

Socio-Demographic correlates of Impulsivity in Patients with Schizophrenia

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Abstract

Schizophrenia is a chronic psychiatric disorder that is characterised by profound disturbances in cognition, emotion and behaviour. Despite its prevalence in the Indian population, studies about the disorder are at an infant stage with socio-demographic and psychological correlates remaining a critical yet underexplored aspect, particularly in the Mizoram context. The present study aimed to investigate the socio-demographic profile of 40 patients diagnosed with schizophrenia in different hospitals in Mizoram and compare them with matched healthy controls on Impulsivity using Barratt Impulsiveness Scale Version 11 (BIS-11). The findings revealed high prevalence of low educational attainment (72%), unemployment (78%), rural residence (56%), low income (62%), winter birth (78%), substance use (62%) and history of psychiatric illness in family (86%) with a significantly higher level of impulsivity among patients with schizophrenia as compared to healthy controls ($p < 0.01$). The study also highlights the influence of social disadvantages, environmental stress and neuropsychological dysfunction in the manifestation and outcome of schizophrenia, further implicating the need for early identification, prevention and integration of socio-demographic risk profiling in clinical practice.

Keywords: Schizophrenia, healthy controls, socio-demographic profile, impulsivity

Schizophrenia Spectrum Disorders are a set of related psychiatric conditions that exist on a spectrum and feature a group of similar symptoms that can vary and change over time. Schizophrenia, in particular, is a chronic and disabling mental disorder that disturbs how a person thinks, feels, and behaves which may cause a loss of touch with reality, and can be distressing not only for them but also for their family and friends. It affects thought, emotion, behaviour which can lead to impaired functioning across one's social, occupational and personal domains.

Globally, schizophrenia affects approximately 24 million people or 1 in 300 people (0.32%) worldwide which is about 1 in 222 people (0.45%) among adults (World Health Organisation, 2019).

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Studies have found that in India, there is a current prevalence of 0.42% and a 1.41% lifetime prevalence of Schizophrenia Spectrum Disorders with higher prevalence among people between the ages 30 to 40 years, having lower education and are unemployed (Hegde, Nirisha, Basavarajappa, Suhas, Kumar, Rao, Rao, Varghese & Gururaj, 2023) and a substantial treatment gap of 72%. Schizophrenia is known to be a massive health burden for the world as it impacts the overall society and economy. The costs of treatment and the debilitating influence schizophrenia poses on the affected individual and their surrounding is a big cause for concern (Guerrin, Doorduyn, Sommer & de Vries, 2021).

In recent decades, research has shifted towards understanding schizophrenia not merely as a biological disease but as a biopsychosocial phenomenon, that is influenced by social environment, demographic context as well as psychological processes (McGurk, Mueser, Walling, Harvey & Meltzer, 2004) The biopsychosocial model by Engel provides a conceptual framework on how biological factors confer vulnerability to the disorder but environmental/ psychological stressors determine expression and course of the disorder (Engel, 1977).

In India, schizophrenia remains a major mental health concern, yet research focused on the underlying determinants such as socio-demographics and psychological correlates are sparse. Within the north-eastern states such as Mizoram, data is nearly absent despite the increasing clinical cases.

The present study therefore aims to bridge the empirical gap by analysing the socio-demographic profiles and examining impulsivity of patients with schizophrenia, further exploring their relationships with illness characteristics.

Socio- Demographic Factors in Schizophrenia

Educational attainment is the highest level of education an individual has completed. It has been known to contribute towards adaptability and resilience through competency building, acquired knowledge and skills. Studies have reported that individuals with schizophrenia tend to have lower educational achievement with evidences implicating that cognitive decline and social withdrawal during prodromal stages contribute to low academic success (Häfner & Maurer, 2005). A study done in the Norwegian population found that 68% of patients with schizophrenia had completed only primary education with education negatively correlated with the duration of untreated psychosis (Tesli, Degerud, Plana-Ripoll, Gustavson, Torvik, Ystrom & Næss, 2022). Lower educational achievements may also implicate socioeconomic disparity, as early life deprivation limits access to educational resources and psychosocial development increasing stress vulnerability (Reininghaus, Gayer-Anderson, Valmaggia, Kempton, Calem, Onyejiaka, Morgan, 2016).

Occupation outcomes demonstrate the functional indicators in schizophrenia. Unemployment rates among patients are typically high with barriers including stigma, cognitive decline and discrimination. This showcases the need for interventions to improve vocational aspects, emphasizing the importance of psychosocial rehabilitation (McGurk, Mueser, Walling, Harvey & Meltzer, 2004)

Socio-Economic Status is found to be related to higher incidence of schizophrenia and poorer outcomes. Factors that are associated include deprivation, early life adversity, limited access to resources and downward social drift (Lund, Brooke-Sumner, Baingana, Baron, Breuer, Chandra, ... & Saxena 2018; Tesli, Hjellvik, Lergenmuller, Hjell, Jangmo, Haram, ... & Bramness, 2024).

