



## CLINICAL CORRELATES OF CANNABIS ABUSE IN SCHIZOPHRENIC PATIENTS

## Medical Science

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## ABSTRACT

**Background:** Cannabis use disorder is common in schizophrenic patients with nearly 16% have a current diagnosis and 27% have a life time diagnosis. Cannabis use is common in young psychotic patients and who have first episode of schizophrenic illness. It commonly produces psychosis and increases psychotic symptoms of schizophrenia. The study highlights the correlation between cannabis use and its effects in schizophrenic patients.

**Materials and methods:** The study examines psychotic patients satisfying ICD-10 criteria with a sample size of 80 and is a cross sectional study. Patients having a diagnosis of Cannabis use disorder and previously diagnosed as schizophrenia are selected for study with the study being conducted in psychiatry department of Govt Rajaji hospital inpatients.

**Results:** The schizophrenic patients are diagnosed with ICD-10 criteria. Rating scales such as PANSS scales are used to assess the severity.

**Conclusion:** There is definite correlation between cannabis and other substance use and schizophrenic illness and cannabis reduces negative symptoms in schizophrenia.

## KEYWORDS

Cannabis use-schizophrenia-psychosis

## Background

About 15-60% of schizophrenic patients have substance abuse. The vulnerability model hypothesis states that drug abuse may cause or increase the likelihood of schizophrenia in a vulnerable individual. Drug abusing schizophrenic patients may be self medicating their symptoms as evidenced by Amphetamine challenge studies<sup>2</sup>. A third concept is that drug abusers self medicate negative and extrapyramidal symptoms<sup>3</sup>. A CNS stimulant drug Amphetamine used in ADHD found to improve the mood and increase the work efficiency of some patients with schizophrenia.

## Aims

1. To study cannabis use in patients diagnosed as having schizophrenia.
2. To study comparison of Cannabis and other substance abuse in schizophrenic patients.
3. To collect data from patients the relation between cannabis use and its effects in controlling symptoms.

## Tools used

1. A semi structured proforma consisting details of sociodemographic profile, frequency of cannabis and other substance use, Family H/o psychosis and substance use, changes in symptomatology with cannabis use etc.
2. MINI scale to assess and screen schizophrenic patients.
3. Severity of cannabis and other substance dependence by rating scales such as Severity of dependence scale for cannabis and other substances.
4. Severity of schizophrenic illness by PANSS scale devised by Stanley Kay and Lewis Opler.

## Review of literature

Nicotine and cannabis use are common in schizophrenia and other psychotic patients with an annual incidence of 13-45%. McLellan et al<sup>4</sup> found that amphetamine abusers who are studied over 6 years more likely developed psychotic disorders than barbiturate abusers. A report by Andreasson<sup>5</sup> et al reported that Swedes with high consumption of cannabis had 6 times increased risk of schizophrenia than nonusers. It has been found that drug abusing schizophrenic patients are younger and onset of schizophrenia at earlier ages than non drug abusing schizophrenic patients suggesting that drug abuse may trigger the development of schizophrenia.

A second model<sup>6</sup> tells that schizophrenia patients with drug abuse may be self medicating their symptoms especially negative as on the street symptoms may be understood parallel to the lab finding that amphetamine challenge studies improve the mood in schizophrenic patients. A review of retrospective studies suggest that schizophrenic patients prefer drugs which might counteract negative symptoms than depressant drugs such as sedative hypnotics and opioids. A third model tells that drug abusing schizophrenics self medicate uncontrollable neuroleptic induced EPS. The large no of studies in student populations

say that the prevalence of cannabis rates higher in medical students and tobacco, alcohol, painkillers, tranquillisers and cannabis are the commonly used drugs<sup>7</sup>.

## Neurobiology

Crow<sup>8</sup> had suggested in early 1970 that activation of mesolimbic and mesostriatal dopamine systems and mesostriatal dopamine systems are rewarding. It has been suggested that substance users have a defect in their ability to capture reward and pleasure from everyday experience which is called reward deficiency syndrome.

## Neuroregulatory systems

The reinforcing effects of the substances of abuse including alcohol are mediated by increased Dopamine release in the subcortical regions mainly the nucleus accumbens.

Studies say that a decrease in serotonin function should lead to increase in alcohol and cannabis consumption. It has been observed that chronic administration of opioid agonists leads to decrease in the release of endorphins. Chronic Morphine and cannabis use causes a compensatory increase in all components of the C AMP signal transduction pathway viz G-proteins, adenylyl cyclase, C AMP dependant protein kinase.

