

## A Study of Influence of Substance Use on Aggression in Schizophrenia

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### Abstract:

**Background:** Schizophrenia is a major mental illness that influences all aspects of the life of an affected individual with devastating consequences. The various symptoms vary from individual to individual based on many factors from the prenatal period to late adulthood. Understanding the factors influencing the aggressive behavior helps in evaluating and treating patients with schizophrenia. Study of factors associated with aggressive behavior has importance in identifying methods of prevention and intervention with this population. One such important and common factor is psychoactive substance use.

**Aim:** To identify the substance abuse of any kind influencing the aggressive behavior in patients with schizophrenia.

### Materials and methods:

The study was carried out in a tertiary care hospital, Government Hospital for Mental Care, Visakhapatnam. Seventy four consecutive patients diagnosed as suffering from Schizophrenia according to ICD-10 diagnostic criteria for research, who were attending the Out Patient Department and inpatients between May 2019 and July 2019, were selected. Patients having a severe medical illness, those below the age of 18 years and above 55 years, and those who could not be evaluated due to their present mental state, which prevented them from giving necessary details were excluded. The subjects were divided into two groups as aggressive patients and non-aggressive patients, and analyzed using the Positive and Negative Syndrome Scale (PANSS), Modified Overt Aggression Scale(MOAS)and a semi-structured proforma was used to collect the socio-demographic details of the participants which included, age, gender, marital status, occupational history, and educational history.

**Results:** A total of 74 patients who were diagnosed as having schizophrenia were taken for the study . MOAS scale was applied on the patients, and the patients were grouped into aggressive patients and non-aggressive patients. Substance intake history was taken. The odds of having aggression is 4.8 times more in schizophrenia patients with substance abuse than, those who don't have any substance use history.

**Conclusion:** Substance abuse increases chances of aggression in schizophrenia patients.

**Keywords:** Schizophrenia, Aggression, violence, substance abuse.

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### I. Introduction

Schizophrenia is a major mental illness that influences all aspects of the life of an affected individual with devastating consequences

The various symptoms vary from individual to individual based on many factors from the prenatal period to late adulthood.

The five domains of schizophrenia are 1.Agression 2.Cognition 3.Positive symptoms 4. Negative symptoms and 5.Affective symptoms. Aggressive behavior is one of the 5 domains of schizophrenia.The term "Aggression" was derived from Latin word "Aggredi"which means to attack.

The word "Aggression" has more than 250 definitions, from various contexts. For the purpose of this study, definition of aggression "threatening behavior , verbal and /or physical, directed towards oneself, others, or property<sup>(1)</sup>, is adopted.

Aggression is one of the main causes of prejudice in society against patients with schizophrenia.

Violence and aggression are frequently the reason for which patients present to psychiatric services

The psychiatry patients are more prone for substance use compared to normal population.

The fact is that a single violent act may have overlapping characteristics of different types of aggression, and that one patient may attempt clearly different types of aggressive acts in different occasions.

Understanding the factors influencing the aggressive behavior helps in evaluating and treating patients with schizophrenia. Study of factors associated with aggressive behavior has importance in identifying methods of prevention and intervention with this population.

**Aim of the study**

To identify the substance abuse of any kind influencing the aggressive behavior in patients with schizophrenia

**II. Materials and Methods**

The study was carried out in a tertiary care hospital, Government Hospital for Mental Care, Visakhapatnam. Seventy four consecutive patients diagnosed as suffering from Schizophrenia according to ICD-10 diagnostic criteria for research, who were attending the Out Patient Department and inpatients between May 2019 and July2019, were selected.

**Inclusion criteria:**

- 1. Age 18 to 55years.
- 2. Subjects who had given written informed consent.
- 3. Subjects with a diagnosis of schizophrenia according to ICD-10 diagnostic criteria for research.

**Exclusion criteria:**

- 1. Subjects with other morbid psychiatric illness at present admission.
- 2. Subjects with other severe medical illnesses.
- 3. Persons who could not be evaluated due to their present mental state, which prevented them from giving necessary details.

**Operational procedure:** Patients fulfilling the inclusion criteria were taken up for the study. After taking informed consent, the subjects were divided into two groups as Aggressive patients and Non-aggressive patients based Modified Overt Aggression Scale (MOAS) and analyzed using the Positive and Negative Syndrome Scale (PANSS), MOAS and a semi-structured proforma was used to collect the socio-demographic details of the participants which included, age, gender, marital status, occupational history, and educational history.

**Ethical Issues:** Informed consent was obtained from each subject and their caregiver prior to inclusion in the study. All were explained regarding the nature and the rationale of the study.

