

LONG TERM EFFECTS OF CANNABIS¹

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SUMMARY

50 chronic cannabis users were studied for their physical, mental, cognitive and socio-economic aspects of health. They were given W.M.S., Bhatia Battery of intelligence and B.G.T. It was observed that only 12% provided clue for suspecting cognitive deficiency. No social breakdown phenomenon was observed in the sample. Also, no significant physical illness was detected in the subjects.

Cannabis is widely abused by people in various countries. Use of Bhang has been a traditional one, particularly in North India. A number of reports address themselves to the question of the effect of long term cannabis use on human brain functioning. Earlier uncontrolled studies suggested the possibility of intellectual deterioration (Chopra & Chopra, 1957; Tylden, 1967), cognitive changes (Agarwal *et al.*, 1975; and Venkoba Rao, 1975) and toxic or schizophrenia like psychosis (Thacore, 1973; Varma, 1973) as a sequelae of chronic abuse of cannabis. Difficulty in sexual and social adjustment (Robin *et al.*, 1970) and personality deterioration (Cohen and Klein, 1970) have also been linked to chronic cannabis abuse. Mendhiratta *et al.* (1978) have reported that its chronic abuse leads to poor concentration, slowed reaction and greater neuroticism.

Taken by themselves these studies suggest that the association between cannabis use, and cognitive and emotional deterioration is clear and unequivocal but recent workers who have conducted controlled studies (Lessin & Thomas, 1976; Satz *et al.*, 1977) did not find these changes associated with chronic use of cannabis.

The present study is aimed at finding effects of long term cannabis use on physical, mental, cognitive and socio-economic aspects of health.

METHODOLOGY

Sample consisted of 50 subjects, who had been taking cannabis almost daily for a period of 5 years or more, below 45 years of age, had not taken any other intoxicants regularly and were not having chronic physical and/or mental illness.

The subjects were interviewed by a psychiatrist with the help of a structured proforma. It indicated information on various demographic and socio-economic variables. Factors which were responsible for initiating and continuation of cannabis abuse were also studied. Accurate information regarding frequency, quantity and duration of abuse were also ascertained for each individual.

Detailed neurological and psychiatric examination was done in each case to detect the presence of any neurological and psychiatric abnormality. For assessment of psychological status, each subject was subjected to following investigations:—

(i) Weschler Memory Scale

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- (ii) Bhatia's Battery of Intelligence
(iii) Bender Gestalt Test.

The socio economic assessment was done by using Gupta & Sethi (1978) scale. Information regarding the effect of cannabis abuse on subject's socio-economic status was also collected in each case.

OBSERVATIONS

Table I describes the socio-demographic variables of the studied subjects.

TABLE I—*Socio-demographic characteristics of Cannabis users (N=50)*

	N	%
<i>Age (in years)</i>		
21-25	7	14
26-30	16	32
31-35	11	22
36-40	6	12
41-45	10	20
<i>Marital Status :</i>		
Single	25	50
Married	24	48
Separated	1	2
<i>Religion :</i>		
Hindu	43	86
Muslim	5	10
Christian	1	2
Sikh	1	2
<i>Education :</i>		
Illiterate	10	20
Primary	13	26
High School	13	26
Intermediate & Post School		
Diploma	6	12
Graduate	6	12
Prof. degree/post-graduate	2	4
<i>Social Status (Gupta & Sethi, 1978)</i>		
Upper middle	3	6
Middle	15	30
Lower Middle	23	46
Very low	9	18

Further it was enquired from the subjects that whether the cannabis abuse has caused them any financial hardship. Majority

(55%) of the subjects reported that there was no effect of cannabis abuse on their financial matter whereas 40% admitted that because of its intake they had to borrow money or sacrifice food and other comforts, 5% were uncertain.

