Original Article

Correlates of injection use of synthetic drugs among drug users in Pakistan: a case controlled study

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Abstract

Objective: To assess the various correlates of injection of synthetic drugs among drug users in Pakistan.

Methods: In a case controlled study, 141 cases and 272 controls were recruited, from 11 drug sites in Lahore, Pakistan, through multistage sampling techniques at a case control ratio of 1:2. Cases were defined as injecting drug users (IDU's) who switched from non injection routes of drug intake to injecting synthetic drugs, while controls (272) were heroin chasers who had never injected synthetic drugs. Data were collected on various demographic, socioeconomic and personal characteristics, drug use history and practices, and knowledge regarding HIV. While controlling for various confounders, adjusted odds ratios (aOR) with corresponding 95% CI were estimated using multivariate logistic regression.

Results: Factors found to be independently associated with route transitions were young age (aOR:3.7, 95%CI: 1.9-7.2), homelessness (aOR: 6.4, 95%CI: 3.9-10.2), presence of an IDU friend (aOR:3.7, 95%CI: 2.3-6.1), easy availability (aOR:5.6, 95%CI: 3.3-9.6) and cost of the current drug (aOR:2.6, 95%CI: 1.6-4.3) and poly drug use (aOR:3.2, 95%CI: 1.6-6.4).

Conclusion: Low cost of the current drug of choice, easy availability and polydrug use were strongly associated with IDU of synthetic drugs (JPMA 56:119;2006).

Introduction

While a larger part of the epidemic in Africa and most of the developed world is attributed to the heterosexual transmission of the virus, injecting drug use (IDU) has provided the essential catalyst for the HIV epidemic in Asia - especially South East Asia. In many developing countries, HIV epidemics among IDUs have paved the way for larger epidemics in the broader population with prevalence rates reaching 60 to 90 per cent, within a few months of the appearance of the incident case.[1] Drug users are not only at a substantial risk of contracting HIV themselves through their risky injecting practices, but also transmit the infection to their sexual partners, children and the general population through unprotected sexual contact.

The drug abuse problem in Pakistan is complex, largely driven by the international drug scene and depending on multiple poorly understood factors. Most recent estimates from Pakistan have scientifically calculated 500,000 chronic heroin users nationwide, with a sizeable proportion of drug users altering their drug route preferences from non injectable forms to injection use of synthetic drugs.[2] From a public health perspective, this shift is disastrous, as injecting drug use fuels the rapid spread of injection-related diseases such as HIV and Hepatitis. Research conducted in the West has compared the characteristics of injection drug users with non injection drug users and suggested various factors including age.[3,4] low education status and early school drop outs[5-7], unemployment[7,8] and homelessness[4,7] to be independently associated with IDU. In addition duration and type of drug use[6,8,9], drug market fluctuations and drug availability including cost[10-12], polydrug use[7,13], having peer networks that include IDU's[3,14] and trading of sex[7] have been extensively explored and are found to be associated with injection drug use.

Studies that focus on IDUs in Pakistan are scant, but data is suggestive that injecting drugs is becoming increasingly popular, and a combination of legally procured injectable drugs including sedatives, tranquilizers, antihistamines, anti-emetics and Morphine derivates are usually injected.[15-20] Recently collected surveillance data shows alarmingly increasing rates of HIV infection[21] with a strong indication that the infection is beginning to establish its foothold among IDUs. Although steps have been taken by the government authorities to limit and control the spread of HIV among IDUs through harm reduction approaches[22], there still is an imperative need to evaluate reasons leading to the recent emerging trends of injecting available synthetic drugs in Pakistan. It is of interest, that beyond situational and environmental factors, there may be patterns of use, typical of individuals, which can lead to such transitions. A determination of such factors is of utmost importance to direct the policy makers in designing preventive activities and treatment regimens, especially in the context of HIV prevention. This study was therefore conducted with the objective to investigate the various factors associated with

the objective to investigate the various factors associated with injecting synthetic drugs among drug users in Lahore, Pakistan.

Subjects and Methods

Study design and setting

A case control design was followed to study the various factors associated with injecting synthetic drugs.

