



RESEARCH ARTICLE

Dual diagnosis affects prognosis in patients with drug dependence in integrative care setting

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Abstract

Background: Dual diagnosis is a special case of psychiatric comorbidity in which the drug dependent patient also qualifies for other than dependence co-occurring mental health disorder. This old term is still maintained in bibliography in order to underline the difficulties in treating these patients. Dual diagnosis was found to negatively affect prognosis in patients with drug dependence. Nowadays, the treatment model for dual diagnosis has transformed its focus, from treating each disorder in independent setting to providing integrating care in one setting.

The aim of this study was to explore whether dual diagnosis is related with worse prognosis than simple drug dependence, even when integrative care is provided.

Methods: Forty-five consecutive patients (30 males, mean age 27.5 ± 6.7 , 15 females, mean age 26.4 ± 4.1), 16 of them were dually diagnosed, were admitted to a therapeutic community inspired, abstinence oriented, relapse prevention and rehabilitation program. Integrative care was provided in the sense that both diagnoses were managed by the same multidisciplinary team. Retention in the treatment was used as the endpoint for comparisons.

Results: By using time-to-event analysis differences revealed in time to relapse between the group of dually diagnosed and the group with drug-dependence only. (Log Rank Mantel-Cox test shown Chi-Square: 4.52, df=1, $p < .05$). Univariate and multivariate Cox-regression analysis was conducted and did not show any significant effects of gender, age, multiple-drug dependence, on time to relapse.

Conclusion: This study adds evidence to the fact that drug dependent patients with a comorbid mental health disorder show worse prognosis. Treating these dually diagnosed populations according to the integrative care model seems to have advantages in comparison to the previous model of treating each disorder in independent settings, namely a relapse prevention and rehabilitation program and an inpatient or outpatient mental health clinic. Despite these advantages, our findings underline the fact that dual diagnosis is still characterised by a higher relapse rate, even when treatment is provided according to a modern, integrative care model.

Keywords: Drug dependence, addiction, dual diagnosis, comorbidity, rehabilitation, relapse prevention

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Introduction

Individuals who are addicted to a legal or illegal drug often may also qualify for other co-occurring mental health disorder and vice versa. The comorbidity of drug dependence with a non-dependency mental disorder is consistently higher than 50% in clinical populations¹⁻³ but also remains high reaching 17% in general samples.⁴ In some populations the comorbidity of substance misuse has been estimated to reach 90%^{5,6} of the mentally disordered population, revealing that at least in some clinical populations dual diagnosis undoubtedly cannot be disregarded, whereas



some authors describe dual diagnosis as being the rule and not the exception.^{7,8}

Factors contributing to this comorbidity appear to be shared genetic vulnerability,^{9,10} developmental processes¹¹ and/or psychosocial adversities,⁹ as well as a possible causality relationship between drugs and mental disorder and vice versa.¹² The direction of the latter correlation has been shown to be from mental disorder to drugs,¹²⁻¹⁵ or the opposite,¹⁶⁻¹⁸ but these data do not exclude a possible reciprocal relationship, or in some cases no causal relationship but simple independent coexistence. Current neuroimaging data show that users of cocaine, heroin, inhalants, as well as cannabis, develop anatomical and functional white matter impairment, that are correlated with cognitive, affective and behavioural changes.¹⁹⁻²⁴ Drug users may have increased risk for developing mental disorder.¹⁶⁻¹⁸ Reversing the time sequence, individuals with a mental disorder may have increased risk for becoming drug users.^{12,25,26} Patients with psychosis may abuse substances in order to alleviate negative symptomatology, or the negative symptoms may be a predisposing factor for drug abuse and dependence.²⁷ Patients with psychosis not only have an increased risk for problematic use of alcohol, cannabis, stimulants, but also for heroin.¹² Depression is also correlated with substance abuse, even depression in schizophrenia.²⁸ An interesting epidemiological finding is that anxiety disorders usually start at an earlier age than drug dependence, whereas depression usually starts at an older age than drug dependence from legal or illegal substances.²⁵ Anxious patients commonly use drugs as a way to self-treat their symptomatology,^{29,30} and the negative consequences of self-medication, such as worst mental health despite higher usage of mental health services, has been underlined.¹⁴ In addition personality traits have also been found to play a role in substance use. More specifically, the trait of neuroticism as described by five-factor model as well as cluster B characteristics in DSM-

