



Original Article

A study of impulsivity trait and stress, and it's relationship with each other among medical undergraduate students

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ABSTRACT

Background: Impulsivity is a factor in multiple forms of psychopathology. Stress in Individuals is defined as anything that disrupts the normal person's physical or mental wellbeing. It arises due to the inability of an individual to meet the demands made on him. Medical school has long been recognized as a setting that has numerous stressors that can affect the wellbeing of students. In addition to coping with stressors of everyday life medical students must deal with stressors specific to medical school such as the new information flow, input overload, examinations, chances of failure, lack of leisure time, workload, relationships with peers and career choices.

Aims & Objectives: To assess impulsivity trait and stress level among medical undergraduate students. To study relationship between impulsivity and stress.

Methodology: A cross-sectional study was conducted among 500 Undergraduates Medical students at NDD Medical college nadiad during July to December 2023. Results: The mean age of study participants was 20.4 + 1.9 years. Total 24.6% participants were aged of 21 years. Out of total, 365(65%) participants were females and remaining 175(35%) participants were males. Out of total, 62.6% participants had moderate stress, 34.4% participants had low stress and 3% participants had high stress as per PSS scale. There was an association between BIS score and PSS level among study participants.

Conclusion: The physiological and psychological stress responses should be regarded as distinct types of stress responses because they are inversely correlated. Furthermore, there are strong correlations between attentional impulsivity and both psychological and physiological stress reactions.

Keywords: Impulsivity trait, Medical Students, Stress, Barratt Impulsiveness Scale, Perceived stress scale.

INTRODUCTION

Medical education is widely recognized as demanding and stressful, often exposing students to elevated psychological pressures due to academic workload, competitiveness, and clinical responsibilities. [1] These persistent stressors can have profound effects on students' mental well-being, academic performance, and professional development. [2] Among the various psychological traits that influence stress response, impulsivity is particularly notable. Impulsivity, defined as a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard for negative consequences, is associated with various maladaptive behaviors and emotional dysregulation. [3]

Impulsive individuals are often more susceptible to stress due to impaired coping mechanisms and poor emotional regulation strategies. Conversely, high stress levels can exacerbate impulsive behavior, forming a potentially detrimental

cycle. [4] In the context of medical students, this interplay may contribute to adverse outcomes such as burnout, anxiety, substance use, and poor academic engagement. [5,6]

Despite the growing recognition of stress and impulsivity as critical issues in medical training, limited research has focused on their interaction within the undergraduate medical student population, particularly in the Indian context. [7] Understanding the relationship between these two variables is essential for designing targeted interventions aimed at promoting psychological resilience and enhancing academic performance among future healthcare professionals. So, this study was conducted to find out the correlation between impulsivity trait and stress.

Aims & Objectives: To assess impulsivity trait and stress level among medical undergraduate students. To study relationship between impulsivity and stress.

METHODOLOGY:

A cross-sectional study was conducted among 500 undergraduate medical students at Dr. N.D. Desai Faculty of Medical Sciences and Research, Nadiad, during the period of July to December 2023. All undergraduate medical students who provided informed consent were included in the study. Students who had a prior diagnosis of a psychiatric disorder or were currently taking psychotropic medications were excluded from participation.

This was a questionnaire-based study, utilizing two standardized, pre-validated psychometric scales to assess impulsivity and perceived stress levels among participants.

Study Instruments

Barratt Impulsiveness Scale – Version 11 (BIS-11)

The BIS-11 is a widely used self-report measure comprising 30 items designed to assess the personality/behavioral construct of impulsiveness. Responses are recorded on a 4-point Likert scale ranging from 1 (Rarely/Never) to 4 (Almost Always/Always). Total scores range from 30 to 120, with higher scores indicating greater levels of impulsivity. While the BIS-11 is not diagnostic, it provides a useful indication of trait impulsivity across various populations.

Perceived Stress Scale (PSS)

The PSS is a commonly used psychological instrument for measuring the perception of stress. It consists of 10 items, with total scores ranging from 0 to 40. Stress levels are interpreted as follows:

- 0–13: Low perceived stress
- 14–26: Moderate perceived stress
- 27–40: High perceived stress

Data entry & analysis: Data were entered into Microsoft excel sheet and analyzed using SPSS software version 26. Qualitative data were described as frequency and percentages and quantitative data were described as mean and SD. Chi square test and T test were used. P value less than 0.05 was considered as a statically significant.