Study subjects

Cases were "male drug users as defined by DSM IV criteria, who had been injecting synthetic drugs as the primary drug of choice, for a minimum of past six months on a regular basis" against controls who were defined as "male drug users as defined by DSM IV criteria, who had never injected synthetic drugs or heroin, and were taking heroin (through non injecting techniques) at least for the past six months". All potential controls that had ever used synthetic drugs were excluded. All subjects showing unwillingness to participate and reluctance to provide informed consent were also excluded from the study.

Sample Size

Sample size was calculated to achieve a study power of 80% and a 5% level of significance to detect an Odds Ratio of at least 2. Exchanging sex for drugs or money was taken as the least prevalent factor and a prevalence of 10% was used for calculating sample size. Further estimates of sample size were made to acquire a case control ratio of 1:2. Due to strict case definitions used for inclusion in the study, 141 cases and 272 controls, at a case control ratio of 1:2, were recruited to participate in the study.

Data collection procedures

A community based sampling was done, from sites of 'high drug activity' scattered all over the city. The inclusion of drug users themselves as 'social mobilizers' into the study team helped the data collection team penetrate into the drug user community and identify various 'locations and hot spots' where drug addicts could be contacted. Drug addicts found at the 'hot spots' were approached by team members, and were briefed about the objectives of the study. An inquiry was made into the drug using practices and determination of the inclusion of the subject in the case or control series was done.

All subjects fulfilling the inclusion criteria either as cases or controls were asked for an informed consent to participate in the study. Only 7 potential subjects refused to participate in the study. A structured interview was conducted by a trained interviewer using a pre-tested questionnaire. Some of the procedures used to obtain reliable data included establishing rapport with the drug users, spending time with the subjects and helping them with problems of recall in a non authoritative environment during the interview. It also included high level of competence and experience of the interviewers themselves, along with meticulous 3 day training on data collection procedure prior to data collection. The questionnaire contained both close-ended and open-ended questions which were coded during data editing. Information was collected on various demographic and socioeconomic variables along with personal characteristics of the drug users. It also included evaluation of subject's knowledge and awareness of HIV / AIDS, its routes of transmission and methods to avoid transmission. Information on types of drugs use, its availability, patterns and practices related to drug use were also recorded. All drug addicts who wanted to be treated were referred to a local detoxification centre for treatment.

Data Management and Analysis

The questionnaires were double checked by the field supervisor, and missing information were completed. All open ended questions were coded and after editing, data set were double entered in the computer using EPI INFO 6.04, followed by data cleaning. Data analysis was done using the statistical software packages, SPSS version 10.0 (statistical package for social sciences).

Descriptive analyses were conducted by calculating mean ± SD (median) for continuous and proportions for categorical variables. The continuous data were dichotomized or when appropriate categorized into meaningful and biologically plausible categories. Univariate analysis was followed by multivariate analysis using multiple logistic regression techniques to control for the combined effect of confounding variables. Independent associations were described using adjusted OR with subsequent 95% CI.

Ethical issues

Clear explanation of the research objectives, securing of an informed consent before starting the interview, and referral of all motivated drug users to treatment facility were among the ethical protocols that were followed during the study. All drug users interviewed were given the right to refrain from answering any questions, or leave the interview if they wished to. Privacy and confidentiality of personal information was ensured by non inclusion of subject's identifying information in computer files and making subject's information inaccessible, except to the principal investigator. Furthermore, presentation of all results was made in an aggregate form, without individual identification.

Results

The study group consisted of 413 male drug users, 141 of whom were injecting a cocktail of synthetic drugs in

contrast to the 272 controls who were non injecting drug users. A total number of 7 potential subjects refused to participate in the study.

