MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.59218/makrjms.2024.2.184.189

Evaluation of Psychosocial Factors and Psychiatric Comorbidity Among Persons Abusing Cannabis

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ABSTRACT

Cannabis is one of the most widely used illicit substances in the world. There is a continuum of cannabis use from occasional or experimental use of the drug to compulsive use patterns. As the level of involvement with the drug progresses the risk of associated psychiatric disorder is likely to increase. In India, data about distribution of psychiatric comorbidity among cannabis users are very limited. Always an update is needed in this area to take a stock of the prevailing situation. To evaluate sociodemographic profile, problematic domains and withdrawal symptoms among persons abusing cannabis. And to estimate the distribution of psychiatric comorbidity among persons abusing cannabis. This study was conducted in the Institute of Mental Health, Madras Medical College, a tertiary care center of Tamilnadu. Subjects who use cannabis attending our outpatient department and also got admitted in Institute of Mental Health were included in this study. After obtaining the written consent from the participants as required by the international ethics committee the following questionnaire were given to all subjects Semi structured proforma, Marijuana problem scale The Cannabis withdrawal scale and MINI PLUS structured clinical interview. In our study we found those who presented with cannabis related problems are predominantly males, 77% unmarried, 70% belong to urban area, 96% belong to LSES, 64% employed. The mean age of onset of cannabis use was 18.36 years with a median of 17 years. 87% has family history of substance use disorder whereas history of mental illness present only in 13%. 68% used cannabis in adolescent period i.e less than 19 years. In our study we found that 27% of cannabis users were violence prone, 53% were impulsive, 32% has deviant behavior, 45% have drug using peers and 33% admitted drug availability in neighborhood. In our study we found that 27% of cannabis users were violence prone, 53% were impulsive, 32% has deviant behavior, 45% have drug using peers and 33% admitted drug availability in neighborhood. About withdrawal symptoms, the common symptoms we encountered were craving for cannabis, easy irritability, anger outbursts. Psychiatric comorbidity is a common occurrence in persons with cannabis dependence especially those seek treatment. Psychotic symptoms are the most common presentation presented in a tertiary care center. Cannabis withdrawal symptoms increase as the duration of cannabis use increase. Comorbid other substance use and family history of substance use are the commonest association with the persons who abuse cannabis. Adolescents who begin to use cannabis has poor psychosocial factors like high levels of impulsivity, drug using peer relationship drug availability in neighborhood, skipping at school or work than those begin to use cannabis in early adulthood.

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Key Words

Psychoactive drugs, cannabis, CUD cannabis use disorder, psychosis, withdrawal, prevalence

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Received: 20 November 2023
Accepted: 15 January 2024
Published: 20 January 2024

Citation: S. Deepa, M. Ramkumar Vihram P. Ramanujam and M. Venkat Lakshmi, 2024. Evaluation of Psychosocial Factors and Psychiatric Comorbidity Among Persons Abusing Cannabis. Res. J. Med. Sci., 18: 184-189, doi: 10.59218/makrjms.2024.2.184.189

INTRODUCTION

Cannabis is one of the most widely used illicit substances in the world. "With approximately 200-300 million regular users, it occupies fourth place in worldwide popularity among psychoactive drugs, after caffeine, nicotine and alcohol. The prevalence of lifetime use of cannabis by young adults has increased in many developed countries over the past several decades. The ready availability of the drug the increasing social disapproval of cigarette smoking, stern drinking laws and perceptions that cannabis is safe or less harmful than cigarettes or alcohol may explain these changes". Alfonso Troisi *et al.*[1] also in their article pointed out that "Cannabis abuse or dependence is often associated with significant premorbid psychopathology ranging from personality and affective disorders to psychotic disorders. In addition, acute adverse reactions, chronic anxiety states, depressive symptoms and changes in life style have been linked to chronic cannabis use by a number of observers. Even though, several studies have investigated the relationship between psychopathology and cannabis use, there are few data on the psychiatric comorbidity of different patterns of cannabis use. There is a continuum of cannabis use from occasional or experimental use of the drug to compulsive use patterns. As the level of involvement with the drug progresses the risk of associated psychiatric disorder is likely to increase".[23] In India, data about distribution of psychiatric comorbidity among cannabis user are very limited. Always an update is needed in this area to take a stock of the prevailing situation. Hence in our study, we tried to evaluate various socio demographic profiles and comorbid psychiatric disorders in a sample of cannabis dependent treatment seeking patients attended our institute of Mental Health, Kilpauk.

