Association between Cannabis and Psychosis in Terms of duration of use and Socio-Demographical Variables

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ABSTRACT

Introduction: Cannabis was bound to faith and mysticism in India in the past. An association between cannabis use and mental illness, psychotic illness, was recognized as early as 1895 in a report by the Indian Hemp Drugs Commission. The study was conducted to find out association between duration of cannabis usage and psychosis and its sociodemographic variables.

Material and methods: Study was conducted in department of psychiatry at Rama Medical College on fifty cases of psychosis using cannabis for long. Patients were of 18-60 years and of both sexes, diagnosed as per ICD 10 criteria and cooperative. Data was analyzed with the help of SSPS 16, Spearman's rank correlation coefficient and demographic variables were assessed by t- test.

Results: Education does show impact on cannabis use though age and marital status don't. In experimental group majority of patients were hindu by religion while in control group patients of both hindu and muslim religion were seen, difference was significant at .05 level. In areas of habitat and family type, significant difference was found at .01 level. Almost all patients were of rural origin and nuclear families. 50% patients among experiment group and 32% in control group were employed.

Conclusion: The present study shows that cannabis intake is higher in the patients of psychosis as compared to the normal population. The current study also indicates the importance of gateway drugs and the risk they pose for a chronic illness like psychosis.

Keywords: Cannabis, Psychosis, Association, Sociodemographic Variables

INTRODUCTION

India is a land steeped in faith and mysticism. Cannabis was similarly bound to faith and mysticism in India in the past. Cannabis sativa is the most widely used drug in the world and archeological evidence from China indicates that humans used cannabis as early as 4000 BC.[1] An association between cannabis use and mental illness, psychotic illness, was recognized as early as 1895 in a report by the Indian Hemp Drugs Commission.[2] There are a substantial number of case reports of cannabis psychoses. These describe individuals who develop psychotic symptoms or disorders after using cannabis. Chopra and Smith[3] for example, described 200 patients who were admitted to a psychiatric hospital in Calcutta between 1963 and 1968 with psychotic symptoms following the use of cannabis. Most psychoses were preceded by the ingestion of a large dose of cannabis and there was amnesia for the period between ingestion and hospitalization.

The findings of Chopra and Smith[3] have received some support from other smaller case series, which suggest that large doses of potent cannabis products can be followed by a 'toxic' psychotic disorder with 'organic' features of amnesia and confusion. These disorders have been reported from the Caribbean[4,5], India[3,] New Zealand[6,] Scotland[7], South Africa[8], Sweden[9,10], the UK[11-13] and the USA.[14-15] Thacore and Shukla[16] reported a case control study that compared 25 cases who had a "cannabis psychosis" with 25 controls who were diagnosed as having paranoid schizophrenia with no history of cannabis use. Their cases had a paranoid psychosis resembling schizophrenia in which there was a clear temporal relationship between the prolonged use of cannabis and the development of psychosis on more than two occasions.

Chaudhry et al[17] compared 15 psychotic bhang (cannabis tea) users with 10 bhang users without psychosis. They found that their cases were more likely to have a history of chronic cannabis use and past psychotic episodes. Similarly, Mathers et al[18] reported a study of patients presenting to two London hospitals whose urine was analyzed for the presence of cannabinoids. They found a relationship between the presence of cannabinoids in urine and having a psychotic diagnosis. Rolfe et al[19] reported a similar association between urinary cannabinoids and psychosis in 234 patients admitted to a Gambian psychiatric unit.

Thornicroft et al[20] compared 45 cases that had a psychosis and a urine positive for cannabinoids with 45 controls who had a psychosis but either had a urine negative for cannabinoids or reported no cannabis use. They found very few demographic or clinical differences between the groups.

It was seen in very few studies that cannabis psychosis and schizophrenia may have distinct demographic, premorbid and clinical features. The present study is conducted to identify differences in demographic profile between the two groups and thereby propose possible variables underlying

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cannabis and psychosis.

The aim and objective was to study the strength of the association between cannabis and psychosis in terms of duration of use and socio-demographical variables.

