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STUDY OF IMPULSIVITY IN BIPOLAR AFFECTIVE DISORDER AND ITS CORRELATION WITH CO-MORBID ANXIETY

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ABSTRACT **Objectives:** Impulsivity is known to be a core symptom of Bipolar disorder, just as anxiety is known to be a common co-morbidity. This study aims at investigating how the expression of impulsivity varies in subjects with Bipolar Disorder, according to the severity of co-morbid anxiety.
Methods: Eligible candidates were assessed using a semi-structured proforma. The study participants were divided into four groups: manic, depressed, mixed state or euthymic (control) group. Standardized assessment tools were used to measure the severity of manic, depressive symptoms as well as anxiety and impulsivity in the participants. The collected data was analysed for correlations between underlying impulsivity and co-morbid anxiety symptoms.
Results: Both impulsivity and anxiety levels were significantly higher in all the illness groups as compared to controls. Total impulsivity score and its motor domain increased with the severity of manic symptoms, while total impulsivity and its attentional domain increased with the severity of depressive symptoms. Co-morbid anxiety is significantly higher in Bipolar depression as well as in mixed state as compared to mania. Severity of co-morbid anxiety correlated significantly with attentional impulsivity, especially in Bipolar depression.
Conclusions: Impulsivity varies significantly across the spectrum of Bipolar Disorder. Presence of co-morbid anxiety specifically worsens attentional impulsivity. This highlights the importance of addressing both impulsivity and anxiety simultaneously in treatment of Bipolar Disorder.

KEYWORDS : Bipolar Disorder, Impulsivity, Anxiety

INTRODUCTION:

Bipolar Affective Disorder (BAD) has a relatively good prognosis, despite causing functional/ cognitive impairment and social disability.[1] Decades of research on impulsivity in Bipolar Disorder has identified impulsivity as a core feature of BAD, influencing other symptoms like high risk sexual behavior, indiscriminate spending, reckless driving, aggression, substance use and suicidality.[1,2] On the other hand, approximately 50-65% of people with BAD are seen to meet the criteria for at least one anxiety disorder in their lifetimes.[3]

There is some symptom overlap in presentation of impulsivity, anxiety and BAD. Difficulty concentrating is a core feature of anxiety, Bipolar depression and attentional impulsivity. Distractibility presents in mania and attentional impulsivity. The symptom overlap however is insufficient for establishing an association between anxiety and impulsivity in mood disorders.[4] Dearth of research on how impulsivity varies with co-existing anxiety in mood disorders prompted us to conduct a study investigating the relationship between specific aspects of impulsivity and co-morbid anxiety in various phases of BAD.

METHODOLOGY:

Patients of BAD attending out-patient clinic were recruited for this cross-sectional, analytical.study and classified into four groups as per their current mood state: manic, depressed, mixed episode and euthymic. Patients of BAD of either sex, between ages 18 and 55 years, willing to participate in the study were included, after ruling out underlying organicity, co-morbid substance use or cognitive decline. With informed consent, socio-demographic data, clinical history and mental status examination details of each participant were recorded using:
- Ham-D = Hamilton Rating Scale for Depression
- YMRS = Young's Mania Rating Scale
- Ham-A = Hamilton Rating Scale for Anxiety and
- BIS-11 = Barratt's Impulsivity Scale-11 (Factors: Attentional + Motor + Non-planning Impulsivity)

Four study groups were formed based on the following cut-off scores:
- Group A: Patients of BD currently mania (YMRS > 6)
- Group B: Patients of BD currently depression (HDRS > 7)
- Group C: Patients of BD currently mixed state (YMRS >6 and HDRS >7)
- Group D: Patients of BD currently euthymic control group (YMRS <=6 and HDRS <=7)

The recorded data was analyzed using SPSS 22.0.

RESULTS:

Mean age of total study population was 34.354 (+/- 7.973 SD) years. The mean scores for mania, depression, anxiety and impulsivity showed a significant variation across study groups. Impulsivity in all illness groups was significantly higher than the euthymic (controls), especially during mixed affective states (Table 1). Anxiety levels between each active illness group and euthymic (control) group were also significantly higher (Table 2).

Table 1: Comparison of impulsivity in illness groups with euthymic (controls)

N = 36 (each)	BAD(M)	BAD(D)	BAD(Mix)
BIS total score	t = 3.801, **p = 0.000****	t = 1.294, p = 0.200	t = 2.480, **p = 0.016***
AI[†]	t = 2.544, **p = 0.013***	t = 3.756, **p = 0.000****	t = 3.513, **p = 0.001****
MI[‡]	t = 7.174, **p = 0.000****	t = 0.269, p = 0.788	t = 4.888, **p = 0.000****
NPI[¶]	t = -1.016, p = 0.313	t = -1.384, p = 0.171	t = -2.613, **p = 0.011***

t=correlation co-efficient, p=significance value (2-tailed)
†AI = attentional impulsivity, ‡MI = motor impulsivity, ¶NPI = non-planning impulsivity
* (p<0.05), ** (p<0.001)

