

## COMPARISON OF SELF-REPORTED BENZODIAZEPINE USE AND URINALYSIS AMONG CONSECUTIVE TREATMENT SEEKERS AT A TERTIARY CARE DRUG DEPENDENCE TREATMENT CENTRE

RAMAN DEEP PATTANAYAK, RAKA JAIN\* AND RAJAT RAY

*National Drug Dependence Treatment Centre,  
Department of Psychiatry,  
All India Institute of Medical Sciences,  
New Delhi – 110 029*

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**Abstract :** Information provided by drug dependent patients might be incomplete and/or discrepant. Benzodiazepines are frequently abused, but not necessarily reported, even by the treatment seeking population. The study aims to compare the self reported benzodiazepine use with a quick and effective urinalysis method. A total of 51 consecutive adult patients were included after an informed consent during their first visit to a tertiary care drug dependence treatment centre. The socio-demographic and clinical details were recorded on a semi-structured proforma. Patients were specifically asked for ever, current and recent benzodiazepine use and thereafter ten ml urine sample was collected to perform urinalysis with cassette test for benzodiazepines. The sample, predominantly males, had a mean age of  $37.86 \pm 10.46$  years. The common primary drugs of use were heroin (52.9%), alcohol (23.5%) and other opioids (21.6%). Drug use was uninterrupted in most of users (72.5%) and ranged from one to forty years. The recent benzodiazepine use was reported by 21.6% of all users whereas urinalysis by cassette test was positive in 50.9% of the treatment seekers. Denial among users was 69.2% and denial among negative self report was 45%. A poor level of agreement ( $\kappa$ ) was found between results of self-report and urinalysis for all the treatment seekers. Self report of benzodiazepine use is highly questionable among treatment seekers. The urinalysis with cassette test is a quick objective method which is recommended for routine screening.

**Key words :** benzodiazepine cassette test                      self-report urinalysis

### INTRODUCTION

Information provided by the substance-users is crucial for a comprehensive assessment, diagnosis and management plan. In the absence of corroborating sources, the

self-report guides the decision of the treating physician for type and dosage of medications to be prescribed. Reliance on self-report is practiced frequently in substance use treatment centres because majority of patients come to seek help alone,

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\*Corresponding Author : Fax : 91-011-26588663, 26588641; Tel. No. : 91-011-26593236, 26593595; E-mail : rakajain2009@gmail.com

unaccompanied by family members. They are, however, likely to underreport, misreport or hold back some information regarding their drug usage (1, 2, 3). Intentional or not, such omission may be dangerous in case of benzodiazepines as the withdrawal related complications may be serious and even life-threatening in some cases.

Benzodiazepines are a group of drugs which can be used to augment the effect of other substances (e.g. heroin) or as a substitute in their absence (e.g. alcohol). The underlying reasons for non-reporting can be multi-fold. Use of benzodiazepines may not be perceived as harmful and its reporting therefore considered unnecessary. Accepting multiple drug use might be shameful for the patient. Certain personality traits common to substance-using patients may facilitate manipulative behavior and easy lying. They may intentionally underreport drug use, particularly if there is a real or perceived consequence to what is reported (4). Cognitive impairments which are frequently associated with substance-use may at times contribute to non-reporting (5). Whatever may be the underlying reason, it only highlights the pitfalls of self report and the need for having an objective validation.

Urine screening for benzodiazepines is a useful tool for corroborative purposes. Cassette testing for benzodiazepines is a quick and effective method that can be of immense help to clinicians.

#### MATERIALS AND METHODS

The study was conducted at National Drug Dependence Treatment Center (N.D.D.T.C),

All India Institute of Medical Sciences (A.I.I.M.S), New Delhi, India. It is an apex referral Centre for substance use disorders in India. In addition to clinical services, it is actively engaged in research, epidemiological surveys, manpower development, formulation of policy recommendations and generation of cost-effective models for service provision in the country. The Centre also runs free-of-cost agonist maintenance program for opioid dependence as well as provision of free-of-cost opioid antagonist and medicines for alcohol dependence.

