



## Prevalence and Associated Factors Related to Cannabis abuse Among School Children in Kohat, Khyber Pakhtunkhwa

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### Abstract

**Objective:** To determine the prevalence and associated factors related to cannabis abuse among school children in Kohat.

**Methods:** This cross-sectional study was conducted among schoolchildren aged 13-20 years in Kohat City from May 2025 to June 2025. A systematic sampling technique was used in this study with a sample size of 281 children, taken from different public and private schools. Data were collected through a well-structured questionnaire that contained 10 questions with their Urdu translation. Statistical analysis was done through SPSS version 22.

**Results:** A total of 281 students were given a questionnaire, out of which 270 (96%) filled and back and 11 (4%) did not give a response. All the students were male, and their mean ages were  $17\pm 3$  years. 155 (56%) students were from the public schools, and the remaining 122 (42%) were from the private schools. Overall, 78% children were aware of cannabis addiction, of which 14 (5.2%) children had used cannabis. Most of the children referred to this abuse as peer pressure (friends) and their society.

**Conclusion:** The prevalence of cannabis abuse among school children exceeds rates within the country. This has been accompanied by significant changes in the prevalence and strength of associated factors related to cannabis abuse. Furthermore, cannabis abuse among school children is a serious public health problem that requires special attention from the concerned education and health departments to overcome and control this issue.

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**Keywords:** Prevalence, Cannabis, Abuse, School Children

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### Introduction

The cannabis plant, known as "Cannabis Sativa," is grown and found almost everywhere in the world. Tetrahydrocannabinol (THC) and cannabidiol (CBD) are two of the most significant pharmacological characteristics of this psychotropic plant, which contains about 500 constituents. Of these, 104 cannabinoids have been identified so far. The market offers cannabis in a variety of forms, including "herbal cannabis" (such as leaves and blossoms) and "hashish" (such as oil) <sup>[1]</sup>. Many studies reported that cannabis is the most commonly used illicit drug among adolescents across the world, and it is reported that both of its forms, i.e., resin (hashish) and herbal (marijuana), are used for addiction by people of all age groups <sup>[2]</sup>.

In many countries, cannabis is known as "marijuana" through its Mexican terminology." <sup>[3]</sup>. As per the 2008 estimates by the United Nations Office on Drugs and Crime (UNODC), the largest number of cannabis users—51 million, or one-third of the total—occurs in Asia, followed by 42 million in Africa and 41 million in America <sup>[3]</sup>. About four out of ten high school children use cannabis, with a higher incidence among male students, according to a 2011 report by the Centers for Disease Control (CDC) and the Youth Risk Behavior Surveillance System (YRBSS). Additionally, they claim that adolescents start using cannabis in the ninth grade, or early adolescence.

The US National Survey on Drug Use and Health (NSDUH) verified in 2012 that there is a higher percentage of adolescents who use cannabis [4].

Cannabis has numerous negative physiological impacts on health. Common side effects include a heart rate that is greater than normal (between 100 and 150 beats per minute), hypertension, dry mouth and tongue, dry throat, eye redness, and bronchodilation [11]. Cannabis use has numerous psychological consequences on human health in addition to its physiological benefits. The acute effects of cannabis following inhalation (smoking) peak 30 minutes to 1–6 hours after consumption. In humans, these effects can linger for two to four hours, though they range depending on the person and dosage. Euphoria, enhanced perception, relaxation, sociability, improved appetite, reduced discomfort, and a sense of time slowing are some of the benefits of cannabis use [12]. Anxiety, impatience, paranoid thoughts, short-term memory impairment, poor concentration and attention, poor judgment, and disturbances in coordination and balance are among the detrimental psychological effects of cannabis.

Studies have shown that frequent cannabis use, particularly among school-age children, can lead to a variety of mental health conditions [13]. A recent study found that teenage mice exposed to cannabis have cortical oscillations in their brains. Patients with schizophrenia also have this problem [5]. In cognitive domains like attention, memory, and processing speed, several studies on cannabis abuse reveal slight declines in performance when compared to controls. These effects have been deemed temporary in the literature due to the limited group differences following continuous cannabis use [6]. Continuous use of cannabis develops several cognitive, behavioral, and physiological symptoms of its dependent [7].

