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### Short report

## Detection of addiction in medical professionals—an eye opener

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#### ABSTRACT

The medical professionals are vulnerable to substances of abuse/addiction due to their ready accessibility to the substances of abuse. Of particular concern is the finding of a lack of gender differences in problematic drinking with the pattern of female addicts drinking rates for women approximating that of men by the end of medical school. There is higher percentage use of alcohol, tranquillizers and narcotics among medical students. Majority of the substance-abusing doctors are graduates, belong to medicine specialty (21%) and majority of them prescribe drugs to themselves (37%). Medical student abuse is the major risk factors. Despite paucity of studies in Indian population, substance use is reported between 32.5% to as high as 81.2% among medical students, interns and house physicians. In spite of the treatment dilemmas, the physicians do respond favorably to treatment. These findings have implications in planning preventive and interventional strategies for this professional group. This study explores the attitudes and perceptions of medical students concerning patients with addictions and policy issues related to drugs. Over 100 students from PGIMER students responded to an anonymous survey concerning their experience and training regarding addictions, and their level of support or opposition for various drug policy approaches. Quantitative and qualitative epidemiological investigation of substance use within a student population was seen during their mandatory preventive health visit at the OPD medical facility. The purpose of this study was to assess the prevalence of psychotropic (Narcotics) & tranquillizers drug consumption by students undergoing medical courses of Post Graduate Institute of Medical Education & Research, Chandigarh India to verify aspects related to those addictions.

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### 1. Introduction

The medical professionals are vulnerable to substances of abuse/addiction due to their ready accessibility to the substances of abuse. Of particular concern is the finding of a lack of gender differences in problematic drinking with the pattern of female

addicts drinking rates for women approximating that of men by the end of medical school. There is higher percentage use of alcohol, tranquillizers and narcotics among medical students. Majority of the substance-abusing doctors are graduates, belong to medicine specialty (21%) and majority of them prescribe drugs to themselves (37%). Medical student abuse is the major risk factors. Despite paucity of studies in Indian population, substance use is reported between 32.5% to as high as 81.2% among medical students, interns and house physicians. In spite of the treatment dilemmas, the physicians do respond favorably to treatment. These findings have implications in planning preventive and interventional strategies for this professional group. Among psychotropic drugs, Narcotics & other psychotropic drugs like dextropropoxyphenes, morphine, pethidine & tranquilizers were more frequently used by the students. It was found to be 45.2% and 55.3% respectively [1-5].

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## 2. Materials and method

This study was carried out with students of all years of the medical course invited to participate anonymously by answering a self-applied questionnaire. It was based upon the World Health Organization's Guidelines for Student Substance Use Survey and included 25 questions about drug addiction. To carry out a quantitative and qualitative epidemiological investigation of substance use within a student population was seen during their preventive health visit at the PGIMER medical facility.

Thin Layer chromatography is a method in which mobile phase moves by capillary action across a uniform thin layer of finely divided stationary phase bonded on to plate. Drugs when applied to the plate & developed with the mobile phase, they move across the plate at different rates & hence separated. Keeping in view cost effective and reasonably accurate method of TLC was used.

### 2.1. Kind of drugs separated which can be separated

Almost all sorts of drugs of abuse, narcotics hypnotics, antidepressants & other of abuse & addiction. Collection of sample:--20 cc. of urine is collected in neat & dry test tubes. It should preferably be done 8 to 10 hrs. after consumption of drug. If done after five days of consumption the result will be negative

### 2.2. Processing of sample

To 20 cc. of urine add conc. HCl was used so as to get pH between 3 & 4. Reflux the contents in a flask, burner & condenser for 1 ½ an hour. Allow this to cool down for about an hour.

### 2.3. Extraction Procedure

Refluxed urine is thoroughly washed with 20 cc. Hexane. Then add sodium carbonate to get alkaline pH (8--9). Drug is extracted from urine with chloroform & propyl alcohol ratio of 4/1. Total volume of the extraction mixture is 100 ml. Transfer the contents in a separating funnel & collect the lowermost layer in a neat & dry beaker. Evaporate the contents so that only residue is left.

