The ability of case managers to clinically judge demoralization within substance dependent outpatients

A cross-sectional study

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1. English abstract.

Title: The ability of case managers to clinically judge demoralization within substance dependent outpatients.

Background: Substance dependent outpatients are at risk of demoralization. Early identification of demoralization may play a key role in order to reduce destructive behavior such as relapse in drugs and suicide. Therefore it is important that case managers are able to identify demoralization of substance dependent outpatients.

Aim: The aim of this study is to explore the ability of case managers, working in Flexible Assertive Community Treatment (FACT) teams specialized in addiction, to clinically judge demoralization of substance dependent outpatients, compared to patients' self-reported demoralization.

Methods: A cross-sectional, observational design was used. Case managers were invited to complete a clinical judgement questionnaire and also self-rate their degree of certainty of their answers. Patients were invited to complete a self-report Demoralization Scale (DS). Differences in clinical judgement between the case managers and patients' DS were explored using the sensitivity and specificity. The degree of certainty is analyzed using an independent t-test.

Results: Twenty-one case managers and 79 patients from two FACT teams were included. The prevalence of demoralization, using a cut-off score for demoralization of ≥ 46, was 43%, with a sensitivity of case mangers clinical judgement of 0.85 and specificity of 0.62. Based on independent t-test analysis, to detect the differences in the correct and incorrect answers of the degree of certainty of case managers' clinical judgement, there were no significant differences ($p = .147$).

Conclusion and implications of key findings: This study highlights that the clinical judgement by case managers did not cover the whole diagnosing process. Further research should determine what the needs of case managers are to be able to identify demoralization within patients.

Key words: Demoralization, substance abuse (MeSH), case manager, Flexible Assertive Community Treatment, clinical judgement.

2. Nederlandse samenvatting

Titel. Het vermogen van casemanagers om demoralisatie bij middelen afhankelijke patiënten klinisch in te schatten.

Achtergrond: Middelen afhankelijke patiënten lopen risico op het ontwikkelen van demoralisatie. Vroegtijdige identificatie van demoralisatie kan een sleutelrol spelen om destructief gedrag te verminderen, zoals terugval in drugs en suïcide. Het is belangrijk dat casemanagers demoralisatie van middelen afhankelijke patiënten kunnen identificeren.

Doel. Het doel van deze studie is te onderzoeken of casemanagers, werkzaam in een Flexible Assertive Community Treatment (FACT), in staat zijn om demoralisatie bij middelen afhankelijke patiënten in te schatten, in vergelijking met een door patiënten zelf ingevulde demoralisatie lijst.

Methode. Cross-sectioneel, observationeel onderzoek design is gebruikt. Casemanagers werden uitgenodigd om een vragenlijst voor een klinische inschatting af te ronden en de mate van zekerheid van hun antwoorden te beoordelen. Patiënten werden uitgenodigd om de Demoralisatie Schaal (DS) in te vullen. Verschillen in de klinische schatting tussen de casemanagers en de DS van patiënten werden onderzocht met behulp van de sensitiviteit en specificiteit. De mate van zekerheid is geanalyseerd met behulp van een onafhankelijke t-test.

Resultaten. Eenentwintig casemanagers en 79 patiënten uit twee FACT teams zijn geïncludeerd. De prevalentie van demoralisatie, met behulp van een cut-off score voor demoralisatie van ≥ 46, was 43%, met een sensitiviteit van casemanagers klinische inschatting van 0,85 en specificiteit van 0,62. Er was geen significant verschil (p =.147) in de mate van zekerheid tussen de correcte en incorrecte klinische inschattingen van casemanagers.

Conclusie en aanbevelingen. In dit onderzoek is gebleken dat de klinische inschatting van casemanagers niet het gehele diagnose proces van demoralisatie dekt. Verder onderzoek moet bepalen wat de behoeften van casemanagers zijn om demoralisatie te identificeren bij patiënten.

