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Original Article

Assessment of Pattern of Drug Abuse from Different Clinical Settings in a Reference Laboratory of Pakistan During the COVID-19 Pandemic

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ABSTRACT

Objective: To determine the pattern of drug abuse from different clinical settings in a reference laboratory of Pakistan during the COVID-19 pandemic and assess any change from the previous trend.

Study Design: Comparative cross-sectional study.

Place and Duration of Study: Department of Chemical Pathology and Endocrinology, Armed Forces Institute of Pathology (AFIP), Rawalpindi Pakistan from Mar to Dec 2020.

Methodology: Out of 6902 subjects tested for drug abuse, 672 subjects with positive results were included in the study. The study population was divided into three main Groups. i.e., Psychiatry, ITC/Emergency and Workplace testing. A pattern of drug abuse was compared in the pre (Mar-Dec 2019) and post-COVID (Mar-Dec 2020) periods.

Results: Out of 672 study subjects, 338(50%) were psychiatry patients. Around 629(94%) subjects were males. Mainly young individuals (306, 46%) were affected. Cannabis was the most frequent drug of abuse detected (357, 53%), followed by Benzodiazepines (BZD) (236, 35%) individuals and Opiates (47, 7%). Compared with pre-COVID data, an overall increase of 3% in the total frequency of drug abuse from 392(7%) to 672(10%) was found in 2020. About 14% decrease, from the frequency of 81(21%) to 47(7%) in Opiates usage, while 8% increase in frequency, from 106(27%) to 236(35%) in Benzodiazepines, was observed. There was significant mean difference (p<0.001) between Psychiatric and ITC patients.

Conclusion: Most frequent drug abuse in our settings is Cannabis, followed by Benzodiazepines and Opiates. An overall increase in drug abuse frequency while a decrease in the frequency of Opiates users has been observed, a finding different from previous studies.

Keywords: COVID-19 pandemic, Pakistan, Substance abuse pattern.

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INTRODUCTION

The COVID-19 pandemic has brought multifactorial challenges. Social isolation and anxiety in the disease have led to a rise in the use of substance abuse. Drug abuse-affected individuals are also potential vectors of disease spread.[1] In addition, usage of joints and cigarettes of Cannabis, Heroin etc., are associated with lung damage making individuals more prone to COVID-19 complications.[2] According to the Chinese Center for Disease Control and Prevention, COVID-19 has a fatality rate of 6.3% for patients with chronic respiratory disorders, compared with 2.3% in general.[3]

There is a massive increase in substance abuse, and around 6.7 million people in Pakistan are drug abusers.[4] Afghanistan has accounted for approximately 85% of global opium production and trafficking.[5] Traditional drug trafficking of Opiates from Afghanistan may be affected due to the restrictions associated with the pandemic.

For appropriate management, physicians must remain updated about emerging local drug abuse trends. However, 45% of the countries do not have a comprehensive system of data collection for substance use disorders.[6]

Various studies have been done internationally on trends in drug abuse amid the COVID-19 pandemic. However, local data is sparse in this regard. Therefore, this study was carried out at Armed Force Institute Pathology, Rawalpindi Pakistan, to determine the pattern of drug of abuse usage from different clinical settings in a reference laboratory of Pakistan during COVID-19 Pandemic and assess any change from the previous trend.

METHODOLOGY

This was a comparartive cross-sectional study carried out in the Department of Chemical Pathology and Endocrinology, Armed Force Institute Pathology, Rawalpindi Pakistan, from March to December 2020. The study was approved by the Institutional Review

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Board (IRB) of AFIP (FC-CHP16-9/READ-IRB/20/126). The national drug abuse survey by UNODC in 2013 reported a substance abuse prevalence of 6% in Pakistan. The sample size was calculated using OpenEpi Sample size formula at a 95% confidence level with a power of 80% accuracy with 6% prevalence.[7] The sample size turned out to be 342. However, 672 individuals were selected for our study through consecutive sampling.

Inclusion Criteria: Subjects of either gender, tested for drug abuse, were included in the study.

Exclusion Criteria: Subjects with negative result were excluded from the study.

Samples of patients with suspicion of drug abuse were received at laboratory reception. The condition of the seal was checked and then transported to Toxicology Department, where samples were checked for validity. Initial screening of various specimen types, including urine, blood and gastric fluid, was done by screening methods such as rapid immunoassay methods followed by sample extraction and further confirmation of positive samples by definitive method, i.e. Triple Quadrupole LC-MS. Out of the total of 6902 individuals tested for drug abuse during the study period, 672 subjects with positive results were included in the study, and 6,230 individuals with negative results were excluded. Study subjects were divided into three main groups depending upon the referral setting, i.e., psychiatry, ITC/emergency and workplace testing. A comparison of the pattern of drug abuse observed in AFIP was done in the pre-COVID period (March-December 2019) and post-COVID period (March-December 2020).

