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Research Article

Drug Abuse Pattern and Risk Taking Behaviors among Drug Abusers in Dharan, Nepal

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- Sexual behavior
- Injecting behavior
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Abstract

Background: Drug abuse is a serious and global health problem, causing significant morbidity, mortality, and adverse social and economic effects. The deleterious consequences of drug abuse are related not only to drugs themselves but also to the related risk taking behaviors, particularly sexual and injecting behaviors which can lead to other major health problems such as HIV/AIDS and Hepatitis B.

Objectives: This study describes the pattern of drugs of abuse, sex-related behaviors, and injecting practices among drug abusers in Dharan municipality, Eastern Nepal.

Methods: A total of 291 drug abusers were interviewed using friendship snowball sampling method with personal and household contacts.

Results: The average age at drug initiation was 17.1 years. Marijuana appeared to be the major gateway substance in more than half of the respondents. Age group, caste/ethnicity and occupation were significant associates with injecting practice. More than 22% of intravenous drug abusers were injecting through dangerous routes, such as femoral and neck veins. Half of the drug abusers who visited commercial sex workers did not use condom. Almost half of respondents had never been tested for HIV.

Conclusions: To tackle this situation, there is an urgent need for intervention programs, including harm reduction strategies to address these high risk behaviors and practices.

ABBREVIATIONS

HIV: Human Immunodeficiency Virus; **AIDS:** Acquired Immunodeficiency Virus

INTRODUCTION

Studies show that drug abuse is a problem among adolescents and adults throughout the world. Drug abuse directly causes a wide range of serious health, social, and economic problems and contributes to morbidity and mortality from other diseases such as HIV/AIDS and Hepatitis B due to various risk taking behaviors, including sexual and injecting behaviors [1-4]. Drug abuse/dependence has contributed to the pandemic HIV/AIDS in at least four ways. First, shared contaminated injecting among injecting drug users (IDUs) is a common mode of viral transmission. Second, sexual transmission of the HIV may occur between those who inject drugs and their sexual partners. This is compounded by the fact that drug abusers may resort to prostitution to support their drug habit. The transmission risk in the case of sex workers who also inject drugs leads to epidemics that expand quickly and can act as a bridge to the non-drug abusing population. Third, non-injecting use of drugs such as cocaine and amphetamine-type stimulants may lead to high-risk sexual behaviors. And finally, HIV can be transmitted from an infected drug-using mother to her child. It is estimated that around 4% of the total HIV-infected people in India are believe to be infected through injecting drug use [5].

Drug injecting has long been regarded as the most dangerous route of drug administration, not only because of the risk of drug overdose, but also because of infection and the risk of contracting other diseases associated with injections paraphernalia [6].

Sexual risk-taking behaviors are common among drug abusers, who often have multiple sex partners, including Commercial Sex Workers (CSWs). Male drug abusers do not regularly use condoms [7], greatly increasing the chances of disease transmission.

National Institute on Drug Abuse (NIDA) [8] reports that drug addiction treatment is effective. Scientifically based treatments typically reduce drug abuse by 40 % to 60 %. These rates are not ideal, of course, but they are comparable to compliance rates seen with treatments for other chronic diseases such as asthma, hypertension, and diabetes. Moreover, treatment markedly reduces undesirable consequences of drug abuse and addiction-such as unemployment, criminal activity, and HIV/AIDS and other infectious diseases-whether or not patients achieve complete abstinence. Unfortunately, many members of the public still mistakenly doubt that treatment can help someone overcome addiction, perhaps because-as Principles explains-recovery from addiction can be a long-term process and frequently requires multiple episodes of treatment. Research has shown that every $1 invested in treatment saves $4 to $7 in costs related to drug abuse.

In Nepal, estimated HIV prevalence among injecting drug users (IDUs) was 38.4% overall and 68% in Kathmandu [9]. In the Eastern Terai (the lower plains region of Nepal), 35% male IDUs tested HIV positive in 2004 [10]. The number of IDUs is increasing all over Nepal. The problem is more prevalent among the adolescent age group [6].

This study describes the pattern of drugs of abuse, sexual behaviors and injecting practices among drug abusers in Dharan, Eastern Nepal. Drug abuse can apply to the harmful use of both licit and illicit substances and drug abuse patterns are different from place to place. In this Nepal-based study, drug abuse refers only illicit substances, excluding alcohol and tobacco, as both alcohol and tobacco have legal status in Nepalese law [11]. This study addresses both oral and injecting drugs along with its associated factors.