IV-TR, seem to play the more significant role.³¹⁻³⁴ Personality traits are also affecting substance selection.^{35,36}

In any case, from a clinical point of view dually diagnosed populations do need increased care³⁷ to the point that even special diagnostic criteria for dual diagnosis has been requested as being necessary in order to ensure best clinical practice.³⁸ The classical approach to managing these patients has been to treat the disorder with the most dominant clinical picture.^{39,40} Nevertheless, currently there is increasing evidence for providing integrative care in dually diagnosed populations, namely for treating these patients in one setting with therapists from the same multidisciplinary team.⁴¹⁻⁴⁶

In both dominant diagnostic systems, ICD-10 and DSM-IV-TR as well as in the upcoming DSM-5, drug dependence is considered to be a chronic axis-I mental health disorder. In this context, the comorbidity of two chronic mental health conditions, namely drug dependence and another axis-I or axis-II disorder, has traditionally been defined as dual diagnosis, even though some authors prefer to keep this term for use only in cases of drug dependency with co-occurring severe psychotic or mood disorder. Despite the fact that the concept of dual diagnosis is progressively replaced by comorbidity,⁸ in this study we keep using the term in order to underline the difficulties in treating mentally disordered patients with comorbid substance abuse and/or dependence. In any case, dual diagnosis is correlated with difficulties in treatment, prolongation of the duration of disorders,¹⁴ and a possible worsening of the prognosis.

The **aim** of this study was to explore whether dually diagnosed patients under integrative treatment have different prognosis compared to drug-dependent patients without a comorbid disorder, with both populations participating into



the same therapeutic program, under the care of the same multidisciplinary team.

Methods

Participants

Forty-five consecutive drug-dependent adult patients took part in this study (table 1).

The main outcome considered was retention in treatment, measured in months for the purposes of the analysis. All patients entered voluntarily the treatment program after informed consent, and no patient has been involuntarily treated under section. The study was approved by the ethics committee of the affiliated institutions. No allocation into groups took place, and all patients received the standard care provided.

Treatment offered

The therapeutic program was based on a modified therapeutic community (TC) model^{47,48} for drug dependent populations, that incorporates both a residential and an outpatient part in one treatment community, including the drug dependent as well as the dually diagnosed patients.⁴⁹ The therapeutic model was also inspired from milieu therapy^{50,51} and contingency management approach.⁵²⁻⁵⁵ No methadone or buprenorphine users was accepted in this facility, which were abstinence oriented, despite the fact that opiate substitute receivers could normally admitted into modified TCs.^{47,56}

Inclusion criteria

Forty-five consecutive patients with substance dependency entered the study. All of these patients took part in the same treatment program for drug users, with or without dual diagnosis. In order to enter the therapeutic program the patients had to 1)be older than 18 years old, 2)be abstinent from illegal drugs of dependence and alcohol for the 15 last days at least, 3)be highly motivated for treatment as confirmed in 3 initial appointments with a special nurse before entering

the program, 4)have a present mental state examination by a Psychiatrist and a Clinical Psychologist in order to exclude or confirm mental health comorbidity, and to exclude mental disability and/organic brain damage eg post-traumatic.

Statistical analysis

After descriptive statistics and correlation analysis, time-to-event as well as univariate and multivariate Cox regression analysis was conducted in order to explore for significant effects of gender, age, and multiple-drug dependence, on time to relapse. Time-to-event and Cox regression analyses conducted according to published methodology.⁵⁷ All statistical procedures were performed using the SPSS Statistics version 17.0 (SPSS Inc, Chicago Ill.).

Results

Between gender comparison for difference in age by using t-test showed no significant difference (table 1). Also there was no between gender significant difference in time until relapse (table 1). Correlation analysis did not reveal any significant correlation between time until relapse or retention in treatment and age or gender of the patient, category of the substance, multi-drug use, prescribed psychotropic medication use.

