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#### Review

# Shared clinical associations between obesity and impulsivity in rapid cycling bipolar disorder: A systematic review



Juan F. Galvez <sup>a,b,\*</sup>, Isabelle E. Bauer <sup>a</sup>, Marsal Sanches <sup>a</sup>, Hanjing E. Wu <sup>a</sup>, Jane E. Hamilton <sup>a</sup>, Benson Mwangi <sup>a</sup>, Flavio P. Kapczinski <sup>a,c,d</sup>, Giovana Zunta-Soares <sup>a</sup>, Jair C. Soares <sup>a,d,\*</sup>

- a UT Center of Excellence on Mood Disorders, Department of Psychiatry and Behavioral Sciences, University of Texas Health Science Center, Houston, TX, USA
- <sup>b</sup> Department of Psychiatry, Pontificia Universidad Javeriana School of Medicine, Bogotá, Colombia
- <sup>c</sup> Molecular Psychiatry Laboratory, UT Center of Excellence on Mood Disorders, Houston, TX, USA
- <sup>d</sup> Harris County Psychiatric Center (HCPC), University of Texas Health Science Center, Houston, TX, USA

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#### ABSTRACT

*Background:* Obesity seems to show a two-way relationship with bipolar disorder (BD), representing not only a possible vulnerability factor but also a consequence of chronic mood dysregulation associated with an overall poor prognosis. Increased impulsivity has been described across all stages and phases of BD as being also associated with a worse prognosis. Although obesity and impulsivity are common features among rapid cycling bipolar disorder (RC-BD) patients, there is a lack of understanding about the clinical implications of these conditions combined in BD.

Methods: To explore and integrate available evidence on shared clinical associations between obesity and impulsivity in RC-BD a systematic search of the literature in the electronic database of the National Library of Medicine (PubMed) has been conducted.

Results: One hundred and fourteen articles were included in our systematic review. Among RC-BD patients, substance abuse disorders (SUDs), anxiety disorders (ADs), predominantly depressive polarity, chronic exposure to antidepressants, psychotic symptoms, suicidality, and comorbid medical conditions are strongly associated with both obesity and impulsivity.

*Limitations*: Heterogeneity of published data, inconsistent measurements of both obesity and impulsivity in RC-BD and an absence of control for RC-BD in epidemiological surveys. Consequently, their combined impact on the severity of RC-BD is yet to be recognized and remains to be poorly understood.

Conclusion: In RC-BD patients the co-occurrence of obesity and impulsivity is associated with an unfavorable course of illness, specific shared clinical correlates, negative psychosocial impact, and overall worse prognosis. There is a need to examine obesity and impulsivity as modulating factors and markers of severity in RC-BD.

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<sup>\*</sup> Correspondence to: UT Center of Excellence on Mood Disorders, Biomedical and Behavioral Sciences Building (BBSB), 1941 East Rd Suite 3208, Houston, TX 77054, USA. Tel.: +1 713 486 2507; fax: +1 713 486 2553.

E-mail addresses: juan.f.galvezflorez@uth.tmc.edu (J.F. Galvez), isabelle.e.bauer@uth.tmc.edu (I.E. Bauer), marsal.sanches@uth.tmc.edu (M. Sanches), emilysky2008@livemail.tw (H.E. Wu), jane.e.hamilton@uth.tmc.edu (J.E. Hamilton), benson.irunguru@uth.tmc.edu (B. Mwangi), flavio.p.kapczinski@uth.tmc.edu (F.P. Kapczinski), giovana.b.zuntasoares@uth.tmc.edu (G. Zunta-Soares), jair.c.soares@uth.tmc.edu (J.C. Soares).

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#### 1. Introduction

Rapid cycling affects approximately 20% of all adult patients with bipolar disorder (BD) (Kupka et al., 2003; Schneck et al., 2004). In addition, rapid cycling bipolar disorder (RC-BD) is associated with medical and psychiatric comorbid disorders that have been shown to lead to increased risk for mixed states, high symptom severity, aggression and suicidality (Frye and Salloum, 2006; Kemp et al., 2010). Higher levels of burden affecting patients and their family members have also been linked to RC-BD (Bastiampillai et al., 2010). Furthermore, RC-BD has been associated with more severe clinical pictures and refractoriness (Whiteford et al., 2013).

