

## The Epidemiology, Etiology And Psychological Consequences Of Cannabis Use Among Indian Youth

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**ABSTRACT:** The extensive problem of substance abuse and substance dependence in today's world is drawing psychological attention. Cannabis drug dependence is a common phenomenon faced by teenagers and young adults. Cannabis is the most commonly used substance globally. Recent worldwide trends indicate increase in the prevalence rates of marijuana use and marijuana-related hospitalizations with adolescents and young adults being especially vulnerable. Present research is an exploratory Indian study to know the extent and impact of cannabis use on psychological factors, such as, social adjustment and achievement levels of young adults. Out of various metropolises in India, Delhi the national capital was selected. The sample comprised of 90 students (50 cannabis users and 40 non cannabis users). The Mean age of the sample is 19.77 years. Participants are pursuing undergraduate or graduate studies from various reputed central, state and private universities in Delhi. The tools administered were Bells Adjustment Inventory by Hugh M. Bell (1963) and the achievement value and anxiety inventory by Prayag Mehta (1976). MANOVA was computed and a Semi-structured interview was also conducted with cannabis users for deeper understanding. Our findings cover epidemiology (patterns and extent of drug use), etiology (what generates substance use) and psychological consequences (effects and outcomes of youthful drug use) among Indian youth. The study has implications for intervention based studies that can be designed for taking corrective measures in order to change the mindset of cannabis users who often perceive drugs as helping them achieve academically and adjust socially.

**KEYWORDS:** Cannabis Use, Drug Abuse, psychological consequences, epidemiology, etiology

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### I. INTRODUCTION

The extensive problem of substance abuse and substance dependence in today's world has drawn public and scientific attention. Cannabis drug dependence is a common phenomenon faced by teenagers and young adults. It is the most commonly used substance globally. In 2013, an estimated 181.8 million people aged between 15 to 64 years used cannabis for non-medical purposes (UNODC, 2015).

Cannabis plant has a widespread distribution in Asia extending from the Himalayan foothills in India to southern Russia and other parts of the continent. The cannabis plant requires a certain climatic condition to grow therefore, in India it is grown in states like Assam, madras, Jammu & Kashmir, Punjab, Rajasthan that provide a favorable environment for the growth of the plant. The drug cannabis is commonly used in India for medicinal and recreational purposes. It is derived from different parts of the Cannabis Sativa Linn plant (flowers, leaves, twigs, bark of the stem).

The three main forms in which cannabis is used in India are-

- Bhang (Hemp)
- Ganja (Marijuana)
- Charas (Hashish).

These three differ in the amount of narcotic substances they contain even after being extracted from the same plant hence, each differing in intensity of the effects they produce.

- Bhang

Bhang is derived from the parts of female and male Cannabis Sativa Linn plant. Bhang is associated with religious sentiments in India. It is popularly used in sacred Hindu festivals like Holi as Lord Shiva consumed it. The various ways in which bhang is consumed is either by mixing it in milk or eaten in small balls. Bhang is considered equivalent to the western marijuana.

- Ganja and charas (Marijuana and hashish)

Marijuana comes from the dried leaves and flowering of the female cannabis sativa, and cannabis Indica plant. The plant consists of mind-altering compounds like THC(Tetrahydrocannabinol).The resinous

gland head of the female cannabis sativa plant is known as hashish. Ganja and charas are commonly smoked. The way it is smoked differs in different parts of the country ranging from rolled blunts to being smoked in a chillum. Other common ways of smoking cannabis is through hookah and weed rolled in cigarettes.

## **Effects of Cannabis**

### **Short-term effects**

After smoking a mild dose of cannabis the effect stays for 24 hours (Leirer, Yesavage and Morrow, 1991). The cognitive functions highly impaired by cannabis include effects on working memory, planning and decision making, motor coordination, attention and concentration, accuracy and latency, it also increases impulsivity and risk taking thereby making the individual more prone to injuries (WHO, 2016). People using cannabis for the first time may become anxious, have panic attacks, hallucinations and vomit (Smith 1968; Thomas 1993 and Weil, 1970). It has several cardiovascular effects such as increased heart rate and blood pressure that can further cause orthostatic hypertension (Pacher & Kunos, 2013; Schmid et al., 2010). Severe cardiovascular complications such as acute coronary syndromes and strokes have been found in cannabis users (Jouanjus, 2014).