RESULTS:

Total 500 participants were taken part in the study, but as per selection criteria 20 participants were excluded.

Table 1. Demographic details of study participants

Variables		Frequency	Percentages
Age in years	18	46	9.5
	19	99	20.6
	20	87	18.12
	21	123	25.6
	22	72	15
	23	53	11.04
Gender	Male	168	35
	Female	312	65
MBBS year	First	111	23.12
	Second	106	22.9
	Third first	101	21.4
	Final	121	25.2
	Interns	41	8.5
Past H/o psychiatric illness	Yes	20	4.2
	No	460	95.8

The mean age of study participants was 20.4 ± 1.9 years. Total 25.6% participants were aged of 21 years. Out of total, 312(65%) participants were females and remaining 168(35%) participants were males. Out of total, 121 participants were studying in third MBBS part 2. Total 41 participants were interns. Among the study participants, 20 cases had past history of psychiatric illness. [Table 1]

Table 2. Stress level among study participants

Stress level as per PSS	Frequency	Percentages
Low stress	172	35.8
Moderate stress	293	61.4
High stress	15	3.7

Out of total, 61.4% participants had moderate stress, 35.8% Participants had low stress and 3.7% participants had high stress as per PSS scale. [Table 2]

Table 3. Impulsivity traits among study participants

Impulsivity traits	Frequency	Percentages
BIS - ≤ 50	37	7.7
BIS - > 50	443	92.3

Out of total, 92.3% cases had BIS more than 50 impulsive traits. [Table 3]

Table 4. Association between stress level and impulsive trait among study participants

Stress level as per PSS	BIS - ≤ 50	BIS - > 50	P value
Low stress	28	144	0.000
Moderate stress	9	284	
High stress	0	15	

There was statically significant an association found between stress level and impulsive trait among study participants. [Table 4]

DISCUSSION:

Impulsivity plays a role in several significant and prevalent mental health conditions. It is one of the primary aspects of suicidality, and patients with severe depression exhibit all three aspects of impulsivity—behavioral loss of control, nonplanning, and cognition. [10] Patients with schizophrenia who exhibit high degrees of impulsivity and sensation seeking are also linked to substance use. [11] Another notable feature of bipolar disorder is impulsivity, which is also linked to serious suicidal behaviour. [12]

In present study, the mean age of study participants was 20.4 ± 1.9 years. Total 24.6% participants were aged of 21 years. Out of total, 365(65%) participants were females and remaining 175(35%) participants were males. In study of Anuradha R et al, [13] the mean age of participants was 21.6 years and females (59.43%) were more which is similar to our findings. In present study, out of total, 121 participants were studying in third MBBS part 2. Total 61 participants were interns. In other studies, different rate of participants were observed. [14,15]

In this study, among the study participants, 20 cases had past history of psychiatric illness. Out of total, 62.6% participants had moderate stress, 34.4% Participants had low stress and 3% participants had high stress as per PSS scale. There was an association between BIS score and PSS level among study participants. Researchers Phillipou et al. looked at the relationship between anorexia nervosa participants' attentional impulsivity and stress, and their results indicated a strong positive correlation [16]. Meule et al. looked at the relationship between attentional impulsivity and stress-dependent eating behaviour; the findings showed a strong positive correlation between this two factor [17]. In study of Wang et al [18] found that possible association between impulsivity and stress. Such lack of inner restraint may also manifest itself in clinical settings as avoidance and non-compliance with the therapeutic process as therapy itself may be a source of stress for such patients. In addition, it has been reported that anger and aggression associated with impulsivity can result in increased levels of stress.

CONCLUSION:

The findings of this study demonstrated that, physiological and psychological stress responses should be regarded as distinct types of stress responses because they are inversely correlated. Furthermore, there are strong correlations between attentional impulsivity and both psychological and physiological stress reactions.

The significance of characterizing the ways in which affective state and individual differences might influence learning and decision-making processes has been brought to light by converging research lines. Our findings show that trait impulsivity and stress exposure have new interacting consequences. Specifically, it seems that stress makes people more likely to make choices via revealing their inclinations towards decision speeding and reward repetition, as opposed to directly influencing these behaviors. Research supporting the idea that stress is not just a directed influence on choice behaviors but also a component that exposes underlying choice biases supports this trend.

Limitations: it is a single centered and questionnaire-based study. If interview-based study will be conducted then it will be more effective.

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