MATERIALS AND METHODS

Nepal is a landlocked country bordered by India and China covering an area of 147,181 square kilometers; it has a population of greater than 23 million [12]. Dharan municipality is situated in the Eastern Development region at the foothills of the Himalayas. A total of 291 drug abusers between the ages 15 to 40 years were identified within the Dharan Municipality in 2007 using a) friendship snowball sampling method and b) through identification by a random sample of non-drug abusers who identified potential drug abuse cases.

Case/control definition

Cases were defined as persons, between 15 and 40 years of age, who were screened using the CAGE [13] scale and found to meet the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders-IV) criteria for drug abuse [14].

Sampling: Potential case identification was carried out using two methods. First, using snowball sampling, five ex-drug abusers, four drop-in-center in-charges and four outreach workers from 19 wards of Dharan were contacted and initially identified sixteen drug abusers who were found to meet DSM-IV criteria for drug abuse. Each of these cases was also asked to name a friend who might be a drug abuser (a potential case). These individuals were interviewed (with consent), and in turn were asked to identify other drug abusers. All (except 5 who were under severe influence of drugs) agreed to participate in the interview. A total of 150 cases were selected using this snowball sampling method.

A second set of 141 drug abusers was identified using a random sampling methodology. First, 158 households from 19 wards of Dharan municipality were selected using stratified random sampling with proportional allocation method. A randomly selected occupant aged 15 to 40 years in each household (without history of drug abuse) was asked to list friends who they believed were drug abusers. One person from the list was randomly selected as a potential case. The sample size calculation, reliability and validity of the instruments used for interview have been described elsewhere [6]. Investigator took the interview under the guidance of a psychiatrist. The average time for interview was half an hour for each participant.

Consents

The study was approved by the Ethical Review Board of the Research Committee of B.P. Koirala Institute of Health Sciences, Dharan, an institution authorized by the Nepal Health Research Council to conduct human subject review of research protocols. The written permission was obtained from Dharan municipality. Informed consent was required for each participant. Each subject was informed about the objectives of the study and assured of anonymity and confidentiality before the interview.

Exclusion criteria

Any drug abuser undergoing treatment for drug dependence did not agree to participate, and those who could not respond properly and correctly due to the influence of drugs or other mental disorder, were excluded from the study.

Survey Instrument

A pretest of the questionnaire was conducted among ten potential cases taken from a drug rehabilitation center and its surrounding areas. Suggested corrections were made to a few questions and based on the pretest, the time required for an interview was also estimated.

The instrument used in this study incorporated several standardized scales: Kuppuswamy scale [15] (socio-economic status), CAGE scale and DSM-IV scale.

CAGE scale [13] is widely used to screen substance abuse from general population. CAGE stands for Cut down, Annoyed, Guilty, and Eye opener. Since the CAGE scale is based on only 4 questions, it is an easy and time saving tool and has a good validity for alcohol abuse and drug abuse. However this has not been validated in Nepal.

Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) [14] is a classification of mental disorders and was developed for use in clinical, educational, and research settings. The diagnosis indicates need of treatment for substance disorder.

Table 1: Descriptive of study samples of drug abusers in Dharan.

Characteristics	Set I	Set II	Total
Observations (#)	150	141	291
Age group, %			
< 20 years	15.3	12.1	13.7
(20-30) years	63.3	70.9	67.0
30+ years	21.3	17.0	19.2
Sex, %			
Male	95.3	99.3	97.2
Female	4.7	0.7	2.8
Education, %			
Below 10 years	61.3	51.8	56.7
(10-12) years	37.3	48.2	42.6
13+ years	1.3	0.0	0.7
Religion, %			
Hindu	68.7	51.8	60.5
Kirat	16.7	24.1	20.3
Buddhist	8.0	17.0	12.4
Others*	6.7	7.1	6.9
Ethnicity			
Hill native**	57.3	68.8	62.9
Brahmin/Chhetry	14.7	13.5	14.1
Newar	11.3	10.6	11.0
Others***	16.7	7.1	12.0
Occupation, %			
Unemployed	51.3	53.9	52.6
Employed	30.7	25.5	28.2
Student	18.0	20.6	19.3
Marital Status, %			
Unmarried	66.7	63.1	65.0
Married/Remarried	28.7	31.9	30.3
Separated/Divorced	4.7	5.0	4.7
Type of family, %			
Nuclear	50.0	41.8	46.0
Joint	35.3	45.4	40.2
Extended	14.7	12.8	13.8
Socio-economic status+,%			
Lower	3.3	2.1	2.7
Upper-Lower	50.0	53.9	51.9
Lower-middle	36.0	33.3	34.7
Upper-middle	10.7	10.6	10.7
Average age at drug initiation	16.9	17.3	17.1

*Christian/Muslim;** Rai, Limbu, Gurung, Sherpa, Magar and Tamang; ***Bhujel, BK, Priyar, Jha, Shah, Majhi etc.+ Kupposwamy socio-economic status

This scale is a standard scale and very useful to identify the drug abuser and dependent.