The study included 51 consecutive new patients, of either gender, aged 18 years and above, who sought treatment for the first time at the out-patient clinic. A written informed consent was taken after explaining the study details in easily understood language. They were explained that confidentiality will be ensured, information to be used purely for research purposes and the nature of responses or refusal to participate will not have any impact on future treatment process. Those who were willing to participate and provide urine for examination were included. The assessment and interview was conducted by a psychiatrist and diagnosis was established as per ICD-10 (6). The socio-demographic profile, drug use history and other relevant information was recorded on a semi-structured proforma. Specific questions were asked for lifetime, current (past month) and recent (past week) benzodiazepine use and the responses noted as positive or negative. In patients with an affirmative response, further details about dose, duration and frequency of use were asked and recorded.

The patient was sent for urine sample

collection. Ten ml of urine was collected under close supervision of the laboratory staff to prevent the risk of tampering. After proper labeling and sealing, the urine sample was sent to Centre's Drug Abuse Testing laboratory for analysis.

The samples were analysed using Alfa Scientific Designs, Inc. urine cassette test for detection of benzodiazepines. The test is a one step, lateral flow test and is cross-reactive for most of the benzodiazepine. It is designed for screening (qualitative) urine for the detection of the benzodiazepines at a sensitivity cut-off level of 300 ng/ml for oxazepam. Oxazepam, a common metabolite of benzodiazepine, remains detectable in urine up to one week, making it a useful marker of benzodiazepine use. The accuracy and precision of the test are both 99% and the results are available within 4-7 minutes.

**RESULTS**

A total of 51 consecutive new patients seeking treatment for the first time were included. Table I shows the socio-demographic profile and drug use parameters. Mean age of treatment seekers was 37.86±10.46 years (Range: 20-62 years; median: 38). The years of formal education ranged from zero to 20 years (median: 7) and majority (82.4%) was married. The treatment seekers were, by and large, from an urban background. Majority (68.6%) reported to be currently working and 43.1 % of the sample comprised of unskilled workers. A majority of the treatment seekers were opioid users (74.5%), heroin being the most common substance of use (71%) followed by *dodo/post*, injectable opioids and dextropropoxyphene. Alcohol use was the

TABLE I: Sociodemographic profile and drug use parameters.

Variable	Subjects (n=51)
Age (in yrs)	Mean±SD: 37.86±10.46
Education (yrs)	Range: 0-20 Median: 7
Gender	
Male	49 (96.1%)
Female	2 (3.9%)
Marital status	
Married	42 (82.4%)
Unmarried	9 (17.6%)
Occupational type	
Unskilled	22 (43.1%)
Semi-skilled	16 (31.4%)
Skilled	13 (25.5%)
Occupational status	
Working	35 (68.6%)
Not working	16 (31.4%)
Primary drug	
Heroin	27 (52.9%)
Other opioids	11 (21.6%)
Alcohol	12 (23.5%)
Cannabis	1 (1.9%)
Duration of dependent use (yrs)	Range: 1-40 Median: 6.5
Significant Abstinence (>1 m)	
Present	14 (27.5%)
Not present	37 (72.5%)

primary drug of use in 23.5% of the sample. None reported concurrent dependence on multiple drugs. Duration of dependence on primary drug ranged from one to forty years (median: 6.5). Drug use was uninterrupted in 72.5% of the treatment seekers with no significant abstinence period (defined as minimum of one month drug-free period). None of the patients had received any treatment in the month prior to presentation as per their self report.

The recent (past one week) and current (past month) benzodiazepine use was reported by 21.6% of treatment seekers; while lifetime/ever benzodiazepine use was reported by 27.5% of the treatment seekers.