The increased usage of cannabis among school children is an alarming threat to global public health. Essential research work is required to understand and overcome this global issue.

## Methods and Materials

### Study Design:

This study was cross-sectional, in which data could be collected on one occasion with the school children [14]. This design was selected because it was effective, handy, and appropriate in establishing the prevalence of characteristics, behaviors, and patterns in a given group of students.

### Study Settings:

The study was conducted in the city of Kohat of Khyber Pukhtunkhwa, Pakistan. In order to offer a representation of different educational settings, two public and two private schools were selected intentionally [15]. Diversity of such schools gives them a surety of collecting quality information in relation to the study objectives.

### Study Participants:

The students in classes 9th, 10th, 11th, and 12th who were between the ages of 13 and 20 were included. These two age groups were selected because they are equivalent to a huge stage of development. The students who attended the schools chosen were approached during the regular school time to voluntarily take part in the study.

### Inclusion Criteria:

Between the ages of 13 to 20 years, a formal enrolment of the

sampled schools was done. Those who were available on the data collection days and could fill out the questionnaire were only qualified [16]. This was so that the kind of persons that were used matched the target population that was set and provided credible responses.

### Exclusion Criteria:

The non-school children, who have not enrolled in any learning institution, were not included in the study. This exclusion was to ensure that only registered students are sampled, and this would ensure that the focus is only on school-going adolescents, as well as removing contamination of the sample with other population groups that are not related to the study.

### Sample Size:

As the sample of the study, 281 school children were selected. The calculator sample size of OpenEpi was applied to work out the sample size, which provided enough statistical power. This was considered sufficient to reflect the target population correctly and can answer the research objectives.

### Sampling Technique:

The selection of the participants was through a systematic sampling method in which schools provided the list of students. It was a process that ensured uniform selection intervals that are not biased and reduced errors in sampling [17]. The approach itself was effective in ensuring that the entire population of students was well represented in a way that the process of selecting the participants was fair.

### Data Collection Procedure:

The structured questionnaire was designed to gather information based on 10 questions, and the English version of the questionnaire was given to ensure that the respondents were able to comprehend it. The supervision of the researcher was the conduct of the questionnaire during school hours. Students themselves give the answers, and it enables ensuring accuracy, clarity, and reliability of the data obtained.

### Statistical Analysis:

The collected data were typed and coded, and analyzed in SPSS version 22. The analytical methodologies were relevant and descriptive, and they were applied to give a summary of the findings of the six questionnaire items. SPSS ensured that there was appropriate data management, statistical validity, and results interpretation as required by the study's objectives.

## Results

A total of 281 students were given a questionnaire, out of which 277 (98.5%) filled and back and 4 students (1.42%) did not give a response. All the students were male, and their mean age was  $17 \pm 3$  years. Students were categorized into two groups according to their age. One category contained 102 (37.8%) students from 13 years up to 16 years of age, while the second category contained 168 (62.2%) students from 17 years up to 20 years of age. 155 (56%) students were from the public schools, and the remaining 122 (42%) were from the private schools. 78 (28.9%) students were from class-10, 140 (51.9%) students were from class-11 while 52 (19.3%) were from class-12.

Most of the students were aware of cannabis abuse. Out of

the total 270, 155 (57.4%) students were aware of the above substances, while 115 (42.6%) students did not know. Most of the students, i.e., 207 (76.7%), got to know about cannabis from their society. This means that there is wide use of cannabis by the general public in our society. 51 (18.9%) students got to know about the substance from their friends, while 12 (4.4%) students have its awareness from the internet. When students were asked about whether they know