A descriptive analysis of the socio-demographic characteristics of the study subjects showed a mean (± sd) age of 28.3 ± 8.5 years for the cases in comparison to 30.7 ± 7.3 years for the controls. High level of illiteracy was found with 68% of the cases being illiterate against 70% among controls. 40.4% of the cases were unmarried while 52.5% were married and the remaining 7% were separated, divorced or widowed. For controls the percentage of subjects in corresponding categories was 39%, 51% and 9.7% respectively. Migration was reported by 73% of the cases and 75.7% of the controls. Analysis of the current living conditions showed that almost two thirds of the controls (64.3%) lived in their family homes, in comparison to a less than one third (30%) cases living in their own homes. Of the total cases 80% belonged to a Punjabi ethnicity, against 88% Punjabi controls. Information collected on the current employment status of the subjects demonstrated that among cases, 64.5% were unemployed, 6.4% were salaried employees, 10.6% were self employed and 17% were on daily wages. Among controls the proportions were 59.6%, 10.3%, 15.8% and 12.9% respectively. The average monthly income was divided into 4 categories as shown in table 1, along with corresponding proportions. The mean average monthly income reported was Rs. 2272 ± 1166 for the cases and Rs. 2637 ± 1502 for the controls.

Table 2 shows the relationship of various personal and socio-demographic characteristics thought to be associated with an injection route transition using multiple logistic regression. Young age was found to be an independent correlate of IDU, drug users ≤ 20yrs of age were more likely to switch to IDU in comparison to their elder associates (adj.OR=3.7; 95%CI=1.9-7.2). In terms of current living arrangement, homelessness (adj.OR=6.4; 95%CI=3.9-10.2) was found to be an independent predictor of IDU. Cases were more likely to have IDUs friends in comparison to controls (adj.OR=3.6; 95%CI=2.3-5.5).

Table 3 shows HIV knowledge and various drug

Table 1. Descriptive analysis of the Socio-demographic characteristics of study subjects.

Variable	Cases n (%)	Controls n (%)
Age*		
Upto 20 yrs	35 (24.8)	27 (9.9)
21 - 30 yrs	56 (39.7)	114 (41.9)
31 - 40 yrs	36 (25.5)	110 (40.4)
> 40 yrs	14 (9.9)	21 (7.7)
Years of education		
None	96 (68.1)	191 (70.2)
1 - 9 years	38 (26.9)	54 (19.8)
10 and above	08 (5.0)	27 (9.9)
Current Marital status		
Unmarried	57 (40.4)	103 (39.1)
Currently married	74 (52.5)	136 (51.2)
Separated/Divorced/Widowed	10 (7.1)	33 (9.7)
Migrated to Lahore		
Yes	103 (73)	206 (75.7)
No	38 (27)	66 (24.3)
Current Living arrangements		
Family Home	42 (29.8)	175 (64.3)
Relatives	16 (11.3)	46 (16.9)
Workplace	11 (7.8)	08 (2.9)
Street	72 (51.1)	43 (15.8)
Religion		
Islam	135 (95.7)	253 (93.0)
Others	06 (4.3)	19 (7.0)
Language		
Punjabi	113 (80.1)	240 (88.2)
Urdu	23 (16.3)	22 (8.1)
Others	05 (3.5)	10 (3.7)
Employment status+		
Salaried	09 (6.4)	28 (10.3)
Self-employed	15 (10.6)	43 (15.8)
Daily wages	24 (17.0)	35 (12.9)
Un-employed	91 (64.5)	162 (59.6)
Average Monthly Income (Rs)++		
Upto Rs. 1500	12 (11.7)	18 (07.3)
Rs. 1501 to Rs. 3000	66 (64.1)	145 (59.2)
Rs. 3000 to Rs. 5000	19 (18.4)	57 (23.3)
> Rs. 5000	06 (05.8)	25 (10.2)

* Mean age (sd) 28.3 ± 8.5 for the cases and 30.7 ± 7.3 yrs for the controls
\+ 6 students are not shown in the distribution
++ Information available for 348 respondents
Mean income (sd) 2272 ± 1166 for the cases and 2637 ± 1502 for the controls

Table 2. Personal & Demographic factors associated with transition to IDU of synthetic drugs.