Season and place of birth have been suggested as having influence on patterns like winter and early- spring birth among schizophrenia cases in the Northern Hemisphere (Davies, Welham, Chant,

Torrey & McGrath, 2003) possibly through maternal stress, infections or Vitamin D deficiency. While urbanicity has traditionally been linked with increased risk, studies in India report that rural stigma and limited services may lead to underreporting of the disorder and late diagnosis (Patel, Lund, Hatherill, Plagerson, Corrigan, Funk & Flisher, 2010)

Substance use is often reported to be higher among patients with chronic mental illnesses. Self-medication hypothesis posits that patients use substances to relieve symptoms or medication side effects (Khantzian, 1997). However, substances such as cannabis may be associated with precipitating psychosis in genetically vulnerable individuals due to altered neurotransmission (Murray, Bhavsar, Tripoli & Howes, 2017).

Family illness history remains as one of the most reliable predictors in various mental disorders. According to Gottesman, first degree relatives of affected individuals have approximately 10- fold higher risk of vulnerability (Gottesman & Erlenmeyer-Kimling, 2001). However, family environment such as expressed emotion, adaptive coping, and so on, modulates this risk.

Impulsivity in Schizophrenia

Impulsivity is defined as a predisposition towards rapid and unplanned reactions to internal or external stimuli with less regard to potential negative consequences (Moeller, Barratt, Dougherty, Schmitz & Swann, 2001).

Iancu et al., examined the relation between impulsivity, aggression and suicide risk in 69 male patients with schizophrenia where a strong positive correlation was found between high impulsivity and increased suicidality and aggression (Iancu, Bodner, Roitman, Piccone Sapir, Poreh & Kotler, 2010). This emphasizes the critical role of impulsivity in patients with schizophrenia especially with concerns to suicidal behaviours.

In other studies, it has been indicated that impulsivity may exacerbate or contribute to comorbid conditions such as substance use disorders. Higher impulsivity scores in schizophrenia patients have been found to be comorbid with cannabis and cocaine use disorders as compared to individuals without such conditions (Dervaux, Baylé, Laqueille, Bourdel, Le Borgne, Olié, & Krebs, 2001; Duva, Silverstein & Spiga, 2011).

Despite the clinical relevance impulsivity seems to have, it has received limited targeted research within schizophrenia population.

Objectives

Based on the available research, the following objectives were attempted for the present study: The first objective of the study was to assess the socio-demographic profile of patients diagnosed with schizophrenia in Mizoram. The second objective was to assess difference in the levels of impulsivity between patients with schizophrenia and matched healthy controls. The third objective was to explore the relationship between socio-demographic variables and impulsivity in patients with schizophrenia.

Method

The present study adopted an exploratory cross-sectional design to examine socio-demographic profiles and differences in impulsivity patterns between patients with schizophrenia and matched **healthy controls**.

Sample:

Data was collected from 3 different hospitals and centres located in Aizawl functioning under the state Government of Mizoram. Using consecutive and purposive sampling, 40 patients with schizophrenia were selected and 40 normal healthy controls equivalent to the patients selected were identified to ensure equal representation and socio-demographic profiles to control extraneous variables.

Tools used:

(i) *Socio-Demographic Data Sheet a Semi-structured Performa (Ramdintluangi, 2023)* The researcher constructed a Socio-Demographic Data Sheet a Semi-structured Performa containing important information about socio-demographic variables such as age, sex, religion, education, marital status, residence, occupation, seasonal effects on timing of birth, place of birth, substance abuse, family history of illness of the subjects which can be used as sources of information for the study. (ii) *The Barratt Impulsiveness Scale Version 11 (BIS-11; Patton, Stanford & Barratt, 1995)* is a gold-standard measure that has been influential in shaping current theories of impulse control and has played a key role in studies of impulsivity and its biological, psychological, and behavioural correlates. It measures the impulsive behaviour, self or clinician administered, and having high reliability and internal consistency.

Procedure:

Informed consent forms and sociodemographic forms were constructed by the researcher. Appropriate permission was taken from the authorities and along with the participants and caregivers. The socio-demographic details and psychological scale were administered as per instruction of the test manual. Ethical guidelines of the American Psychological Association (APA) were strictly followed. After completion, the scales were collected after the researcher made sure that all the necessary responses have been given.