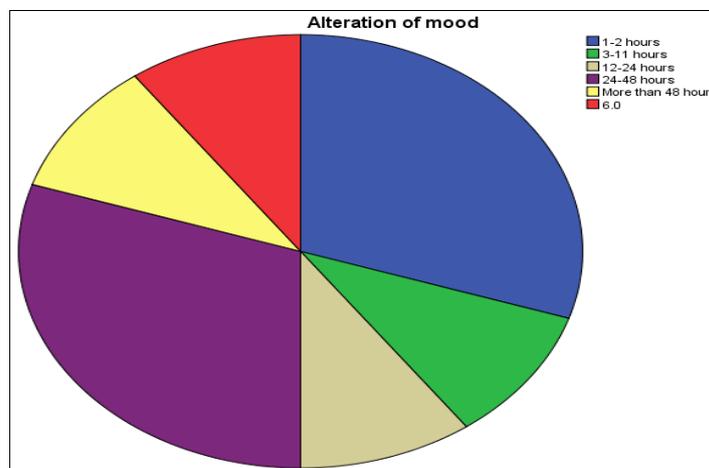
others who use cannabis in their school, 62 (23%) students answered “yes”, which shows that most of the children have used cannabis. Most of the students, 230 (85.2%), have the awareness that cannabis is not safe for human health. Out of the total 270, most of the students, i.e., 212 (78.5%), were aware of the cannabis dependence and addiction. 14 (5.2%) children have answered that they have used cannabis, which represents the prevalence of the substance among them.

**Table 1:** Students’ Ages and Class-wise Distribution

Valid	Frequency	Percentage	Valid Percentage	Cumulative Percentage
13-16 Years	102	37.8	37.8	37.8
17-20 Years	168	62.2	62.2	100
Class 10 <sup>th</sup>	78	28.9	28.9	28.9
Class 11 <sup>th</sup>	140	51.9	51.9	80.7
Class 12 <sup>th</sup>	52	19.3	19.3	100
TOTAL	270	100	100	

**Alteration of mood**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1-2 hours	3	30.0	30.0	30.0
3-11 hours	1	10.0	10.0	40.0
12-24 hours	1	10.0	10.0	50.0
24-48 hours	3	30.0	30.0	80.0
More than 48 hours	1	10.0	10.0	90.0
6.0	1	10.0	10.0	100.0
Total	10	100.0	100.0	

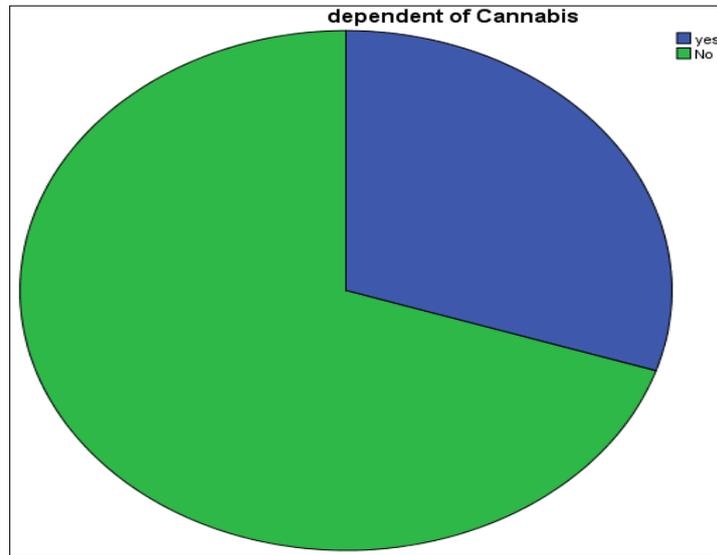


Most of the cannabis use of surveyed school children in Kohat was of 1-2hours or 24-48 hours (30 and 30), with less

than 3-11, 12-24, or more than 48 hours.

**dependent of Cannabis**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	3	30.0	30.0	30.0
No	7	70.0	70.0	100.0
Total	10	100.0	100.0	