Time-to-event analysis showed differences (figure 1) in time to relapse between the group of drug dependence only and the group of the patients with a comorbid axis-I and/or axis-II mental health disorder (Log Rank Mantel-Cox test shown Chi-Square: 4.52, df=1, p< .05)

Univariate and multivariate Cox-regression analysis did not show any significant effects of gender, age, multiple-drug dependence, on time to relapse.

Discussion

Dually diagnosed participants in our study, even though they received integrative treatment,



showed poorer prognosis compared to drug dependent only population, when retention in treatment was used as the endpoint for between groups comparison. Other studies also found dual diagnosis to be a poor prognostic factor when compliance or adherence to treatment⁵⁸⁻⁶¹ and/or time until relapse and rehospitalisation^{58-60,62,63} were used as the endpoint. This finding is also consistent in studies that used other relative endpoints such as the symptom severity,^{58-61,64,65} as well as illness duration.^{58,61,64} Other authors that also found dual diagnosis to be a poor prognostic factor for relapse, underline that even when concomitant psychotropic medication treatment is used this is still not associated with successful participation in the treatment program.⁶⁶ This is also in agreement with our results, even though separate analysis for each mental health disorder category and/or substance category were not possible due to the inadequate sample size.

In our sample, most of participants with dual diagnosis, and predicted shorter time until relapse, were diagnosed with mood or anxiety disorder. A meta-analysis, that retrospectively explored for predictors for continued drug use during and after treatment, also showed depression and anxiety to be significant variables⁶³ for predicting relapse, even though this meta-analysis included population restricted in opiate users only. These diagnoses are common comorbidities in dually diagnosed drug dependent populations, as well as in our sample in which also consist predictors of worse prognosis.

In this dually diagnosed patients providing integrative care meaning that they were receiving concomitant treatment in the same setting integrated for both disorders, and not only treatment for drug dependence and referring or leaving the patient to navigate the health system in order to join other clinic for treating mental health disorder as was the usual practice in the past.^{39,40,95} Integration of treatment has been

suggested as best practise in treating different populations of dually diagnosed patients^{43-46,95-98} Integrative treatment is also suggested by in practise guidelines,⁹⁹ and it is considered the cost-effective approach in dually diagnosed patient management.¹⁰⁰ A possible explanation for this is that a multidisciplinary team is more effective when caring for both the mental disorder and drug dependency as it deals with the patient in a more holistic, biopsychosocial approach. Other possible explanation could be the facilitation for the patient who does not have to navigate anymore in different treatment settings and to deal with different therapists as well as therapeutic approaches.

Despite the advantages of integrative treatment provided, dually diagnosed population still showed worse prognosis. All participants in our study received integrated treatment consisting of interventions based on group behavioural interventions inspired from the abstinence-focused therapeutic community (TC) model, as well as pharmacotherapy when necessary for mental health comorbidities, under the care of a psychiatrist, individualised psychosocial interventions as designed by a multidisciplinary team consisting of a psychiatrist, nurses, addiction counsellors, an occupational therapist, and a social worker. A meta-analysis that explored the effects of psychosocial treatments in dually diagnosed populations, to reduce substance use or to improve mental health, found no compelling evidence to support any one individual psychosocial treatment compared to the others.⁶⁷ These findings generate questions regarding how to increase the effectiveness of treatment programs that include dually diagnosed patients. Relative studies also explored the effectiveness of abstinence oriented therapeutic communities (TC) based approach, in a community based or residential setting, for treating dual diagnosis and drug dependent only population found variable results,⁶⁸⁻⁷² even when including modified therapeutic communities that



are open to admitting patients who receive opioid substitutes' maintenance treatment.^{56,73} A recent meta-analysis that was conducted in order to determine the overall effect of abstinence focused-therapeutic communities (TCs), found that there is a little evidence that TCs offer significant benefits, in comparison with other residential treatment, or that one type of TCs is better than another.⁷⁴

Apart from the fact that abstinence oriented communities are not considered an adequately effective treatment for some populations,⁷⁴ there are also arise many questions regarding the safety of abstinence oriented therapeutic interventions in general.⁷⁵⁻⁷⁹ This arises on the basis that patients who successfully completed detoxification were more likely than other patients to have died during the following year, compared to patients who failed to complete detoxification and remained in use.⁷⁸ Recent research revealing promising evidence regarding the efficacy of non-abstinence oriented TCs admitting patients receiving opiate substitutes,^{47,56} but no other findings regarding substitutes of substances other than opiates have been published yet. This results have to be cautiously interpreted under the prism of studies arising adding evidence on harm reduction approach promising effectiveness,^{47,56,80,81} even in the difficult to treat dually diagnosed populations.⁸²⁻⁸⁶