### **Long-Term effects**

One of the major long-term cannabis effects is the strong desire to take the substance, decreased interest and pleasure in activities. Meier observed in a longitudinal study that there is a decline in cognitive functioning of heavy cannabis users over a long period of time, which maybe partly irreversible. He also observed changes in IQ of 1037 New Zealanders born in 1973 at the age of 13 (before cannabis use) and then again at the age of 38 (after using cannabis). Individuals who used cannabis early and persistently in life showed an average decline of 8 IQ points in comparison to the individuals who did not smoke cannabis (Meier et al., 2012). In chronic cannabis users, there have been changes in functions and structure of hippocampus, pre frontal cortex and cerebellum observed through MRI scans (Yücel et al., 2013).

A longitudinal study related to cannabis use and later life outcomes was done in New Zealand. The results of the study suggested that increase in cannabis use in adolescence and young adulthood leads to adverse outcomes in later life. For instance, it is related to poorer educational outcomes, lower incomes, unemployment, greater welfare dependence and lower life and relationship satisfaction (Fergusson & Boden, 2008).

There is a rapid shift regarding the legalization of cannabis for medicinal and recreational purposes. A popular notion is attached to the drug is that it is a harmless pleasure which should not be considered illegal (Volkow et al., 2014). Recently in June 2018, Canada is the first country of G-7 that has passed legalization of cannabis.

Cannabis is one of the most used drugs on college campuses. The usage among young adults is increasing; many students begin using cannabis during college (Suerken et al., 2015). Cannabis use has been associated with positive and negative wellbeing among college students. Multiple studies have reported the detrimental effects of cannabis, however whether it is harmful or not is debatable.

## **Prevalence in India**

A National Survey conducted in India in 2004-reported marijuana to be the most commonly used substance. Recent worldwide trends indicate increase in the prevalence rates of marijuana use and marijuana-related hospitalizations with adolescents and young adults being especially vulnerable. The usage of cannabis has been increasing in India with 1,08,299.72(kilogram) of marijuana consumed in 2014 and 1,82,622.85 in 2016. Increase can also be seen in the amount of kilograms of hashish being consumed from 2,280.48 in 2014 to 3350.73 in 2015.

Among the top ten cities with the highest usage of cannabis New Delhi and Mumbai have been ranked the third and the sixth rank respectively with New Delhi's per year consumption being 38.26 and Mumbai's 32.38. In the year 1985 cannabis was banned in India by the government due to the pressure from foreign countries. However, there is partial control on the ban of cannabis as it used for medicinal, research and industrial purposes.

Cannabis is becoming increasingly popular because of several reasons

- It is easily available because of partial control in India
- It is cheaper than the other drugs (cocaine, opium)
- It is assumed to be less harmful than other drugs.
- For teenagers and young adults it has become a 'way of life' and a new definition of enjoyment and happiness.

The present research is an exploratory study to know the prevalence, causes and the impact of cannabis use on psychological health of young adults.

## II. METHOD

### Sample

A total of 90 undergraduate and graduate students ( $M_{\text{age}} = 19.77$  years) from various reputed central, state and private universities in New Delhi, India, took part in the study. Of these, 50 students were cannabis users and 40 were non-cannabis users. 50 cannabis users were further divided into two groups, 25 heavy cannabis users (smoke cannabis more than 3 times in a week) and 25 light cannabis users (smoke cannabis once or twice in a month).

### Measures

**Demographic Questionnaire.** The demographic questionnaire included questions related to participants' gender, age, educational qualification, usage/ non-usage of cannabis and frequency of usage.

**Bell's Adjustment Inventory.** It was developed by Hugh M. Bell (1963) to assess the adjustment level of individuals in different domains. It is used for counseling purposes, which further helps in identifying the personal problem of the individual in the particular categories in the test. It is used for analyzing the adjustment level in various domains. Each dimension has 32 items. The response pattern for the inventory is a three-point scale, yes, no and maybe. Total number of items is 200. The scale is divided into five subscales. However, in the present study only two domains were assessed:

**Home Adjustment:** individuals scoring high tend to be unsatisfactorily adjusted to their home surrounds. Low scores indicate satisfactory home adjustment.

**Social Adjustment:** Individuals scoring high tend to be submissive and retiring in their social contacts. Individuals with low scores are aggressive in social contacts.

