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Beck Depression Inventory for depression screening in substance-abusing adolescents

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Abstract

Co-occurring major depressive disorder (MDD) in adolescents with substance use disorders (SUD) has been linked to poor treatment outcomes. Use of validated depression screens in adolescent SUD populations may improve the detection of depression. In this study, we evaluated the diagnostic efficiency of the Beck Depression Inventory (BDI) in detecting MDD, as assessed by psychiatrists administering the Diagnostic Interview for Children and Adolescents, and its factor structure, internal consistency, and discriminant validity in a clinical sample of adolescents with SUD (n = 145). Results indicate that BDI scores of 12 and higher had the most optimal sensitivity (73%), whereas BDI scores of 17 and higher, the most optimal specificity (75%). Five factors accounted for approximately 56% of the variance. Overall, internal consistency was high, and the BDI adequately discriminated MDD from non-MDD cases. Results support the use of BDI as a screen for MDD with moderate to high psychometric properties in an adolescent SUD sample.

Keywords: Depressive symptoms; Adolescent substance abuse; Depression screening

1. Introduction

Adolescent depression is a treatable psychiatric disorder with serious consequences when untreated (American Academy of Child and Adolescent Psychiatry, 1998; Brent & Birmaher, 2002). Of clinical samples of adolescents with substance use disorders (SUD), 15% to 50% present with co-occurring depressive disorders (Bukstein, Glancy, & Kaminer, 1992; Clark et al., 1997; Deykin, Buka, & Zeena, 1992; Kashani, D'Souza, Reid, & Neal, 1985; Riggs, Baker, Mikulich, Young, & Crowley, 1995). When depression is present at the time of entry to substance abuse treatment, it has been linked to poorer posttreatment outcomes (Cornelius et al., 2004; Hasin, Nunes, & Meydan, 2004). Based on these features, published treatment guidelines (American Academy of Child and Adolescent Psychiatry, 2004; Center for Substance Abuse Treatment, 2005) recommend that substance treatment programs identify and manage co-occurring psychiatric disorders. In practice, however, very few programs routinely assess for psychiatric disorders such as depression because of limited resources. For example, psychiatric diagnoses are obtained after lengthy clinical interviews performed either by a psychiatrist or by a licensed mental health provider, which these programs often cannot afford. It may be useful to have validated self-reported psychiatric screens that can supplement a counselor's intake assessment, which can lead to identification of cases that can be referred for the management of their co-occurring disorders. Although a number of screening instruments exist for depression, few, if any, have been tested among adolescent samples with SUD. Psychometric properties for assessment tools in this population may be unique, particularly because they may have depressive disorders of mixed origins (substance-related, preexisting, or even

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coexisting mood states) and because vegetative symptoms of depression can appear similar to symptoms of substance use and withdrawal. It is especially important to investigate this in adolescents because substance use and depression are associated and predictive over time (Chinet et al., 2006). Therefore, it is important to establish the use of psychometric tools developed for adults in adolescent populations.

The Beck Depression Inventory (BDI) is one of the most commonly used self-reported screens for major depressive disorder (MDD) and has been well validated with well-established psychometric properties (Beck, Steer, & Gabin, 1988). It was found to be highly sensitive (i.e., ability to correctly identify those with depression, range = 68%–87%) and specific (i.e., the ability to identify those without depression, range = 70%–82%) in detecting MDD among adolescents diagnosed as using standardized structured psychiatric interviews such as the Kiddie Schedule for Affective Disorders and Schizophrenia (Ambrosini, Metz, Bianchi, Rabinovich, & Undie, 1991; Bennett et al., 1997; Kaufman, Birmaher, Brent, Rao, & Ryan, 1996) and the Diagnostic Interview of Children and Adolescents (Marton, Churchard, Kutcher, & Korenblum, 1991; Reich, 2000). The BDI has not yet been examined for its diagnostic use among adolescents with SUD. However, data exist for substance-dependent adult patients where studies have shown that the BDI offered the best validity as a screening tool for depression when compared to other depression screens (Rounsaville, Weissman, Rosenberger, Wilber, & Kleber, 1979; Weiss, Griffin, & Mirin, 1989). In these samples, the sensitivity ranged from 65% to 100% for cutoff scores of BDI ≥11–15, whereas for the same cutoff scores, the specificity was much lower ranging from 39% to 61%. The BDI also merits further evaluation because in one study, BDI scores ≥11 robustly predicted postresidential substance use outcomes across 3, 6, 9, and 12 months in an adolescent sample (Subramaniam, Stitzer, Clemmey, Kolodner, & Fishman, 2007), suggesting the role of affective distress negatively impacting outcomes.