Null hypothesis
- There will be no significant association between cannabis and psychosis in terms of duration of use and socio-demographical variables.
- There will be no significant differences between the socio-demographic characteristics of the experimental and the control group.

MATERIAL AND METHODS

Cross-sectional descriptive hospital based study was conducted over a period of ten months from March to November 2019. The study was carried out in department of psychiatry at Rama Medical college, Kanpur.

Sample Size
Based on such previous study[21] and Purposive sampling technique a total of 100 consecutive patients were taken for the study. There were two groups; first group (experimental) included 50 cannabis using patients with psychosis. The second group (control) included 50 patients with Schizophrenia but no cannabis intake.

Participant's Inclusion And Exclusion Criteria:
Inclusion Criterion For Experimental Group:
- Diagnosis of Cannabis dependence syndrome according to Diagnostic Criteria for Research (DCR) of International Classification of Diseases (ICD –10).[22]
- Patients between the age range of 18-60 years.
- Patients of either sex were taken for the study.
- Both literate and illiterate patients were included for the study.
- Patients who gave informed consent to participate in the study.
- Cooperative patients were taken.

Inclusion Criterion for Control Group
- Patients of Schizophrenia as per Diagnostic Criteria of Research (DCR) of International Classification of Diseases (ICD – 10).[22]
- Patients between the age range of 18-60 years.
- Patients of either sex were taken for the study.
- Both literate and illiterate patients were included for the study.
- Patients who gave informed consent to participate in the study.
- Cooperative patients were taken.

Exclusion Criteria for Control and Experimental Groups
- Co morbid psychiatric disorder, substance abuse or dependence.
- Evidence of clinically significant organic/neurological disorders and mental retardation.
- Uncooperative patients.

Tools
- Socio-demographic and Clinical data sheet.

Socio-Demographic and Clinical Data Sheet
It was some semi-structured pro-forma especially designed for this study. It contains information about socio-demographic variables like age, sex, religion, education, marital status occupation and source of referral as well as clinical data such as duration of cannabis use, age of onset, amount of cannabis use, last intake, history of medical or psychiatric illness, treatment history, family history of medical or psychiatric illness and premorbid personality. It also included details of mental status examination. Finally, diagnosis of the patient would be made according to ICD-10 DCR.[22]

Procedure
Information about socio-demographic variables and clinical details were collected using the socio-demographic and clinical data sheet from the drawn sample selected according to the inclusion and exclusion criteria. Detailed history regarding psychotic symptoms and different parameters of cannabis use were collected from the key informant as well as the patients.

STATISTICAL ANALYSIS

The Statistical analysis was done with the help of Statistical Package for Social Sciences- 16 (SPSS- 16). To analyze association between cannabis and psychosis was done using Spearman's rank correlation coefficient. To analyze group differences between control and experimental group on certain socio- demographic variables (assessed as continuous variables) like age and year of education, t- test was applied. For other socio- demographic variables chi-square test was applied.

RESULTS

Table 1 shows age and education of the experimental and control group. It shows in age, there is no significant difference between both the groups. While regarding education significant differences between both the groups were noticed at .01 level.

Table-2 shows comparison between experimental and control group on other socio-demographic variables. In the experimental group all the patients were male whereas in the control group majority of the patients were male and few were female. Regarding sex variable both the group have significant difference at .01 level. No significant difference was found between the experimental and control groups in the socio demographic characteristics of marital status. In the experimental group majority of the patients were Hindu by religion on the other hand in the control group, patients of both Hindu and Muslim religion were seen. In the socio demographic characteristics of religion significant difference was found at .05 level. In the areas of habitat and family type significant difference was found at .01 level, approximately all the patients of the experimental group were from rural background and nuclear families as compared to the control group.

Table 3 showed socio demographic characteristics of the occupation and socioeconomic status. It shows that patients

of the experimental group were more employed as compared to the control group. In the experimental group 50% patients were employed whereas in the control group 32% were employed and significant difference between both the groups was at .01 level. In the control group, majority of the patients were housewives who worked infrequently as tailoring and housemaids. Significant difference between both the groups was found due to the increase symptomatology of the control group, which is clearly mentioned under the results of the clinical symptoms of SAPS. Regarding socioeconomic status majority of the patients of the experimental group were belong from the lower socioeconomic status and difference between both the group was at .01 level.