Statistical Package for Social Sciences (SPSS) version 24.0 was used for the data analysis. Frequencies with percentages were computed for qualitative variables (age, gender, specimen type, referral facility, and type of drug used). Quantitative variables were summarized as mean±SD. One-way ANOVA was applied to check the mean difference among three groups (i.e. Psychiatry, ITC and workplace). The *p*-value lower than or up to 0.05 was considered as significant.

RESULTS

Out of the total of 672 subjects, who tested positive for various drugs of abuse, there were 338(50%) psychiatric patients, 204(31%) patients from ITC/emergency settings, and 130(19%) subjects were referred for workplace testing.

Among the study subjects, 629(94%) were males, while 43(6%) were females. Most of the samples received were of urine (269, 40%). In comparison, both urine and blood samples of 198(29%) patients were sent for analysis, 99(15%) blood samples were analysed. 79(12%) patients had sent urine, blood and gastric fluid for analysis, and only 27(4%) patients' gastric fluid was sent for analysis. Cannabis was the most frequent drug of abuse 357 (53%), followed by BZD 236 (35%) and Opiates, 47(7%). A comparison of the pattern of drug abuse observed in AFIP during the pre and post-COVID period was shown in Table-I.

Table-I: Comparison of Drug of Abuse Data, during pre COVID and post COVID Period

Parameters	2019 (March-December, Pre COVID)	2020 (March-December, Post COVID)
Total number of subjects tested for drug of abuse	5621	6902
Number of subjects tested positive for Drug of abuse	392 (7%)	672 (10%)
Gender Distribution		
Male	377 (96%)	629 (94%)
Female	15 (4%)	43 (6%)
Type of Sample		
Urine	196 (50%)	269 (40%)
Blood	50 (13%)	99 (15%)
Urine+Blood	94 (24%)	198 (29%)
Gastric Fluid	13 (3%)	27 (4%)
Urine+Blood+Gastric Fluid	39 (10%)	79 (12%)
Referring Facility		
Psychiatry	184 (47%)	338 (50%)
Emergency Setting	110 (28%)	204 (30%)
Workplace Testing	98 (25%)	130(20%)
Type of Drug		
Cannabis(THC)	199 (51%)	357(53%)
Benzodiazepines(BZD)	106 (27%)	236(35%)
Opiates	81(21%)	47(7%)

The frequency of drug abuse observed from all three clinical settings (March-December 2020) was shown in the Figure.

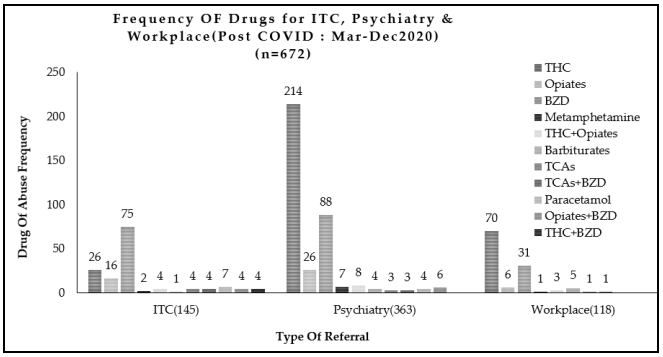

Figure: Frequency of drug of abuse observed in AFIP from different clinical settings (March-December 2020)(n=627)

The mean difference between the three clinical settings (i.e., psychiatry, ITC and work-place testing) showed a significant difference (p<0.001) bet-ween Psychiatry and ITC patients (Table-II).

DISCUSSION

Drug abuse patterns are becoming more complicated in these unprecedented times after the SARS-COV-2 outbreak.[8] Only a collaborative effort between government sectors, physicians, public health care workers and a proactive approach of labs can help to curtail this dilemma.

Among the study population, there was a predominance of Males were 629(94%), while 43(6%) were females. A high frequency of substance abuse was also noted among males in a local study conducted by Dar *et al*.[9] at Karachi in 2010. Our findings regarding gender distribution agree with a regional study carried out in India by Singh *et al.*[10] that reported that men were three times more likely than women to use Cannabis and Cocaine. As per the Times of India, there has been a 200% increase in distress call post-COVID-19 lockdown in April 2020, attributed to apprehension and withdrawal symptoms in individuals who could not access alcohol and other drugs of abuse,[11] a trend not noted in our country.

Compared with previous AFIP data, an overall increase in drug abuse testing positive rate was observed from 7% in 2019 to 10% in 2020. Our data generated in AFIP in 2020 shows the highest proportion (53%) of Cannabinoid abuse, followed by Benzodiazepines (35%) and Opiates (7%). On the other hand, a significant decrease in Opiates usage has been observed from 21% in 2019 to 7% in 2020, along with an increase in Benzodiazepines usage in 2019 from 27% to 35% in 2020. While back in the year 2010, a local study showed that the highest frequency (39.5%) of use of Benzodiazepines and Cannabinoids was next to follow (7.8%).[11] Comparison of drug abuse pattern observed in the present study with previous regional and international data (Table-III),[12-14] highlights that abuse of Cannabis along with Benzodiazepines and Opiates has persisted in our population amidst COVID-19 pandemic. However, a decrease in the frequency of Opiates users may be attributed to insufficient raw materials for opioid production in Afghanistan and lockdown border restrictions. Opiate shortages during the pandemic have also increased the use of more readily available substances such as Benzodiazepines, and a finding also emphasized in UNODC World Drug Report 2020.[15]

