



STUDY OF IMPULSIVITY IN BIPOLAR AFFECTIVE DISORDER AND ITS ASSOCIATION WITH ILLNESS CORRELATES

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ABSTRACT

Introduction: Bipolar Disorder (BD) manifests between the poles of depression and mania, with impulsivity identified as its core symptom. This study aims at investigating how specific aspects of impulsivity vary with underlying illness correlates and patient profile in different affective states of BD.

Methodology: A semi-structured proforma assessed eligibility and collected socio-demographic and clinical data of study participants. Young's Mania Rating Scale and Hamilton Depression Rating Scale were used to assess affective symptom severity and divide the participants into groups based on current mood state: manic, depressed, mixed state or euthymic (control group). Barratt's Impulsivity Scale was used to assess state impulsivity in each participant and the collected data was analysed for correlations.

Results: Non-planning impulsivity increased with advancing age in BD ($p=0.012$), specifically bipolar depression ($p=0.005$). Total ($p=0.038$), motor ($p=0.001$) and attentional ($p=0.011$) impulsivity was higher in females during a depressive episode. Illness duration impaired total ($p=0.022$) and attentional impulsivity ($p=0.026$) and number of previous depressive episodes increased attentional impulsivity ($p=0.021$). Manic symptom severity increased total ($p=0.002$) and motor impulsivity ($p<0.000$), while depressive symptom severity increased attentional impulsivity ($p<0.000$) in BD.

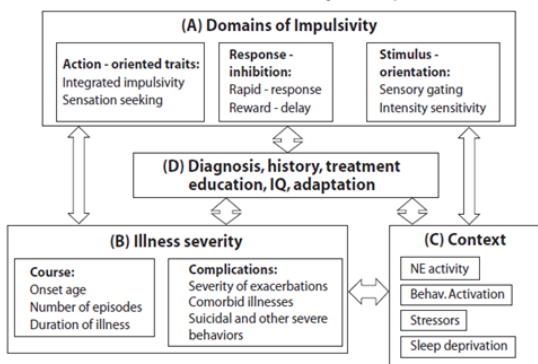
Conclusion: Certain illness and patient characteristics affect impulsivity manifestation in BD. This warrants watchfulness for impulsive behaviours in BD and its appropriate management.

KEYWORDS : Bipolar Disorder, Impulsivity

INTRODUCTION:

Impulsivity is a predisposition to react rapidly towards stimuli without planning.¹ It encompasses a range of poorly conceived, prematurely expressed, unduly risky or inappropriate actions that often result in undesirable consequences.² A core feature of Bipolar Disorder (BD), impulsivity manifests in symptoms like risky sexual behavior, indiscriminate spending, reckless driving, aggression and increased suicidal ideation.³ It is a diagnostic criterion inherent in mania, contributes to suicidality in depression and is a known stable trait of BD across mood states.^{4,5} There are various determinants of impulsivity manifestation:

Determinants of Impulsivity



Numerous studies have evaluated expression of impulsivity in BD with reference to mood state or co-morbid psychiatric symptoms. This study particularly aims to study how individual illness correlates impact the expression of impulsivity in BD.

METHODOLOGY:

OPD patients of BD were recruited for this cross-sectional, analytical study and classified into four groups: mania, depression, mixed episode and euthymia (control group). Patients of both genders, aged between 18 and 55 years, willing to participate in the study were included after ruling out co-morbid substance use, underlying organicity or neuro-

cognitive decline. After taking informed consent, the socio-demographic and clinical history of each patient was collected and rated using:

- Ham-D = Hamilton Rating Scale for Depression
- YMRS = Young's Mania Rating Scale
- BIS-11 = Barratt's Impulsivity Scale (Factors: Attentional (AI) + Motor (MI) + Non-planning (NPI))

Cut-off scores for defining study groups:

- Group A: Mania (YMRS > 6)
- Group B: Depression (HDRS > 7)
- Group C: Mixed state (YMRS > 6 and HDRS > 7)
- Group D: Euthymic (control group) (YMRS ≤ 6 and HDRS ≤ 7)

SPSS 22.0 was used for data analysis.