Trefwoorden: Demoralisatie, Middelen misbruik, Casemanager, Flexible Assertive Community Treatment, Klinische inschatting.

3. Introduction

Substance dependency is a chronic relapsing disorder and is increasingly considered to be a chronic brain disease(1–3), which often comes with a destructive lifestyle and lower frustration tolerance(2,4). Patients with substance dependency often have difficulties to manage stressful events or persevere goals in their lives(5,6). These negative psychological aspects of addiction are closely related to the concept of demoralization(1).

Demoralized people are conscious of having failed to meet their own expectations, or those of others. They are unable to cope with stressful situations as they feel powerless to change and cannot extricate themselves from their unpleasant situation(7,8). Demoralization is a state of hopelessness, helplessness and isolation in which the person is merely trying to survive(9–12).The feeling of hopelessness and loneliness might lead to suicide attempts(13), where the feeling of helplessness might cause relapses in substance abuse(14). Early identification of demoralization could play a key role in order to reduce destructive behavior such as relapse in drugs and suicidal behavior(1,11,13,15).

Treatment of substance dependent patients in the Netherlands is delivered by case managers within Flexible Assertive Community Treatment (FACT) teams. These FACT teams focus on outreach and provide persistent, intensive care and treatment to substance dependent outpatients(16). Case managers work both individually and as a team depending on the intensity and complexity of patients' care needs(16–19).

Demoralization not only influences patients negatively, it also has its effect on the patient-case manager relationship. Demoralized patients transfer their feelings of demoralization onto their case manager(1). The case managers aim for improvement but encounter a lack of treatment progress(20,21). Even highly motivated case managers tend to be demoralized by the lack of success they encounter(21). As a result feelings of despair of the case manager may grow and result in attempts to avoid the interaction with the demoralized patient(21). Case managers need to understand how their countertransference impacts the professional relationship with the patient(1), because in order to overcome demoralization the patient is in need for more engagement from their case manager, not less(9).

Recognizing demoralization is important to prevent disastrous consequences for patients. Therefore, it is important that case managers are able to identify demoralization of patients and subsequently act upon it by reinforcing the professional relationship(1,7,9). Demoralization can be identified with various measuring instruments(22). A commonly used measuring instrument is the demoralization scale (DS)(1,15,24). The authors of the DS proposed that demoralization is present when feelings of hopelessness and meaninglessness occur, with an attitude of helplessness, poor coping and a feeling of failure(24).

Despite the numerous instruments and the importance of identifying demoralization, the clinical use of these instruments remain impractical(22). Clarke and Kissane(7) describe that demoralization is difficult to fully comprehend and is not captured in structured assessment tools or checklists. Connor and Walton(25) do not favor tools that measure demoralization at a particular point in time, because it may change significantly when the context changes. In fact, recording demoralization scores can distract case managers from responding to present cues(25). Therefore it is important to gain insight in the ability to clinically judge demoralization by case managers instead of identifying demoralization through the use of instruments.

The ability of case managers to clinically judge demoralization of substance dependent outpatients has not been studied before. This study examined the ability of case managers to clinically judge demoralization of substance dependent outpatients. To better understand the clinical judgement the certainty of the clinical judgement was assessed. The hypothesis was that the degree of certainty of the correct clinical judgement of case managers was higher then the degree of certainty of the incorrect clinical judgements.

4: Aim

The aim of this study is to explore the ability of case managers, working in Flexible Assertive Community Treatment (FACT) teams specialized in addiction, to clinically judge demoralization of substance dependent outpatients, compared to patients' self-reported demoralization.

5: Method

5.1 Design

A cross-sectional, observational study design was chosen to investigate case managers' ability to identify demoralization of substance dependent patients. This design makes it possible to collect data at one single point in time and compare case managers' clinical judgements with the patients' DS scores, which are collected at the same time through a survey. With an observational design the data from the case managers and patients were recorded without manipulating the clinical practice.

