Dual Diagnosis and Application Problems in the Use of the Construct

A Review of Literature

Antonio Iudici, MD, Riccardo Girolimetto, MD, Giulia Volponi, MD, and Alba Eletto, MD

Abstract: Dual diagnosis (DD) commonly identifies a condition of co-occurrence of substance use disorders and psychological or psychiatric disorders. Many scholars have tried to explain this phenomenon, yet no agreement has been found: methodologies of intervention and treatment are numerous, but there is no uniformity of methodology. Our work aims to search critical aspects linked to this fragmented framework, to facilitate those who use the construct of DD. We have elaborated a literary review focused on specific critical contributions to the theoretical and methodological complexity of the construct. Scopus, PubMed, and Scholar were used as search engines. Our research reveals significant problems around several thematic areas: Defining, Operative and Treatment; Economic and Policy; Pharmacological Approach; and Patients' Perspectives Issues. Consistent issues are discussed with regard to DD: innovation should start from its limits. Future research should look for alternative theoretical formulations and consequent intervention experiences to provide new perspectives.

Key Words: Dual diagnosis, co-occurring disorders, psychiatry, mental disorders, psychology, diagnosis, literature review

(*J Nerv Ment Dis* 2020;208: 181–189)

The terms "dual diagnosis" (DD) or "co-occurring disorders" are currently used to define people who present a substance use disorder (SUD) in association with a psychological or a psychiatric disorder (Chorlton and Smith, 2016; Johnson, 2000; McKeown et al., 1998; Morozova et al., 2015; Padwa et al., 2013; Truter et al., 2017; UNODCCP, 2000).

The birth of this category can be traced back to the late 1980s, when the increase in "chronic" patients stressed the theoretical and operative limits of many therapeutic programs. At that time, professionals started to relate the persistence of substance abuse behavior to psychological or psychiatric diseases (and the other way around) in a way different from what was commonly intended as "comorbidity." Indeed, the term "comorbidity" pointed at the generic compresence of two (or more) disorders, whereas "dual diagnosis" specifically indicated the link between SUD and compromised psychological functioning—often supposing a causal relation between the two (Truter et al., 2017).

With regard to the oldest theoretic framework, the eldest one that looked for an explanation of this clinical condition is the self-medication theory. Within a psychodynamic frame, Khantzian (1985, 1990) tried to account for the primacy of the psychiatric disorder, finding it to be the cause of the abuse. The author suggested patients use psychotropic substances to self-medicate their symptoms. In addition, the drug they abuse is supposed to be selected according to the nature of the psychological state they need to control. Thus, the addictive behavior would be at the same time adaptive.

At a later time, First and Gladis (1993) proposed a systematic conceptualization of the construct. According to the authors, three different kinds of relations may be hypothesized between substance abuse and psychiatric disorder: a) primary psychiatric disorder resulting in a secondary SUD; b) primary SUD resulting in a secondary psychiatric symptomatology; and c) both psychiatric symptomatology and SUD as primary. The first two hypotheses defined a causal link, whereas the third indicated the independence of the two disorders (First and Gladis, 1993).

Later on, the most acknowledged theory for interpreting substance addiction became the biopsychosocial model (Engel, 1977), which considers three levels of influencing factors: biological, psychological, and social. Taking into account these three levels of analysis, researchers were able to propose many hypotheses on the construct of DD. The theory considered the links among the variables involved as causal links (biological, psychological, and social factors have direct influence on patients' symptoms and conduct). However, the lack of empirical support has moved the model toward a slightly softer conceptualization, supported by correlative studies (Abou-Saleh and Janca, 2004; Banerjee et al., 2002; Evans and Sullivan, 2001; Mueser et al., 1998).

Still, the most significant models of comorbidity are based on a cause-effect structure, organized by a primary cause mechanism, a shared etiology model, and a trigger substance model. The first mechanism implicated that the presence of one disorder is a necessary condition to the other one. The second model considered the two disorders as derived from the same etiological factors. Finally, the trigger substance model described the substances as catalysts in the uprising of the psychopathology (Abou-Saleh and Janca, 2004; Banerjee et al., 2002; Evans and Sullivan, 2001; Mueser et al., 1998).

As can be noticed from this summary, although many decades have passed from the initial construct, still DD does not have a precise definition as we may expect. Moreover, each theoretical background provides clinicians and operators with a different methodological system, which again gives birth to a variety of treatments and intervention programs. Evaluation and comparison of the effectiveness of these programs are made harder for researchers. As Hryb et al. (2007) suggest, when investigating the effectiveness of integrative treatment, the methodological problems researchers face begin with the inconsistency of the diagnostic criteria that clinicians use to refer patients to appropriate treatment programs.

Given the theoretical and methodological complexity of DD, this work aims to draw upon literature to investigate the effects that such a framework may produce in its applications. By highlighting theoretical bounds expressed by researchers and recollecting difficulties faced by operators and clinicians, this article attempts to delineate the current state of the art of clinical problematic implications in working with DD. No recent review study has been conducted on such a specific aspect of DD.

Department of Philosophy, Sociology, Education and Applied Psychology, University of Padova, Padova, Italy.

Send reprint requests to Antonio Iudici, MD, Department of Philosophy, Sociology, Education and Applied Psychology, University of Padova, Via Venezia, 14, 35130 Padova, Italy. E-mail: antonio.iudici@unipd.it.

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

ISSN: 0022-3018/20/20803–0181
DOI: 10.1097/NMD.0000000000001092

METHODS

Theoretical Background

Our research was informed by an interactionist epistemology (Iudici, 2015; Iudici and Fabbri, 2017; Salvini et al., 2012). According to its principal assumption, "things" in our world are not facts of unarguable consistency, although they result from a process of construction that takes place in social interaction. Therefore, as we deal with DD, we consider it as a product of a given space and time rather than (the label of) "something" that exists with the solidity of objects; this is the reason we are interested in all discourses and practices diffused in the community (mostly scientific in this case) that contribute to building and maintaining its use. As many issues seem to be connected to the latest, the research attempted to shed some light on its limits.

Literature Search

According to the typology recently shared by Grant and Booth (2009), our work is to be considered as a literature review, which focuses on specific problematic issues ascribed to the theoretical and methodological complexities of the construct of DD. According to the Medical Subject Headings scope note, a literature review describes published materials that provide an examination of recent or current literature (Lipscomb, 2000). The literature review method seeks to identify what has been achieved previously in terms of consolidating research. The aim is to systematize and summarize the available data, allowing new research to fill gaps and omissions. The synthesis used in this work is narrative, and the analysis carried out is of a conceptual nature (Hall and Walton, 2004). A common characteristic is that a literature review reviews published literature that has been subjected to a peer review process.