RESULTS:

Mean age of study population was 34.35 (+/- 7.9 SD) years, with 75% male patients and 2/3rd sample from rural area. About half of the participants belonged to middle socio-economic status and >70% were educated till at least high school. Mean illness duration of the population was 9.6 years, with good treatment compliance in >70% cases. The following tables depict the effects of age, gender, illness duration, number of depressive episodes and affective symptom severity on the manifestation of impulsivity in total study population:

Table 1: Effect of age on impulsivity in BD

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 = 0.161, p = 0.054	t = -0.018, p = 0.919	t = 0.012, p = 0.946	t = 0.190, p = 0.267	t = 0.307, p = 0.068
AI	t = 0.067, p = 0.423	t = 0.151, p = 0.378	t = -0.280, p = 0.086	t = 0.263, p = 0.121	t = 0.239, p = 0.086
MI	t = 0.053, p = 0.525	t = 0.109, p = 0.526	t = -0.261, p = 0.125	t = 0.045, p = 0.794	t = 0.290, p = 0.086
NPI	t = 0.209, p = 0.012	t = 0.215, p = 0.207	t = 0.458, p = 0.005	t = 0.088, p = 0.608	t = 0.142, p = 0.408

(*t*=Pearson's correlation co-efficient, *p*=significance value (2-tailed))

Table 2: Effect of gender on impulsivity in BD

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 = -1.163, p = 0.247	t = -1.629, p = 0.113	t = -2.150, p = 0.038	t = -0.596, p = 0.555	t = 0.914, p = 0.367
AI	t = -1.709, p = 0.090	t = -1.286, p = 0.207	t = -2.697, p = 0.011	t = 0.726, p = 0.473	t = -1.364, p = 0.182
MI	t = -0.692, p = 0.490	t = -0.704, p = 0.486	t = -3.564, p = 0.001	t = -0.444, p = 0.660	t = 1.504, p = 0.142
NPI	t = -0.093, p = 0.926	t = -1.190, p = 0.242	t = 0.764, p = 0.450	t = -1.765, p = 0.087	t = 2.059, p = 0.047

(*t*=Pearson's correlation co-efficient, *p*=significance value (2-tailed))

Table 3: Effect of total illness duration on impulsivity in BD

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 = 0.191, p = 0.022	t = -0.008, p = 0.964	t = 0.191, p = 0.264	t = 0.206, p = 0.229	t = 0.159, p = 0.355

Table 5: Effect of affective symptom severity on impulsivity in BD

Variable	Score on YMRS				Score on Ham-D			
	Total sample (N = 144)	BAD (M)(N = 36)	BAD (Mix)(N = 36)	BAD (E)(N = 36)	Total sample (N = 144)	BAD (D)(N = 36)	BAD (Mix)(N = 36)	BAD (E)(N = 36)
BIS total score	t = 0.262, p = 0.002	t = 0.228, p = 0.182	t = -0.154, p = 0.369	t = 0.181, p = 0.290	t = 0.041, p = 0.627	t = 0.141, p = 0.411	t = 0.104, p = 0.547	t = 0.292, p = 0.084
AI	t = 0.107, p = 0.203	t = 0.034, p = 0.842	t = -0.109, p = 0.527	t = 0.215, p = 0.208	t = 0.331, p = 0.000	t = 0.257, p = 0.130	t = 0.162, p = 0.346	t = 0.139, p = 0.419
MI	t = 0.528, p = 0.000	t = 0.114, p = 0.509	t = -0.108, p = 0.529	t = 0.160, p = 0.351	t = -0.126, p = 0.131	t = -0.060, p = 0.726	t = 0.087, p = 0.613	t = 0.219, p = 0.199
NPI	t = -0.097, p = 0.248	t = 0.341, p = 0.042	t = -0.123, p = 0.476	t = 0.019, p = 0.912	t = -0.111, p = 0.184	t = 0.046, p = 0.789	t = -0.026, p = 0.879	t = 0.268, p = 0.114

(*t*=Pearson's correlation co-efficient, *p*=significance value (2-tailed))

Non-planning impulsivity increased with advancing age in BD (*p*=0.012), specifically bipolar depression (*p*=0.005) (Table 1). Total (*p*=0.038), motor (*p*=0.001) and attentional (*p*=0.011) impulsivity levels were higher in females during a depressive episode (Table 2). Total illness duration impaired total (*p*=0.022) and attentional impulsivity (*p*=0.026) overall in BD, while number of depressive episodes in past appeared to increase overall attentional impulsivity (*p*=0.021) (Table 3, 4). Irrespective of the nature of current episode, severity of manic symptoms correlated significantly with total (*p*=0.002) and motor impulsivity (*p*<0.000), while depressive symptom severity correlated with higher attentional impulsivity (*p*<0.000). In a manic episode, symptom severity showed significant correlation with non-planning impulsivity (*p*=0.042) (Table 5).