5.2 Population & domain

The population consisted of case managers working in a FACT team and substance dependent outpatients who receive treatment from a large center for addiction care in the Netherlands. An average FACT team serves 200–220 patients and consists of 7–8 FTE case managers (psychiatric nurses, psychiatric community nurses, social workers, substance

abuse counselors, nurse practitioner), a psychiatrist, a psychologist and Supported Employment Worker(17). In this study it was important to have sufficient judgements of patients' demoralization taken by different case managers. Therefore two FACT teams, from which each team incorporates twelve case managers were approached to participate. Case managers were recruited, using a purposive sampling strategy, with total population sampling. Total population sampling is a purposive sampling technique with which it is possible to examine the entire population (i.e., the total population of case managers in FACT team A and B) that has a particular set of characteristics (i.e., specific experience, knowledge, skills, exposure with case management). This purpose is chosen because the size of the FACT team population is very small(26). Case managers participated multiple times in this study depending on how many patients they had in their caseload and who were willing to participate, leading to an unequal number of patients and case managers. Patients were paired to their case manager. Case managers included their patients by convenience sampling. This study included patients with substance use disorders (cocaine, heroin, methadone, opium, opiates, benzodiazepine, cannabis, speed, alcohol, GHB, poppers, ecstasy), who were registered patients within a FACT team and aged ≥18 years. Patients who were shared caseload patients (patients will be transferred to shared caseload when they are at risk of readmission or crisis)(17) or who did not speak Dutch were excluded. Data was collected over a 3-month period in 2017.

5.3 Data collection

Case managers were invited to complete a demographic and clinical judgement questionnaire on paper. The clinical judgement questionnaire was developed and reviewed by the research team on feasibility and completeness. Before data collection started the questionnaire was reviewed by members of the research team and a case manager to improve the questionnaire's clarity for a case manager.

The following two nominal, binary (yes or no) questions were asked to case managers:

1. I believe that this patient is demoralized
2. I believe that this patient is more demoralized than the average of all patients within my FACT team

Additionally, case managers were asked to self-rate their degree of certainty in each of the two questions on a scale from zero to 100.

After the case managers filled in their questionnaires patients were invited to complete a series of demographics questions and the self-report Demoralization Scale (DS). As a result the data of the case manager and the patient remain paired, which was needed to analyze the results.

The DS measures five dimensions with 24 items describing loss of meaning and

purpose (5 items), dysphoria (5 items), disheartenment (6 items), helplessness (4 items), and sense of failure (4 items). They are scored using a five-point Likert scale, ranging from 0 (never) to 4 (all the time). Higher scores indicate higher levels of demoralization. The minimum score is 0 and the maximum score is 96(24).

The validated Dutch version of the DS was used, with psychometric properties comparable to the English version and showing adequate reliability and validity, in a community-based sample as well as in an opioid dependent group of patients(1). Scale reliabilities were Cronbach's α D 0.79 for dysphoria; α D 0.77 for disheartenment; α D 0.82 for helplessness; α D 0.61 for sense of failure; α D 0.82 for loss of meaning; and α D 0.92 for the total demoralization score(1,15).

The cut-off scores for demoralization vary across multiple studies which creates difficulties in interpretations and comparisons(27). This study uses the fixed cut-off score that has been used in former studies on substance dependent patients(28). In this study patients with a score of ≥46 points are considered demoralized.

5.2 Study procedure

The researcher (MvT) approached two FACT teams to participate in this study. First, the researcher explained the study and the concept of demoralization to case managers. It was important to explain what demoralization is according to scientific research in order for case managers to be able to make a clinical judgement. The quality of the presentation regarding the concept of demoralization was checked by the members of the research team. The clinical judgement questionnaire was presented during two work meetings and case managers received instructions on how to complete the questionnaire. This instruction was brief and emphasized that case managers should answer the clinical judgement questionnaire based on their professional expertise and experience representing their perception of patients' functioning. If case managers decided to participate, they were asked to approach and inform their patients to participate. The case managers gave prospective participants information about the study. The case managers also obtained informed consent (IC) from the patients. When the patients signed their IC the case managers were also asked to sign their IC. This approach has been chosen in consultation with IrisZorg Health Sciences ethics committee (Arnhem, NL). The health sciences committee explained that the patients probably feel more comfortable with their case manager nearby instead of an unknown researcher.