### 2.4. Preparation & activation of Plates

Take neat & clean Glass plates of 20'x20' size & adjust the 5—8 future spots size on mica sheet. A known amount of silica (G) is taken in a conical flask & to this double the quantity of distilled water is added. We get a homogenous slurry which is put in an applicator. Move the applicator on plates either constant & heavy pressure. Allow slurry on the plate to dry, then activate the plates in an oven for an hour at 110 degree temperature.

### 2.5. Spotting of Extracted Drug

Dried residue obtained in a beaker is dissolved in a drop of methanol. This is spotted on mica plate so that difference between the two is not >1/2 cm. & distance from bottom is 2 cm. Along with the sample the known sample is also spotted acting as standard of the drug.

### 2.6. Preparation of Mobile phase or medium

Make the mobile phase of solvent system with ethyl acetate, Methanol & ammonia (85:10:5) ratios a jar covered with glass plate & Vaseline is applied on edges to make this air tight. Keep it for 1/2 hour to get saturated medium.

### 2.7. Development of spotted plate

Put the spotted plates in the jar & left mobile phase to run up to 15 cm. mark. Take out the plates & put them in oven for 5 minutes at about 100°C.

Separating the plates

Cool the plate & spray this with spraying reagent Iodoplatinic acid. (made with the help of 1N HCl, Potassium iodide & platonic chloride). Alternately a UV lamp is much better device. But for this we need labeled Silica to quote the glass plate.

### 2.8. Detection of Drug

Locate the drug positive samples & compare them with morphine standard which was spotted along with the samples. Depending on Rf value we can isolate & identify drugs like Morphine, codein, papavarine & other narcotics.

**Rf Value =  $\frac{\text{Distance of spot moved from origin}}{\text{Distance of solvent from origin}}$**

Similarly by changing the mobile phase or solvent system & spraying reagent with dye or /UV apparatus we can isolate & identify other drugs of abuse.

### 2.9. Advantages of TLC

1. Nearly accurate & cost effective.
2. Easy to operate.
3. Remains positive for long time.
4. A huge variety of drugs can be separated.
5. The space area required is easy as compared to other methods like HPLC.
6. Non invasive. It can be operated even without patient knowing i.e. secrecy can be maintained.
7. Very Handy & cheap for third world countries.

The present study was undertaken in one hundred students studying in various courses of all years in PGIMER, Chandigarh attending the OPD for a different psychological problem of drug de-addiction & treatment Centre (DDTC) department of Psychiatry, Post graduate Institute of Medical Education Research, Chandigarh (PGIMER, Chandigarh) & those who were ailing & admitted to the ward of DDTC. All of them were scanned thoroughly to rule out taking the drugs inadvertently. Age group was not particular & all the students doing all medical courses were selected. They were provided a test tube for collecting a urine sample for detecting the drugs in urine. They were guarded by watch staff so that they may not dodge by filling the tube with a water sample. Different routine investigations with Liver Function Tests in particular were carried out. This was taken into consideration as they may have been taken raw morphine which contains Arsenic. Following tests were carried out in routine in all the suspected cases:--

1. Serum ALT/AST/ALP/SGT.
2. Routine tests like Sugar, urea, TSP/DSP were carried out by auto analyzer.
3. Tests according to History of Patients.
4. The food was provided by PGIMER, CHD mess to rule out any foul play of sending the medicine in food.
5. Watch & ward staff was always on alert to rule out any back door entry of drugs
6. Adequate protection staff so as to keep checks on any suicidal or homicidal tendency.
7. Patients were given analgesics, tranquilizer, Vitamins & mineral as drug.

### 3.Results

A total of 100 students took part in the survey with a response rate of approximately 50%. Preliminary results relating to a subsample of this study are presented here (n = 100, mean age 20 years, 56% women). 44% of the students consumed narcotic & tranquilizer at least once in their life. Other evaluated substances had a prevalence of consumption lower than 1%. For the first consumptions, a majority of students state to felt "pleasant" effects: relaxation (71%) and euphoria (53%). 13% state to have felt effects of anxiety or sadness. 25% admit having had difficulties of expression, 24% memory deficits, 35% trouble with coordination or balance and 39% difficulties of concentration. Approximately 16% had impressions of depersonalization and derealization. Lastly, some experienced "psychotic-like" effects such as visual (10%) and auditory (6%) hallucinations, as well as referential ideas (16%), mistrust or feelings of persecution (11%). 26% of the student sample had felt at least one of these last four "psychotic-like" effects. : In 2000-2006, 66.0% of male respondents and 52.0% of female respondents have reported any drug use during their life. The analysis of standardized data (by the place of residence) showed an increase in the prevalence of drug use during 2006-2010. Up to 69.67 % in boys (P<0.05) and up to 60.60 % in girls (P>0.05). Percentage of club drug users increased significantly in girls (from 21.5% to 29.8%; P=0.040) [Table-1-3].

