benefit to a greater extent than women ($d = 0.10$). Results showed large effects for men in Interpersonal Sensitivity, Paranoid Ideation and Psychoticism and large effects for women in Somatization.

4.2. Discussion of the effects

4.2.1. Results of couples

Interestingly, Couple 3 showed (admittedly with the longest treatment duration compared with the other couples) most symptom reductions (within both partners). This couple separated after treatment termination. The discrepancy in substance use may have created problems and finally led to a separation at treatment termination. This might be due to the fact, that Couple 3 was the only couple in which only one partner used heroin (the man). In all other couples both partners used heroin.

4.2.2. Symptom change in individuals

On the individual level, only patient W3 showed reliable and clinically significant gains in GSI. This result is surprising, because literature shows that patients with substance use disorders can gain significant effects in symptom load, for example on depression [47].

4.2.3. Differences between men and women

Concerning the GSI, it is very interesting, that males benefitted more than females. While gender differences are well examined concerning substance-related epidemiology, demographic, the progression of dependence, comorbidity, treatment entry, retention, and completion [48-50], there aren't many studies, which investigated the differential effects on symptom load between men and women. Kosten et al. [51] and Mc Hugh et al. [52] reported comparable treatment effects for men and women. These results are contradictory to our findings. The gender differences found in our study warrant further research.

Concerning the different scales, large effects were found for decreased Interpersonal Sensitivity, Paranoid Ideation and Psychoticism in men and for Somatization in women. Improvements in Interpersonal Sensitivity, Paranoid Ideation and Psychoticism in men are in line with the finding, that couples therapy is effective in reducing dyadic adjustment and intimacy [53] as well as in reducing partner violence, which is usually a problem of the male partner [54].

4.3. Limitations of the study

The inferences which can be drawn on the current study have several limitations. As this study used a naturalistic design without randomization or control groups, no conclusions can be drawn about the causality of the reported effects. Furthermore, the differential impact of the various treatment elements and the specific setting of the inpatient treatment remain unclear. It also remains unclear how sustainable these effects are, since no follow-up examination of symptom load was performed. We did not collect addiction-related outcomes, as we had an open setting, where no drug searches were routinely performed, so we don't know how the patients developed in relation to their addictions. The study was further constrained by its small sample size, which may lead to limitations regarding reliability and representativeness of the results. In addition, no satisfactory study completion rate was achieved in this study. Low response rates are problematic as they may distort the results, reduce external validity and undermine the scientific credibility of conclusions from clinical trials [55, 56]. We didn't systematically collect the causes of missing data, but we assume, that non-completion of study measures was primarily caused by a lack of motivation and compliance. It should also be noted critically that psychodynamic characterization was not a standardized procedure. This may have distorted interrater reliability. Another major point is that only self-assessment tools were used to measure symptom load. The advantages of these measures can be found in their economy, practicality and cost efficiency. At the same time, they may be fraught with substantial sources of errors [57].

4.4. Conclusion and outlook

The investigation of concordant couples is a relatively new research field, since most literature deals with patients who use drugs and have partners who are drug-free. Treating concordant couples at the same time and in the same setting is challenging for the team and fellow patients. Our results provide preliminary evidence that it is feasible and clinically useful to treat concordant couples in the same ward. This study demonstrated that inpatient therapy might help to address the specific problems in the relationship of concordant couples, which may lead to a better prognosis. We showed that inpatient therapy offers the possibility to examine and work through the complex psychodynamics of concordant couples. Our study provides preliminary evidence that concordant couples show characteristic patterns of collusion, which are related to substance abuse. Our patients benefited not statistically significant from the treatment, but showed symptom reductions at treatment termination. These effects were larger for the men than for the women.

Future studies should focus on the mechanisms of change of the treatment of concordant couples to determine which treatment is most effective for which individuals with specific deficits. Future studies may want to contrast the outcomes of concordant couples treated simultaneously and separate. Also, it would be interesting to examine possible gender differences when concordant couples are treated together. In future studies, other measures should be included to assess for instance relationship dynamics, social support and substance use. We recommend to use the Alcohol, Smoking and Substance Involvement Screening Test [ASSIST, 58].

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Abbreviations

BSI: Brief Symptom Inventory

PDT: "Psychiatrische Dienste Thurgau"

NADA: National Acupuncture Detoxification Association (NADA)

TFP: Transference Focused Psychotherapy

ASSIST: Alcohol, Smoking and Substance Involvement Screening Test

Declarations

- Ethics approval and consent to participate: All patients gave their consent to participate in the study. Consent was given according to the guidelines of the Ethics Committee of Eastern Switzerland.
- Consent to publication: All patients consented to the usage and publication of their data.
- Availability of data and material: Available from the first author on request.
- Competing interest: None of the authors have got competing interests.
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- Authors contributions:
 - Hansen initialized, drafted, and reviewed the publication
 - Thomas reviewed the publication and gave important input
 - Kraus worked on the revision of the publication
 - Brokatzky interviewed the patients and reviewed the publication
 - Sternbauer compiled data and reviewed the publication
 - Rudaz calculated the effect sizes and worked on the revision of the publication
 - Dammann reviewed the publication and gave final approval
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