Data was collected in the consulting room of the case manager or during home visits. Data collection started with the questionnaire for the case manager to preclude measurement bias(29). This way a case managers' judgement was not influenced by the response of the patients filling in their questionnaires. The case manager was present or

nearby when the patient completed the DS. The research team was aware of the possible reporting bias which could occur because of the presence of the patients' case manager(29). There was a risk of socially desirable answers because of this presence. Despite this potential negative consequence, this approach was chosen because it was expected to improve the response rates. Patients will probably feel more comfortable with their case manager nearby than an unknown researcher.

5.4 Data analysis

Descriptive statistics, including mean, standard deviation (SD) and range were calculated. Categorical data was described using counts and percentages. To test for differences in demoralization on the five subscales and total scores of the Demoralization Scale between group analyses of variance were performed. In this study there were no missing values. Statistical analyses were preformed using IBM SPSS version 22, (Armonk NY, USA).

Differences in clinical judgement of the case managers and patients' self report were explored using the sensitivity and specificity(30,31). The two questions of the clinical judgement questionnaire for case managers had different cut-off points. First, the clinical judgement of demoralization was assessed against the cut-off points of the DS (≥46 means demoralized). For the second question the mean demoralization score of all the patients in a FACT team was set as a cut-off point. Both FACT teams had different mean demoralization scores set as a cut-off point. Case managers' judgements were compared with the mean cut-off demoralization score related to their FACT team. The 95% confidence interval was calculated to avoid possible type 1 errors. The strength of the association between the degree of certainty (VAS i.e. continuous variable) and the exactness (true/false dichotomous variable) of case managers' clinical judgement was tested with a Point-Biserial Correlation(32–34). After the Point-Biseral correlation was calculated a two-tailed test of significance was executed, using a p-value of .05.

The point-biserial correlation is only appropriate to use when the data meets five assumptions that are required for a point-biserial correlation to providing a valid result(32–34). When the data did not meet these assumptions, an independent t-test was performed, using a p-value of .05.

5.5 Ethical issues

A review from an accredited METC or CCMO was not necessary according to the Dutch Central Committee on Research Involving Human Subjects(35). The study was approved by IrisZorg Health Sciences Ethics Committee (Arnhem, NL). The ethical integrity of the study was assured by each participant being given verbal and written information about the study and providing their informed consent as part of their survey response. Case managers and

patients' identifiable data were not collected, apart from those case managers who volunteered to share their personal codes to participate for the incentive of 50 euro's. The aim of using an incentive was to increase the response rate of case managers. Their personal details were kept in a separate password-protected file, which was only accessible to the principal investigator (MvT).

6. Results

Twenty-one case managers and 79 patients of two FACT teams were included in this study. FACT team A consisted of 12 case managers. In FACT team B nine of the 12 case managers were willing to participate in this study. The baseline characteristics of case managers in the two FACT teams did not significantly differ from each other. The sample of the 21 case managers consisted of mainly women (76.2%). The mean age was 43.1 (SD, 10.4; range, 25-61 years). Most case managers were nurses (42.9%)(table 1).

(Table 1).

FACT team A included 61 patients and FACT team B included 18 patients. There were significant differences of the patients' age, substance use, unknown psychiatric disorder, duration in addiction and duration in treatment between the two FACT teams. In FACT team A patients would more often use opiates (p.000), cocaine (p.004) and benzodiazepines (p.034). The total sample of 79 patients consisted of mainly men (75.9%). The mean age was 46 years (SD, 9.0; range, 26-65 years) (table 2).

(Table 2).

The demoralization scores within the two FACT teams were comparable to each other on all (sub)scales. The mean demoralization was 40.9 (SD,18.6; range, 9-83)(table 3).

