



## Prevalence of substance use among students of government and private medical colleges

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**Abstract:** This research aims to assess the prevalence of substance use among students of private and government medical colleges of Punjab, Pakistan. An exploratory research design and multistage stratified proportionate sampling technique was used to conduct the cross-sectional study. A demographics sheet, DAST-10, AUDIT-10 and DSM-5 Level-2- Substance use- Adult was used for data collection. Of the total target population of 2908, 798 (27%) medical students participated. Overall, 128(16%) were found to be vulnerable and among them 9.7% were diagnosed to substance use. The higher usage was reported by males (63.2%) than females (36.8) with statistically significant difference ( $Z=-4.46$ ,  $p<0.05$ ). Diagnosed participants used pain killers 59.2% mostly. It indicated that different types of substance use was significantly correlated with academic year ( $r_s= 0.46$ ,  $p< 0.05$ ) and family's monthly income ( $r_s= 0.15$ ,  $p<0.05$ ) of participants. The point prevalence of drug and alcohol addiction among diagnosed participants came out to be 30.7% and 12.8% respectively.

**Keywords:** Substance Use, Medical students, Drugs, Alcohol

### I. INTRODUCTION

For thousands of years, humans have used drugs of one type of another. From the time of early Egyptians, the wine was used widely, in 4000 BC narcotics were used; and the use of medical marijuana in China is dated back to 2737 BC ("drug addiction and drug abuse", 2021). According to United Nations (UN) reports of 2020, use of drug has been increased at an alarming rate from 2008 to 2018 ("UNODC World Drug Report 2020: Global drug use rising; while COVID-19 has far reaching impact on global drug markets", 2020). The most common risk factors of substance use in medical students are easy access, relief from psychological stress, immaturity in emotions, student abused and family history of drug use in parents (Nawaz et al., 2017). High work load of academics in medical field and curiosity are some of the major factors promoting use of drugs (Haldar et al., 2018). According to the center for behavioral health statistics and quality, almost 30,000 people die due to an overdose of opioid and heroin ("2017 National Survey on Drug Use and Health", 2018). Only driving in the alcoholic or drugged state reported to have thousands of deaths annually, and 10.6% of drivers reported to have reckless driving behavior dangerous for their as well as for others life (Bogstrand et al., 2015). A cross-sectional research was conducted assess the use of psychoactive drugs among medical undergraduate in Abbottabad, Pakistan. The use of substance prevailed to be 21.49% among which majority users were males (71.33%) (Nawaz et al., 2017). Most commonly used drugs in 2018 study of India were alcohol (77.2%). One of the main factors behind using substances was academic pressure. Drug abuse was reported 75% higher in males (Haldar et al., 2018). Present study aims to explore the prevalence of drug use and alcohol among medical students of Punjab, Pakistan so concrete statistical results obtained from administrating instruments on medical students will help government to make better policies on preventing substance use.

In current study, development of behavioral, psychological and cognitive symptoms, when an individual continuously takes substances, knowing that it will cause them significant problems is defined as substance use disorder. The objective of the current study is to explore the point prevalence of substance use among medical students of government and private medical colleges. The hypothesis of the study suggests that there would be a statistically significant difference and relationship in substance users, drug addicts and alcohol addicts in relation to their demographic variables.

### II. METHODOLOGY

**Research Design:** A multistage stratified proportionate sampling was used to conduct the cross-sectional study in three private and three government medical colleges/universities of Punjab, Pakistan from August 2019 to March 2020.

**Participants:** The sample size was determined using Taro Yamane formula (Yamane, 1973). Proportional allocation method using taro Yamane formula was used to determine the sample size from

three private and three government medical colleges depending on the proportional contribution of each stratum in the target population. Multi-stage random sampling was used to divide the sample into further strata of academic years and gender. This sample size was the 27% of target population. Cities of Punjab, Pakistan having both private and government medical colleges were included and students having any physical and mental illness were excluded from the study.