Recent psychodynamic theories by Weider and Kaplan emphasized that the dominant conscious motive for substance use is reduction in distress that the individual can't achieve by his own psychic efforts. Winnicott described the object relations of early developmental period with the early experiences of the child with mother have become important in understanding the etiology of the addictive core of self. The defense mechanisms involved are denial, minimization, rationalisation and projection.

Socio cultural factors like the availability of more substances the cultural patterns and attitudes, the local controls as well as sociological stress are some of the important factors. In places like Goa and Bangalore where availability of alcohol and cannabis and the permissiveness is high Raw Opium or Affin by ingestion is socially approved in Rajasthan. Children with oppositional traits are prone. Alcohol and cannabis families show impaired problem solving and more negative and hostile communication as compared to non alcoholic families.

## MATERIALS AND METHODS

Study design: cross sectional study

The study is conducted in a sample of 80 inpatients in Govt. Rajaji hospital, Madurai from Nov 2018 to Nov 2019 and all the patients who smoke cannabis, currently in abuse pattern and other substance use who are diagnosed as having schizophrenia are included in the study.

1. Semistructured proforma consisting of sociodemographic

- profile, duration and severity of cannabis and other substance use, family h/o substance use and schizophrenia.
2. MINI scale to diagnose and assess schizophrenic patients.
  3. Positive and negative symptoms scale for rating the severity of schizophrenia.
  4. Severity of cannabis and other substance use (alcohol, nicotine etc) by severity dependence scales individually.

### Statistical design

Non parametric tests like Chi-square tests are employed in this study.

### RESULTS

**Table1 showing the frequency of substance users in the study**  
Substance users=20

| Total no of subjects<br>N=80 | Cannabis use alone<br>N=12      15% | Other substance use<br>N=8        10% |
|------------------------------|-------------------------------------|---------------------------------------|
|------------------------------|-------------------------------------|---------------------------------------|

**Table2 showing various socio demographic profile parameters and substance use. N=80**

| S no | Variables              | No | %     |
|------|------------------------|----|-------|
| 1    | Age in yrs 20-40       | 14 | 17.5  |
|      | 40-60                  | 6  | 7.5   |
| 2    | Sex Male               | 19 | 23.75 |
|      | Female                 | 1  | 1.25  |
| 3.   | Education illiterate   | 17 | 21.25 |
|      | educated               | 3  | 3.75  |
| 4.   | Occupation semiskilled | 16 | 20    |
|      | professional           | 4  | 5     |
| 5    | Marital status single  | 13 | 16.25 |
|      | married                | 7  | 8.75  |
| 6    | Domicile Rural         | 11 | 13.25 |
|      | urban                  | 9  | 11.75 |
| 7    | SES Low                | 15 | 18.75 |
|      | Middle                 | 5  | 6.25  |
| 8    | Family H/O +           | 16 | 20    |
|      | Schizophrenia -        | 64 | 80    |
| 9    | Family H/O +           | 24 | 30    |
|      | substance use_         | 56 | 70    |

**Table3 showing intercomparison of severity variables between schizophrenics and substance use**

| Variable                                              | Statistics X2        |
|-------------------------------------------------------|----------------------|
| 1. PANSS-Neg Mild 60<br>Severe 20                     |                      |
| 2. cannabis severity + 8<br>dependence scale - 4      | 9.78*(comparing 1&2) |
| 3. severity of dependence of +6<br>Other substance _2 | 11.6*(comparing 1&3) |

### DISCUSSION

The active compound in Cannabis is delta-9 Tetra hydro cannabinol (THC) which is obtained from the flowering tops. Cannabis use is most common in males in Indian studies. In our study there are 19 males of total substance users (95%). In our study Cannabis use accounts for 15% which is in line with previous studies. Substance use is more common in illiterates and semiskilled workers in our study.

Upon comparing the correlation of severity of positive and negative symptoms scale with severity of dependence scale for cannabis, by using Chi-square test chi value is 9.78 ( $P < 0.05$ ) is statistically significant which shows patients with severe negative symptoms use cannabis for reducing negative symptoms.

When correlating the severity of schizophrenic illness by PANSS scale with severity of dependence scale of other substance abuse (alcohol, tobacco etc) there is statistical correlation with  $P < 0.05$  and chi 11.6 which shows schizophrenics are prone to other substance abuse too.

Upon correlating intercomparison of severity of dependence scales for cannabis and other substance users there is no statistical significance with chi value showing 1.8 and 0.2 respectively.

### CONCLUSION

Cannabis is the most commonly abused substance in schizophrenic patients (15%). Alcohol and nicotine stand next to it (10%). Schizophrenic patients are abusing cannabis to reduce negative symptoms.

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