Search Strategy, Criteria, and Data Collection

To investigate the current literature concerning DD, Scopus, PubMed, and Scholar were used as databases. No other databases were included as researches in these databases opened up to complex, although specific, aspects, hindering the generalizability of our work. Main search inputs were entered as follows: first, "dual diagnosis" AND "limits, and then "co-occurring disorders" AND "limits." In all databases, we limited results to "article," "article in press," and "review"; we excluded those subjects that were not relevant to our objective. The materials found (649 articles) were reviewed by title and abstract by two auditors in an independent manner; this step led to the exclusion of 615 articles: duplicate articles and articles not consistent with the research objective were excluded, as were studies written in a language other than English. The whole procedure was supervised by a third researcher, who specifically checked relevance of the results to the objective of our research.

Details of the aforesaid process are furnished below.

The selected 22 articles, retrieved from Scopus and PubMed, covered a period of 26 years, from 1990 to 2017. This research revealed that before this period, scientific works were founded on a different conceptualization of DD. No restriction of study design has been made, so we included all published studies because of the dearth of studies on limits in DD treatments and theoretical frameworks. In an effort to locate relevant articles not found in our keyword search, reference sections of published articles and the Scholar database were also examined, retrieving nine articles. The resulting 31 documents were examined in full text to determine whether they contained relevant information on problematic aspects of working with DD in terms of relevance and adequacy to our aim. Thereafter, those selected were read and analyzed by two authors to extract quotes of interest to research objectives. Subsequently, the collected data were categorized into five macro-categories according to the criterion of greater representativeness of the data. Each author participated individually to the last step. The final work is the product of the cross-comparison between each author's results (Fig. 1).

RESULTS

The research eventually resulted in 31 articles; their content was organized into five sections according to the type of critiques they attracted.

The first section, Defining Issues, is dedicated to eminently theoretical critics of the construct; links between the absence of a unified definition and applicative difficulties are illustrated there. The second section, Operative and Treatment Issues, deals with the problematic consequences of using the label "dual diagnosis"—considering both individual treatments and services system. In the third section, Economic and Policy Issues, cost-effectiveness of the current organization and structure of services is presented according to the analysis of those authors who claimed their cost-effectiveness as not being balanced. Connected to the latest, in the fourth section, problems linked to the practice of pharmacological prescription are described (Pharmacological Approach Issues). The fifth section gathers contributions that considered the perspectives of dually diagnosed patients, with particular attention to controversial identity phenomena, for instance, stigmatization (Patients' Perspectives) (Table 1).

Defining Issues: Construct Validity and Diagnostic Ambiguities

Dealing with theoretical limits, some authors claimed the absence of generally shared, standardized criteria when it comes to DD. The first to report this lack of standardization were McKeown et al. (1998): the authors underlined how DD is frequently used to define different kinds of comorbidity, thus making it difficult to understand whether it always refers to the same population. The category becomes so all-encompassing as to lose its [gnoseological] meaning and to call into discussion its use as a research term, for instance, the term may be used to individuate the co-occurrence of personality disorder and SUD, as well as the co-occurrence of schizophrenia and SUD, without making a distinction between the two. Almost a decade later, other authors still claimed that there are no diagnostic criteria for DD or co-occurring disorders in the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision*. Heterogeneity in terminology and methods of assessment hinders the testing process for effectiveness of programs and treatments (Hryb et al., 2007), along with the determination of principal substance (Griffin et al., 2009). However, in the last few decades, few changes have occurred. According to some authors, there is still no agreement between researchers and clinicians on the definition of people with mental health difficulties who use substances (Chorlton and Smith, 2016; Guest and Holland, 2011). Possibly, these considerations shed some light on the difficulty in generalizing the results of researchers who investigate the construct of DD, as the clinical situation underlying the term is always different. For instance, some studies failed to exclude confounding variables while studying gamblers with co-occurring addiction disorders (Ciarrocchi et al., 1991); some others had doubtful generalizability, given their extremely small sample (Green et al., 2012). Other critical considerations concerning the generalizability of the studies have been raised by Tiet and Mausbach (2007). In fact, they observed a frequency, in the DD researchers, of excluding dropped-out patients from the analyses or of conducting intent-to-treat analyses by last observation carried forward technique, producing bias results. In addition, the aforesaid authors highlighted the lack of well-controlled randomized trials and an absence of outcome measure in many DD study designs.

Furthermore, many other contributions may be well represented by the analysis of the authors who stated that generalizability could be reduced by the tendency to recruit patients who present a specific psychiatric disorder and a simple principal drug of abuse even when the study objective is to investigate populations with co-occurring SUDs and psychiatric illness (Griffin et al., 2009).