It also obtained information on socio-demographic characteristics, such as age, sex, marital status, education, occupation, religion, caste/ethnicity, type of family, socio-economic status. The questionnaire also solicited information regarding pattern of drug use, types of drugs use, duration, and age at initiation, route of administration, injecting practices and sexual behaviors. The questionnaires were checked for the accuracy and numbered serially.

Data entry and analysis

Data entry was done in dBASE-IV program. After every 20 entries, the data file was crosschecked with questionnaires and mistakes were edited. The corrected data file was converted into SPSS software Version 16.0 for analysis. Frequency and percentage were calculated. Bar and sub-divided bar graph were constructed. Chi-square test was used to find out the association of independent factors with injecting behaviors and multiple logistic regression analysis was done to find out significant relationship of injecting practice and sexual behavior after adjusting other variables which were significant at 1% level of significance in Bivariate analysis.

RESULTS

The majority of drug abusers were 20 to 30 years of age. Nearly 14% were in the age below than 20 years. About 97.2% of participants were male. More than half of drug abusers (56.7%) had less than 10 years of education. Approximately 60% of respondents were Hindu and more than 60% were from hill native ethnicity (Rai, Limbu, Gurung, Sherpa, Magar and Tamang). More than half of the cases were unemployed and nearly one-fifth of the cases were students. Around 30% of drug abusers were married. More than half of respondents were in 'upper-lower' socio-economic class.

Drug practices: A cocktail drug, called 'set' locally, which is a combination of diazepam, avil, and buprenorphine was the drug most frequently used (Figure 1). Marijuana was the gateway substance for more than 58% of respondents, followed by phensedyle and nitrozepam. The proportion of drug abusers who initiated drug abuse within a year prior to the survey was nearly 7%. Table 2 indicates that the overwhelming majority of respondents injected drugs. Of the total IDUs, 54.6% shared needles with their friends. More than 21% of IDUs were injecting through dangerous routes (femoral and neck veins) (Figure 2).

Sexual behaviors and infections: Extra-marital relationships were reported by almost one-fifth of subjects (Table 3). More than one-third of drug abusers had visited commercial sex workers (CSWs) and 45.8% of these did not use condom. Only 21.3% of respondents reported being tested for Hepatitis B and 56% for HIV. Of those tested about 18% had a positive Hepatitis B antibody and 20.9% were positive for HIV.

Table 4 depicts that injecting drug practice was independently associated with age group, years of schooling, caste/ethnicity

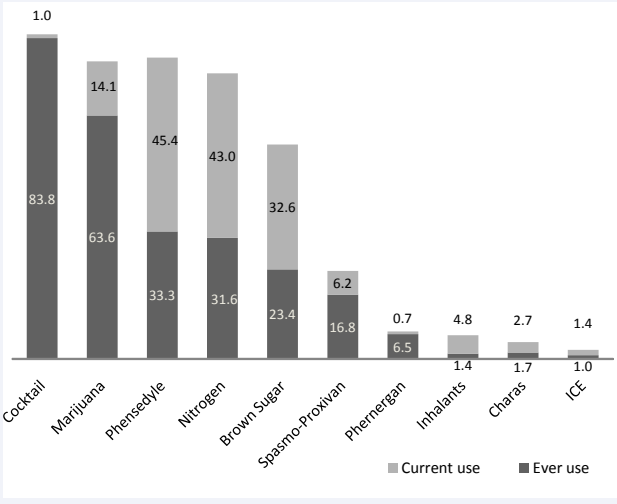

Figure 1 Pattern of drugs of abuse in the sample, % (n=291).

and occupation. Among those who had sexual contact, almost 87% had injecting behavior. Intravenous drug abusers were almost 2 times more likely to be associated with sexual behavior. The association was significant only at 1% significance level. However, after adjusting the potential factors, multiple logistic regression analysis shows only three variables; age group, caste/ethnicity and occupation were significantly associated with injecting practice (P<0.05).