The split-half reliability of the home and social dimension is .91 and .88 respectively.

**Achievement Value and Anxiety Inventory.** It was developed by Prayag Mehta (1976), it is an Indian test based on the stories written by observing TAT type pictures. Items in this inventory are descriptive statements of situations depicted in pictures, which were tried out in the development of Thematic Apperceptive measure of achievement. It contains 22 items; each item is followed by six responses. Two each of the six responses are achievement related (AR); task related (TR); and unrelated to achievement (UR). Respondents have to check one response to each item.

**Interview Schedule.** The interview schedule consisted of 7 semi structured questions pertaining to etiology and consequences of cannabis use. Few of the questions were: "Can you narrate your experience of smoking cannabis for the first time?", "What makes you continue smoking it?", "How has cannabis affected your life?", "Do you notice any changes in your health and daily routine?"

### Data Collection Procedure

Present research was an exploratory study to assess the epidemiology, etiology and psychological consequences of Cannabis use among Indian Youth. Bell's Adjustment Inventory (Social and Home Adjustment) and Achievement Value and Anxiety Inventory were given to all the 90 participants. Initially the questionnaires were given to 50 cannabis users and then to 40 non-cannabis users. The cannabis users were divided into two groups according to their usage: a) Light users - smoke cannabis 1-2 times in a month b) Heavy users - smoke cannabis more than 3 times in a week. The participants were ensured of confidentiality. Post quantitative data collection, a semi-structured interview was conducted with cannabis users divided into two categories to have a deeper understanding of etiology and psychological consequences of Cannabis use.

### Data Analysis

The statistical computation began only after data cleaning wherein the patterns of responses were assessed using IBM SPSS STATISTICS 20. Further using the same software, descriptive and inferential statistics were employed. Using MANOVA for independent samples, differences between cannabis users and non users on Bell's adjustment inventory and Achievement Value and Anxiety Inventory were assessed. Interviews were transcribed and themes were extracted from the data.

## III. DISCUSSION

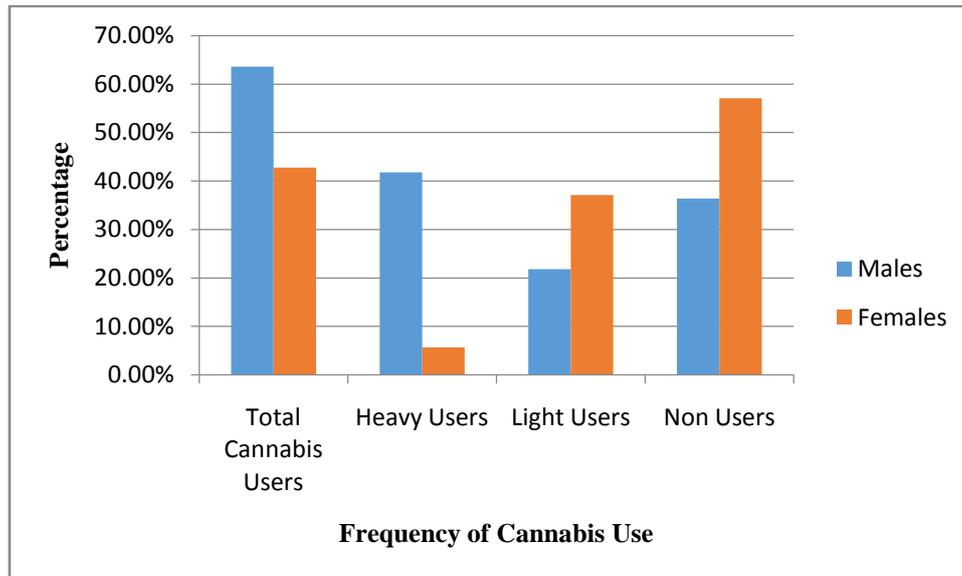
The present research work was an attempt to understand the impact of cannabis use on psychological factors such as adjustment and achievement of young adults pursuing higher education in Delhi. However, for a deeper understanding of the cannabis use, we need to look at the demographics as well as the reasons behind the consumption of the drug by young adults.

### Epidemiology

The Epidemiology of cannabis use was assessed in terms of gender, age, educational qualification and frequency of usage.