DISCUSSION:

Intelligence is related to cognitive efficiency that interacts with impulsivity.⁶ Impulsivity is not only influenced by a person's age and education, but also has a consequent effect on educational attainment in BD patients, despite comparable intelligence with general population.⁷ However, higher age and education are also potential tools for counteracting impulsivity.⁸ A study recorded event-related potentials (P300) in BD patients and found an inverse relationship between mental ability and impulsivity, perhaps explained by reduced inhibition of irrelevant information processing in highly impulsive individuals.⁹ The worsening of non-planning impulsivity in older patients of bipolar depression in our study supports this concept of cognitive impact of impulsivity in the long run.

Research indicates that gender is not strongly related to impulsivity in BD.¹⁰ A meta-analytic review said that gender

AI	t = 0.186, p = 0.026	t = -0.074, p = 0.669	t = 0.117, p = 0.495	t = 0.308, p = 0.068	t = 0.243, p = 0.153
MI	t = 0.154, p = 0.065	t = -0.079, p = 0.648	t = -0.033, p = 0.850	t = 0.172, p = 0.315	t = 0.147, p = 0.392
NPI	t = 0.460, p = 0.584	t = 0.114, p = 0.570	t = 0.243, p = 0.153	t = -0.038, p = 0.825	t = -0.043, p = 0.802

(*t*=Pearson's correlation co-efficient, *p*=significance value (2-tailed))

Table 4: Effect of number of depressive episodes on impulsivity in BD

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 = 0.284	t = -0.001, p = 0.996	t = 0.106, p = 0.538	t = 0.189, p = 0.269	t = 0.001, p = 0.997
AI	t = 1.920, p = 0.021	t = 0.062, p = 0.720	t = 0.052, p = 0.764	t = 0.223, p = 0.192	t = 0.174, p = 0.309
MI	t = 0.003, p = 0.970	t = -0.139, p = 0.418	t = -0.088, p = 0.612	t = 0.210, p = 0.219	t = -0.113, p = 0.513
NPI	t = 0.013, p = 0.879	t = 0.042, p = 0.808	t = 0.192, p = 0.261	t = -0.015, p = 0.931	t = -0.080, p = 0.642

(*t*=Pearson's correlation co-efficient, *p*=significance value (2-tailed))

moderates impulsivity in adolescent girls (*p* = 0.04).¹¹ Gender did not affect overall impulsivity in our study too, except for females suffering from bipolar depression. Contrarily, a study on impulsivity and self-esteem suggested lesser impulsivity in females (as they had a stronger self-esteem).¹²

Impulsivity seemed to worsen with longer illness duration in our study without specific impairments during affective states, suggesting a non specific association, perhaps manifesting from declined cognition in BD in long term.¹³ Also, higher number of depressive episodes in the past appeared to confer improvement in insight and coping mechanisms in BD patients. Severity of current affective episode is expected to affect the expression of impulsivity in BD. In our study manic symptoms significantly increased overall impulsivity and depressive symptoms affected attentional impulsivity during the episode. These findings are supported by a large investigative study that associated higher impulsivity with early onset, longer illness, the frequency of illness episodes and history of suicide attempts.¹⁴ However, few studies deny direct correlations between illness severity and impulsivity, stating complex presentations in impulsivity, based on a dynamic inter-play between inherent behavioral traits, upbringing, personality, psycho-active substances, emotional coping and psychiatric disorders.¹⁵

CONCLUSION:

The illness or patient characteristics in BD do not significantly affect the expression of impulsivity overall. However, impulsivity is associated with higher age and female gender in a depressive episode or more number of previous depressive episodes and affective symptom severity in an active episode. It is important to be watchful for impulsive behaviours specifically in such cases, so that the treatment

plan can be tailored to the individual patient characteristics.

CONFLICT OF INTEREST: None

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