DISCUSSION

Drug abuse is a serious and growing public health problem among adolescent and youth. The teenage years are a very crucial age for setting life-long behaviors – or for developing life-long chronic disease, such as HIV/AIDS. The average age of drug initiation in this study was at around 17 years.

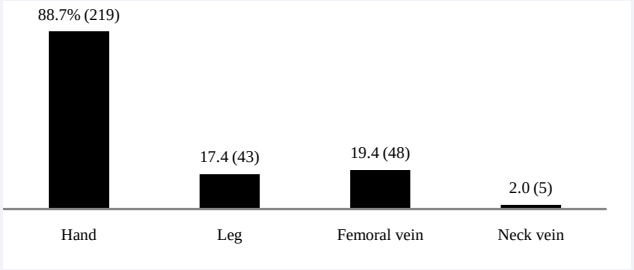

Figure 2 Route of administration of intravenous drug (n=247).

Table 2: Injecting drug practice among drug abusers in Dharan.

Practice	Total sample (n=291)
Injecting drug practice, %(#)	84.9% (247)
New syringe on every drug injection, %(#)	35.4% (103)
Sharing needle with friends, %(#)	54.6% (159)
Age at first intravenous drug abuse, (mean±SD⁺) years	19.21 years

⁺SD=Standard Deviation

Table 3: Sexual behaviors and infections among drug abusers (n=291).

Sexual practices and infections	Percent (Number)
Ever had sexual intercourse	80.8%(235)
Average age at first sexual intercourse	18.5 years
First sexual partners	
Commercial Sex Worker (CSWs) Wife/husband Unmarried partner	19.9% (58) 12.4%(36) 48.5% (141)
Extra-marital sexual intercourse (ever had)	18.6%(54)
Drug used by sexual partners (% yes)	36.4% (106)
Open attitude to have sex with multiple partners	70.1% (204)
Ever had sex with CSWs,	37.1% (108)
Condom use with CSWs (% of those who had sex with CSWs)	45.8% (49/108)
Ever tested for Hepatitis 'B',	21.3% (62)
Hepatitis 'B' Positive (% of those tested)	17.7% (11)
Ever tested for HIV	56.0% (163)
HIV Positive (% of those tested)	20.9%(34)

The most common drugs of abuse in this study were buprenorphine, nitrazepam, marijuana, phensedyle, and heroin. Cocktail injecting was highly prevalent among drugs of abuse in Dharan. Marijuana was a gateway substance for a majority of drug abusers in Dharan. Of particular concerns were the unsafe injecting and sexual practices among study subjects. More than 22% of IDUs were injecting through dangerous routes, such as femoral and neck veins. More that 45% of drug abusers who visited CSWs did not use condom. The result shows IDUs were two times more likely to be associated with sexual practice. Around 22% of drug abusers reported to have HIV infection. But the real figure of risk marker may be higher than this data. It may be because of two reasons. Firstly, the proportion of HIV may be higher than the reported cases because nearly 44% of the drug abusers had never tested their blood for HIV. Similarly, 78.7% of drug abuser had never tested blood for Hepatitis B. Secondly; the self-reported HIV cases obviously are less due to social stigma. The figure on HIV infection demonstrates a major attention imperative to conduct national programs. Apart from the above risk-taking practices, some common dangerous practices were associated with the drug addicts like blood flooding practice, i.e. pulling and pushing blood several times through the vein. They also injected plain water and played with blood, if the drug was not available. The blood flooding practice is also reported in the study done among IDUs in Calcutta [10]. Other dangerous practices – injecting through own panis, snorting the smell of used menstrual pad and dirty socks, smoking marijuana mixing with the dust of dried gecko – wall lizard, etc. are found among the drug abuser in the eastern Nepal.

This demonstrates a major attention imperative to conduct national programs emphasizing the following two aspects: One is for the free drug education centers at least in vulnerable areas like Dharan, Biratnagar, Pokhara, Kathmandu, etc. The second is to conduct harm reduction program along with the counseling centers for drug abusers to control the dangerous risk taking injecting practices which mentioned above.

Needle-syringe program, drug substitution treatment, HIV/AIDS related treatment and information, education and communication are the components of Harm Reduction (HR) program [16]. A study estimated that between 4,394 and 9,666 HIV infections could have been prevented in the United States between 1987 and 1995 if a national needle exchange program had been in place [17]. This program has been significantly made higher positive behavioral change among IDUs than non-IDUs in Bangladesh [18]. It has also decrease rate of HIV, hepatitis B and C, and other blood-borne infections among IDUs [19]. HR is to retard the rate of spread of HIV transmission. It also aims to prevent hepatitis and other blood-borne infection; reduces the risk of overdose and other drug-related fatalities [20].