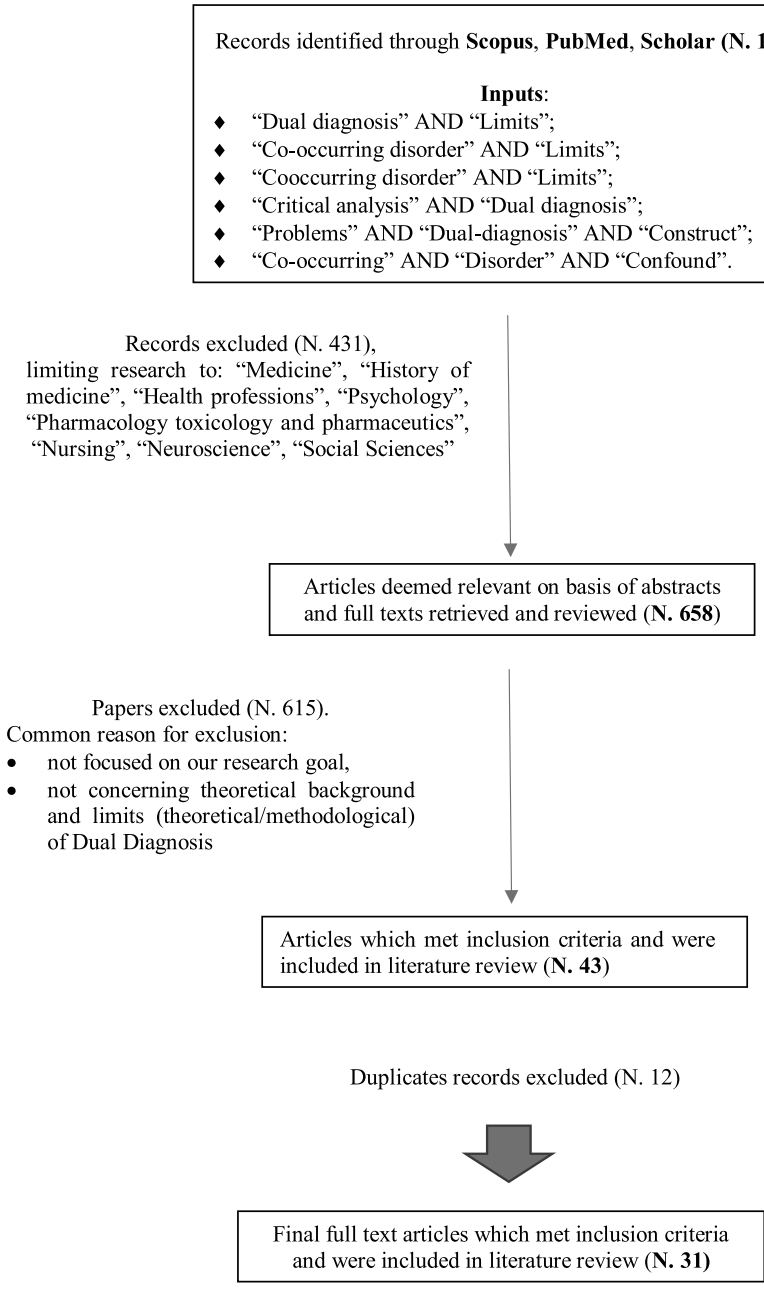

FIGURE 1. Flowchart of the research steps.

Another controversy in this kind of research is whether these studies are able to state and evaluate the supposed cause-effect bond. Some authors, while applying secondary analysis to randomized controlled trial (RCT) data, revealed many technical problems in making causal inferences out of the results they obtained; these problems were mainly connected to randomization of mediators and moderators and led the researchers to generate hypotheses more willingly than making causal inferences (Hien et al., 2015). The same datum comes from studies that failed in the attempt to individuate the relative influence degree of mood disorders or attention deficit hyperactivity disorder (ADHD) on the severity of SUD (Truter et al., 2017), to delineate the nature of the relationship between ADHD and SUD (Ameringer and Leventhal, 2013), and to define causal associations between events in childhood, adolescence, and adulthood (Green et al., 2012). In fact, even a correlation between two events does not constitute a cause-effect relationship: for example, most cannabis consumers do not develop a psychotic illness, and the mood alteration may confound the apparent cause-effect relationship, considering, for instance, depression relief as valuable reason for substance use (Horsfall et al., 2009). This kind of interpretation descends from the self-medication hypothesis, largely discussed with regard to its assumptions concerning the cause-consequence controversy (Khantzian, 1990, 1997). To face the impasses derived from the perspectives above, some researchers elaborated a different conceptualization: that the causal relationship which links the psychiatric disorder and the SUD is a bidirectional relationship (Kanbur and Harrison, 2016; Truter et al., 2017). Thus, the theoretical necessity to state which disorder "comes first" apparently vanishes.

Therefore, the frame of DD may sometimes look unclear. Diagnosis, as well as the selection of the most effective treatment, may be

TABLE 1. Study Selection and Characteristics

#	Author(s)	Year	Country	Objective(s)
1	Ameringer and Leventhal	2013	California (United States)	To clarify fundamental questions regarding the association between gradations in ADHD symptomatology and substance dependence.
2	Ciarrocchi et al.	1991	Maryland (United States)	To compare MMPI scores for 96 alcoholics with 136 pathological gamblers, of which 81 had coexisting alcohol dependence or abuse and 55 had no substance abuse disorder.
3	Chorlton and Smith	2016	United Kingdom	To synthesize current qualitative research about how people with mental health difficulties experienced using substances, to provide enhanced theoretical knowledge of these experiences.
4	Dickey and Azeni	1996	Massachusetts (United States)	To examine the costs of psychiatric treatment for seriously mentally ill people with comorbid substance abuse as compared with mentally ill people not abusing substances.
5	Green et al.	2012	United States	To test whether African-Americans with comorbid SUDs and depression represent a qualitatively different subtype than those with depression or an SUD on its own.
6	Grella et al.	2004	California (United States)	To examine the current status of service delivery to individuals with co-occurring substance abuse and mental disorders.
7	Griffin et al.	2009	Massachusetts (United States)	To assess the principal substance of abuse in 150 subjects with bipolar disorder and substance dependence.
8	Guest and Holland	2011	United Kingdom	To argue that the term "dual diagnosis "should be actively de-emphasized.
9	Hamilton et al.	2015	United Kingdom	To consider the reported problems in sexual function caused by psychotropic medication; to assess the sexual functioning; to explore the role of the pharmaceutical industry; to suggest implications for future research and practice.
10	Henderson et al.	2015	Canada	To examine stakeholder perspectives on services for youth with concurrent disorders including a) clinical issues in youth services, b) priority system issues, and c) optimal knowledge translation strategies to enhance researcher-stakeholder communication.
11	Hepner et al.	2009	California (United States)	To evaluate two of the most commonly used depressive symptomatology measures (BDI-II and PHQ-9) in a sample of clients ($N = 240$) in residential substance abuse treatment settings.
12	Hien et al.	2015	United States	To describe the limits of randomized controlled trials as related to SUD/PTSD populations. In addition, authors highlight benefits and potential pitfall of secondary analytic technique and use a case example of effectiveness trials of behavioral treatment for co-occurring SUD/PTSD.
13	Horsfall et al.	2009	New South Wales	To review empirical evidence in psychosocial treatments for dually diagnosed people (co-occurring SMIs and SUDs).
14	Hryb et al.	2007	Ohio (United States)	Delineate a call for developing standardized diagnostic criteria to assist clinicians in the proper and timely diagnosis and treatment of dually diagnosed patients.
15	Johnson	2000	Texas (United States)	To provide a review of the literature on the effectiveness of ambulatory mental health services and recent emergent reports of cost-effectiveness of programs for the dually diagnosed, paying special attention to the gray areas and gaps.
16	Kanbur and Harrison	2016	Turkey, Jamaica	To review and discuss the co-occurrence of substance use and eating disorders, with a specific emphasis on the approach to the adolescent patient in the context of family-centered care.
17	Khantzian	1990	Massachusetts (United States)	To compare self-medication and self-regulation factors in alcoholism and addictions.
18	Khantzian	1997	Massachusetts (United States)	To summarize the state of art of self-medication hypothesis, both in its theoretical and applicative aspects
19	King et al.	2014	California (United States)	To investigate the severity of co-occurring behavioral health disorders together to provide focused insight regarding pregnant women with very high behavioral and mental health risk.
20	Kubiak et al.	2011	United States	To assess transitions to community mental health services among individuals with co-occurring disorders upon release from jail.
21	Malat and Kahn	2011	Canada, United States	Not reported.
22	Martinez-Raga et al.	2013	Spain, Florida	To provide an updated, thorough, and critical review of the current status of the pharmacological and psychosocial treatments of patients with ADHD and a comorbid SUD.
23	McKeown et al.	1998	United Kingdom	Not reported.
24	Morozova et al.	2015	Canada	To provide a critical evaluation of nicotine use disorder comorbidity in persons with MDD or its subsyndromal presentations.
25	Mueser et al.	1998	New Hampshire (United States)	To review the evidence of different etiological theories of increased comorbidity, organized according to four general models: common factor models, secondary SUD models, secondary psychiatric disorder models, and bidirectional models.