(Table 3).

Despite the significant differences in baseline characteristics between the patients in both fact teams, the data were not analyzed separately. The baseline characteristics of the case managers (table 1) and the demoralization scores of patients within the two FACT teams (table 3) were not significantly different from each other. Moreover, the difference in the number of patients between FACT teams A and B is too large to make a good

comparison. Besides that the sample size of FACT team B is too small to perform a valid scientific analysis.

The prevalence of demoralization, using a cut-off score of ≥ 46, was 43% (CI 31.94% - 54.67%). Thirty-four of the 79 patients were demoralized. Patients have 63.0% chance (29 of the 46 cases) that case managers correctly indicate demoralization when the patient actually is demoralized (demoralization cut-off score of ≥ 46). There is an 84.4% chance (28 of the 33) that someone, who is assessed as not demoralized by the case managers' clinical judgement, actually is not demoralized.

When a cut-off score of the patients' demoralization was used (cut-off point ≥46), there was a sensitivity of 0.85 (95% CI, 0.69-0.95) and specificity of 0.62 (95% CI, 0.47-0.76). When case managers were asked to rate patients on the mean demoralization within a FACT team (using the mean demoralization score as a cut-off point), there is a sensitivity of 0.43 (95% CI 0.27-0.59) and specificity of 0.79 (95% 0.64-0.91)(table 4).

(Table 4).

A point-biserial correlation was run to determine the relationship between the degree of certainty and the exactness of case managers' clinical judgement using the cut-off point of ≥46. There was a negative correlation between the degree of certainty and exactness, which was not statistically significant (rpb = -.079, n = 79, p = .147).

For the mean demoralization scores of both FACT teams it was not appropriate to use a point-biserial correlation, because the data did not meet the five assumptions that are required for a point-biserial correlation. Therefore independent t-test analyses were produced to determine the relationship between the degree of certainty and the exactness of case managers' clinical judgement. Based on independent t-test analysis, the degree of certainty of case managers' clinical judgement, when using the cut-off point of ≥46, was not significantly different (p = .147), which was also shown with the point-biserial correlation. When case managers correctly indicate demoralization, the mean certainty was 77.9. The mean degree of certainty of the incorrect answers was 71.8. Using an independent t-test, when the mean demoralization score in a FACT team was used, the mean degree of certainty of the correct answers was 73.8. The mean degree of certainty of the incorrect answers was 77.6. There was no significant difference (p= .326) between the degree of certainty of the correct and incorrect answers (table 5).

(Table 5).

7. Discussion

This study presents the ability of case managers to clinically judge demoralization of substance dependent patients. The case managers detect demoralization in 85% of the cases but its relatively low specificity of 62% means their judgements will be falsely positive for a number of patients who are not demoralized. It was expected that the degree of certainty of the incorrect clinical judgement of case managers was lower then the degree of certainty when case managers correctly indicate demoralization. Though, there was no significant difference of the degree of certainty between correct and incorrect answers for both used cut-off points.

In this study case managers seem to overestimate demoralization of substance dependent patients while, according to the DS cut-off point, they were not demoralized. However it is possible that case managers judge the patients' demoralization on their usual pattern of responses, instead of the performance of the last 14 days. As a result, they may have estimated how demoralized the patient was in general. This is in line with existing research whereas effective clinical judgement rests on engaging with patients and their concerns, as well as knowing the patients and their usual pattern of responses(36)(37). In contrast, case managers seem to underestimate demoralization according to the mean demoralization cut-off point. Self-serving bias could be the reason for underestimation, whereas case managers find it hard to compare their patients fairly with other patients, and to admit that their patient is more demoralized than other patients(38)(39). Overall, previous research shows that clinical judgement is tremendously complex and requires a flexible and nuanced ability to recognize salient aspects of an undefined clinical situation, interpret their meanings, and respond appropriately(36).