Variable	Cases	Controls	OR (95% CI)	Adj. OR (95% CI)
Age				
upto 20 yrs	35	27	2.9 (1.7-5.2)	3.7 (1.9-7.2)
> 20 yrs	106	245		
Educational status				
Uneducated	96	191	0.9 (0.6-1.4)	
Educated	45	81		
Current Marital status				
Unmarried	57	103	1.0 (0.6 - 1.5)	
Separated/ Divorced/Widowed	10	33	0.6 (0.2 - 1.2)	
Married	74	136		
Migrated to Lahore				
Yes	103	206	1.1 (0.7 - 1.8)	
No	38	66		
Homelessness				
Yes	83	51	6.2 (3.7-10.5)	6.4 (3.9-10.2)
No	58	221		
Employment status				
Unemployed	91	162	1.2 (0.8-1.9)	
Employed	48	106		
History of arrest				
Yes	12	18	1.3 (0.6-2.8)	
No	129	254		
IDU friend				
Yes	90	89	3.6 (2.3-5.5)	3.6 (2.3-6.1)
No	51	183		
IDU in the family				
Yes	46	79	1.1 (0.7-1.8)	
No	95	193		

Table 3. HIV knowledge and Drug related practices associated with IDU transition of synthetic drugs.

Variable	Cases	Controls	OR (95% CI)	Adj. OR (95% CI)
Heard about HIV / AIDS				
No	05	13	0.8 (0.2 - 2.0)	
Yes	136	259		
Knows HIV is spread through IDU				
No	48	91	1.1 (0.6 - 1.5)	
Yes	88	168		
Knows HIV is spread through sexual intercourse				
No	68	130	1.0 (0.5 - 1.5)	
Yes	68	129		
Considers himself at risk of acquiring HIV				
No	95	179	1.0 (0.6 - 1.6)	
Yes	41	80		
Cost of current drug				
Upto Rs. 1000	51	55	2.2 (1.4 - 3.5)	
More than Rs. 1000	90	217		
Number of drugs used				2.6 (1.6 - 4.3)
3 or more	128	213	2.7 (1.4 - 5.1)	
< 3 drugs	13	59		
Availability of current drug				3.2 (1.6 - 6.4)
Easy	55	29	5.3 (3.2 - 8.9)	
Difficult	86	243		
Exchanged sex for drugs or money				5.6 (3.3 - 9.6)
Yes	11	15	1.5 (0.7 - 3.3)	
No	113	231		
Time since initiation of drug use				
Upto 2 yrs	52	71	1.3 (0.8 - 2.2)	
3 yrs to 5 yrs	51	132	0.7 (0.4 - 1.1)	
> 5 yrs	38	69		

Table 3 shows HIV knowledge and various drug related practices associated with IDU. Questions directed to evaluate the knowledge regarding HIV was found to show no association with transition to injectable forms of drugs. Independent associations were noted with various drug related characteristics. Thus low cost of the current drug of choice (adj.OR=2.6; 95%CI=1.6-4.3), easy availability (adj.OR=5.6; 95%CI=3.3-9.6) and polydrug use (adj.OR=3.2; 95%CI=1.6-6.4) were found to be strongly and independently associated with IDU of synthetic drugs. No biologically plausible or scientifically significant interactions were found.

Discussion

In our study, we have looked at the various personal, environmental and drug related factors based on their possible role as factors associated with injection drug use of synthetic drugs in Pakistan. Results have suggested that among personal and environmental factors, young age, current living arrangements and the presence of a friend who injects drugs are independently associated with IDU. Among drug related characteristics, availability and cost of current drug and poly drug use were strong predictors of injection drug use of synthetic preparations.