(Continued on next page)

TABLE 1. *(Continued)*

#	Author(s)	Year	Country	Objective(s)
26	Padwa et al.	2013	California (United States)	To assess treatment programs' capacity to meet the needs of clients with DD, to identify areas where they are well equipped to serve these clients, and to determinate where programmatic improvement is needed. The study also undertakes an initial exploration of the potential impact that funding sources have on DD capability.
27	Rosen et al.	2011	Pennsylvania	To focus on PST and present evidence that PST may be a promising nonpharmacological treatment for older methadone clients with comorbid depressive disorders.
28	Schubiner et al.	1995	Michigan (United States)	To describe three adult patients with both ADHD and substance abuse who were treated successfully with psychostimulants. In addition, to review the relevant literature.
29	Tiet and Mausbach	2007	California (United States)	To review the current scientific literature on the treatments for individuals diagnosed with co-occurring substance use and psychiatric disorders, evaluate the methodological issues of published studies, and describe what still needs to be done to develop and evaluate treatments for those who have dual disorders.
30	Truter et al.	2017	South Africa	To explore different clinical presentations of three co-occurring disorders as they are described in the literature: ADHD, mood disorder, and SUD.
31	Ward	2011	North Carolina (United States)	To describe and enhance the understanding of what it is like to live with bipolar disorder and comorbid substance used disorder through a phenomenological framework.

BDI-II indicates Beck Depression Inventory II; MDD, major depressive disorder; MMPI, Minnesota Multiphasic Personality Inventory; PHQ-9, Patient Health Questionnaire-9; PST, problem-solving therapy.

particularly challenging (Hien et al., 2015). These issues may be considered as consequences of the complex nature of the clinical presentations of co-occurring disorders—in which two clinical conditions influence each other—as well as the modulation of prognosis and the severity of manifestations of both disorders (Truter et al., 2017).

With respect to epidemiological data, some studies revealed they are not always as informed as expected (Green et al., 2012; Truter et al., 2017). For example, in some cases, their quality seems to be affected by problematic differential diagnosis of co-occurring disorders in SUDs; in other cases, they do not account for cultural and ethnic diversities. These issues may stem from insufficiently sensitive research tools (Truter et al., 2017).

The articles discussing theoretical assumptions underlying different diagnostic approaches reveal a rather fragmented scenario. The oldest study compared pathological gambling (therefore a psychiatric disorder) with substance addiction itself (Ciarrocchi et al., 1991), thus overlapping the two categories. Furthermore, in 1998, Mueser, Drake, and Wallach reviewed evidence of different etiological theories of increased comorbidity (Mueser et al., 1998). With regard to bidirectional models as explanatory framework—the ones that suggest ongoing, interactional effect between severe mental illnesses (SMIs) and SUD—it was considered as largely theoretical and untested such as the evidence that SUD worsens the course of SMIs (Mueser et al., 1998). Considering the self-medication model, the authors had found limited empirical evidence (ibidem). On limitations regarding understanding factors that may contribute to the increased comorbidity of SUD in patients with SMI, Mueser et al. (1998) reported the lack of prospective longitudinal assessments of dually diagnosed patients, and the absence of efforts to subtype DD, which could be a fruitful conceptual operation for understanding the different etiologies of DD and connected specific interventions.

However, later studies on co-occurrence of depression and some kind of addictive behavior disconfirmed the necessary connection of the two conditions (Green et al., 2012; Morozova et al., 2015). Some authors pushed their hypotheses further, stating depression and substance abuse are independent and have distinct etiologies (Green et al., 2012; Hepner et al., 2009). Finally, Horsfall et al. (2009), in a review of empirical evidence in psychosocial treatments for dually diagnosed people, underlined an independence between SUD and SMI, observing a lack of common genetic basis. However, they reported a hypothesis about the role of emotional, social, and biological sequelae of early childhood trauma as vulnerability factors to both the previous conditions (Horsfall et al., 2009).

In dealing with etiological issues, time is a core variable: to define the direction of a causal relationship, there is a need for clarity on temporal aspects; however, some studies fail in the distinction of post hoc and propter hoc relationship (Truter et al., 2017). Moreover, some authors report a lack of clarity on the succession of events in studying co-occurring disorders; more specifically, they called for longitudinal studies that can account for developmental changes throughout the life span of the patients (Ameringer and Leventhal, 2013). Weaknesses of hard (causal) conceptualization led some authors to hypothesize a bidirectional influence relationship (Morozova et al., 2015), along with multifactorial models for co-occurrence in DD. Among these, some authors analyzed proximal and distal factors for SUD and posttraumatic stress disorder (PTSD) through secondary analysis (Hien et al., 2015); others focused on risk factors for co-occurrence of depression and SUD through a lifetime, distinguishing between childhood and adolescence, as well as between individual and familial risk factors (Green et al., 2012); and others study social risk factors for pregnant woman with SUD and generally intended mental illnesses (Lee King et al., 2015).

It could be supposed that an undefined framework may lead to such issues; indeed, national data about the condition of patients with co-occurring disorders in the United States reveal that a small percentage (7%) of them "have received a mental health evaluation or appropriate treatment" (Hepner et al., 2009, p 318). Although alarming, this datum is not astonishing if we consider the contributions of other authors. Indeed, according to some, co-occurring disorders are not promptly identified and diagnosed (and consequently not treated), thus reducing prognostic outcomes (Truter et al., 2017). Hepner et al. (2009) had already linked this to limited resources available to treatment programs, whereas the authors above led this back to the intricate natures of the clinical presentations (Truter et al., 2017). Still, what remains unknown to researchers is the change mechanism; therefore, what scientific studies may offer clinicians is not enough either to select and implement adequate treatment or to recognize target patients (Hien et al., 2015).