Table 4 shows; there is positive correlation (.05 level) between the mode of cannabis use and religion, it reveal that smoking cannabis is more prominent in the Hindu religion compare to Muslims. On the basis of socio demographic characteristics it further reveals that overall cannabis intake is high in the Hindus compare to the muslims. As it is already described in table 3 that majority of the patients of the experimental group belong to the lower socioeconomic status. It further reveal here that mode and duration of cannabis use is positively correlated (at .05 level) with lower socioeconomic status.

DISCUSSION

In the present study, it was seen that cannabis intake was

Variables	Experimental Group Mean ± SD	Control Group Mean ± SD	t value	df	P-value
Age (in years)	28.26±7.29	32.18±8.71	2.46	98	.351[NS]
Education (in years)	7.96±3.21	10.40±2.36	4.39	98	.002**
NS=Not significant, **= Significant at .01 level					

Table-1: Showing Age and Education Characteristics of the Experimental Group and Control Group

S. No.	Variables		Experimental Group (%)	Control Group (%)	Chi Value (df)
1	Sex	Male	50 (100)	33 (66)	20.48**
		Female	0 (0)	17 (34)	(1)
2	Marital Status	Married	17 (34)	21 (42)	3.02[NS]
		Unmarried	33 (66)	27 (54)	(2)
		Other	0 (0)	2 (4)	
3	Religion	Hindu	45 (90)	33 (66)	13.69*
		Muslims	3 (6)	17 (34)	(2)
		Others	2 (4)	0 (0)	
4	Habitat	Rural	46 (92)	18 (36)	34.12**
		Semi Urban	2 (4)	12 (24)	(2)
		Urban	2 (4)	20 (40)	
5	Family Type	Nuclear	48 (96)	34 (68)	13.27**
		Joint	2 (4)	16 (32)	(1)
NS=Not significant, *= Significant at .05 level, **= Significant at .01 level					

Table-2: Showing Socio-Demographic Characteristics of the Experimental Group and Control Group

S. No.	Variables		Experimental Group (%)	Control Group (%)	Chi Value (df)
1	Occupation	Employed	25 (50)	16 (32)	37.43**
		Unemployed	17 (34)	9 (18)	(3)
		Student	8 (16)	0 (0)	
		Housewife	0 (0)	25 (50)	
2	Socioeconomic Status	Lower	48 (96)	11 (22)	34.12**
		Middle	2 (4)	30 (60)	(2)
		Upper	0 (0)	9 (18)	
NS=Not significant, *= Significant at .05 level, **= Significant at .01 level					

Table-3: Showing occupation and Socioeconomic Status of the Experimental Group and Control Group

N=50	Religion		Socioeconomic Status	
	Spearman's Rho	P value	Spearman's rho	P value
Mode of Cannabis Use	.243	.045*	.264	.032*
Duration o Cannabis Use	-	.	.261	.034*
*= Significant at .05 level				

Table-4: Showing Correlation between Cannabis Use and Socio demographic variables of Religion and Socioeconomic Status

higher in the males; in our study no female cannabis user could be taken due to the fact that in UP state, females are generally known to be not using cannabis. These findings are also supported by the previous studies. Literature suggests that daily cannabis users are more likely to be male and less well educated.[57] In a study[23], it was found that overall prevalence of drugs is higher in males. The finding in our study is similar to study done in this area.

It was seen that gender had no role in schizophrenia; it is equally prevalent in men and women. In a comparative study done by Nunez and Gurpegui[21], where it was found that total number of acute schizophrenia were 35 in which 54.3% were male and rest were female. It is seen in our study, that in the experimental group no female patient could be taken due to unavailability however, in the control group male and female patients were; 66% and 34% respectively.