Results and Discussion

Descriptive statistics was used to examine the socio-demographic profile of the samples, independent t-test was used to analyse the difference in Impulsivity levels between patients and matched healthy controls and Pearson product moment correlation coefficient(r) was used to determine the relation between impulsivity and socio-demographic variables in schizophrenia.

Psychometric adequacy check:

The test scales were constructed for other cultures and its applicability to the target population has to be checked. The normality, reliability and homogeneity were checked as presented in Table-1.

Table 1: Psychometric property check- Normality (Mean, SD, Skewness, and Kurtosis), Reliability (Cronbach alpha) and Homogeneity (Levene statistics) for Impulsivity, and depression among the samples.

Statistics		Impulsivity
Normality	Mean	71.02
	SD	9.28

	Kurtosis	0.88
	Skewness	0.93
Reliability coefficient		0.83
Test of homogeneity (Levene's F statistics)		0.35

The Mean, SD, Kurtosis and skewness showed the normality of the variances. The reliability of the tool used was estimated using Cronbach's alpha among the target population for impulsivity was 0.83 and the Levene statistics showed the homogeneity of the variance that impulsivity was 0.35 which explained the trustworthiness of the psychological scales and the appropriateness of using parametric statistics for further analysis.

Table 2: Socio-Demographic factors in patients with schizophrenia (n=40)

Variables	Categories with frequency and percent among samples			
Level of education	Below cl X 29 (72%)	Class XII 7 (18%)	BA 3 (8%)	MA 1 (2%)
Occupation	Unemployed 31 (78%)	Labourer 3 (8%)	Self employed 5 (12%)	Govt servant 1 (2%)
Season of birth	Winter 31 (78%)	Summer 3 (8%)	Monsoon 6 (14%)	
Socio-economic status	Below 10000 62% (25)	10001-40000 26% (10)	40001-above 5 (12%)	
Marital status	Unmarried 20 (50%)	Divorced 11 (28%)	Married 9 (22%)	
Place of birth	Urban 18 (44%)	Rural 22 (56%)		
Substance use/abuse history	Non users 9 (22%)	Users 25 (62%)	Abuse 6 (16%)	
History of illness in family	General illness 6 (14%)	Psychiatric illness 34 (86%)		

The study collected data about the level of educational qualification from the samples which was categorized as Below class x, class XII, UG and PG and above which was presented in the Table 2. The results revealed that 29 out of 40 (72%) were below class X, 7 out of 40 (18%) studied till Class XII, 3 out of 40 (8%) till UG and 1 out of 40 (2%) studied PG and above.

The results of the present study had a consistency with earlier research finding that individuals with schizophrenia in general have lower educational attainment compared with the general population, the association between educational attainment and mortality is smaller in schizophrenia subjects than in the general population (Tesli et al., 2024).

Similarly, occupational status or employment status was evaluated from the samples which was categorized as Unemployed, Self-employed, Labourer and Government servant as given in the Table 2. Out of the 40 samples, 31 (78%) were Unemployed, 3 (8%) were Labourers, 5 (12%) were self-employed and 1(2%) was working as a government servant.

The results of the present study had a consistency with earlier research findings that lower levels of educational attainment and occupation are frequently reported among individuals with schizophrenia, either as a pre-existing vulnerability or as a consequence of early disease onset. Occupational status often declines after illness onset, reflecting the disorder's functional impact (McGurk et al., 2004).

The study collected data about the different seasons of birth from the samples which was categorized as Winter, Summer and Monsoon. The results revealed that there were 78% (31) Winter births, 8% (3) summer births and 14% (6) monsoon births among patients with schizophrenia.

This is complimentary to various researches wherein season of birth has emerged as a modest but consistent risk factor, with winter and early spring births showing increased schizophrenia prevalence, possibly due to prenatal exposure to infections or nutritional deficits (Davies et al., 2003).

Data was collected for place of birth among the patients with Schizophrenia and was categorised as either Urban or Rural. The results revealed that out of 40 participants, 18 or 44% were from urban regions while 22 or 56% of them were from rural areas.

This is contrary to the popular notion that urbanicity is more prevalent among patients with severe mental disorders such as schizophrenia. However, various previous researches have contributed to the idea that factors such as social adversity, lack of education and stigma in rural areas may lead to underreporting during symptom development, leading to more severe clinical presentations when patients do engage with mental health services (Patel et al., 2010).

Similarly, socio-economic status (SES) was studied where 25 out of 40 samples (62%) make up for SES below 10000, 10 samples (26%) between 10001-40000 and 12% or 5 samples were among 40001 and above. This is consistent with previous researches which have established that lower SES may be linked to increased risk and poorer outcomes, likely due to the stress and limited access to care associated with poverty (Hudson, 2005).