Table 2: Comparison of anxiety in illness groups with euthymic (controls)

N = 36 (each)	BAD(M)	BAD(D)	BAD(Mix)
Ham-A score (Anxiety)	t = 2.025, **p = 0.047***	t = 12.216, **p = 0.000****	t = 12.398, **p = 0.000****

t=correlation co-efficient, p=significance value (2-tailed)
* (p<0.05), ** (p<0.001)

Overall, severity of manic symptoms showed a significant correlation with total impulsivity (p=0.002) and its motor component (p<0.0001) and depressive symptoms correlated significantly with attentional

impulsivity (p<0.0001). In mania, symptom severity correlated significantly with non-planning impulsivity (p=0.042). Severity of co-morbid anxiety in total sample showed a highly significant correlation with attentional impulsivity, especially during Bipolar Depression (Table 3).

Table 3: Effect of severity of co-morbid anxiety on Impulsivity in Bipolar disorder

Variable	Total sample (N = 144)	BAD(M) (N=36)	BAD(D) (N=36)	BAD(Mix) (N=36)	BAD(E) (N=36)
BIS total score	t = 0.106, p = 0.206	t = 0.036, p = 0.835	t = 0.255, p = 0.133	t = 0.076, p = 0.659	t = 0.136, p = 0.429
AI[†]	t = 0.336, **p = 0.000**[**]	t = -0.196, p = 0.252	t = 0.359, **p = 0.031**[*]	t = 0.120, p = 0.485	t = 0.117, p = 0.496
MI[‡]	t = -0.026, p = 0.759	t = 0.073, p = 0.672	t = -0.126, p = 0.466	t = 0.183, p = 0.284	t = 0.082, p = 0.636
NPI[¶]	t = -0.093, p = 0.268	t = 0.099, p = 0.567	t = 0.191, p = 0.263	t = -0.127, p = 0.461	t = 0.089, p = 0.604

t=Pearson's correlation co-efficient, p=significance value (2-tailed)
†AI = attentional impulsivity, ‡MI = motor impulsivity, ¶NPI = non-planning impulsivity
* (p<0.05), ** (p<0.001)

DISCUSSION:
The role of impulsivity in the pathogenesis of various neuropsychiatric disorders has been increasingly evident. Impulsivity contributes to a wide range of psychopathology: bipolar disorder, attention deficit hyperactivity disorder, borderline personality disorder, alcohol and substance dependence, as well as suicidality, as a feature of several disorders.[5,6] Known to be elevated in BAD, impulsivity has a varied presentation across mood states.[7] This study demonstrates similar variation while replicating previous reports of higher impulsivity during mixed mood states.[8]

Co-morbid anxiety in BAD lowers quality of life for patients, worsens mood symptoms, impairs treatment response and increases hospitalization rates, while predicting suicidality and worsening long-term prognosis.[9,10] Treatment of anxiety with anti-depressants (SSRIs) also poses risk for destabilizing moods in BAD.[2]

Study of co-morbid anxiety in affective disorders was first conducted by Simon and colleagues, on 500 patients enrolled under the Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD). This study noted a lifetime prevalence of 51.2% for anxiety disorders in BAD (30.9% currently). It also demonstrated an independent delirious effect of anxiety in BAD in the form of suicidality (Odd's Ratio = 2.45).[3] Otto and colleagues further examined 1000 patients enrolled under STEP-BD and found that presence of at least one current co-morbid anxiety disorder caused significantly lesser recovery period, more anxiety over time, higher relapse rates and lower quality of life and functioning in the individuals.[11] A study on anxiety disorders in bipolar manic patients conducted in India, noted a lifetime prevalence of 70.2% for anxiety disorders and correlated it significantly with more depressive episodes in the past (p<0.001), lesser inter-episode recovery (p<0.01) and poorer response to treatment in mania (p<0.05).[12]

Anxiety and impulsivity share a controversial relationship, wherein anxious individuals seem to have more impulsivity, trait and state both.[13] However, with inconsistent evidence for this association, the potential interplay between anxiety, impulsivity and mood in determining the clinical picture in a BAD patient is not completely understood. The National Co-morbidity Survey Replication in USA reported significant positive correlations between all impulse control disorders and various anxiety disorder diagnoses.[14] Impulsivity levels in a study on BAD subjects with anxiety, have been found to be significantly higher for both, anxiety as a symptom (p=0.011) and a disorder (p=0.010).[15]

Study of suicidality in remitted BAD revealed a higher suicide risk conferred by co-morbid anxiety, along with earlier onset of BAD, more depressive episodes, rapid cycling and higher use of psychoactive substances.[16] Another study identified both impulsivity and anxiety as potentially modifiable risks in suicidal patients, warranting early recognition and urgent effective intervention for the same.[17] A comparative study of impulsivity in unipolar v/s bipolar depression and its variation with underlying anxiety reported significantly higher lifetime anxiety in unipolar depressed group (p=0.022) as compared to

bipolar and showed that co-morbid anxiety significantly worsened impulsivity (p=0.019), especially motor component (0.049) in both groups of mood disorders.[18]