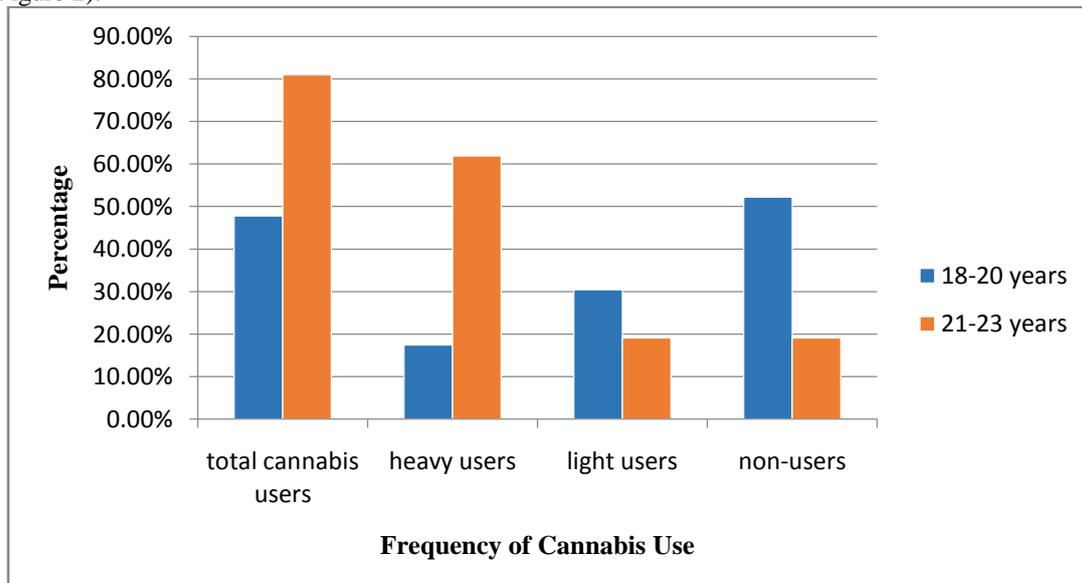
**Gender:** Out of 90 participants, of which 35 were females and 55 were males, it was found that 63.6% males consume cannabis in comparison to 42.8% females. The cannabis users when further divided into two categories- Light users ( $n=25$ ) – who smoke cannabis 1-2 times in a month and Heavy users ( $n=25$ ) – who

smoke cannabis more than 3 times in a week. It was found that only a small percentage i.e. 5.7% of females were heavy users as compared to 41.8% male heavy users. Thus, males were found to be using cannabis more than females in general. Further, a high percentage of cannabis using males were found to be having a higher frequency of smoking cannabis as compared to cannabis using females (Figure 1).



**Figure 1: Gender differences in Frequency of Cannabis Use of the sample [Males (55) and Females (n=35)]**

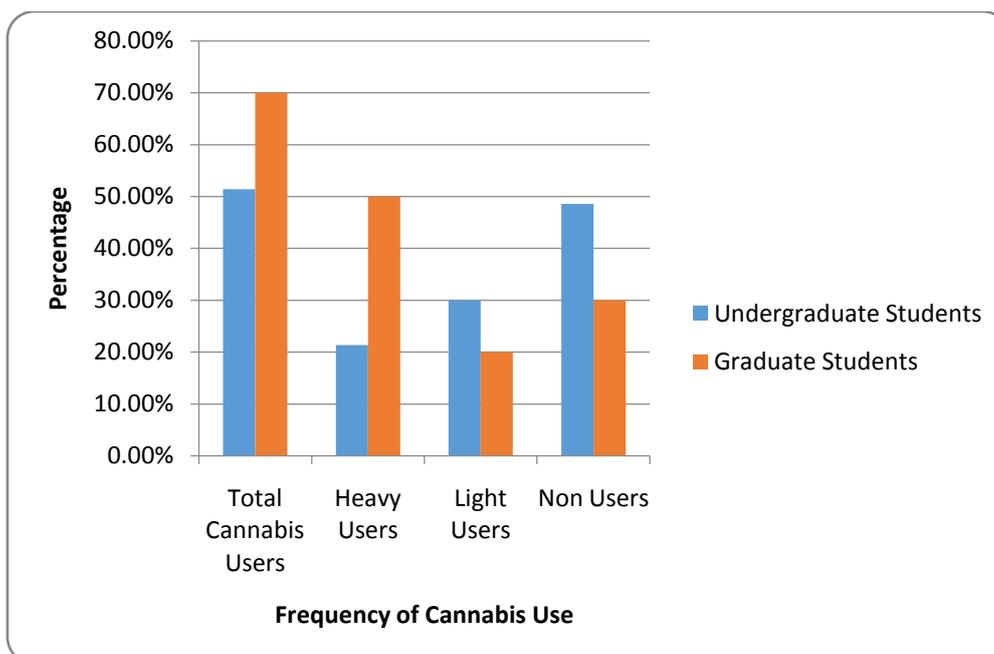
**Age:** Cannabis use was assessed among two age groups – 18-20 years (n= 69) and 21-23 years (n=21). It was found that a higher percentage (80.95%) of 21-23 years old was using cannabis as compared to 47.8% of 18-20 age group. Even the frequency of smoking cannabis was found to be higher among 21-23 years old cannabis users, among whom 61.9% were heavy users, 19.05% were light users; and 19.05% were non- users. In the 18-20 years old cannabis users sample, 17.4% were heavy users, 30.4% were light users; and 52.2% were non-users. The age group of 21-23 was thus found to be more frequent users of cannabis as compared to 18-20 years old (Figure 2).



