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ORIGINAL RESEARCH

Co-Occurring Psychiatric and Substance Use Disorders: Clinical Survey Among a Rural Cohort of Italian Patients

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Purpose: Dual diagnosis (DD) is the co-occurrence of both a mental illness and a substance use disorder (SUD). Lots of studies have analysed the integrated clinical approach, which involves both psychiatry and toxicology medical experts. The purpose of this study is to analyse the socio-demographic characteristics and treatment strategies of patients with DD in a rural area of Italy.

Patients and Methods: Clinical data of 750 patients were collected in 2016 through the analysis of health plan records.

Results: The rate of co-occurring disorders is highly variable among people with SUD. In the considered area, patients with DD are 24%, of these only 46.1% have been treated with an integrated clinical program. Moreover, this percentage is further reduced (35.8%) if only patients with heroin use disorder are considered.

Conclusion: A comprehensive revision of DD treatment is needed, especially for people suffering from heroin use disorder and living in remote areas. Meticulous data analysis from other addiction health services of rural areas could be necessary to identify a science-based clinical intervention.

Keywords: dual diagnosis, integrated treatments, substance use disorder, social stigma, rural populations

Introduction

The terms "co-occurring" or "dual diagnosis (DD)" mean the co-occurrence in the same patient of both mental illness (MI) and substance use disorder (SUD).[1] MI and SUD are strongly connected, with high prevalence rates of DD among patients with SUD, even if these epidemiological data vary significantly depending on multiple factors such as geographical areas, reference population, study settings, study methodology; moreover, the rate of people with DD seeking health treatment is influenced by several drivers, making realistic epidemiological analysis even more challenging.[2] In fact, according to the epidemiological study conducted in 2011 by the Substance Abuse and Mental Health Services Administration, SAMHSA, only 44% of patients with DD was treated for either disorder.[3] Just to report some examples of the high prevalence, and high prevalence variability of DD among patients with SUD found by European studies, comorbidity of schizophrenia and SUD prevalence is estimated to be 30–66%,[4] comorbidity of depression and SUD prevalence is 12–80%,[5] comorbidity of personality disorder and SUD prevalence is 45%.[6] Although the absence of a defined epidemiological prevalence rate, the association between MI and SUD is clear.

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Many theories have been proposed to explain the link between co-occurrence of SUD and MI, such as the interaction of genetic and environmental factors, which could make an individual more predisposed to these disorders, or the identification of MI as a risk factor for SUD or vice versa.[2] One other interesting explanation model could be the "self-medication hypothesis", which assumes that substances of abuse help individuals to relieve their psychiatric symptoms or negative emotions.[7,8] This hypothesis is still under discussion in the scientific literature.[9–13] Once discovered, the explanation of the link between co-occurrence of SUD and MI would probably help to develop prevention and treatment programs, but so far, the complex relationship remains largely unknown and poorly understood. Still, psychiatric problems are very common among people with SUD, and this comorbidity is a big challenge for medical doctors, in terms of prevention and treatment.[14–16]

Primarily, the first problem is how to establish the correct diagnosis, as sometimes symptoms due to substance's withdrawal or intoxication cannot be clearly distinguished from those associated with MI or produced by psychological conditions.[17–18]

Secondly, one of the major challenges is how to treat individuals presenting both disorders. A universal agreement on a guideline for the assessment and treatment of the co-occurring disorder has still not been reached.[19]

Compared to patients with a single psychiatric disorder, dual-diagnosed patients have more complicated treatment processes and sometimes, in these patients, poorer compliance and outcomes are expected as well as higher clinical costs.[20] In fact, DD is associated with increased psychiatric hospitalisations and greater propensity to hazardous behaviours which lead, in turn, to higher risk of parenterally transmitted diseases, unemployment and homelessness.[2,21] The complexity of this comorbidity may need an integrated medical management and a multiple clinical approach.[22]

A fully integrated treatment approach, which means that patients are treated and managed by both psychiatrists and toxicologists, so that both psychiatric and substance use disorders are handled by specialized physicians with shared treatment programs, could be more effective than separate treatment plans;[23–26] furthermore, uncoordinated services are perceived by patients with DD as one of the major difficulties to their recover.[27] Separate programs indeed have some disadvantages: the patients would be in charge of managing two different services, which means coordinating double appointments, and perhaps different therapeutic approaches.[2]

In Italy, as in most countries, MI and SUD are managed separately: people with SUD are usually chronically managed as outpatients by the drug-treatment territorial services (Servizi Tossicodipendenze, SerT), whilst patients with MI are addressed by mental health territorial services (Centri di Salute Mentale, CMS).