Additionally, marital status was evaluated where it was categorized as unmarried, married or divorced. 20 samples (50%) came under Unmarried, 11 (28%) under divorced and 9 (22%) were married to a spouse. Previous literature suggests that marital status and family history also play a role in the manifestation and management of schizophrenia. Being unmarried is often more prevalent

among individuals with the disorder, potentially reflecting impaired social functioning (Bora & Baysan Arabaci, 2009).

Table 3:

Groups	Statistics	Impulsivity
Schizophrenia	Mean	104.51
	SD	13.828
	Kurtosis	0.87
	Skewness	0.94
Healthy controls	Mean	37.53
	SD	4.738
	Kurtosis	0.89
	Skewness	0.91
Independent t-test between the groups		5.93**
Note: N= 80, **p < 0.01		

Descriptive statistics and independent t-test for patients with schizophrenia and healthy controls (n=40).

The results reveal a significant difference in impulsivity levels between patients with schizophrenia and healthy controls. Patients with schizophrenia exhibited a notably higher mean impulsivity score (M = 104.51, SD = 13.83) compared to healthy controls (M = 37.53, SD = 4.74).

The independent t-test yielded a value of 5.93, which is significant at the 0.01 level, indicating that the difference in impulsivity between the two groups is statistically significant. Both groups showed similar levels of kurtosis and skewness, suggesting a normal distribution of scores within each group. These findings suggest that impulsivity may be a prominent characteristic in individuals with schizophrenia and could have important implications for clinical assessment and intervention. This result is supported by a growing body of research demonstrating that individuals with schizophrenia exhibit elevated levels of impulsivity compared to healthy controls (Hoptman, Antonius, Mauro, Parker & Javitt, 2014).

Meta-analyses and large-scale studies confirm that individuals with schizophrenia exhibit significantly higher impulsivity across both self-reported and behavioural dimensions relative to healthy control groups (Su, Liu, Li, Lappin, Li, Wu, ... & Bao, 2018). These findings support the view that impulsivity is a trait-like vulnerability in schizophrenia, potentially exacerbated during symptomatic episodes.

Hoptman et al. (2014) also found that reduced connectivity between the ventral prefrontal cortex and amygdala is correlated with increased impulsivity and aggression in schizophrenia, suggesting a neurobiological mechanism that differentiates these individuals from healthy controls.

Table 4: Correlation coefficients between impulsivity and socio-demographic variables among samples

Variables	1	2	3	4	5
2	-0.12				
3	-0.28*	0.14			
4	-0.41*	0.08	0.25		
5	0.38*	-0.09	-0.20	-0.35*	
6	0.36*	-0.07	-0.10	-0.28*	0.31*
Note: 1-Impulsivity, 2-Age, 3- Education, 4- Socio-economic status, 5- Substance use, 6- Family Psychiatric history, [* p<0.05 (two-tailed)].					

A negative correlation was observed between impulsivity and education ($r = -0.28$) significant at the 0.05 level. This indicates that lower educational attainment is related with higher impulsivity. This is supported by previous findings that cognitive or/and executive dysfunction can limit progress in education and further enhance impulsive behaviour (Wood & Worthington, 2017). Another negative correlation between impulsivity and socio- economic status was found ($r = -0.41$, $p < 0.05$) suggesting that individuals from a lower socio-economic status tend to have higher impulsivity scores. This may reflect the chronic stress, limited resources and exposure to adversities associated with poverty (Hudson, 2005). The study also observed a positive correlation between impulsivity and substance use ($r = 0.38$, $p < 0.05$) which implies that individuals with substance use display higher impulsivity. This is consistent with prior research which have reported shared neurobehavioral mechanisms between the two (Billieux, Fineberg, King & Rumpf, 2024). Moreover, the findings revealed a positive correlation between family history of psychiatric illness and impulsivity which suggests heritability of traits such as impulsivity (Bevilacqua & Goldman, 2013). Additionally, the study also showed negative correlation between Socio-Economic status and Substance use ($r = -0.35$, $p < 0.05$) and a positive correlation between substance use and Family psychiatric history ($r = 0.31$ *, $p < 0.05$).

Conclusion and Implication

This study contributes to the limited body of research in the Northeast India specifically Mizoram, by empirically examining socio-demographic risks and psychosocial correlates among patients with schizophrenia in Mizoram. It highlights the complex interplay of various biopsychosocial factors in the manifestation and progression of the disorder. It emphasizes that addressing schizophrenia extends beyond pharmacological treatments and requires social inclusion, education, empowerment. Hence integrating holistic community-based frameworks focused on early detection, prevention and rehabilitation is essential for management of schizophrenia.

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