**Figure 2: Age differences in Frequency of Cannabis Use of the sample [18-20 years (n=69) and 21-23years (n=21)]**

**Educational Qualification:** Out of 90 participants, 70 were undergraduate students and 20 were graduate students. It was found that 70% of the graduate students in comparison to 51.4% of undergraduate students reported smoking cannabis. Even the frequency of smoking cannabis was higher among graduate students, of which 50% were heavy users, 20% were light users; and 30% were non- users. Among undergraduate students

21.4% were heavy users, 30% were light users; and 48.6% were non- users. Thus, it was found that students pursuing post graduation were using cannabis more commonly and frequently as compared to the students pursuing undergrads study (Figure 3).



**Figure 3: Differences in Frequency of Cannabis Use as per Educational Qualifications of the sample [undergraduate students (n=70) and graduate students (n=20)].**

### Etiology

The responses from semi-structured interview conducted with cannabis users helped us assess the reasons behind cannabis use. The themes related to etiology were broadly divided into two - Causes for beginning Cannabis use and causes for continuing using it.

**Causes for beginning Cannabis use:** The first sub theme extracted was ‘The First Experience’ of using cannabis. Interestingly, most of the participants stated feeling nothing extraordinary at that first time i.e. the drug had no impact on them. As a result of which they were disappointed and also curious for the reason behind the absence of the expected effect which led to smoking cannabis for the second time.

The second sub theme was ‘Experiencing a Good Trip’. When asked the reason behind using cannabis, they repeatedly used the term ‘Good trip’ which according to them refers to feeling light headed, happy and relieved.

It was also found that external factors such as the environment of the place they are smoking in or the people they are smoking with is important for them; third sub theme - ‘External Factors’. Majority of the cannabis users reported beginning the use with friends and that they still smoke mostly with their friends. They prefer smoking in a social setting rather than when they are alone. Previous researches have also highlighted that Social facilitation is positively associated with cannabis use in the context of being with others (Phillips & Prince, 2018). Therefore, it can be inferred that cannabis use could be related to peer acceptance and means to social adjustment.

**Causes for continuing Cannabis use:** Under the fourth sub theme ‘Reasons for Continuing’, they reported that smoking cannabis helps them cope with life problems, keeps them engaged and makes them feel euphoric. They stated that it is a stress reliever for them and provides immense happiness. They find its consumption useful in helping them avoid the feeling of inferiority and to get over humiliating experiences or criticism.