Unfortunately, as the services are historically organized separately, integrated treatments are not easy to implement; moreover, these treatments require personnel, specific training, and adequate infrastructure which, in rural settings such as some Italian areas, are even harder to organize.[28]

Common perception is that in comparison to urban settings, rural communities are a safer environment in regards of SUD,[29] nevertheless some authors reported that rural status confers several general disadvantages, such as less perceived risk, reduced exposure to prevention messages and specific disadvantages for health-care use measures, regardless of poverty and health-care supply.[30,31] Besides, Chasnoff and colleagues reported that rural children are more likely to have mental health challenges, such as internalizing behaviours and anxiety or mood disorders, than urban children.[32]

All patients enrolled in our study lived in an Italian rural area suffering from socio-economic disadvantages: unemployment (due to industrial crisis of the late 1980s) and all medical and social problems linked to the elderly population (28.1% of the inhabitants are aged over 65, with a mean population age of 48.3).[33]

The aim of the current study is to analyse co-occurring patient's characteristics, their clinical and socio-demographic situation, as well as clinical treatment strategies in the community addiction health centers (SerT). The first purpose was to find out how the substance use is connected to the environment and to mental illness and secondly, we focused specifically on all integrated clinical interventions proposed to patients with DD.

Materials and Methods

A large retrospective, exploratory and descriptive survey was conducted from April to December 2016 through data collection from selected patient's medical histories: we enrolled patients with a current age ≥18 year and whose diagnosis obtained from their medical records, satisfied the DSM-5 diagnostic criteria for SUD (with the exception of tobacco cigarettes) and another MI.

Age, sex, substance of abuse, mental illness, type of treatment approach, and other main socio-demographic

characteristics, such as educational level, marital status and employment situation were considered.

All subjects included in this analysis were treated in one of the four headquarters (Savona city, Albenga, Finale Ligure and Cairo Montenotte) of Savona's community addiction health centers (SerT); Savona province, with a total population of 280,707 (ISTAT, 2016),[34] is a rural area in the northwest of Italy. The study was approved by the institutional review board "Regional ethic committee – Liguria Region". Patient's written consent to review their medical records was collected and the privacy of the participants was guaranteed as collected data were anonymized and maintained with confidentiality. The study was carried out in compliance with the Declaration of Helsinki. A statistical analysis was performed using GraphPad Prism 5 V.502. All statistical tests used the 5% level of significance, and all p-values were two-tailed. Mean and percentages were used for descriptive statistics. Univariate comparisons for categorical data were made between groups using Fisher's exact test and Student's *t*-test for continuous variables.

Results

Clinical histories of 750 patients with SUD were analysed and 180 (24%) of them met the DSM-5 diagnostic criteria for another MI satisfying therefore the definition of patients with DD.

Subjects were predominantly male (n=126; 70%), Italians (n= 168; 93.3%), with a mean age of 45.7± 9.3 years (min= 22; max=74). Only a minority of patients had one or more children (n=71; 39.4%) and 135 subjects (75%) were unmarried at the time of clinical assessment. The majority of patients finished primary school (n= 168; 93.3%) and 84 patients (46.7%) were unemployed. Mean age, education level, state of employment, marital status did not statistically differ between genders, whilst women were more likely to have children than men (p=0.0016). Only 71 subjects (39.4%) had familiarity with SUD and/or MI (Table 1).

All enrolled patients had heroin, cocaine, cannabis, alcohol and/or a non-pharmacological addiction (gambling and shopping). Specifically: 77 (42.8%) were dependent on

Table 1 Socio-Demographic and Descriptive Data

	Total		Women		Men		p*
	N	%	N	%	N	%	
	180	–	54	30	126	70	
Socio-demographic characteristics							
Mean age (years)	45.7	9.3	44.4	9.6	46.3	9.2	ns
Education (primary school)	168	93.3	50	92.6	118	93.7	ns
Unemployed	84	46.7	27	50	57	45.2	ns
Unmarried	135	75.0	42	77.8	93	73.8	ns
With children	71	39.4	31	57.4	40	31.7	p=0.0016
Familiarity	71	39.4	24	44.4	47	37.3	ns
Substances of abuse							
CNS-d	77	42.8	21	38.9	56	44.4	ns
Multiple Substances	50	27.8	13	24.1	37	29.4	ns
Alcohol	33	18.3	10	18.5	23	18.3	ns
Cocaine	15	8.3	8	14.8	7	5.6	ns
Not-pharmacological	5	2.8	2	3.7	3	2.4	ns
Mental illness							
MD	72	40.0	24	44.4	48	38.1	ns
PD	60	33.3	22	40.7	38	30.2	ns
SPD	24	13.3	1	1.9	23	18.3	p=0.0016
CD	17	9.4	3	5.6	14	11.1	ns
AD	7	3.9	4	7.4	3	2.4	ns
Integrated treatment	83	46.1	24	44.4	59	46.8	ns

Notes: *p<0.01 Fisher's exact test; ns=not statistically significant.