In our abstinence oriented program dually diagnosed patients stayed less time into treatment meaning that they show an earlier relapse. There were no control group in this study to compare prognosis between dually diagnosed in abstinence and dually diagnosed in treatment with substitutes. Consequently, a question remains if substitutes could decrease or eliminate the difference in effectiveness and prognosis, in an integrative care program. Despite this limitation, it cannot be disregarded that abstinence focused programs have been shown to be ineffective for some populations, and in

addition its safety is questioned. Recently, there is some evidence that harm reduction approaches could help dually diagnosed population. In our study abstinence from any illegal substance as well as alcohol was a prerequisite for patients in order to enter and remain in the integrative treatment program. Harm reduction approaches were not incorporated in this study protocol, due to treatment design, inadequate training and consequent inability to apply, meaning that neither treatment work with active users took place in the treatment setting nor patients under treatment with substitutes were admitted, despite some promising published results of harm reduction practises in dually diagnosed populations.⁸²⁻⁸⁷ A recent meta-analysis showed only low evidence supporting the effectiveness of antidepressants in heroin addicts under opioid agonist treatment, with comorbid depression. A recent study showed a better long-term prognosis for dual-diagnosed patients when treated with opiate substitutes.⁸⁸ Harm reduction includes treatment approaches that do not require abstinence from the substance but are focused on reducing the harm in biological/somatic health aspect, achieving psychosocial stability and increasing functionality. At the same time abstinence from the substance is desirable but not mandatory. There is increasing evidence that harm reduction approaches are effective in dually diagnosed populations when patients are dependent in legal⁸⁹⁻⁹¹ or illegal substances,^{92,93} as well as when the comorbidity includes a psychotic^{83,92,93} or a non-psychotic^{84,94} mental disorder.

To the knowledge of the authors this is the first study comparing intervention effectiveness, as a means of retention in treatment, between dually diagnosed and drug dependent only patients, receiving TC inspired integrated care in a common setting by the same multidisciplinary team. Some important limitations decrease the power and generalisability of the findings, generating interesting questions for future researchers in the



field: 1) No structured diagnostic interview was used for the diagnosis of comorbidity. Diagnosis of comorbidity took place after clinical interviews from a Psychiatrist and a Clinical Psychologist. Nevertheless, in the case of disagreement, diagnosis was detailed discussed between them. 2) a small sample size precluded the between gender and/or between category of the substance comparisons 3) there was no control group of patients receiving non-integrating care, neither control group of patients receiving care while they were under active use of the substance or under treatment with substitutes.

Dual diagnosis is a special form of mental disorders comorbidity that could worsen prognosis either in a setting of integrating provided care. The term "dual diagnosis" in relevant medical literature is being partly replaced by the concept of comorbidity. Authors still use it in current bibliography in order to focus in a special case of comorbidity that includes a difficult drug dependent patient with another non-dependent mental disorder, that needs special attention. Taking into account the limitations of abstinence oriented therapeutic programs, even the integrative ones, a need arises for incorporation of more harm reduction approaches into the integrating –community or residential-treatment setting. There is a need for clinical education and research in this field, in order to reduce the harm and rehabilitate difficult to treat dually diagnosed patients.

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ANNEX

Table 1: Characteristics of the patients (n=45)

	Males (n=30)	Females (n=15)	
Age, years	27.5 ± 6.7	26.4 ± 4.1	NS
Major substance			
Heroin	6	4	
Cannabis	6	1	
Other	2	7	
Multi-drug users	16	3	
Dual-diagnosis	11	4	
Psychotropic medication	11	2	
Time until relapse, months	10.2 ± 12.5	13.6 ± 17.2	NS

Figure1: shows differences in time-to-relapse between patients with drug-dependence only and patients with drug-dependence plus another axis-I mental health comorbidity (dual diagnosis) already under treatment with prescribed psychotropic medication.