TABLE II—*Factors for initiation and motivation for cannabis use*

	N	%
<i>(a) Age of starting intake of cannabis (in yrs.)</i>		
11-15	10	20
16-20	31	62
21-25	6	12
26-30	2	4
31-35	1	2
Mean = 18.6 yrs., s.d. = 5.7 yrs.		
<i>(b) Reasons for starting cannabis use</i>		
Company	35	70
Pleasure	3	6
Medicinal use	1	2
Psychosocial stress	9	18
To increase work capacity	2	4
<i>(c) Reasons for maintaining cannabis use</i>		
To achieve euphoria	35	70
For relaxation	14	28
To increase work capacity	14	28
Medicinal use	1	2

82% of the subjects started intake of Cannabis before the age of 20 yrs. It was observed that in this sample, 70% of the subjects started consuming cannabis in the company of others, 18% started it because of psychosocial stress. Only one subject reported that he started taking the drug for medicinal purpose, i.e. to relieve constipation. In many instances multiple reasons were given by the subjects for their continuation of Cannabis majority of them said that they continue to take cannabis to achieve euphoria (70%), relaxation (28%) or to increase the work capacity (28%).

TABLE III—*Duration of cannabis use*

Pattern of consumption	Duration of cannabis use (in yrs)										
	6—10		11—15		16—20		21—25		26—30		
	N	%	N	%	N	%	N	%	N	%	
Irregular pattern	4	8	8	16	2	4	3	6	..	..
Gradual increase	2	4	4	8	1	2	..	..	..	..
Stationary	..	8	16	6	12	5	10	6	12	1	2

It was very difficult to exactly assess the quantity of cannabis consumed by these subjects as majority of them had been taking it as beverage or in the form of pills or smoking or in combination and the amount of which is not very definite.

TABLE IV—*Premorbid personality of the subjects*

Personality	N	%
Average
Cyclothymic
Schizoid
Explosive
Passive-Aggressive
Inadequate
Antisocial

In the present study an attempt to evaluate the pre-drug status of the personality of the subjects was made. The pre-drug status of the personality of the subjects was judged clinically. It should be mentioned that these personality traits were subjects own assessment and the reliability of this grouping of personality may be questionable as the subjects own evaluation of himself is not always a very reliable data particularly in drug users.

Table-IV shows that 60% of the subjects

did not show evidence of abnormal personalities or its deviations. 14% showed schizoid traits, 10% were having cyclothymic type of personality but only one subject could fulfil the criteria of Antisocial type of personality.

When enquired as to whether subjects would stop intake of cannabis for any length of time, only 22% replied that either they did not try to stop cannabis intake or failed to do so. Further 78% replied that they had stopped cannabis intake only for a period of few weeks during all these years of cannabis use. This brings in question whether cannabis can cause true addiction. 30% of subjects did not experience craving for cannabis when they were not consuming cannabis while 70% of the subjects reported that they felt a sort of uneasiness about the time when they usually were taking cannabis. This craving was invariably mild in nature and they could withhold the intake or could easily miss the drug but used to experience tiredness, bodyaches, disturbed sleep, loss of appetite and loss of libido.

WMS revealed a mean M.Q. of 95.4 (s.d. 8.12) for this group. 76% of subjects obtained M.Q. between 91-110 which is within average limits. In 20% of subjects there was evidence of mild impairment of the memory functions (M.Q. 81-90). These people usually had a rather poor performance on the subjects of associative learning and logical memory suggesting lack of concentration and retention. The test results, however, do not indicate any gross disturbance of memory. Only 4% of subjects had an I.Q. between 71-90 on Bhatia Battery of Intelligence, which is definitely "below average".

Analysis of the distribution of Z scores on the Bender Gestalt Test shows that 48% had a Z score of 6 and above. 52% obtained a Z score of up to 5. According to norms provided by Hain (1964), Z scores of below 6 represents fairly normal record whereas

TABLE V—Observations on Psychometric evaluation

			No. of Subjects (N=50)	Per- centages
(a) Memory Quotient on Wechsler Memory Scale M.Q.				
81—90	..	..	10	20
91—100	..	..	22	44
101—110	..	..	16	32
111—120	..	..	2	4
Mean =95.4, s.d.=9.12				
(b) Distribution of I.Q.				
71—80	..	..	2	4
81—90	..	..	8	16
91—100	..	..	34	68
101—110	..	..	4	8
111—120	..	..	2	4
Mean =94.9, s.d.=8.12				
(c) Z scores on BGT				
0—5	..	..	26	52
6—12	..	..	18	36
13—24	..	..	6	12

score between 6 to 12 represent borderline and critical area is represented by a score of 13 and above. In our study 12% obtained score between 13 to 24. However, one has to be considerably restrained in making any definite statement since Indian norms for this test are not available and the observed deviations may not be truly pathological.