Abbreviations: CNS-d, central nervous system disorder; Multiple Substances, patients dependent on more than one substance; MD, mood disorder; PD, personality disorder; SPD, psychotic disorder; CD, cognitive disorder; AD, anxiety disorder.

central nervous system depressants (CNS-d), respectively, 68 patients (88.3%) had heroin and 9 cannabis use disorder; 50 patients (27.8%) had a multiple substance addiction, respectively, 25 subjects on heroin & cocaine, 21 on heroin & cocaine & cannabis, 1 on cocaine & cannabis and 3 were heroin & cannabis users, indeed basically almost all patients dependent on more than one substance (49 subjects) had heroin as one of their substance of abuse; 33 patients (18.3%) had an alcohol use disorder; 15 (8.3%) were dependent on cocaine; 5 patients (2.8%) had a non-pharmacological addiction, respectively, 4 subjects had a gambling disorder and 1 had a compulsive shopping disorder (Table 1).

In the same perspective the following psychiatric diseases were identified: 72 patients (40%) were diagnosed with a mood disorder (MD); 60 patients (33.3%) with a personality disorder (PD); 24 (13.3%) with schizophrenia or other psychotic disorder (SPD); 17 (9.4%) had a cognitive disorder (CD) and only 7 patients (3.9%) had an anxiety disorder (AD). Except for SPD, which was more common among males (p=0.0016), psychiatric disease prevalence did not statistically differ between genders.

The cross analysis of data shows that among patients with CNS-d addiction (N = 77), the majority had a PD (32.5%), then the remaining patients had a MD (31.2%), a SPD (22.1%), a CD (10.4%) and only 3.9% had an AD (Table 2). Among patients dependent on more than one substance (N = 50), 44% had a PD and 36% a MD. The remaining 20% of patients had CD (10%), SPD (6%) and AD (4%). Among subjects with alcohol use disorder (N = 33), the majority (57.6%) had a diagnosis of MD, 21.2% of PD, 9.1% of CD, 9.1% of SPD and only 3% of AD (Table 2).

Among people with cocaine use disorder (N = 15), 53.3% had a diagnosis of MD; 33.3% of PD; both SPD and CD were diagnosed in the 6.7% of patients.

Among the patients with a non-pharmacological addiction (N = 5), three had a diagnosis of MD, one of AD and a one of PD.

By comparing the prevalence of psychiatric diseases of patients with different substance addiction (Post hoc analysis, Table 2), we found that MD was more common in patients with a non-pharmacological addiction, but a statistical significant difference was detectable only between patients with alcohol use disorder and patients with CNS-d addiction (p<0.05); PD was more common in patients who had a multiple substance addiction, especially in respect with subjects with alcohol use disorder (p<0.05). Finally, SPD was statistically more common in patients on CNS-d than in patients with multiple substance addiction (p<0.05).

Only 83 subjects (46.1%) were steadily monitored and treated with an integrated program; this percentage is further reduced when considering only patients with CNS-d addiction (33.8%) and patients dependent on more than one substance (42%); patients dependent on cocaine or alcohol were more frequently involved in integrated programs, with 73.3% and 69.7% of patients treated, respectively. Statistical analysis showed the following significant difference in rate of integrated treatment when comparing the above-mentioned substance of abuse: subjects with alcohol use disorder are more involved in integrated

Table 2 Cross Analysis of Data

	1. CNS-d		2. Multiple Substances		3. Alcohol		4. Cocaine		5. Not-Pharm		Total DD		Post Hoc
	N=77		N=50		N=33		N=15		N=5		N=180		
	N	%	N	%	N	%	N	%	N	%	N	%	
MD	24	31.2	18	36.0	19	57.6	8	53.3	3	60.0	72	40.0	1 vs 3*
PD	25	32.5	22	44.0	7	21.2	5	33.3	1	20.0	60	33.3	2 vs 3*
SPD	17	22.1	3	6.0	3	9.1	1	6.7	0	0.0	24	13.3	1 vs 2*
CD	8	10.4	5	10.0	3	9.1	1	6.7	0	0.0	17	9.4	
AD	3	3.9	2	4.0	1	3.0	0	0	1	20.0	7	3.9	
Integrated treatment	26	33.8	21	42.0	23	69.7	11	73.3	2	40.0	83	46.1	3 vs 1**; 3 vs 2 *; 4 vs 1*; 4 vs 2*