Along with this, some authors reported worrisome gaps between research and clinical practice, especially concerning treatments and intervention programs; according to them, both current implementation of evidence-based interventions and the extent of services evaluation are not precise, thus keeping service delivery lagging a step behind (Henderson et al., 2015).

A similar quest comes from studies of pharmacological approach toward co-occurring disorders; for example, whereas literature advises

against prescription of benzodiazepines, many treatments are still based on this therapy (Malat and Kahn, 2011). However, the disparity between research and practice is significant even in the opposite direction of the relationships: other authors showed how 20% of patients under pharmacological treatment for ADHD fail to respond well to medications despite the efficacy of pharmacotherapies being strongly confirmed (Martinez-Raga et al., 2013).

Operative and Treatment Issues: Treatment Inefficacy and Intervention Fragmentation

Issues encountered in the attempt to unequivocally define DD and, more generally, co-occurring disorders present their consequences in practical clinics and in provision of services. Indeed, some authors underline how treatment of patients with DD ends up being much harder and frequently results in unsuccessful outcomes (Johnson, 2000; Padwa et al., 2013), so the efficacy of many treatments may result premature (Tiet and Mausbach, 2007). These data confirm an older study which stated that, when working with DD, successful treatment represents an exception rather than the rule (Dickey and Azeni, 1996). Furthermore, some authors have identified a significant impact of the features of mental illnesses in the treatment phases: for instance, delusions, auditory hallucinations, inferential thinking, ability to tolerate stressors, etc (Horsfall et al., 2009).

In contrast to what Khantzian (1990) stated, one of the difficulties commonly met in the diagnostic process is determining the principal substance accurately: until a decade ago, no specific research on this was available in literature (Griffin et al., 2009). Furthermore, once the clinical condition has been precisely identified, its treatment remains challenging—especially pharmacologically (Truter et al., 2017).

With regard to residential programs, Horsfall et al. (2009) highlighted the fact that short-term residential programs do not achieve better outcomes if compared with usual outpatient service. On the contrary, long-term programs (1 year or more) reveal, at 6 months after discharge, much better outcomes (abstinence, accommodation, etc) (Horsfall et al., 2009).

A general problematic aspect related to service provision is its dependence on essential structural changes at the systems level of service provision, which may facilitate the fragmentation of treatments offered (Horsfall et al., 2009). In addition, development of intervention programs may be hindered by their fragmentation in different areas of specialization; the first claim for integration dates back two decades ago when some authors reported the need to build bridges between the various professionals dealing with patients with DD (Dickey and Azeni, 1996). Some more recent data concerning this issue are rather critical: for example, over 50% of patients with SUD and co-occurring PTSD still have symptoms at the end of treatment (Hien et al., 2015).

As some had noticed 20 years ago, DD calls into action psychiatry and public health; however, at the intersection of the two, no agreement on policies and treatments is found (McKeown et al., 1998). At a later time, Horsfall et al. (2009) identified, in a review of psychological treatments for people with DD, the common failure of health providers in addressing cross-service participation and planning. Speaking about the sequential (when the person is first treated for one condition, and then for the other one) and the parallel (different service providers work simultaneously but in isolation) treatment models. the authors emphasized the necessity to communicate between service providers involved in the DD treatment (Horsfall et al., 2009). Furthermore, given the lack of qualified mental health professionals on substance abuse (Hepner et al., 2009), and since little satisfaction was reported by mental health professionals working with these patients (Dickey and Azeni, 1996), some authors conclude that an integrative approach could lead to better outcomes, than if the two services are kept separate (Padwa et al., 2013). This, despite the fact that only weak evidence, in previous years, has suggested the efficacy of integrated treatment, probably due to the lack of data and the heterogeneity of team-dependent integrated treatment (Tiet and Mausbach, 2007). Despite the limited resources and the absence of well-defined guidelines that mark out integrated treatment (Horsfall et al., 2009), some studies show no evidence of counterproductive effects of this integration (Johnson, 2000), whereas others adduce empirical evidence supporting the effectiveness of these approaches (Hryb et al., 2007). Indeed, Tiet and Mausbach (2007) had already observed how the total amount of services people with DD received may contribute to better outcomes in treatment practices.

Under any of these scenarios, the problems that arise from an integration are not few. In particular, McKeown et al. (1998) identified two main issues: a) how to define the location of these services, either using existing facilities (and, in this case, which one) or opening new "hybrid" services, and b) what form these integrative services should assume. Beyond any possible answers to these still open issues, Horsfall et al. (2009) highlight the fact that, irrespective of whether services follow integrated or parallel models, they should be well coordinated; adopt a team approach; be multidisciplinary; have specialist-trained personnel with accessible, 24-hour contact; meet the actual needs of people with DD and their caregivers; and display a range of different treatment programs that should provide long-term follow-up, focusing on relevant outcomes and not on the simple symptom reduction.

Economic and Policy Issues

All data collected in the present section may be introduced by the consideration of some authors, according to whom an uncritical DD management may lead to problems in service provision (McKeown et al., 1998). As the preceding section shows, these problems may be encountered in treatments and interventions; however, we are now reporting those contributions that deal with cost-effectiveness of the same services and all policy and management issues connected to it.

A study conducted in the United States almost two decades ago reported the ranking of the cost-effectiveness of different services. The results are shown in Table 2.

Although there has been non replication of such research up to now, this study helps in giving information on the functioning of services. Moreover, no studies have investigated the cost of integrating

TABLE 2. Ranking of Different Services' Cost-Effectiveness (Johnson, 2000, p 124)

Expense Ranking	Types of Services	Effectiveness
First	Medical services	Widely effective
Second	Psychosocial services	Maintained clients in the community
Third	Supported education	Second most effective
Fourth	Group counseling	a. No effect on community maintenance b. Increased risk of hospitalization if accompanied by medical services
Fifth	Networking/referral	Ineffective
Sixth	Individual counseling	a. No effect on community maintenance b. Reduced risk of hospitalization if accompanied by medical services

different services (Dickey and Azeni, 1996). Currently, Henderson et al. (2015) claim a renewed approach to service evaluation, providing a glimpse of the opportunity to build more rigorous strategies; for example, they suggest pre-post evaluation tests or formal treatment research.