In this study there was an overestimation of demoralization. The question that arises is whether overestimating demoralization is a problem? It is known that when patients were not treated for demoralization this could have serious consequences(1,11,13,15). Treatment of demoralization consists of exploring meaning and purpose in life and scheduling positive activities. These activities will assist the redevelopment of a sense of mastery and control, and encourage a re-engagement in relationships and an enjoyment of aesthetic pleasures(7). It is to be expected that over treating of demoralization should not burden the patients. Further research is needed whether over treating patients for demoralization can have negative effects on patients.

Case managers seem to be overconfident with their incorrect clinical judgements. This corresponds with other studies in which the degree of certainty is requested(40,41). In line with existing research miscalibration, such as overconfidence or underconfidence, when making judgements and decisions is an important form of bias in reasoning(40–44).

Individuals often overestimate the 'correctness' of their knowledge, when it comes to decision-making or judgement tasks(40,41). This was also recognized in this study whereas case managers overestimated their incorrect answers. In the medical area of critical event risk assessment, overconfidence can result in delayed action (or worse, doing nothing) while in this context immediate response of intervention is needed(43).

Demoralization itself can fluctuate from day-to-day and even throughout one day in relation to what else is happening in people's lives(25). Diagnosing demoralization is according to Clarke and Kissane's not captured in structured assessment tools or a checklist approach because it can change significantly when the context changes(25). Case managers in this study recognize the fluctuation in patients' demoralization levels. The use of only a clinical judgement in this study did not seem to cover the whole diagnostic process to identify demoralization. Therefore it is important that case managers are familiar with various diagnostic categories, eligibility criteria of behaviors, how those behaviors typically manifest in people and their impact on recovering and rehabilitation including an individual's ability to perform self-care and adhere to the physician's orders(45).

Demoralization is not an adjustment disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV criteria. Slavney and Carter et al. describes that the absence from DSM has contributed to its neglect(9)(46). This was also noticed during the presentation of the concept of demoralization whereas case managers had little or no knowledge about the concept of demoralization. A first priority should be to increase the understanding of demoralization among case managers and other caregivers(9). Possible adoption of a diagnostic category of Demoralization Syndrome in the DSM could possibly ensure both recognition and treatment of this morbid mental state.

To appreciate the findings of this study, some aspects require further consideration. The current study has some limitations. First, the DS is used as a golden standard in this study. Several considerations must be made to determine whether the DS constitutes valid methods for the assessment of demoralization understood as a distinct condition(27). The DS has showed adequate reliability and validity, but the validation process is as far as we know not mentioned in research.

Another limitation of the study is that patients were not asked if they were affected by substance use when they filled in the questionnaire. Substance use can have influence on patients' behavior.

Strength as well as a limitation in this study is the inclusion of two FACT teams. The diverse sample was a benefit, but the limited number of patients in FACT team B caused a too small sample size to run analyses for both teams separately. The unequal distribution is most likely due to the fact that the researcher (MvT) is well known by the case managers within FACT team A.

This study highlights that case mangers were not completely able to judge demoralization of substance dependent outpatients. The case managers detect demoralization in 85% of the cases but its relatively low specificity of 62% means their judgements will be falsely positive for a number of patients who are not demoralized. The lack of knowledge about demoralization and the complexity to make a clinical judgement can cause the inability to correctly judge demoralization. Therefore it is important that case managers become familiar with the concept of demoralization. Further research should determine what the needs of case managers are in identifying demoralization of substance dependent patients.