All of these met ICD-10 criteria for harmful use with the exception of one dependent user. The total duration of benzodiazepine use ranged from two to ten years and the most commonly reported benzodiazepine was nitrazepam (dose range: 10–100 mg per day of use) in 81.2% of cases, followed by diazepam and lorazepam. Urinalysis results were positive in 50.9% of the treatment seekers. (Table II). Out of positive urinalysis subjects, only 30.8% reported their benzodiazepine use, while a majority (69.2%) denied the use of benzodiazepines.

TABLE II: Self report versus urinalysis for benzodiazepines.

	<i>Self reported use for paze one week</i>	<i>Urinalysis (cassette test) positive</i>	<i>Denial among users*</i>	<i>Denial among negative report**</i>
Benzodiazepines	11/51 (21.6%)	26/51 (50.9%)	69.2%	45.0%

\* = percent reported no use among urine positive;  
\*\* = percent of positive urine among those reported no use of the benzodiazepine.

Two discrepancy measures, that is, *denial among users* and *denial among self-reported nonusers* can be calculated by contrasting the same group of subjects who provided discrepant reporting (those whose self-reported drug use disagreed with urinalysis results) with the other two groups whose urine results were either positive or negative but were consistent with their self-reports (Table II). Former is calculated as the percentage of those testing positive for the drug who claimed no recent usage, while latter is calculated as the percentage of positive urine results among those who reported no recent use of the drug. Cohen's kappa (7) a measure for degree of agreement

between the two variables beyond that expected by chance, was used to compare self-report and urinalysis results. There was a poor level of agreement between results of self-report and urinalysis by cassette test. The agreement level did not vary with the type of drug used, with opioid, heroin and alcohol users showing similar discordant results (Table III).

TABLE III: Agreement between self report and urinalysis for benzodiazepines.  
bzp : benzodiazepine  
n = number of subjects

	<i>Self-report (bzip use)</i>	<i>Urinalysis (bzip cassette test)</i>		<i>Cohen's kappa κ</i>
		<i>Positive</i>	<i>Negative</i>	
All users (n=51)	Positive Negative	8(15.7%) 18(35.3%)	3(5.9%) 22(43.1%)	0.186 (P>0.05)
Opioid users (n=38/51)	Positive Negative	7(18.4%) 15(39.5%)	2(5.3%) 7(36.8%)	0.174 (P>0.05)
Heroin users (n=27/38)	Positive Negative	7(25.9%) 11(40.7%)	2(7.4%) 7(25.9%)	0.133 (P>0.05)
Alcohol users (n=12/51)	Positive Negative	1(8.3%) 3(25.0%)	0(0%) 8(66.7%)	0.308 (P>0.05)

## DISCUSSION

The focus of our study was the comparison of non-prescription benzodiazepine use in treatment seekers from De-addiction Centre with a rapid urinalysis method. There is a male preponderance in the sample, which is not surprising given the fact that there are a lot of sociocultural and societal barriers in India, preventing women from seeking treatment freely. Majority of the sample comprised of opioid users, heroin users being the most common subgroup. This is consistent with the general profile of treatment seekers at our center, especially since the center runs a free of cost maintenance program for opioid users.

The study results indicate that almost one in two of the new treatment seekers have used benzodiazepines recently, but nearly two thirds of them chose to hide their benzodiazepine use, even when asked specifically about it. These findings suggest that concurrent non-prescription benzodiazepine use is quite prevalent in new treatment seekers and more often than not, the use is denied by the treatment seekers. Further, such denial appears to be preferential for the benzodiazepines used concurrently while help is sought voluntarily for the primary drug e.g opioids or alcohol.