MATERIALS AND METHODS

This study was conducted in the Institute of Mental Health, Madras Medical College, a tertiary care center of Tamilnadu. The necessary approval for conduct of the study was obtained from Institutional Ethics Committee, Madras Medical College, Chennai. This study was conducted for a period of 4 months from March 2017 to June 2017. Subjects who use cannabis attending our outpatient department and also got admitted in Institute of Mental Health were included in this study. The sample size calculated according to the formula:

- $2*p*(1-p)/d^2$

According to previous studies the prevalence of psychiatric comorbidity among persons abusing cannabis was 60%[3]-80%[4]. So we can 70% prevalence. Precision was assigned as 10%. Sample size calculated as 100. Those who have previous history of psychiatric illness before abusing cannabis and acute intoxication of any illicit substance, head injury/neurological illness/hearing impairment were excluded in this study. After obtaining the written consent from the participants as required by the international ethics committee the following questionnaire were given to all subjects:

- Semi structured proforma
- Marijuana problem scale
- Cannabis withdrawal scale
- MINI PLUS structured clinical interview

RESULTS

The results of our study are tabulated in (Table 1 and 2).

Table 1: Distribution of sociodemographic variables among the sample of cannabis abusing persons

Sciodemographic variable	Frequency	Percentage
Gender		
Male	100	100
Female	0	0
Age at presentation		
<15Years	0	0
15-20Years	26	26
21-25Years	35	35
>25Years	39	39
Place of residence		
Urban	70	70
Semiurban	9	9
Rural	21	21
Marital status		
Single	77	77
Married	20	20
Divorced	3	3
Education		
Uneducated	2	2
1-5	15	15
6-10	62	62
Higher secondary/ ITI	10	10
Degree/diploma	11	11
Socioeconomic status		
Lower	96	96
Middle	4	4
Higher	0	0
Occupation		
Unemployed	36	36
Unskilled	27	27
Semiskilled	13	13
Skilled	24	24
Religion		
Hinduism	88	88
Islam	4	4
Christianity	8	8
Family history of		
Mental illness	13	13
Substance use disorder	68	68
Age at onset of cannabis use		
<19years	68	68
20 years and above	32	32
Duration of cannabis use at the time of presentation		
<5Years	54	54
5-10Years	26	26
>10Years	20	20

Table 2: Prevalence of psychosocial attributes among the sample of cannabis abusing persons

Variable	Frequency	Percentage
Violence prone	27	27
Impulsive	53	53
Deviant behavior	32	32
Drug using peers	45	45
Drug availability	33	33
Skipping at work	43	43
Poor achievement	56	56
Comorbid substance use		
Nicotine	48	48
Alcohol	66	66
Others	27	27

Table 3: Distribution of psychiatric comorbidity among 100 cannabis abusing people

Diagnosis as per mini plus	Percentage
Psychosis	61
Mania	11
Depression	1
ASPD	6
Non-alcohol psychoactive substance use disorder	21

DISCUSSIONS

Our study points that specific socio demographics were associated with cannabis use disorder. CUDs are more common in males. This is consistent with the various other studies. Though various studies state the prevalence of cannabis use in females was very much significant. In our study we found zero prevalence that may be due to subjective bias in our sampling technique. Secondly few studies highlighted that males were more likely to become cannabis dependent in early years after initial use[2].

In our study we found those who presented with cannabis related problems are predominantly males, 77% unmarried, 70% belong to urban area, 96% belong to LSES, 64% employed. The mean age of onset of cannabis use was 18.36 years with a median of 17 years. This was approximately consistent with a similar study done in 2013 by Hercilio *et al.*[3] which conclude those who were seeking treatment for CUD were 81% male, 66% single, 62.5% employed. The mean age of onset of use of cannabis was 16.53 years with standard deviation 4.66 years.

Regarding religion, 88% belong to Hinduism. This is most probably due to small sample size and also certain religion has restriction towards illicit substance use. Regarding education, 79% of people were below 10th standard. That too, most people were discontinued studies due to use of cannabis. In previous literature which evaluates the effects of cannabis on education the most important issue concerned is the risk of early drop outs from school due to heavy, regular use of cannabis. Hall *et al.* specifically shown that use of cannabis produce impairment in reaction time, impairment in short term memory, loosening association and they become the reasons that cause impairment in attainment of proper education[4]. 87% has family history of substance use disorder whereas history of mental illness present only in 13%. The strongest predictor for adolescent substance use is do their parents use substances or not. This is in accordance with social learning theory. Numerous studies found that substance use among parents greatly influences the onset of substance use by their children. Andrews *et al.*[5] in US did a study from which parent the children get the behavior. He suggested that the children get smoking behavior from their mother and drinking behavior from the father.