The present study also shows age group, caste/ethnicity and occupation were significant associates with injecting practice. Therefore, drug rehabilitation program along with HR program should be considered for long-term reduction of the drug-abuse problem in context of Nepal especially for the targeted group.

Table 4: Factors associated with intravenous drug abusers among drug abusers in Dharan: a multiple logistic regression.

Factors	Injecting Practice,%		Total (n=291)	COR+ (95% CI)	P Value	Adjusted OR (95% CI)	P Value
	Yes (n-247)	No (n=44)					
Age group							
≤ 25 years	79.4	20.6	165	1		1	
> 25 years	92.1	7.9	126	3.0(1.4-6.4)	0.004*	3.3(1.4-7.8)	0.008*
Sex							
Male	75.0	25.0	8	1			
Female	85.2	14.8	283	1.9(0.4-9.8)	0.437		
Years of Schooling							
≤10 years	87.3	12.7	245	1		1	
> 10 years	71.7	28.3	46	0.4(0.2-0.8)	0.008*	0.5(0.2-1.1)	0.099
Religion							
Kirat	89.8	10.2	59	1			
Hindu	80.7	19.3	176	0.5(0.2-1.2)	0.112		
Others[a]	92.9	7.1	56	1.5 (0.4-5.5)	0.567		
Caste/Ethnicity							
Hill Native[b]	88.5	11.5	183	1		1	
Brahmin/Chhetri	78.0	22.0	41	0.5(0.2-1.1)	0.08	0.4(0.2-0.8)	0.018*
Others[c]	79.1	20.9	67	0.5 (0.2-1.0)	0.061	1.2(0.4-3.4)	0.732
Occupation							
Unemployed	90.8	9.2	153	1		1	
Employed	82.9	17.1	82	0.5(0.2-1.1)	0.078	0.4(0.2-1.0)	0.046*
Student	71.4	28.6	56	0.3(0.1-0.6)	0.001*	0.9(0.3-2.5)	0.850
Marital Status							
Single	82.8	17.2	203				
Married/remarried	89.8	10.2	88	1.8(0.8-4.0)	0.129		
Socio-economic status							
Lower	86.2	13.8	159	1			
Middle	83.3	16.7	132	0.8(0.4-1.5)	0.503		
Family type							
Nuclear	83.6	16.4	134	1			
Joint	87.2	12.8	117	1.3 (0.7-2.7)	0.424		
Extended	82.5	17.5	40	0.9(0.4-2.4)	0.872		
Sexual contact							
Yes	86.8	13.2	235	1		1	
No	76.8	23.2	56	0.5 (0.2-1.0)	0.06	0.6(0.3-1.3)	0.199

[a]Christian/Muslim/Buddhist; [b]Rai, Limbu, Gurung, Sherpa, Magar and Tamang; [c]Bhujel, BK, Priyar, Jha, Shah, Majhi etc.
+Crude odds ratio; *Significant difference
-2Log likelihood = 216.5, Model Chi-Square=30.75, P<0.001

There is urgent need of harm reduction program in vulnerable areas of the eastern Nepal along with rehabilitation centers to improve their behavior and wrong practices. The treatment centers should be increased in number as well as in quality. It is necessary to keep sending messages through the media that it is better not to start at all than to enter rehabilitation if addiction occurs.

Since 150 study participants were also enrolled from snowball sampling method, which might not be representative to other population and might produce selection bias. However measures had been taken to make more heterogeneous, i.e. the samples were taken from all 19 wards of Dharan municipality. It is reported the snowball sampling allows more representative samples of drug users to be recruited than would be possible using ordinary convenience samples [21]. Finally, this study demands for further research in Sunsari district of Nepal at large scale which should also address the risk factors for drug abuse.

CONCLUSION

The most common drugs of abuse in the eastern Nepal are buprenorphine, nitrazepam, marijuana, phensedyle, and heroin. Cocktail injecting drug appears to be highly prevalent among drugs of abuse in Dharan; moreover, their unsafe injecting and sexual practices are the matter of serious concern. There is urgent need of harm reduction program in vulnerable areas of the eastern Nepal along with rehabilitation centers to improve their behavior and wrong practices. The treatment centers should be increased in number as well as in quality. It is necessary to keep sending messages through the media that it is better not to start at all than to enter rehabilitation if addiction occurs. The findings may have implications to aware individuals, families, communities and developing countries like Nepal.

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