**Data Collection Tools:** A set of questionnaires were used for this study, comprising of demographics sheet, Drug Abuse Screening Test-10 (DAST-10), Alcohol Use Disorder Identification Test-10 (AUDIT) and Diagnostic and Statistical Manual of Mental Disorders DSM-5 Level-2- Substance use- Adult (Skinner, 1982; SAUNDERS et al., 1993; APA, 2013). The reliability of these scales range from good to excellent. Survey method was used to collect the data from the participants. Official permissions were taken from all College/University officials. Data was collected from Lahore, Sialkot and Rawalpindi cities of Pakistan. Written and Verbal consent was taken from the participants before administrating questionnaires. The purpose of the research was clearly told to all participants. Participants were approached in their free time. Frequencies and percentages were computed, for descriptive analysis of the data on Statistical Package of Social Sciences (SPSS-21). While inferential analyses were computed to explore relations of demographic variables with substance use.

### III. RESULTS:

Of the total population of 2908, 803 (28%) were approached for the study. Of them, 798 (99.3%) people participated. Overall, 128(16%) were found to be vulnerable to substance use. Of the 128 vulnerable cases, 50 (39%) had some indication of substance use but they were not diagnosed as depressive as they scored below the cut-off point for diagnosis. However, 78 (61%) diagnosed respondents were selected from vulnerable participants, while in total sample; the percentage came out to be 9.7%. Among these diagnostic participants 24 (30.7%) and 10 (12.8%) are drug and alcohol addicts respectively (Table-1).

**Table-1:** Participants at Stage I, II and III

Cases	Number of Participants	Percentages
Stage I (Total Population=798)		
Non-Vulnerable	670	84
Vulnerable	128	16
Stage II (Vulnerable Participants=128)		
Vulnerable	50	39
Diagnostic	78	61(9.7)*
Stage III (Diagnostic Participants=78)		
Drug Addicted	24	30.7
Alcohol Addicted	10	12.8
Different types of Substance Abusers	76	97.4

*Note:* \*Percentage out of total population

In table 1, first stage consists of all respondents cases as assessing for substance use through screening (N=798). At second stage, all vulnerable cases (n=128) were separated from total sample. Further, the responses on each relevant diagnostic criterion applied against each vulnerable respondent for targeted substance use. Diagnosed cases were identified and categorized under the diagnosis of their relevant category of substance use. At the third stage, all diagnosed cases (n=78) were categorized and assessed as having drug, alcohol addiction and abusing different substances.

Further, the different types of substance abusers diagnosed were men as compared to women as illustrated in Table 2, supported by many literatures stating males have higher prevalence of substance use (Nawaz et al., 2017; Moutinho et al., 2019; Javed et al., 2019). As for alcohol and drug addicts no significant difference ( $p>0.05$ ) was observed between participants and their demographic variables.

**Table-2:** Mean Comparison of Diagnosed Participants Using Different Substances with respect to Gender (n=76)

Variables	N	Mean Rank	Mann-Whitney U	P*
Male	48	46.97		
			265.5	.00
Female	28	23.98		

Note: P= Significance  $p<0.05$

Diagnosed participants abused pain killers 45 (59.2%) mostly, after that marijuana 41 (53.9%), then sedatives 37 (48.6%), inhalants or solvents 31 (40.7%), heroin 22(28.9%), methamphetamine 18 (23.6%) and club drugs 16 (21%). Also they abuse hallucinogens, stimulants and cocaine which were equivalent to 14 (18.4%), 13 (10.2%) and 7 (9.2%) respectively. Furthermore in Table 3, there was a statistically significant relationship of diagnosed participants with respect to academic year and family's monthly income. Medical students of 4th year tend to use most substances than any other academic year students and medical student's family monthly income earning was subsequently higher in 51,000 to 100,000 categories.