Our study comprised of 90% of Hindu male which is in accordance with the previous study done by Basu et al. In India, because of its association with religious rituals, cannabis has got social acceptance and moreover it is regarded as a stimulant of religious fervor and used to propitiate Lord Shiva by Hindu people.[16,24] Where as in the control group 66% were Hindu and 34% were Muslims. It showed that in schizophrenia religion has no effect.

Regarding marital status no significant difference were noticed between both the groups. Although in the experimental group 34% patients were married while in the control group 42% were married.

Literature suggests[21] that family history of psychosis was higher in acute schizophrenia group than in cannabis psychosis and differences between the groups were statistically significant.

In India the numbers of drug addicts are increasing day by day. India also has a huge at-risk young population with 40% being below the age of 18 years. According to UN Convention Reports on Narcotic Drugs and Psychotropic Substances, it is estimated that, in India, by the time most boys reach the ninth grade, about 50% of them have tried at least one of the gateway drugs. Every year, about 55,000 children generally hailing from low socio-economic strata with poor social support, broken homes and victims of deprivation and discrimination take up smoking. This risky behavior is often initiated during childhood and adolescence, as more than 70% of adult smokers report that they started smoking on a daily basis prior to age 18.[25]

Similarly in our study it was seen that cannabis smoking (40%) was high in the patient of cannabis psychosis and 96% patients of the experimental group were from the lower socioeconomic status. 96% patients were from nuclear families, 66% of patient had broken home and 60% had parental lack before the age of 18years. 40% of patients had childhood disorder and 66% had disciplinary problems. 40% of patients started taking cannabis before the age of 18 while 60% of patients started taking cannabis after the age of 18.

Peer smoking also predicts continued smoking among young people who have already begun to smoke.[26] Cannabis abuse in school-going population has been associated with poor scholastic performance, school dropout and reinforcement of conduct symptoms. In the present study, majority of the patients described that they started taking cannabis due to the enhanced peer relationship. In the present study 52% patients of the experimental group have good peer relationship.

In a study done by the Macleod et al[27] and Lynskey et al[28] it was seen that heavy cannabis smokers reported significantly lower educational attainment and lower income than did control. When asked about the subjective effects of cannabis on career, social life, physical and mental health and various quality of life measures, majority of heavy use cannabis smokers reported negative effects of their drug use. Similar findings are reported by our study where, 60% patients have poor academic record. In the present study, we also correlate the socio demographic characteristics with the cannabis intake variables. Findings of our study reveal positive correlation between the mode of cannabis use and religion (spearmen rho value- .243; p value- .045). In the present study 90% patients of the experimental group were Hindu and in rest 10% muslims and other religion were include and smoking was high (40%) as the mode of cannabis use. This finding suggests that smoking is high in Hindu religion compare to the other religion.

It was also seen that cannabis intake was high in the lower socioeconomic status. There is found positive correlation between the mode of cannabis use and lower socioeconomic status (rho value- .264 p values- .032). Positive correlation is also found between the duration of cannabis use and lower socioeconomic status (rho value- .261 p values- .034). These findings are similar with the previous study.[113]

CONCLUSION

The present study shows that cannabis intake is higher in the patients of psychosis as compared to the normal population. Low socio-economic conditions, nuclear families, broken homes and lack of parents are risk factors for cannabis abuse. The study also points towards the cannabis abuse in school going children and various risk factors associated with them. The current study indicates the importance of gateway drugs and the risk they pose for a chronic illness like psychosis.

Future Direction

- Another study can be carried out with non-institutionalized patients and the results can be compared with that of the present study.
- Studies should try to assess dose response relationship with confounding factors.
- Multiple statistical comparisons of the results can be undertaken in order to cross validate the findings.