68% used cannabis in adolescent period i.e less than 19 years. This is consistent with previous studies by Fergusson *et al.*[6] he concluded that 70% of cannabis users belong to the age group less than 21 years. Similarly Poulton *et al.*[7] showed that 62% of cannabis users were less than 20 years. In our study we found that 27% of cannabis users were violence prone, 53% were impulsive, 32% has deviant behavior, 45% have drug using peers and 33% admitted drug availability in neighborhood. This is consistent with the previous studies which conclude that cannabis use is more prevalent among young people who belong to disadvantaged family or social background, people with adjustment problems, depression in early years, poor scholastic achievement, unemployment and those who were exposed to difficult childhood circumstances[8]. In our study also we found 79% quit studies below 10th grade. 36% were unemployed, 96% belong to lower socioeconomic status and 87% has family history of substance use disorder. By wrong role modeling they were prone to use of cannabis at early age. When we compared these psychosocial factors among adolescent onset cannabis user and adult onset cannabis users, (Table 15) we found there was significantly high level of impulsivity, drug using peer relationship, drug availability in neighborhood, skipping at school or work were more among adolescent onset group. In a previous study also it showed that the violent/impulsive was moderately strongly associated with the use of cannabis at the age of 14-15 years. Thereafter decreases as age advances and less by the age 20-21 years[8].

Comorbid substance use among cannabis users: Our study showed that 48% use nicotine, 66% use alcohol and 27% use other psychoactive substance like fevibond, HANS, nitrazepam tablets, cough syrup etc. 84% of the sample use one or other psychoactive substance along with cannabis. 16% were only cannabis users. It has been found in various studies that use of cannabis increase the risk of developing other substance dependence. In 1970's researchers debated about " the gateway hypothesis" that people who use illicit substances like heroin, cocaine would have been used initially one of the gateway drugs like tobacco, alcohol or cannabis. Vanyukov *et al.*[9] Now researchers began to reveal reverse gateway hypothesis. In that they say use of cannabis is reverse

Table 4: Comparison of duration of cannabis use and cannabis withdrawal symptoms

					95% Confidence interval for mean	
Bound	No.	Mean	Std. deviation	Std. error	Lower bound	Upper
<5 Years	54	9.4074	5.97643	.81329	7.7762	11.0387
5-10 Years	26	16.9231	9.45272	1.85383	13.1050	20.7411
Above 10 years	20	22.7000	6.46529	1.44568	19.6742	25.7258
Total	100	14.0200	8.87395	.88740	12.2592	15.7808

gateway for the onset of other drugs like nicotine or alcohol Agrawal *et al.*[10] Various studies and meta-analysis found that there was a moderate evidence of statistically significant association between the use of cannabis and the occurrence of other substance abuse or dependence which includes alcohol, tobacco and other illicit substances[11].

Similarly one follow up study done in united states revealed that those who used cannabis at initial phase later in 3 years found to around 3 times higher rate of alcohol abuse compared to individuals who did not used cannabis. Similarly the risk of abusing tobacco was also two times high among them.

Psychiatric comorbidity among persons abusing cannabis: Our study found that 61% qualified for psychosis, 21% for non-alcohol psychoactive substance use disorders [cannabis use disorder], 11% as Mania, 6% with antisocial personality disorder and 1% with depression. This was similar to the study done by Sarkar *et al.*[45] who found that 53% had psychotic illness and 34% had substance dependence. Similar study done in Brazil in 2010 found that 22.5% had depression, 11% had generalized anxiety disorder, 8.8% panic disorder, 8.8% had schizophrenia, and rest around 31% had only cannabis dependence.

This study by Hercilio *et al.*[3] concluded that 61.2% had psychiatric comorbidity among cannabis dependent persons. Another study by Holscher *et al.*[12] showed 42% had comorbid psychiatric disorders. They also concluded that the most prevalent is depression and generalized anxiety disorders. But our findings were inconsistent with those results by concluding around 79% has comorbid psychiatric condition in that psychosis was predominant illness found. This may be due to sampling error that we took sample in a tertiary care center where people with predominantly major mental illnesses report. This can be adjusted if we did our study at multicenter level/community level. Among psychotic patients, the average duration of psychotic illness was found to be 24.98 months. Any substance induced transient psychotic illness would last only up to 12 months. (DSM V) This showed that use of cannabis has a contributing effect on the development of psychotic symptoms. Similarly, the Dutch study showed that people who are genetically vulnerable are at greater risk to develop psychosis than people without family history but abusing cannabis. The RD (risk difference) of cannabis use is 2.2% whereas those who have family history of psychosis are 54.7%[13]. But in our study those who developed psychosis has family history of some mental illness only in about 16.4%. While nearly 83% had no history supportive of mental illness in their family. Four hypothesis were formulated by various studies for the association of cannabis and psychosis:

- **Confounding hypothesis:** By this, use of cannabis often mixed with the other substance use and various other factors that can cause psychosis
- **Interaction hypothesis:** By this, cannabis as a component causing psychosis in vulnerable individuals
- **Reverse causality hypothesis:** By this theory, they hypothesis that to cope with psychotic symptoms especially negative symptoms, people use cannabis
- **Ethological hypothesis:** In this hypothesis, cannabis as a direct cause for psychotic symptoms[14].