**Study tools:**

- 1. **A Semi-structured Proforma:** It was a self-designed proforma used to collect the socio-demographic details of the participants, which included family history, duration of illness, age, gender, marital status, treatment history and details of suicide attempt if present.
- 2. **International classification of Mental and behavioral disorders-10 Diagnostic criteria for research.**
- 3. **The Positive and Negative Syndrome Scale (PANSS)** developed by Kay SR et al. 1987<sup>(2)</sup>, was used for evaluating the positive, negative, and other symptom dimensions of schizophrenia. The PANSS includes 30 items on three sub-scales: 7 items, each covering positive and negative symptoms, 16 items covering general psychopathology. Each item is scored ranging from 1 to 7.

**4. Modified overt aggression scale<sup>(3)</sup>**

MOAS was developed by E.Coccaro & collaborators in 1991. Application- The MOAS measures aggression in psychiatric patient population. The data on reliability and validity - high intra class correlation(>0.91) and moderate test – retest reliability(0.46-0.54).

**Statistical analysis:** Statistical analysis was carried out using SPSS software version 23.0.

**III. Results**

A total of 74 patients were recruited for the study. The aggressive patients were 28 and the remaining 46 were non aggressive patients based on MOAS scores.

A total of 44.59% (n=33) patients are having substance abuse history. Of these a total of 19 are aggressive patients(67.85% of aggressive patients).

The odds of having aggression is 4.8 times more in substance users when compared to non-substance users.

	Substance use		Total	Odds ratio
	Y	N		
Aggression	19	9	28	4.82
Non Aggression	14	32	46	
Total	33	41	74	

The odds of having aggression is 4.8 times more in substance users when compared to non-substance users.

**Table 2:** Socio-Demographic Characteristics of the Participants

	Variables	Frequency (n)	Percentage (%)	P value
<b>Age</b>	18-24 yrs.	14	18.9	0.41
	25-34 yrs.	37	50	
	35-44 yrs.	20	27	
	45-55 yrs.	3	4.1	
<b>Gender</b>	Male	48	64.9	<0.01
	Female	26	35.1	
<b>Marital Status</b>	Single	39	52.5	0.16
	Married	29	40	
	Divorced	4	5	
	Widowed	2	2.5	
<b>Education</b>	Illiterate	3	4.1	0.89
	Primary	15	20.3	
	Secondary	29	39.2	
	Higher Secondary	18	24.3	
	Graduate	9	12.2	

**Table 3:** Comparison of the Two Groups by PANSS Scores

Variables	Persons with aggression(n-28) Mean (SD)	Persons aggression(n-46) Without Mean (SD)	P-value
Positive Symptoms	27.64 (1.682)	22.3(0.634)	<0.001
Negative Symptoms	13.57(1.103)	15.39 (0.745)	<0.001

A significant difference between the two groups on positive symptoms and negative symptoms were found.

A significant difference was noted between the two groups on depression.

#### IV. Discussion

In this study, a total of 44.59% (N=33) are associated with psychoactive substance use. Out of these, a total of 19 patients are included in aggressive group which comprises 67.85% of all patients with aggression. The Odds Ratio is 4.82. That is patients with psycho active substance use are 4 times more prone to aggression than patients without psychoactive substance use.

These findings are of great clinical concern because the lifetime prevalence of co-morbid substance abuse is nearly 60% in patients with schizophrenia<sup>(4)</sup>. Substance dependence is five times more prevalent in patients with schizophrenia than in the general population. Most anti psychotic medications block dopamine receptor D2 (D2R) that interfere with dopamine neuro transmission in the whole brain. Patients may resort to drugs of abuse to counteract the cognitive deficits induced by pre-frontal D2R blockage and compensate for the anhedonia induced by D2R blockade in the nucleus accumbens and ventral pallidum<sup>(5)</sup>

Psycho active substance use may lead to violence by impairing cognitive and behavioral mechanisms of impulse control, contributing to negative mood states such as depression ,rage and paranoia, that may predispose individuals to aggression by stimulating aggressive behavior through their direct pharmacological effects on brain systems.<sup>(6)</sup>

Murat Erkiran et al<sup>(7)</sup>, in their study stated that one of the most disruptive sequel of co occurrence of schizophrenia and substance abuse co morbidity is amplified risk for violence behavior

.Alen Green et al<sup>(8)</sup>, stated that substance use disorder is common in patients with schizophrenia and dramatically worsen their outcome.

**Limitations:** Our study was a cross-sectional study; a prospective study would have been more useful. A larger sample would have more practical implications. As the study was carried out in a tertiary care hospital, it cannot be generalized to the community.

#### V. Conclusion

Comorbid substance abuse in schizophrenia patients have a negative effect, associated with the aggressive behavior in such patients.

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