In our study, anxiety was found to be significantly elevated in all illness groups as compared to euthymic controls, thus reflecting the considerable role of anxiety in enhancing subjective distress in BAD patients irrespective of the mood state. Relatively higher levels of anxiety found in depression and mixed mood states as compared to mania, are as per expectation from previous research.[12,17] It was also found that underlying anxiety significantly impaired attentional impulsivity, irrespective of current mood state, which is in line with previous observations.[9] Co-morbid anxiety has therapeutic implications in management of BAD. Clinical evidence indicates poorer course of illness, response to treatment and greater deficits in psychosocial functioning in bipolar depressed patients with co-morbid anxiety. Logistic regression for treatment Evaluation of how anxiety affects treatment of BAD patients enrolled under STEP-BD showed the efficacy of intensive psychotherapy over a year, advocating need for psychotherapeutic interventions in managing acute depressive episodes.[19] Thus addressing anxiety separately while managing BAD is essential to optimal patient care. Careful management of both impulsivity and anxiety in BAD is highlighted, for achieving complete remission and optimal recovery.

CONCLUSION:
The multi-faceted construct of impulsivity is expressed differentially in different affective states of Bipolar disorder. Co-morbid anxiety in BAD affects the manifestation of impulsivity, implying the need for simultaneous addressal of both the variables for a better long-term outcome.

CONFLICT OF INTEREST: None

REFERENCES:
1   Najt, P., et al., Impulsivity and bipolar disorder. Eur Neuropsychopharmacol, 2007. 17(5): p. 313-20
2   Swann, A.C., et al., Increased impulsivity associated with severity of suicide attempt history in patients with bipolar disorder. Am J Psychiatry, 2005. 162(9): p. 1680-7
3   Simon, N.M., et al., Pharmacotherapy for bipolar disorder and comorbid conditions: baseline data from STEP-BD. J Clin Psychopharmacol, 2004. 24(5): p. 512-20
4   Association, A.P. and A.P. Association, Diagnostic and Statistical Manual of Mental Disorders: DSM-IV. 1994: American Psychiatric Association
5   Swann, A.C., Impulsivity in mania. Curr Psychiatry Rep, 2009. 11(6): p. 481-7
6   Winstanley, C.A., D.M. Eagle, and T.W. Robbins, Behavioral models of impulsivity in relation to ADHD: translation between clinical and preclinical studies. Clin Psychol Rev, 2006. 26(4): p. 379-95
7   Swann, A.C., et al., Impulsivity and phase of illness in bipolar disorder. J Affect Disord, 2003. 73(1-2): p. 105-11
8   Swann, A.C., et al., Impulsivity: differential relationship to depression and mania in bipolar disorder. J Affect Disord, 2008. 106(3): p. 241-8
9   Kauer-Sant'Anna, M., et al., Anxiety comorbidity and quality of life in bipolar disorder patients. Can J Psychiatry, 2007. 52(3): p. 175-81
10 Engstrom, C., et al., Bipolar disorder. III: Harm avoidance a risk factor for suicide attempts. Bipolar Disord, 2004. 6(2): p. 130-8
11 Otto, M.W., et al., Prospective 12-month course of bipolar disorder in out-patients with and without comorbid anxiety disorders. Br J Psychiatry, 2006. 189: p. 20-5
12 Das, A., Anxiety disorders in bipolar I mania: prevalence, effect on illness severity, and treatment implications. Indian J Psychol Med, 2013. 35(1): p. 53-9
13 Kessler, R.C., et al., Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Archives of general psychiatry, 2005. 62(6): p. 593-602
14 Parmentier, C., et al., Clinical and dimensional characteristics of euthymic bipolar patients with or without suicidal behavior. Eur Psychiatry, 2012. 27(8): p. 570-6
15 Fawcett, J.A., et al., Defining and managing suicidal risk in patients taking psychotropic medications. J Clin Psychiatry, 2009. 70(6): p. 782-9
16 Young, S.N., McGill University, Department of Psychiatry, 50th anniversary. Part 2: Psychiatry in the year 2043? J Psychiatry Neurosci, 1993. 18(5): p. 205-8
17 Turvey, C., et al., Long-term prognosis of bipolar I disorder. Acta Psychiatrica Scandinavica, 1999. 99(2): p. 110-119
18 Petersen, T., et al., Do comorbid anxiety disorders impact treatment planning for outpatients with major depressive disorder? Psychiatry research, 2009. 169(1): p. 7-11
19 Deckersbach, T., et al., Do comorbid anxiety disorders moderate the effects of psychotherapy for bipolar disorder? Results from STEP-BD. American Journal of Psychiatry, 2014. 171(2): p. 178-186