DISCUSSION

To define a true cannabis abuser is a difficult task. The term abuse has a variety of meanings, ranging from any use of the substance to only that having clearly detrimental effects of emotional and physical health of the abuser. Since the operational definition of chronic use in terms of duration, regularity, frequency dose, etc. vary from investigator to investigator, it is very difficult to compare various studies. In the present study the term chronicity has been operationally defined as to regular usage of cannabis for 5 years or more.

In the present study majority of the subject reported intake of cannabis before the age of 20 years. This is quite in conformity with findings reported by earlier workers (Agarwal *et al.*, 1975; Dube, 1972). Varma (1972) found that most common age for initiating the use of cannabis was between 10-29 yrs (87%). Similarly western studies (Beedle, 1972; Mabilean, 1972; Baselqu, 1972) also reported higher incidence in younger population. The reason why the younger generation falls a prey to this habit of using drug may be manifold. The curiosity for new experience, emotional changes, need to show independence, for its pleasurable experience and for religious reasons may be some of the factors responsible. Kumar (1973) has also listed a number of reasons for initiating this drug in younger people viz., expression of hostility, for being identified as "campus hero", better sanes and just for relaxation and to escape from tension.

In the present study we could not find any evidence of deterioration either in work performance or in social relationship of these subjects. This may be as the use of cannabis in our society has a traditional and cultural sanction as a result of which majority of the subjects do not take in excessive quantity which may otherwise be detrimental to health. Earlier studies (Kolansky & Moore, 1971; West, 1970) did show some evidence of psychosocial maladjustment in cannabis users but Halikas *et al.* (1971) emphasised that anti-social behaviour more often preceded marihuana use than followed it.

The present study did not show any evidence of physical illness in the cannabis users. The Indian Hemp Drugs commission reported that "Large numbers of practitioners of long experience have seen no evidence of any connection between the moderate use of hemp drugs and disease (Grinspoon, 1971) and this conclusion has never been seriously challenged. La

Guardia committee came to the same conclusion as observed by the Indian Hemp Drugs Commission. Studies in Jamaica (Rubin and Carnitas, 1975), Greece (Stefans *et al.*, 1976) and Costa Rica (Coggins *et al.*, 1977) confirm the observations made by the two commissions mentioned above.

One of the most common contentions made by opponents of cannabis use and one of the most difficult to prove or disprove, is whether in the long run cannabis use can cause mental, moral or emotional deterioration—either cognitive and psychomotor impairment or a change in personality, which is vaguely defined as impairment of mind, emotions and will be known as the "amotivational syndrome". Evaluation of cognitive functions in our subjects did not show any evidence of memory or intellectual impairment but BGT findings were indicative of mild cognitive impairment in only 12% of subjects. Mendhiratta *et al.* (1978) who studied 25 bhang drinkers, 25 charas/Ganja smokers and 25 normal controls observed that controls were less neurotic and were having less perceptively—motor disturbances than the drug users, suggesting that cannabis has a deleterious effect on these functions. A controlled study of chronic heavy cannabis users in Costa Rica by Saltz *et al.* (1977) found no deficit on neuropsychological, intelligence or personality tests. Carlin & Trupin (1977) similarly found no difference in neuropsychological functioning.

The duration of cannabis use in majority of subjects in our study was 11-15 yrs. It is possible that intake of cannabis has produced minimal cognitive impairment and gross deficit may develop only at a longer duration of use.

We will have a sharp divergence of opinion on the issues of the medical hazards at cannabis. A well designed, large scale, long term prospective study of the effects of cannabis could add significantly to our present knowledge.

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