Another need reported in the literature is that of integrating interventions and increasing staff competency to enhance the quality of services. Some authors stated that this necessary process is hindered by a lack of accessibility and coordination (Grella et al., 2004; Henderson et al., 2015). In some cases, indeed, the need for a cross-sectoral cooperation is misinterpreted, and its realization is limited to arrangements aiming to guarantee access to services rather than specific treatments (Kubiak et al., 2011); this tendency finds evidence in many programs not being manned by professionals with specific skills or training in dealing with patients with DD (Padwa et al., 2013). To find a remedy to this, the rethinking of financial administration, through the delivery of resources directed to the support of integrated treatments, is of crucial importance (ibidem). According to some authors, this need should not be disregarded, as it has been demonstrated how patients with DD often need more social services (Johnson, 2000).

The last issue connected to service delivery is the incapability to reach provincial territory. Indeed, a recent Canadian study revealed a lack of visibility not only within and across service sectors but also with regard to the territory. This creates two barriers: one which hinders collaboration within services, and the other which prevents families having complete awareness of programs and services offered, thus rendering access even more infrequent (Henderson et al., 2015).

Pharmacological Approach Issues

Similar to other patients, patients with DD frequently follow pharmacological treatments. However, given the complexity of their condition, the use of psychotropic medication may be particularly complex to regulate. Truter et al. (2017) suggest continual monitoring in order not to underestimate the impact of pharmacological interaction with abuse of illegal substances. In particular, some authors illustrated how psychiatrists may in some cases collude with patients' addictive behavior, scarcely monitoring patients' use of medications (Malat and Kahn, 2011). In addition, in the same work, the authors stated that what should not be underestimated is the patients' familiarity with ingesting substances, which produce rapid changes in state of mood and thinking, as this may influence patients' expectations with regard to the effects of pharmacotherapy (ibidem).

According to Johnson (2000), pharmacotherapies may be useful to treat patients with DD in the short term, whereas the same treatment may turn out counterproductive in the long term; this is probably linked to a low level of compliance showed by patients, presumably due to the unpleasant adverse effects of treatments. For example, their frequent interference with the three phases of sexual functioning (desire, arousal, and orgasm) should be taken into consideration, especially with regard to patients with DD, who have turned out to be less monitored than other patients (Hamilton et al., 2015).

Generally, researchers still claim empirical evidence supporting efficacy of pharmacological treatments; for example, some specific studies on ADHD and comorbid SUD showed that no reports demonstrating the efficacy of pharmacotherapies have been published so far and that psychostimulants do not seem to eliminate the risk of SUD (Martinez-Raga et al., 2013). Actually, only limited empirical evidence helps in clarifying when ADHD pharmacological treatment should be initiated with respect to an abstinence period for DD SUD patients. For instance, in an early review, Schubiner et al. (1995) underlined that despite difficulty in making a decision about the chemical treatment of dependent adults with stimulant medication, stimulants were considered the most effective class for the control of ADHD symptoms.

Moreover, while comparing pharmacological treatment of late-life depression with co-occurring substance addiction, with or without co-occurring cognitive deficits, the first results turned out to be less satisfying, as interventions were less effective (Rosen et al., 2011). This datum leaves open the discussion on whether standardized medical interventions may be generally applied to any individual with the same results.

Patient Perspectives

Even back in the 1990s, a matter of concern for professionals working with patients with DD was taking into consideration the risk that when applied to a heterogeneous population, these terms could exert a homogenizing effect such as the extension of prejudicial stereotypes or new forms of stigma (McKeown et al., 1998). Indeed, years later, some authors report stigmatization as an actual problematic consequence connected with labeling. For example, according to Ward (2011), patients with DD experience social exclusion and unequal treatment not only in familial and working environments, so producing interpersonal conflicts (Horsfall et al., 2009), but also when dealing with professionals and clinicians, whose role is supposed to be supportive. This is rather alarming and calls for more research on the role health care providers themselves may play in keeping the stereotype working, as to consider these patients as a homogeneous group (ibidem), especially considering the consistent influence stigmatization has on identity-building processes. In fact, in an early review, Schubiner et al. (1995) had already highlighted the evidence that the diagnostic process may create the condition of putting many aspects of peoples' lives into a new framework. Furthermore, Chorlton and Smith (2016) later reported patients are often aware of the personal and social consequences of being identified with a specific category, especially when DD provides them with the possibility of oscillating between two different identity categories—and therefore to experience two different identities with all its implications. In the same work, the authors reported patients with both mental illness and SUDs prefer substance use identity as less stigmatizing, given the immediate benefits it could give them within some subcultures (Chorlton and Smith, 2016, p 325). Moreover, in some cases, the diagnosis proposed by clinicians does not match with patients' beliefs based on their experience of abuse (Griffin et al., 2009). Patients' conceptions may be influenced by the treatments they follow, the substances they still use, or even the data collection methods: it has been demonstrated that self-administered questionnaires and interviews may lead to discrepant conclusions (ibidem).

These instances illustrate the complexity of "living with" a DD, an aspect that may often be neglected by researchers and clinicians. Indeed, studies concerning co-occurring disorders and DD often deal with categories rather than single cases, thus losing the chance to comprehend the different realities hidden behind labels. In fact, in a review concerning patients with ADHD and SUD, Schubiner et al. (1995) had highlighted how the abuse patterns are strongly different from one individual to another. According to this perspective, Horsfall et al. (2009) seems to suggest that clinicians should disengage themselves from a generalizing assumption with regard to treatment of double-labeled patients. Furthermore, a study by Rosen et al. (2011) revealed that many treatment models for patients with DD lose their explanatory power when confronted with the process of ageing. The same consideration applies to the various studies conducted with RCT methodology: even if large samples of subjects participate in researches, significant data collected always concern central tendencies and, therefore, cannot be easily applied to single individuals with the aim of explaining or interpreting its clinical condition (Hien et al., 2015). However, patients with DD reported positive feelings connected to the experience of being understood by professionals without their condition being reduced to simplistic explanations (Chorlton and Smith, 2016). This is the reason why, according to the same authors, developing holistic understanding of all aspects of DD on the part of clinicians is crucial: every disorder manifestation belongs to "individual subjective motivations […] which could be influenced by internal psychological processes, social attitudes, and past

experiences" (Chorlton and Smith, 2016, p 319). The same belief has already led Ward (2011) to study personal perspectives of patients diagnosed with bipolar disorder and co-occurring substance use, stating that the comprehension of the individual point of view is of vital importance in informing the development of knowledge and policy.

DISCUSSION

In an early review, some authors reported a dearth of studies in the DD field, assuming this fact was due to the "diversity of conditions under the umbrella of 'dual diagnosis'" (Tiet and Mausbach, 2007, p 533). Furthermore, regardless of the kind of comorbid diagnosis, few DD treatments seem to have been replicated: in all the cases it was difficult verify if there were improvements of the pathological conditions. To shed light on this opacity that seems to go along with DD since the first studies concerning these conditions, this study has taken place.