<b>Beginning Cannabis use</b>	<b>Continuing Cannabis use</b>	<b>Consequences of Cannabis use</b>
<u>The First Experience</u> -Felt normal - Felt Nothing -Felt light	<u>Reasons for Continuing</u> -Keeps engaged - love the feeling - to cope with problems -Humiliating experience	<u>Effects on Health</u> -Too many thoughts -Bad skin -Vomiting -Dark circles
<u>External Factors</u> -Kind of people present	-Inferiority complex -Stress reliever Low	-Body pains -Dehydration

-Vibes of other people -Environment (car, party) -Conversation with friends	<u>Experiencing a Good Trip</u> -Feeling every sensation - Happy -Joy -Feel light - Stress reliever	-Bad concentration -Weight fluctuations -Coughing -Disturbed sleeping pattern -Disturbed eating pattern  <u>Impact On Education</u> -Time Table is disturbed -Poor concentration  <u>Occasional Bad Trips</u> -Vomiting -Headache -Body ache -Anxiety -Over thinking
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**Table 1: Themes based on the Qualitative Data**

**Psychological Consequences**

To assess the psychological consequences of Cannabis use both quantitative and qualitative methods were used. For quantitative analysis, two inventories (Bells achievement inventory and Achievement value and anxiety inventory) were administered on all the 90 participants. They helped us assess the adjustment and achievement level of cannabis users and non-cannabis users. MANOVA was used for comparison purposes. There were no significant differences found between the scores of cannabis users and non-cannabis users on adjustment as well as achievement level. Further, there were no significant differences found between heavy and light cannabis users.

Source	Home Adjustment			Social Adjustment		
	M	SD	F	M	SD	F
Cannabis users (n=50)	7.86	7.22	.899	8.28	4.97	.903
Non-Cannabis users (n=40)	6.57	5.14		9.40	6.21	
Heavy Cannabis users (n=25)	6.96	6.38	.945	8.56	5.56	.510
Light Cannabis users (n=25)	8.76	8.01		8.00	4.40	

\*F value significant to 0.05

**Table 2: Mean, Standard Deviation and Analysis of calculated variance (ANOVA) between Cannabis users and Non-Cannabis users as well as Heavy Cannabis users and Light Cannabis users on Home and Social Adjustment**

However, the qualitative analysis highlighted different results. When during the interview the participants were asked to share the physical and psychological consequences of Cannabis use, they stated having a disturbed sleeping and eating pattern. After smoking, they become dehydrated and have body pains. Their skin and weight is also affected. It emerged that they are unable to concentrate on different tasks and activities; there is lack of energy and motivation to perform any task that further leads to a disturbance in their daily routine. One of the participants stated, "I have no control over my life whenever I consume cannabis."

Source	Achievement		
	M	SD	F
Cannabis users (n=50)	-1.6	4.9	1.343
Non-Cannabis users (n=40)	1.00	4.5	
Heavy Cannabis users (n=25)	-.36	5.0	.709
Light Cannabis users (n=25)	.04	4.88	

\*F value significant to 0.05

**Table 3: Mean, Standard Deviation and Analysis of calculated variance (ANOVA) between Cannabis users and Non-Cannabis users as well as Heavy Cannabis users and Light Cannabis users on Achievement Value**

From the interview responses it can be seen that the cannabis users reported experiencing short-term ill effects of cannabis use, however they did not mention any long-term effects of its consumption on their health. When asked about the long term effects, none of them believed that there are any long term effects of cannabis use. This could be the reason of their high scores on achievement inventory in which they stated that they have high career aspirations. They currently are oblivious to the fact that cannabis use has long term ill effects which can hamper their future achievements. A longitudinal study related to cannabis use and later life outcomes suggested that increase in cannabis use in adolescence and young adulthood leads to adverse outcomes in later

life, such as, poor educational outcomes, lower incomes, unemployment, greater welfare dependence and lower life and relationship satisfaction (Fergusson & Boden, 2002).

Interview responses also highlighted that the users mostly smoke with peers and they even started smoking with their friends. External factors like the people they are smoking with are important for most of them. Thus, it could be that they perceive cannabis use as a means to social adjustment as a result of which they scored high on the adjustment inventory.

#### IV. CONCLUSION

Thus, the youth of India needs to be alerted to the fact that Cannabis use has negative long term consequences. It has been found in the present research that they have turned a blind eye towards the ill effects of drug abuse on psychological health. They are seeking short term pleasures and social acceptance through Cannabis use. The prevalence has been found to be highest among male students pursuing post-graduation between the age range of 21-23. The present research work has implications in terms of taking preventive actions through seminars, workshops and awareness programs for the target population i.e. the ones who are most prone to Cannabis use. Future researchers can design intervention based studies for taking corrective measures in order to change the mindset of cannabis users who often perceive drugs as helping them achieve academically and adjust socially.

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