Our study definitely ruled out reverse causality hypothesis since no one suffered from psychotic symptoms before the use of cannabis. But we could not conclude or exclude other hypothesis as follow up study will be needed to confirm causal association between the two. The average age of onset of psychotic symptoms was found to be about 25.54 years and the average duration of cannabis use among them was found as 7.15 years. The mean age of onset of cannabis in psychotic group was found to be 18.36 years. One Swedish study found a relation of dose response between the frequency of use of cannabis at the age of 18 and the risk of schizophrenia diagnosis over 15 year's period[15]. In our study, we found use of cannabis over 7.15 years produced psychotic symptoms.

Though, DSM 5 did not mention about cannabis induced mood disorder, in our study we found around 11% of persons abusing cannabis suffer from Mania. In a study done by Gilbert *et al.*[16] found that use of cannabis was associated with a nearly 3 fold increase in symptoms by the odds ratio compared with clinical outcome. Another study done in Italy suggested that the less realistic in thinking and more involvement in religion and spiritual experience are at higher risk of developing cannabis dependence. They also found that the following psychiatric disorders occur as Axis I comorbidity Adjustment disorder, Dysthymia, Major

depression, GAD. They showed certain personality disorders specifically associated with the use of cannabis i.e. borderline, histrionic, dependent and unspecified[17].

People without comorbid psychiatric illness report that they use cannabis or other drugs for external reasons such as problems at work, social pressure, peer pressure etc. We found only 1% in our study sample reported as depression. Various studies also provide mixed evidence upon the associative nature of the use of cannabis and depression. Brook *et al.*[18] in a cohort study found that use of cannabis early i.e. before 20 years was associated with mild increase in the risk of MDD by 27 years of age. But after the control of confounding factors like demographics, history of depression in the family, childhood depression, and the odds ratio was 1.7, that is people who use cannabis has 1.7 times higher risk in developing MDD compared with those who did not use cannabis. But by the age of 27 years the risk of developing depression become very less.

Similar result was also given by Fergusson *et al.*[19] in which the association between the use of cannabis and the depressive disorder with the age, by the age of 20-21 years, significantly there was no association between the two. Since the average age at presentation of our sample was around 25 years, the risk of depression may be low comparing the results of the abovementioned studies. About withdrawal symptoms the common symptoms we encountered were craving for cannabis, easy irritability, anger outbursts. On Likert scale, the average value for cannabis withdrawal symptoms was found to be 14.02 out of maximum score of 190. And also it has been found the mean of withdrawal score increases significantly as the duration of cannabis use increases (Table 17). This is consistent with the finding of a study published in the Journal of clinical psychiatry by Deborah *et al.*[20]

Another study done by Bonnet *et al.*[21] also suggested that 75% of people who abuse cannabis seeking outpatient treatment usually develop mild to moderate cannabis withdrawal symptoms. Heavy and prolonged use favors the increased risk of CWS. Hofler *et al.*[22] in 1999 did a study on risk factors for cannabis use among 1228 subjects. The risk factors that were well documented are drug use in peer group, drug availability in immediate neighborhood, low competence and self-esteem. In addition, they found substance use disorder in family and experience with legal drugs before the use of cannabis play an important role among 14-17 years old subjects who use cannabis We conclude that:

- Psychiatric comorbidity is a common occurrence in persons with cannabis dependence especially those seek treatment
- Psychotic symptoms are the most common presentation presented in a tertiary care center
- Cannabis withdrawal symptoms increase as the duration of cannabis use increase
- Comorbid other substance use and family history of substance use are the commonest association with the persons who abuse cannabis
- Adolescents who begin to use cannabis has poor psychosocial factors like high levels of impulsivity, drug using peer relationship drug availability in neighborhood, skipping at school or work than those begin to use cannabis in early adulthood

The strengths of our study are the sample taken according to the sample size calculation and the tools used were validated and has good internal consistency. Limitations of our study includes that the cross sectional study design used in our study can be helpful to study the association between variables but it could not assess causal relationship. As this study has been done in a tertiary care setting, burden in a community level could not be ascertained. Also the amount and pattern of cannabis use were not considered in our study. And often associated with the comorbid alcohol use, that may have a confounding effect.

We suggest to do community level study to assess the exact prevalence of cannabis use disorders and the distribution of psychiatric comorbidity. And the comparison between cannabis dependent persons with or without comorbid mental illness, will throw added insight upon the biopsychosocial causes for psychiatric comorbidity.

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