The results of this research deepen our understanding of DD, as they allow individuation of those critical and problematic aspects that need to be reconsidered to find new perspectives on the construct, as well as on the theories underlying it and the related treatment for people with DD.

According to an interactionist and constructivist epistemology, it is of fundamental importance to investigate the knowledge processes underlying DD. Indeed, the lack of a standardized diagnostic criteria that regulate its theoretical and clinical applicability leads to a confused scenario—the construct ending up being rather inconsistent. Indeed, some contributions report researchers and professionals finding themselves using the same word while referring to different phenomena (for instance, the co-occurrence of substance use and different disorders); this hinders the generalizability of findings, as there is no evidence that different clinical manifestations can be investigated or treated as equal.

The research supports the hypothesis that an unclear theoretical framework may go along with substantial operative issues. As a critical consideration for future research, on account of the fact that patients with DD are a large population heterogeneous in the etiology of the disorders, accurate attention should be paid in the evaluation of possible subtypes of DD based on different etiological models, as well as thinking of tailored interventions to meet the specific needs not only of consumers but also caregivers. In patients with DD, most interventions prove unsuccessful, as ordinary problems (connected with the treatment of SUDs or mental disorders) add to those connected with contemporary treatment of the two. Many contributors agree that pharmacological treatment in particular hardly faces inefficacy, unpleasant adverse effects, and low compliance, thus arguing the need for a more societal approach in dealing with dually diagnosed patients. The latest could start with coordination of the various services, providing patients with the possibility to experience continuity between apparently different lines of intervention. Indeed, many researchers and professionals working with this specific (though increasing) population call for integration of services, which could confront the current fragmentation in their delivery.

However, thinking of service integration opens up economic and policy issues concerning DD care (Nicholas et al., 2017; Timko et al., 2006). As some authors noticed, investing in integration would initially require huge resources: few professionals are well qualified to deal with both kinds of patients (substance users and psychiatric patients), and therefore, integration should start with staff education and training. In this respect, the previous literature suggests how staff education is a crucial ingredient for better outcomes in DD treatment, addressing preconceptions and stereotyped attitudes, as well as lack of information and skills in treating both SUD and mental illness (Horsfall et al., 2009; Tiet and Mausbach, 2007). Second, visibility of services should be improved not only among patients but also in territories as well: we suppose that citizens aware of territorial service opportunities may play an important role in the interception of disadvantageous situations and in health promotion. Finally, as stated above with regard to intervention fragmentation, beyond questions concerning the kind of treatment (integrated or parallel models), to treat DD patients means to provide a well-coordinated service, multidisciplinary approach (*e.g.*, general medical practitioners involved along with mental health and substance abuse specialists), trained personnel available for 24 hours, different program types, long-term follow-up, well-defined guidelines, rehabilitation for subsequent employment, and, in general, an idiographic gaze and method for people with DD. Obviously, these critical conditions add another layer of complexity that needs to be taken into account in a coordinating care system.

CONCLUSIONS

The construct of DD appears rather controversial when studying its limits: starting from its definition up to its applications, many issues are encountered by those who study and work with it—conceptual, operative, and management issues. By presenting all the difficulties described in the literature in an organized fashion, this work highlights areas that urgently call for innovation. However, not all of these areas found a sufficiently in-depth analysis to delineate an overview of problematic issues (both theoretical and operative) around DD, so we recommend, for future analysis, to consider this study as a starting point to pursue the five macro-areas retrieved in an analytical way.

Certainly, as the work considered only three scientific databases (Scopus, PubMed, and Scholar), future research could extend to other sources of information. Therefore, this study analized the limitations of the previous studies on DD and it could be a starting point for future researches that should take into account not only how the relationship between types of substance and mental illnesses influences the DD treatment outcomes but also which roles and effects disciplinary fields (*e.g.*, psychology, psychiatry, medicine) have in DD treatment. Moreover, no ethnic and cultural influences on outcomes of DD treatment have been considered in this study, although there were few studies focused on these aspects. Finally, new research may attend on functioning interventions to individuate more solutions to the presented critical aspects.

DISCLOSURE

The authors declare no conflict of interest.

REFERENCES

Abou-Saleh MT, Janca A (2004) The epidemiology of substance misuse and comorbid psychiatric disorders. *Acta Neuropsychiatr*. 16:3–8.

Ameringer KJ, Leventhal AM (2013) Associations between attention deficit hyperactivity disorder symptom domains and *DSM-IV* lifetime substance dependence. *Am J Addict*. 22:23–32.

Banerjee S, Clancy C, Crome I (2002) *Co-existing problems of mental disorder and substance misuse (dual diagnosis): An information manual*. London: The Royal College of Psychiatrists Research Unit.

Chorlton E, Smith IC (2016) Understanding how people with mental health difficulties experience substance use. *Subst Use Misuse*. 51:318–329.

Ciarrocchi JW, Kirschner NM, Fallik F (1991) Personality dimensions of male pathological gamblers, alcoholics, and dually addicted gamblers. *J Gambl Stud*. 7:133–141.

Dickey B, Azeni H (1996) Persons with dual diagnoses of substance abuse and major mental illness: Their excess costs of psychiatric care. *Am J Public Health*. 86: 973–977.

Engel GL (1977) The need for a new medical model: A challenge for biomedicine. *Science*. 196:129–136.

Evans K, Sullivan J (2001) *Dual diagnosis: Counselling the mentally ill substance abuser*. New York: Guilford Press.

First M, Gladis M (1993) Diagnosis and differential diagnosis of psychiatric and substance use disorders. In Solomon J, Zimberg S, Shollar E (Eds), *Dual diagnosis: Evaluation, treatment, training, and program development* (pp 23–37). New York: Plenum Medical Book Co/Plenum Publishing Corp.

Grant MJ, Booth A (2009) A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Info Libr J*. 26:91–108.

Green K, Zebrak K, Fothergill K, Robertson J, Ensminger M (2012) Childhood and adolescent risk factors for comorbid depression and substance use disorders in adulthood. *Addict Behav.* 37:1240–1247.

Grella CE, Gil-Rivas V, Cooper L (2004) Perceptions of mental health and substance abuse program administrators and staff on service delivery to persons with co-occurring substance abuse and mental disorders. *J Behav Health Serv Res*. 31:38–49.