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9 Tabels

Table 1: Socio-demographic features of case managers

Socio-Demographic Features case managers	**FACT*[1] team A (N=12)**	**FACT*[1] team B (N=9)**	**P**	**Total both groups (N=21)**
Age, (mean, SD, range), in years	44.5 (12.1;25-61)	41.22 (7.0;29-52)	.477	41.8 (10.4;25-61)
Female, n (%)	10 (83.3%)	6 (66.7%)	.375	16 (76.2%)
Duration of service in addiction, (mean, SD, range), in years	9.9 (6.90-27)	8.7 (3.4;6-17)	.625	8.8 (4.4;0-27)
Duration of service in this organization, (mean, SD, range), in years	9.9 (6.9;0-27)	8.3 (3.8;3-17)	.544	8.8 (4.5;0-27)
Working hours, (mean, SD, range), in hours	31.6 (3.8;24-36)	31.1 (6.5;18-36)	.837	32.9 (3.5;18-36)
Occupation, n (%)				
Nurse	8 (66.7%)	1 (11.1%)	.074	9 (42.9%)
Social worker	3 (25.0%)	3 (33.3%)		6 (28.5%)
Psychiatric nurse	1 (8.3%)	2 (22.2%)		3 (14.3%)
Nurse practitioner	0	1 (11.1%)		1 (4.8%)
Other	0	2 (22.2%)		2 (9.5%)

*[1] Flexible Assertive Community Treatment

Table 2: Socio-Demographic Features of substance dependent outpatients

Socio-Demographic Features and Subscale Scores of the DS*[1]	**FACT team A (N=61)**	**FACT team B (N=18)**	**P**	**Total**	**Demoralized (DS*[1] ≥46) (N=34)**	**Not demoralized (DS*[1] <46) (n=45)**	**P**
Age, (mean, SD, range), in years	47.5 (7.6;32-65)	40.2 (11.2;26-64)	.002	45.8 (9.0;26-65)	44.4 (9.0;27-58)	47.0 (9.0;26-65)	.514
Male, n (%)	45 (73.8%)	15 (83.5%)	.404	60 (75.9%)	23 (38.3%)	37 (62.7%)	.133
Duration of addiction, (mean, SD, range), in years	25.7 (9.0;2-43)	16.6 (7.2;4-30)	<.000	23.6 (9.4;2-43)	23.6 (9.8;2-43)	23.6 (9.3;4-43)	.619
Duration of treatment, (mean, SD, range), in years	16.1 (11.8;0-43)	7.9 (8.1;0-23)	.002	14.2 (11.6;0-43)	14.3 (11.7;0 -36)	14.1 (11.6;0-43)	.790
Living situation, n (%)							
Alone	33 (54.1%)	8 (44.4%)	.471	41 (51.9%)	19 (46.3%)	22 (53.7%)	.538
With partner	6 (9.8%)	3 (16.7%)	.423	9 (11.4%)	3 (33.3%)	6 (66.7%)	.532
With family	7 (11.5%)	2 (11.1%)	.966	9 (11.4%)	5 (55.6%)	4 (44.4%)	.420
Institution	10 (16.4%)	1 (5.6%)	.243	11 (13.9%)	3 (27.3%)	8 (72.7%)	.255
Alone with house counseling	2 (3.3%)	1 (5.6%)	.657	3 (3.8%)	0 (0%)	3 (100%)	.125
Homeless	3 (4.9%)	3 (16.7%)	.098	6 (7.6%)	4 (66.7%)	2 (33.3%)	.224
Used addictive substances in the last 30 days, n (%)*[2]							
Opiate	57 (93.4%)	4 (22.4%)	.000	61 (77.2%)	24 (39.3%)	37 (60.7%)	.282
Cocaine	37 (60.7%)	4 (22.4%)	.004	41 (51.9%)	17 (41.5%)	24 (58.5%)	.823
Cannabis	21 (34.4%)	7 (38.9%)	.728	28 (35.4%)	15 (53.6%)	13 (46.4%)	.235
Benzodiazepine	27 (44.3%)	3 (16.7%)	.034	30 (38.0%)	17 (56.7%)	13 (43.3%)	.065
Alcohol	27 (44.3%)	10 (55.6%)	.399	37 (46.8%)	15 (40.5%)	22 (59.5%)	.820
Speed	6 (9.8%)	3 (16.7%)	.423	9 (11.4%)	3 (33.3%)	6 (66.7%)	.725
Ecstasy	1 (1.6%)	1 (5.6%)	.353	2 (2.5%)	1 (50%)	1 (50%)	1
Psychiatric diagnose, n (%)							
Anxiety disorder	10 (16.4%)	1 (5.6%)	.243	11 (13.9%)	4 (36.4%)	7 (63.6%)	.630
Mood disorder	11 (18.0%)	3 (16.7%)	.894	14 (17.7%)	9 (64.3%)	5 (35.7%)	.077
Multiple disorder	3 (4.9%)	3 (16.7%)	.098	6 (7.6%)	3 (50%)	3 (50%)	.720
Psychotic disorder	0	0					
No disorder	37 (60.7%)	9 (50%)	.421	46 (58.2%)	17 (37.0%)	29 (63.0%)	.197
Unknown	0	2 (11.1%)	.008	2 (2.5%)	1 (50%)	1 (50%)	.840