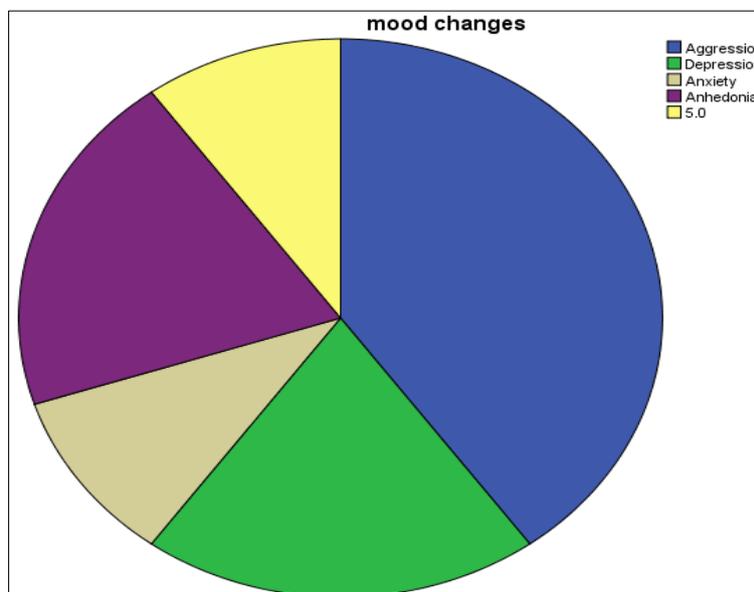


Of the 10 respondent school children at Kohat in the survey 30% of them were dependent, and the rest were not dependent

(70%), which led to lower overall dependence, despite the use.

**mood changes**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Aggression	4	40.0	40.0	40.0
Depression	2	20.0	20.0	60.0
Anxiety	1	10.0	10.0	70.0
Anhedonia	2	20.0	20.0	90.0
5.0	1	10.0	10.0	100.0
Total	10	100.0	100.0	

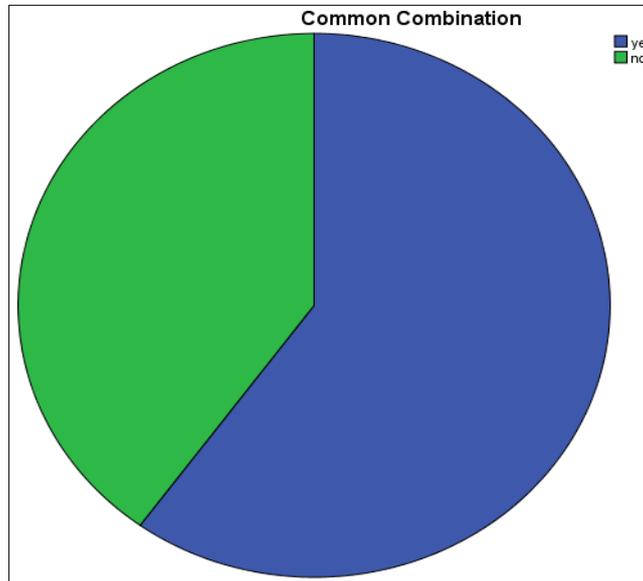


Mood change was also associated with cannabis use in a survey of 10 school children who were surveyed in Kohat; 40% of those were aggressive, 20% depressed, 10% anxious,

and 20% anhedonic, indicating a variety of emotional processes.

**Common Combination**

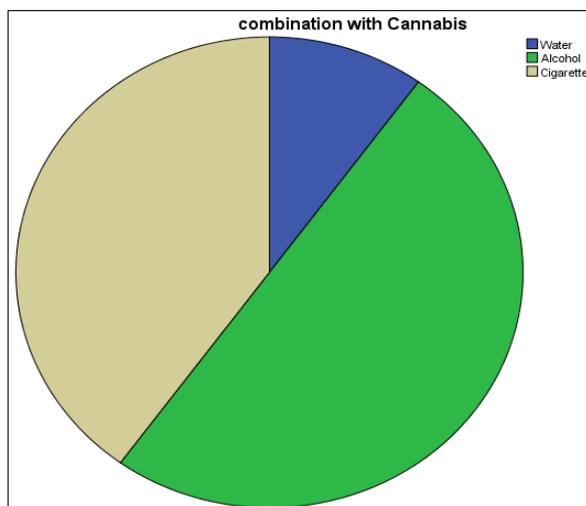
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid yes	6	60.0	60.0	60.0
no	4	40.0	40.0	100.0
Total	10	100.0	100.0	



The data indicate that the combination of cannabis with other substances is more prevalent, as 6 (60) of 10 school children in Kohat reported about the use, and 4 (40) were single users.