Our findings concord with the most frequently reported drug of abuse in the EMRO region. Cannabinoids are the most frequently used substance in the region. The regional median annual prevalence

Table-II: Comparison among the Study Groups

Parameters	**Psychiatry (n=328)**	**ITC (n=208)**		**Workplace testing (n=136)**		***p*-value**
Drug frequency (Mean±SD)	1.98 ± 1.90	3.00± 2.10		2.30 ± 2.40		<0.001
Inter-group comparison (Post Hoc analysis)						
Group Comparison	ITC Vs. Psychiatry	ITC Vs. Workplace Testing	Workplace testing Vs. Psychiatry	Workplace testing Vs. ITC	Psychiatry Vs. Workplace testing	Psychiatry Vs. ITC
(*p*-value)	0.241	0.983	0.32	0.587	0.526	0.001

Table-III: Comparison of Drug of Abuse Pattern in AFIP with Local and International Data

Pattern of Frequency of Drug of Abuse				
Type of drug	**Local Data**		**Regional and international data (Annual prevalence of illicit drug use)**	
	Present Study (2020)	Pasha Ghazal (4) (2019)	South Asia(**Error! Reference source not found.**)	Global Estimates(14)
Cannabis	357(53%)	27.45%	29,830(2.82%)	200,380(3.98%)
Opiates	47(7%)	60.7%	21,590(2.04%)	61,650 (1.22%)
Age Groups with Maximum Frequency of Drug of Abuse				
Local Data			**International Data**	
Present Study (2020)	Pasha Ghazal(4) (2019)	Batool et al. (**Error! Bookmark not defined.**) (2017)	USA (**Error! Bookmark not defined.**) (2017)	
21-40 years	21-30years	15-35 yrs.	18-25	

of THC abuse for 15-64 years of age individuals is assessed to be 3.6%.[16] Our findings also agree with the survey carried out in Belgium during the pandemic that revealed an increase in the consumption of Nicotine and Cannabis.[16] As per the UNODC report, 2020 Cannabis has been the most used substance worldwide.[15]

The second most common drug of abuse in our study population was benzodiazepines. This trend has differed from that seen in the American population, showing more non-medical use of opioids during the pandemic.[17] A plausible explanation for this difference in the pattern of substance drug abuse is due to ease of access to Opioids in the USA.[18] This finding is also supported by the UNODC World Drug Report 2020, which stated; that more than 90 per cent of all pharmaceutical Opioids available for medical consumption were in high-income countries.[15] While in Pakistan, the most commonly licit drug abused are Benzodiazepines because of their low cost and ease of availability as over-the-counter medicines from local pharmacies.

In our study population, the age group with the maximum frequency of substance abuse was younger patients between the ages of 21-30 years (46%). This is in agreement with the results of the study carried out in the USA in April 2020,[19] in which there was increased usage of alcohol and substance abuse in the 18-35 years of age group. Again, loneliness and anxiety are important contributing factors.

The most frequent sample sent for analysis of drug abuse was urine, followed by blood and then gastric fluid. Urine is preferred for monitoring and compliance purposes owing to a longer detection period, non-invasiveness, and ease of collection in larger amounts.[20-22] However, the risk of adulteration and infection needs to be addressed.[23]

Only 4% of samples were of gastric fluid, mainly sent from emergency/ITC settings. In order to assess the statistically significant difference between the three clinical settings (i.e. psychiatry, ITC and workplace), One way ANOVA test was applied, which showed a significant difference at $p<0.001$ between Psychiatry and ITC patients. In psychiatry patients, the most prevalent drug observed was Cannabis, while in ITC settings most frequent Drug of Abuse detected were Benzodiazepines.

Owing to the increased fatality rate of COVID-19 in substance abusers,[3] this local pattern of drug abuse should be kept in mind by the treating physicians and the country's healthcare policymakers.

The fact that our study had a good sample size, representation of patients of different clinical settings, and a sensitive, precise and accurate method of analysis adds up to the strengths of our research. However, a multi-centric study would yield more reliable and effective data leading to better patient management.

CONCLUSION

Current study signifies that the most frequent drug of abuse in our clinical settings amidst the COVID-19 pandemic is Cannabis, followed by Benzodiazepines and then Opiates. Mainly the younger population of our country is indulged in substance abuse. Therefore, an overall increase in drug abuse frequency while a decrease in the frequency of Opiates users is observed, a finding different from previous local data.

Conflict of Interest: None.

Author's Contribution:

Following authors have made substantial contributions to the manuscript as under:

AY: Study design, data analysis, critical review, drafting the manuscript, critical review, approval of the final version to be published.

MA & SIK: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

ZHH: Critical review, drafting the manuscript, approval of the final version to be published.

AB & MUM: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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