**Table 1. Graduates perusing post Graduate Study--Specialty wise**

Specialty	Chronic illness	Self prescription	Mean age±SD	Response rate Specialty wise	Gross response rate
Medicine	23%	35%	25±1.9	39%	41%
Psychiatry	39%	48%	24±2.9	48%	
Surgery	25%	29%	24±3.9	29%	
Orthopedics	21%	15%	26±5.9	15%	

**Table 2. Chart showing narcotic and tranquilizer addiction (Priority wise)**

Total Professional	Revealed intake of Drug	Type of Drug & its prevalence in both sexes		sex wise prevalence			
		Tranquilizer	Narcotics	Male		Female	
				Tranquilizer	Narcotics	Tranquilizer	Narcotics
		67%	52%	64%	58%	73%	32%
100	58						

**Table 3. Comparative Data of the last ten years**

Major cause	% Addicts	Type of Drug & its prevalence in both sexes		sex wise prevalence				
		Tranquilizer	Narcotics	Male		Female		
				Tranquilizer	Narcotics	Tranquilizer	Narcotics	
2000-2006	Sadness/Anxiety	45.4%						
	Depression	32.5%	67%	52%	64%	58%	73%	32%
2007-2010	Relaxation	59.8%						
	Euphoria	65.32%	69.67 &	60.60%	67.8%	66.43%	74.32%	32.76%
	Loneliness	29.7%						
	Failed love affair	39 %						

#### 4. Discussion

Students were asked to take part in an investigation of their substance consumption and their individual experiences with narcotics & tranquilizers in particular. Personality auto questionnaires were performed and the psychotomimetic effects of narcotics & tranquilizers were investigated with substance use within a student population seen during their mandatory preventive health visit at the OPD medical facility. The use of illicit drugs by students and the possible psychological repercussions in this population of young adults is an important public health issue. Some data in the literature suggest a relationship between drugs and the occurrence of mental health disorders, in particular psychotic illnesses, epidemiologic surveys have shown that narcotics & tranquilizers is the most consumed illicit drug [5-7]. Narcotic & tranquilizers consumption is highly variable among different consumers. Implications for prevention strategies are discussed such as educational interventions based on recognition and motivation for change. The results are consistent with the idea that the impact of tranquilizers & narcotics is easy we can isolate & identify other drugs of abuse.

As the present study was meant for knowing the level of addiction in students of different medical courses like Laboratory technicians, nursing, Physiotherapy, B.Sc. (Medical), Radiography & in general all students doing post graduate courses.

#### 5. Conclusion

Narcotics & tranquilizers are the drug most used and were related to other drug addictions. . Of particular concern is the finding of a lack of gender differences in problematic drinking with the pattern of female rates. Drugs were most frequently used by, students living single in hostel room, who live alone and do not support themselves communication with friends who use drugs, participation in the parties where drugs are used, alcohol use, and smoking. In 2006 survey, more significant relationship between drug use and social and behavioral factors was observed. Several indicators of drug use showed a significant increase in drug abuse among students of medical schools in North India during the period of 20004-2010. Multisectorial efforts and integrated preventive measures should be applied for the prevention of epidemics of drug use in North India & for that matter the whole India. Alcohol was most used and was related to other drug addictions. Drugs were most frequently used by single, male students, who live alone and do not support themselves, communication with friends who use drugs, participation in the parties where drugs & alcohol are used. In 2006 survey, more significant relationship between drug use, social and behavioral factors was observed. Several indicators of drug use showed a significant increase in drug abuse among students of medical schools in North India during the period of 2004-2010. Multisectorial efforts and integrated preventive measures should be applied for the prevention of epidemics of drug use in North India & for that matter the whole India.

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