**combination with Cannabis**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Water	1	10.0	10.0	10.0
Alcohol	5	50.0	50.0	60.0
Cigarette	4	40.0	40.0	100.0
Total	10	100.0	100.0	



The statistic reveals that school children abuse cannabis along with other drugs. Half (40%) of the respondents indicated that they used it with alcohol, forty percent with cigarettes, and 10% with water. It connotes that alcohol and

cigarettes are the most frequently consumed drugs, with cannabis, which underlines the biases of the multi-substance use of this group of people.

**Table 2:** Correlation

**Correlations**

		VAR0001	VAR0002
VAR0001	Pearson Correlation	1	.157**
	Sig. (2-tailed)		.010
	N	269	269
VAR0002	Pearson Correlation	.157**	1
	Sig. (2-tailed)	.010	
	N	269	270

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The results point to the fact that there exists a weak yet significant positive relationship between VAR0001 and VAR0002, and this fact shows that as one of them goes up,

the other one represents a slight increase among school children.

**Table 3:** Regression

**Variables Entered/Removed<sup>a</sup>**

Model	Variables Entered	Variables Removed	Method
1	VAR0002 <sup>b</sup>	.	Enter

a. Dependent Variable: VAR0001

b. All requested variables entered.

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.157 <sup>a</sup>	.025	.021	.29031

a. Predictors: (Constant), VAR0002

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.568	1	.568	6.745	.010 <sup>b</sup>
	Residual	22.503	267	.084		
	Total	23.071	268			

a. Dependent Variable: VAR0001

b. Predictors: (Constant), VAR0002

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.551	.035		15.558	.000
	VAR0002	.190	.073	.157	2.597	.010

a. Dependent Variable: VAR0001

Based on the regression findings, VAR0002 is a significant predictor of VAR0001 (p = .010). There are a lot of variances that the model fails to explain (R<sup>2</sup> = .025), although its positive coefficient (B = .190) showed that the increasing

VAR0002 can only contribute minimally to the increasing VAR0001. In totality, there is a weak but statistically significant relationship.

## Discussion

Drug abuse, especially cannabis abuse, is the most commonly used drug among students because it is readily and easily available in society. This study identified the factors most strongly associated with cannabis use and provided prevalence estimates over time for these factors among school children (19). In addition, we provide information on the strength of the association over time for each of the main factors. Although the strength of the association between friends who use cannabis regularly and cannabis use decreased, this variable continued to have the strongest effect size. A significant increase in the strength of the association with cannabis use was found with low parental disapproval of cannabis use (20).

School children represent a significant group of drug users and are known to use illicit substances such as cannabis to improve their academic performance and to manage different unfavorable circumstances. The study also included students from both the private and public sectors to allow generalization of the results and comparison of cannabis abuse trends in the two groups (18). As reported by the WHO, cannabis is the primary reason people seek substance abuse treatment across the globe. Cannabis is also reported to account for approximately 40%, 42%, 26%, and 16% of all psychoactive substance treatment admissions in Africa, Southeast Asia, Europe, and the Western Pacific regions, respectively. Similarly, cannabis is also reported to be the most common psychoactive substance leading to treatment in most low-income countries worldwide. (8). Our findings show a substantial correlation between cannabis usage and alcohol consumption and tobacco cigarette smoking, which is in line with prior research that has looked at cannabis use in connection to other substances.

While such kinds of research have identified several possible mechanisms via which cannabis could be harmful, it is difficult to extrapolate these findings to teenagers. A significant worry is the elevated likelihood of mental illnesses, with schizophrenia garnering the most focus and discussion (9). Relevant psychosocial risk factors include parenting styles, peer and parent substance use, academic and school-related characteristics, and risk perception (10).

## Conclusion

The prevalence of cannabis use exceeds that among school children within the country. This has been accompanied by significant changes in prevalence and strength of association among factors associated with cannabis use. School children are now more likely to be involved with friends who use cannabis, which remains the most important risk factor. They are more likely to have low risk perceptions of cannabis use. Parental disapproval of cannabis use remains high, but low parental disapproval is increasingly associated with cannabis use. These findings may serve as a basis for new prevention strategies by government institutions. In addition, qualitative and longitudinal studies may be needed to examine the behaviors of children involved in cannabis abuse.

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