The BDI is psychometrically sound and has been shown to have high levels of internal consistency in psychiatric populations (coefficient alphas ranging from .76 to .95, M = .86). Three to seven factor solutions have been proposed for the BDI (Beck et al., 1988), with four factors (negative self-attitude, performance difficulty, somatic symptoms, and physical worry) being able to discriminate between depressed and nondepressed adolescents (Bennett et al., 1997). However, these properties of the BDI have not been evaluated in adolescents with SUD. It is possible that the factor structure may be unique in this population. Therefore, it is necessary to identify and characterize the latent variables underlying the depressive symptomatology to use the instrument efficiently and to further understand the underlying nature of depression in this population. The objectives of this study are as follows: (a) to assess the diagnostic efficiency of the BDI in detecting MDD in a treatment-seeking sample of adolescents with SUD and (b) to assess the BDI for internal consistency, factor structure, and discriminant validity in this sample.

2. Methods

2.1. Participants

This is a secondary analysis of data obtained from a cross-sectional study designed to compare the clinical characteristics of treatment-seeking adolescents with opioid use disorder (OUD) with a matched sample of adolescents with cannabis/alcohol use disorders (Subramaniam, Stitzer, Woody, Fishman, & Kolodner, 2009). For this study, 184 participants with either OUD or cannabis/alcohol use disorders were recruited from patients aged 14 to 18 years seeking either residential or outpatient treatment at an adolescent substance abuse treatment program in Baltimore, MD.

2.2. Procedures

A total of 184 participants and their guardians provided assent/informed consent if they met all study eligibility criteria including less than 2 weeks of abstinence or confinement at time of study entry. This criterion was included to reduce variability in rates of depressive symptoms in relation to duration of abstinence. All participants were assessed, typically within 2 weeks of treatment entry, using a demographic instrument, structured interviews Diagnostic Instrument for Children and Adolescents-IV (DICA-IV) for psychiatric disorders and Composite International Diagnosis Interview for *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) SUD and the BDI (instruments described below). Typically, the patients completed the battery of assessments in two sessions and were paid $25 for their time and effort. Further details of the parent study methods are described in Subramaniam et al. (2009). The study protocol, instruments, and consent forms were approved by the Western Institutional Review Board (a Johns Hopkins Institutional Review Board designee).

2.3. Study Instruments

2.3.1. Diagnostic Instrument for Children and Adolescents-IV

This structured psychiatric interview for children/adolescents (Reich, 2000; Welner, Reich, Herjanic, Jung, & Amado, 1987) provided information on several lifetime and current *DSM-IV* Axis I diagnoses. We selected seven current psychiatric disorders commonly reported in the adolescent SUD literature (Hovens, Cantwell, & Kiriakos, 1994; Kandel et al., 1997; Stowell & Estroff, 1992) for assessment: attention-deficit/hyperactivity disorder (ADHD), major depressive episode (MDE), manic episode, generalized anxiety disorder (GAD), posttraumatic stress disorder (PTSD), oppositional defiant disorder (ODD), and conduct disorder (CD). The first author (G. S.) administered 70% of DICA interviews; the