Notes: Statistical analysis was performed with Fisher's exact test.*p<0.05; **p<0.01

Abbreviations: CNS-d, central nervous system disorder; Multiple Substances, patients dependent on more than one substance; DD, Dual Disorder; MD, mood disorder; PD, personality disorder; SPD, psychotic disorder; CD, cognitive disorder; AD, anxiety disorder.

treatments than patients on CNS-d ($p<0.01$) and patients dependent on more than one substance ($p<0.05$), similarly, subjects with cocaine use disorder are more involved than patients on CNS-d ($p<0.05$) and patients dependent on more than one substance ($p<0.05$).

Discussion

A European review estimated the rate of comorbidity in people with SUD to be as high as 50%,[2] in our study, we found a DD rate of 24%. As mentioned in the introduction, DD prevalence rate varies considerably among different studies, because of several biases, making data very difficult to compare: the DD rate that we recorded, which seems to be far lower than the mean European prevalence reported, becomes immediately more in line with the 31% rate recorded in 2006 by the SIMI-Italia data collection system, a national study which collected data, similar to our study, in an Italian population of patients attending SerT.[2] The rate of DD could also have been influenced by the socio-demographic characteristics of patients, such as rate of unemployment, education, mean population age and general economic conditions, as well as by the area of residence (i.e. rural settings/urban areas); to this purpose, available data suggest that a variety of socio/familiar/demographic factors are powerful predictors of difference in prevalence of SUD.[35]

Some authors report that rural populations have less social risk factors and deprivations than urban inhabitants,[36] which could in part explain the particularly low prevalence of DD in our study. Furthermore, in remote and isolated areas there is a high rate of stigmatization,[37–39] which may interfere with access to all treatment services and treatment seeking behaviours related to SUD,[29,37] so that our data could underestimate the real extent of DD prevalence.

In addition to stigmatization, rural areas present also further barriers to the delivery of clinical services in mental health settings, such as economic, administrative and organizational impediments.[40]

Regional organization and collaboration between addiction health centers and mental health services are crucial to implement integrated treatments, which are demonstrated to be essential for improving the quality of life and clinical outcomes of DD patients.[41]

Literature reports that unfortunately only a minority of individuals with DD receive integrated interventions,[24] intended as a multi-disciplinary treatment involving both the psychiatric and substance use health services.

In Italy, the addiction health services, which provide treatment in the areas of social work, psychology, nursing and medical toxicology (substance use) for people with SUD, do not usually include psychiatric health services.[42] In line with the international literature, this study found out that the majority of DD patients (53.9%), living in the considered rural area, are only treated by the addiction health center teams, whilst only 46% of patients were treated with an integrated program.

Looking further into our data, we found out that access to this superior type of treatment varies among patients, depending on the substance of abuse. Specifically, integrated programs involved mainly patients on cocaine or alcohol (73.3% and 69.7% of patients, respectively), versus 42% of patients dependent on more than one substance and 33.8% of patients on CNS-d.

This last group of patients included cannabis users, of which 55.5% (5 out of 9 patients) were steadily monitored with an integrated program, and patients with heroin addiction, of which only 30.8% received the integrated intervention (21 out of 68 patients). As almost all patients dependent on more than one substance had heroin as one of their substance of abuse (49 out of 50 subjects), the percentage of all patients on heroin (adding "CNS-d" plus "patients dependent on more than one substance") receiving an integrated treatment is 35.8%. This suggests that patients with co-occurrence heroin dependence, at least in comparison with DD people addicted to alcohol or cocaine, are less likely to receive integrated interventions.

Stigmatizing attitudes could be a possible explanation for this exclusion. In general, stigmatizing attitudes in the population may arise from the belief that addiction is a sort of "vice", not a proper mental illness, thereby making it misunderstood. Woo et al. reported that patients in methadone maintenance treatment are stigmatized, with higher experiences of self- and perceived stigma associated with heroin use.[43] Moreover, health-care workers were identified as one of the most important source of perceived stigma;[44] this kind of "health-care stigma" can negatively interfere with access of heroin users to all health-care services.

Conclusion

An integrated approach for DD patients, which is considered to be more appropriate to improve adherence and clinical outcome, appears to be hardly available especially for those people living in remote areas and for patients with heroin addiction. Anyway, meticulous data analysis from other addiction health services from rural settings are necessary to analyse the situation and hopefully to establish a gold standard of practice.

Author Contributions

All authors contributed to data analysis, drafting or revising the article, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

Disclosure

All authors declare that there are no known conflicts of interest.

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