Available Indian studies on validity of self report shows variable results according to the drug used, the type of test performed and the setting of treatment. Not much attention is given to validate self-report for non-prescription benzodiazepine use in substance users visiting clinic. Self-reported opioid use have been focused most commonly in previous studies, which may not be directly comparable with our results but nonetheless, will help in providing useful insights for our discussion. In a large-scale study (8) on validity of self reported opiate use using TLC and modified hydrolysis method, 18.2% of out-patients and 10.6% of in-patients did not report the opiate use. Another study (9) for validity of self reported heroin use with 'thin layer chromatography' (TLC) and two highly sensitive methods of urinalysis viz. 'gas liquid chromatography' (GLC) and 'high performance liquid chromatography' (HPLC) found a moderate level of agreement. A moderate to high concordance was found between self report of opioid use and urinalysis in a study of opioid dependent subjects (10), with a

tendency towards over reporting while a poor concordance was seen for heroin and morphine self report in another study using a modified hydrolysis method in intravenous drug users (11). In the same study, the kappa statistics suggested an acceptable agreement for self-report of diazepam ( $P < 0.001$ ), and this is in contrast to the results from our study showing poor agreement ( $P > 0.05$ ), though the studies differ in the population studied. The higher discordance found in our study is in accordance with the questionable self-report validity for other drugs of abuse in general (12–14). The results contrast to a satisfactory agreement found in some international studies comparing self reported benzodiazepine and other drug use with urinalysis (15, 16).

In a previous study (17) for assessing utility of thin layer chromatography (TLC) for detection of benzodiazepines, a high percentage of negative results were observed, highlighting the need for a preferably more sensitive technique in a clinical setting. The urine cassette used in the present study is a quick and effective method to detect benzodiazepine use. With quick availability of results and potential to avoid serious medical consequences associated with undiagnosed benzodiazepine withdrawal, it can act as a useful adjunct to clinicians and a boon for patients.

Two discrepancy measures of inaccurate self-report have been found useful earlier (1): the *denial among users*, taken as an indicator of the likelihood of denying use among those users identified by urine testing and *denial among self-reported nonusers suggesting* degree of underreporting among respondents who did not admit drug use. The

*denial among users* seen in new treatment seekers at our center (69.2%) is comparable to earlier reported figures for benzodiazepine use in high risk groups from sexually transmitted disease- STD clinic (71.4%), emergency room-ER (88.9%) and prison (86.4%) setting (16).

The findings of this study are of great relevance to a clinician as the comorbid benzodiazepine use, particularly if it remains undetected, is likely to have an impact on the management of the patient. Unlike the withdrawal of other substances like opioids, cannabis etc, the benzodiazepine withdrawals has the potential to become complicated and at times, fatal (18). The specific treatment for the comorbid benzodiazepine use should be initiated early on to prevent the possibility of the potentially life threatening withdrawal complications such as seizures, delirium tremens (19). It is also likely that the benzodiazepine use may escalate during the abstinence from primary drug and hence, an intensive follow up care is also needed for a patient with comorbid benzodiazepine use. While this study did not focus on the underlying reasons for benzodiazepine use, literature suggests that patients often use them for augmentation purposes to escalate the euphoriant properties of other drugs, to ameliorate withdrawals from other substances or for insomnia (19).

The study also has certain limitations. The sample size of the study is relatively small. The results of the study cannot be generalized as the sample has been taken from a tertiary care treatment centre and may not hold true for primary care centers. The findings in non-treatment seekers or the

substance users in the community may be different. These limitations need to be taken into account in future studies. Further studies are warranted, possibly with a qualitative design to understand the patient's perspective and to explore their reasons for denial of benzodiazepine use. The current study urges for a routine use of quick and objective methods to corroborate the self-report in treatment seekers. The service provision at a treatment centre should also be geared to effectively deal with and minimize the inaccurate self reporting by the patients.

The concurrent use of non-prescription benzodiazepines is common in treatment seekers. While the use of primary drug is reported voluntarily at the time of seeking treatment, the benzodiazepine use is often not disclosed, even denied on specific questions. It is therefore necessary to have quick and effective laboratory tests to corroborate patient's self report and easily detect such use by objective means. The urine cassette test with readily available results is a useful adjunct for a clinician and can serve to reveal the misreporting by patient and may be even discouraging it in future visits. Future research and policy interventions should be geared towards addressing and minimizing the inaccurate self-report.

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