**Table-3:** Relationships of Diagnosed Participants Using Different Substances among Academic Year and Income (n=76)

Socio-Demographic Variables	Diagnosis n (%)	Spearman Rho	P*
Academic Year		.286	0.01
First year	11(14.5%)		
Second year	15(19.7%)		
Third year	15(19.7%)		
Fourth year	18(23.7%)		
Final year	17(22.4%)		
Family Monthly Income		.290	0.01
50,000 & less	10(13.2%)		
51,000 to 100,000	41(53.9%)		
100,000 to 200,000	12(15.8%)		
200,000 to 300,000	5(6.6%)		
300,000 to 400,000	8(10.5%)		

Note: P= Significance  $p<0.05$

#### IV. DISCUSSION & CONCLUSION:

Substances are being consumed by medical students of western world as well as in India and Pakistan (Nawaz et al., 2017; Haldar et al., 2018; Imran et al., 2011). The current study explores the point prevalence of substance use among students of private and government medical colleges of Punjab, Pakistan thus contributing in making strategies to counter the rising problem.

For current study the response rate was 99.3%, which is slightly higher than 89.46%, a study of Abbotabad, Pakistan (Nawaz et al., 2017). The results indicated that 16% of the medical students were vulnerable to substance use. Among vulnerable participants, 61% were diagnosed for substance use; results are in consistent with a study in India, with prevalence of 60% (Haldar et al., 2018). If rounded from total

sample, 9.7% were diagnosed for substance use; these results are slightly higher than a study in Thailand (7.6%) (Pitanupong & Ratanapinsiri, 2018).

Another major finding of the study was the statistically significant difference in the diagnosis of different types of substance use with respect to female gender. The findings are consistent with literature (Haldar et al., 2018). However, the findings of the study showed no statistically significant relationship between diagnosed participants of alcohol and drug addicts with their demographic variables which is not consistent with findings of China and United States (Lu et al., 2015; Ayala et al., 2017).

This could be due to different parenting styles, as in Asian countries parents are highly involved in their children's lives, also children in these cultures don't work while completing their studies and are solely dependent on their parents for everything. Among the diagnosed participants, there were 12.8% alcohol addicted cases; results were higher than findings of a study in Colombia (7.4%) (Gaviria-Criollo et al., 2015). Similarly, 30.7% among diagnosed participants were also drug addicts, which is higher than a study conducted in India (26%) (Mir, H., S., J., & Singh, 2016).

The diagnosed participants of different substance user category reported most frequent use of pain killers which are notably higher than findings of Greece (Papazisis et al., 2017). Marijuana was the second most commonly used substance, with prevalence of 53.9%, which is much higher than study in Brazil (34.5%) (Moutinho et al., 2019). The results are also higher of sedative use (48.6%) than study in Saudi Arabia (Al-Sayed et al., 2014). Inhalants and solvents are used by 40.7%, which is lower than 57% in India, a study on South Asian countries (Munawar et al., 2019). The prevalence of methamphetamine came to be 23.6% which is much higher than a study in Pakistan (Javed et al., 2019). The heroin use prevailed to be 22% which is much higher than study in Abbotabad, Pakistan (Nawaz et al., 2017). The use of club drugs like ecstasy was 21% which is consistent with findings of a study in Netherlands (Kunst & Gebhardt, 2018). The use of hallucinogens is 18.4% is much higher; use of 10.2% stimulants is lower, while use of cocaine is 9.2% is exactly similar to study in Abbotabad, Pakistan (Nawaz et al., 2017).

The most significant strength of the current study was that it was the first study conducted at a provisional level, as it collected data from three cities of Punjab, Pakistan. It is also significant in its role of comparing private and government sector students of medical universities/colleges. The study not only signified in measuring the point prevalence of substance use, but also explored drug and alcohol addiction in participants. Limitation of the study included the language barrier, as tools were not translated in Urdu language for current study. For next studies, they can be translated.

## V. CONCLUSION:

In conclusion, it is to be pointed that substance use is very much prevalent among medical students of Punjab, Pakistan and is a matter of concern. There is need to conduct awareness programs and introduce counseling sessions in educational settings. It is recommended that for a future study the psychosocial (peer pressure and curiosity etc) and personality factors (neuroticism and extraversion etc) associated with the use of substance among medical students can be explored.

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