Obesity has been associated with an earlier age of onset, higher severity of depressive symptoms, higher number of mood episodes and recurrences, as well as more suicide attempts and reduced treatment response in RC-BD samples (Kemp et al., 2010; McElroy et al., 2011). Moreover, food oriented impulsivity and food reward sensitivity have been shown to be closely related to obesity and binge eating disorder (BED) (Schag et al., 2013; McElroy et al., 2011). Notably, obese adults and BED patients seem to have an increased association risk for developing mood disorders (Simon et al., 2006; Hudson et al., 2007).

Increased impulsivity has been described across all stages and phases of BD as being associated with a worse prognosis (Moeller et al., 2001; Swann, et al., 2001a, 2001b, 2005, 2009; Swann, 2009; Muhtadie et al., 2014). In fact, impulsivity has been recently reported to be significantly higher in bipolar illness compared to schizophrenia and healthy controls (Reddy et al., 2014). Furthermore, individuals with BD type I appear to have a heightened risk of behaving impulsively specially when experiencing positive strong emotions (Muhtadie et al., 2014). However, the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM 5) does not include impulsivity as a specific criterion for episodes nor as a course specifier in BD (American Psychiatric Association, 2013). The criteria for manic/hypomanic episodes only allude to thoughtless and reckless behaviors to be associated with increased impulsivity. Although risk-taking behaviors are considered to be core features and related with a possible candidate endophenotype, these differ significantly from impulsivity in BD patients as well as in first degree relatives at risk (Hıdıroğlu et al., 2013). Therefore, riskiness and impulsivity must be viewed separately rather than combined phenomenological signatures for an accurate diagnosis of acute mania (Cheniaux et al., 2014; Hidiroğlu et al., 2013). Hence, the dearth of research involving impulsivity in BD must set a pace for future trials involving RC-BD and functional outcome.

Although obesity and impulsivity are common and shared features of RC-BD, their relationship in RC-BD remains to be established (Gao et al., 2008; Kemp et al., 2010; McElroy et al.,

2011). Nevertheless, based on available measurements and data regarding obesity and impulsivity in BD samples there are a number of possible associations between these two clinical variables. For instance, obesity and impulsivity may be approached as shared clinical factors (Goldstein et al., 2013). Indeed, impulsive personality traits are prevalent characteristics in obese BD patients (Goldstein et al., 2013; D'Ambrosio et al., 2012; Sutin et al., 2010). Another plausible approach is to examine obesity and impulsivity as two independent non-related clinical features associated with severe affective dysregulation in BD (Goldstein et al., 2013; Swann et al., 2009; Hudson et al., 2007). Finally, obesity and RC-BD may share the same underlying disturbance associated with impulsiveness (Schag et al., 2013). Thus far the association between obesity and impulsivity in RC-BD, as stated above, is not fully understood. In this sense, there is a compelling rationale to explore available data in regards to the clinical relationship between obesity and impulsivity in RC-BD.

#### 2. Methods

#### 2.1. Literature research

A systematic literature search was conducted to retrieve publications examining the clinical relationship between obesity and impulsivity in RC-BD. Our search was conducted in the electronic database of the National Library of Medicine (PubMed). The database was initially inquired including search items belonging to the constructs: (1) bipolar disorder, (2) rapid cycling, (3) impulsivity, and (4) obesity. In addition, we performed an advanced search of the literature using the medical subheading (MeSH) terms "Impulsive Behavior", "Bipolar Disorder", and "Obesity" in all possible combinations.

#### 2.2. Eligibility criteria

Articles were selected based on the following inclusion criteria.

- 1. Every article within the open search must include at least two of the three terms "Impulsivity", "Obesity", or "Rapid Cycling" in their title along with the term "Bipolar Disorder".
- 2. Every article within the advance search must include at least one of the two MeSH terms "Impulsive Behavior" or "Obesity" in their title along with the MeSH term "Bipolar Disorder".
- 3. The abstract must allude to some extend to the Rapid Cycling (RC) course specifier in bipolar disorders.
- 4. The study populations included in the article must have a diagnosis of BD according to Diagnostic Statistical Manual (DSM) or International Classification of Disease (ICD) criterion.

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