*[1] Demoralization Scale
*[2] Patients have scored on multiple items, because they used multiple substances

Table 3: Subscale Scores of the Demoralization Scale of substance dependent patients

DS scale	FACT team A (N=61)	FACT team B (N=18)	P	Total both groups
Loss of meaning, (mean, SD, range)	6.6 (4.7;0-18)	7.2 (4.0;0-14)	0.616	6.7 (4.5;0-18)
Dysphoria, (mean, SD, range)	10.2 (5.1;0-20)	11.1 (3.7;4-19)	0.481	10.4 (4.8;0-20)
Disheartenment, (mean, SD, range)	10.8 (5.6;1-23)	11.9 (5.9;0-22)	0.460	11.1 (5.6;0-23)
Helplessness, (mean, SD, range)	6.2 (4.0;0-15)	7.9 (2.7;2-15)	0.097	6.6 (3.8;0-15)
Sense of failure, (mean, SD, range)	6.6 (3.0;0-15)	6.3 (3.1;2-12)	0.755	6.5 (3.0;0-15)
Total demoralization score, (mean, SD, range)	39.9 (18,9;9-83)	44.2 (17.8;10-76)	0.387	40.86 (18.6;9-83)

Table 4: Performance of case managers clinical judgement

DS*[1] cut-off scores	Sensitivity (95% CI)	Specificity (95% CI)	Positive predictive value (95% CI)	Negative predictive value (95% CI)
≥46 FACT*[2] team A and B	0.85 (0.69-0.95)	0.62 (0.47-0.76)	0.63 (0.53-0.72)	0.85 (0.71-0.93)
FACT*[2] team A ≥ 46	0.84 (0.64-0.95)	0.58 (0.41-0.74)	0.58 (0.48-0.68)	0.84 (0.67-0.93)
FACT*[2] team B ≥ 46	0.89 (0.52-1.00)	0.78 (0.40-0.97)	0.80 (0.54-0.93)	0.88 (0.52-0.98)
Total mean demoralization FACT*[2] team A and B	0.43 (0.27-0.59)	0.79 (0.64-0.91)	0.68 (0.51-0.81)	0.57 (0.50-0.65)
Mean demoralization FACT*[2] team A ≥ 40	0.32 (0.17-0.51)	0.83 (0.65-0.94)	0.67 (0.44-0.84)	0.54 (0.47-0.61)
Mean demoralization FACT*[2] team B ≥ 45	0.78 (0.40-0.97)	0.67 (0.30-0.93)	0.70 (0.46-0.86)	0.75 (0.45-0.92)

*[1] Demoralization score

*[2] Flexible Assertive Community Treatment

Table 5: Degree of certainty of case managers clinical judgement

Degree of certainty	Demoralized	Not demoralized	P
Degree of certainty DS*[1] score ≥46, (mean, SD, range)	77.9 (16.6;30-100)	71.8 (17.0;30-100)	.147
Degree of certainty mean DS*[1] score, (mean, SD, range)	73.8 (20.9;20-100)	77.6 (12.7;50-100)	.326

*[1] demoralization scale