ACKNOWLEDGEMENT

REFERENCES

1. Mackworth YW. Report of the Indian Hemp Drugs Commission.1895
2. Chopra GS, Smith JW. Psychotic reactions following cannabis use in East Indians. Archives of General Psychiatry. 1974; 30: 24-27.
3. Harding T, Knight F. Marijuana-modified mania. Archives of General Psychiatry. 1973; 29:635-637.
4. Spencer DJ. Cannabis-induced psychosis. International Journal of the Addictions. 1971; 6:323-326.
5. Eva J. Cannabis psychosis. Psychiatric Bulletin. 1992; 16:310-11.
6. Wylie AS, Scott RTA, Burnett SJ. Psychosis due to "skunk". British Medical Journal. 1995; 311:125.
7. Solomons K, Neppe VM, Kuyl JM. Toxic cannabis psychosis is a valid entity. South African Medical Journal. 1990; 78:476-81.
8. Bernardson G, Gunne LM. Forty-six cases of psychosis in cannabis abusers. International Journal of Addictions. 1972; 7: 9-16.
9. Tunving K. Psychiatric aspects of cannabis use in adolescents and young adults. Pediatrician. 1987; 14:83-91.
10. Paisson A, Thulin SO, Tunviung K. Cannabis psychoses in South Sweden. Acta Psychiatrica Scandinavica. 1982; 66:311-21.
11. Carney MWP, Bacelle L, Robinson B. Psychosis after cannabis use. British Medical Journal. 1984; 288: 1047.
12. Drummond L. Cannabis psychosis: a case report. British Journal of Addiction. 1986; 81:139-40.
13. Onyango RS. Cannabis psychosis in young psychiatric inpatients. British Journal of Addiction. 1986; 8l: 419-23.
14. Talbott JA, Teague JW. Marihuana psychosis: Acute toxic psychosis associated with the use of cannabis derivatives. Journal of the American Medical Association. 1969; 210: 299- 302.
15. Tennant FS, Groesbeek CJ. Psychiatric effects of hashish. Archives General of Psychiatry. 1972; 27: 133-36.
16. Thacore VR, Shuckla SRP. Cannabis psychosis and paranoid schizophrenia. Archive General of Psychiatry. 1976; 33:383-86.
17. Chaudry HR, Moss HB, Bashir A, Suliman T. Cannabis psychosis following bhang ingestion. British Journal of Addiction. 1991; 86: 1075-81.
18. Mathers DC, Ghodse H, Caan AW, Scott SA. Cannabis use in a large sample of acute psychiatric admissions. British Journal of Addiction. 1991; 86:779-84.
19. Rolfe M, Tang CM, Sabally S, Todd JE, Sam EB, HatibN'Jie AB. Psychosis and cannabis abuse in The Gambia: A case-control study. British Journal of Psychiatry. 1993; 163:789-801.
20. Thornicroft G, Meadows G, Politi P. Is "cannabis psychosis" a distinct category? European Psychiatry. 1992; 7:277-82.
21. Nunez LA, Gurpegui M. Cannabis-induced psychosis: a cross-sectional comparison with acute schizophrenia. Acta Psychiatrica Scandinavia. 2002; 105: 173-78.
22. The ICD-10 classification of mental and behavioural disorders. Diagnostic criteria of research, Geneva: World Health Organization. 1993.
23. Reddy MV, Chandrashekher CR. Prevalence of mental and behavioural disorder in India: A meta- analysis. Indian Journal of Psychiatry.1998; 40: 149-57
24. Basu D, Malhotra A, Varma VK. Cannabis related psychosis syndrome: A selection review. Indian Journal of Psychiatry.1994; 36: 121-128.
25. Lynch BS. and Bonnie RJ. Growing up tobacco free: Preventing nicotine addiction in children and youths. Washington, DC: National Academy Press. 1994.
26. McGraw SA, Smith KW, Schensul JJ and Carrillo E. Socio-cultural Factors Associated with Smoking by Puerto Rican Adolescents in Boston. Social Science Medicine. 1991; 33: 1355-1364.
27. Macleod J, Oakes R, Copello A. Psychological and social sequelae of cannabis and other illicit drug use by young people: a systematic review of longitudinal general population studies. Lancet. 2004; 363: 1579-88.
28. Lynskey MT, Health AC, Nelson EC. Genetic and environment contributors to cannabis dependence in a national young adult twin sample. Psychological Medicine.2002; 32: 195-207.