Griffin ML, Kolodziej ME, Weiss RD (2009) Measuring principal substance of abuse in comorbid patients for clinical research. *Addict Behav.* 34:826–829.

Guest C, Holland M (2011) Co-existing mental health and substance use and alcohol difficulties why do we persist with the term "dual diagnosis" within mental health services? *Adv Dual Diagn*. 4:162–172.

Hall A, Walton G (2004) Information overload within the health care system: A literature review. *Health Info Libr J*. 21:102–108.

Hamilton I, Pringle R, Hemingway S (2015) Psychotropic induced sexual dysfunction for people with a dual diagnosis. *Adv Dual Diagn*. 8:167–178.

Henderson JL, Chaim G, Luca S, Brownlie EB, Rosenkranz S, Skilling TA, Beitchman JH (2015) Program manager perspectives on the service system to meet the needs of youth with concurrent disorders: Findings from a Canadian national survey. *BMC Health Serv Res*. 15:393.

Hepner KA, Hunter SB, Edelen MO, Zhou AJ, Watkins K (2009) A comparison of two depressive symptomatology measures in residential substance abuse treatment clients. *J Subst Abuse Treat*. 37:318–325.

Hien DA, Campbell AN, Ruglass LM, Saavedra L, Mathews AG, Kiriakos G, Morgan-Lopez A (2015) Maximizing effectiveness trials in PTSD and SUD through secondary analysis: Benefits and limitations using the National Institute on Drug Abuse Clinical Trials Network "Women and Trauma" study as a case example. *J Subst Abuse Treat*. 56:23–33.

Horsfall J, Cleary M, Hunt GE, Walter G (2009) Psychosocial treatments for people with co-occurring severe mental illnesses and substance use disorders (dual diagnosis): A review of empirical evidence. *Harv Rev Psychiatry.* 17:24–34.

Hryb K, Kirkhart R, Talbert R (2007) A call for standardized definition of dual diagnosis. *Psychiatry (Edgmont)*. 4:15–16.

Iudici A (2015) *Health promotion in school: Theory, practice and clinical implications*. New York: Nova.

Iudici A, Fabbri M (2017) The construction of "discomfort psychological": An exploration of Italians teachers' reports. *Qualitative Report*. 22:2281–2295.

Johnson J (2000) Cost-effectiveness of mental health services for persons with a dual diagnosis. A literature review and the CCMHCP. *J Subst Abuse Treat*. 18:119–127.

Kanbur N, Harrison A (2016) Co-occurrence of substance use and eating disorders: An approach to the adolescent patient in the context of family centered care. A literature review. *Subst Use Misuse*. 51:853–860.

Khantzian EJ (1985) The self-medication hypothesis of addictive disorders: Focus on heroin and cocaine dependence. *Am J Psychiatry.* 142:1259–1264.

Khantzian EJ (1990) Self-regulation and self-medication factors in alcoholism and the addictions. Similarities and differences. *Recent Dev Alcohol*. 8:255–271.

Khantzian EJ (1997) The self-medication hypothesis of substance use disorders: A reconsideration and recent applications. *Harv Rev Psychiatry.* 4:231–244.

Kubiak SP, Zeoli AM, Essenmacher L, Hanna J (2011) Transitions between jail and community-based treatment for individuals with co-occurring disorders. *Psychiatr Serv.* 62:679–681.

Lee King PA, Duan L, Amaro H (2015) Clinical needs of in-treatment pregnant women with co-occurring disorders: Implications for primary care. *Matern Child Health J.* 19:180–187.

Lipscomb CE (2000) Medical Subject Headings (MeSH). *Bull Med Libr Assoc*. 88: 265–266.

Malat J, Kahn DA (2011) Clinical barriers to effective pharmacotherapy in co-occurring psychiatric and substance use disorders. *J Psychiatr Pract*. 17: 360–367.

Martinez-Raga J, Knecht C, de Alvaro R, Szerman N, Ruiz P (2013) Addressing dual diagnosis patients suffering from attention-deficit hyperactivity disorders and comorbid substance use disorders: A review of treatment considerations. *Addict Disord Their Treatment*. 12:213–230.

McKeown M, Stowell-Smith M, Derricott J, Mercer D (1998) Dual diagnosis as social control. *Addict Res*. 6:63–70.

Morozova M, Rabin RA, George TP (2015) Co-morbid tobacco use disorder and depression: A re-evaluation of smoking cessation therapy in depressed smokers. *Am J Addict.* 24:687–694.

Mueser K, Drake RE, Wallach MA (1998) Dual diagnosis: A review of etiological theories. *Addict Behav.* 23:717–734.

Nicholas DB, Calhoun A, McLaughlin AM, Shankar J, Kreitzer L, Uzande M (2017) Care experiences of adults with a dual diagnosis and their family caregivers. *Glob Qual Nurs Res*. 4:2333393617721646.

Padwa H, Larkins S, Crevecoeur-Macphail DA, Grella CE (2013) Dual diagnosis capability in mental health and substance use disorder treatment programs. *J Dual Diagn*. 9:179–186.

Regnart J, Truter I, Meyer A (2017) Critical exploration of co-occurring attention-deficit/hyperactivity disorder, mood disorder and substance use disorder. *Expert Rev Pharmacoecon Outcomes Res*. 17:275–282.

Rosen D, Morse JQ, Reynolds CF (2011) Adapting problem-solving therapy for depressed older adults in methadone maintenance treatment. *J Subst Abuse Treat*. 40:132–141.

Salvini A, Faccio E, Mininni G, Romaioli D, Cipolletta S, Castelnuovo G (2012) Change in psychotherapy: a dialogical analysis single-case study of a patient with bulimia nervosa. *Front Psychol*. 3:546.

Schubiner H, Tzelepis A, Isaacson JH, Warbasse LH 3rd, Zacharek M, Musial J (1995) The dual diagnosis of attention-deficit/hyperactivity disorder and substance abuse: Case reports and literature review. *J Clin Psychiatry.* 56:146–150.

Tiet QQ, Mausbach B (2007) Treatments for patients with dual diagnosis: A review. *Alcohol Clin Exp Res*. 31:513–536.

Timko C, Chen S, Sempel J, Barnett P (2006) Dual diagnosis patients in community or hospital care: One-year outcomes and health care utilization and costs. *J Ment Health*. 15:163–177.

UNODCCP (2000) *Demand reduction: A glossary of terms. ODCCP studies on drugs and crime—Guidelines*. New York: United Nations Office for Drug.

Ward TD (2011) The lived experience of adults with bipolar disorder and comorbid substance use disorder. *Issues Ment Health Nurs*. 32:20–27.