Heroin users of a younger age are more likely to switch to injection drug use in comparison to their elder associates[3,4]. An association between age, duration of drug use and transition to injection drug use has been reported earlier which is thought to be a reflection of different historical experiences with the use of heroin. While we have not found any association between the duration of drug intake and injection drug use, an independent association of young age with IDU was found significant. This can be explained on the same principles which describe the role played by young age in the etiology of drug use, as young drug users are willing to change their old practices more quickly than their older associates and experiment with new drugs and ideas[23]. Since injecting drugs is associated with a greater 'rush' and the effects are more intense and satisfying, it appears that young users once introduced to injection drug use adopted injecting as the main route of their drug administration. This finding has important implication as studies among IDUs have consistently shown that young IDUs are at an increased risk for HIV infection and needs immediate attention.[13,24]

Homelessness has shown to be a strong independent

correlate of injection transitions, which could be explained in a number of ways. Living on the street or with other drug users is a continuous exposure to an environment where multiple risk behaviours are common.[4,7] It also exposes the individual to various professional street injectors (known as street docs) who can be of a great influence by persuading and providing assistance in initiating injection drug use[25]. Living away from the home also makes an individual susceptible to more adverse and stressful conditions, which is another known risk factor for initiating injection drug use. Our results support earlier research findings that non-IDU's who socialize and associate with IDU's are at a substantial risk of initiating injection drug use.[3,7] There is a recognition that injecting is usually preceded by non-injected drug use and new injectors learn to do so from more experienced users[3,17]. Such peers not only exert a strong influence by pressurizing non-IDU's to be involved into various risky behaviors and practices[26] but also play an important role in the initiation of IDU by transferring information and techniques used to inject drugs to their non injecting colleagues. Thus in times of heroin scarcity and dearth, non injecting drug users can easily shift to other injectable drugs since they get assistance by their IDU friends and can obtain the injecting paraphernalia with relative ease.[27]

The availability of a drug and its cost have been shown to be strong associated factors that lead a non injector to the injecting drugs use. There is sufficient evidence available that when the quality and availability of heroin decreases or the price increases, heroin users may switch to injection drug use[10,11]. During the past few years, the drug scene in Pakistan has undergone significant alterations as a result of the various changes taken place in the political environment of the country itself as well as the regional transformations. The military interventions in Afghanistan and increased security measures on the border between India and Pakistan led to temporary disruptions in the smuggling of South-West Asian heroin situation and opium and morphine became much less available. On the other hand, measures for the control of the domestic manufacture and distribution of pharmaceuticals containing narcotic drugs and psychotropic substances are not always strictly adhered to in Pakistan and all sorts of psychotropic drugs are readily available over the counter. Thus in a period of heroin scarcity and dearth, many of the drug users reacted by switching over to drugs, which are readily available and are cheaper.

Among drug use practices, no association was seen between the length of drug using career and IDU, however use of multiple drugs (poly drug use) was found to be an independent predictor. Regular use of 3 or more drugs increased the likelihood of a transition into injecting. Similar results have been shown elsewhere where IDU has been associated with use of other drugs and poly drug use[7,13]. This association needs to be considered with concern, as it indicates that prevention intervention programs that target multiple substances may be more efficient in reducing overall risk than prevention programs that focus on a single substance.

The interpretation of our findings is subject to certain limitations. Results based on retrospective data usually present with misclassification of exposure as a result of recall bias and difficulty in calling to mind exposures happened in the past. Moreover, the element of mis-reporting and under reporting of various exposures as well as the possibility of non differential misclassification due to recall bias cannot be over ruled. Despite these limitations we have identified important personal, social and drug related circumstances which can lead to the initiation of injection drug use among non IDUs.

Conclusions and Recommendations

Pakistan is among the countries where drug injecting is endemic, but is rapidly spreading to new population groups. The patterns of drug use are not different to those seen in other parts of Asia, indicating that the rapidly increasing IDU can fuel the hitherto quiescent HIV epidemic in the country. The prevention of injecting is possible as injecting is not an inevitable consequence of drug use. There is an urgent need to assess the risk that injecting drugs will increase and the need to institute appropriate public-health-based HIV intervention activities before the problem overtakes the response. Although a few harm reduction and needle exchange programs have been functional but the interventions need to be scaled up. Ecological factors e.g., changes in the local drug market have shown to play a leading role and practical steps to combat these situations need to be taken. Effective efforts to reduce heroin supply probably leads to an inflation in the price and low availability of the drug. This might lead to an increase in the injection use of other synthetic drugs readily available in the country. It is strongly suggested that any supply reduction efforts should be accompanied with an expansion of prevention as well as detoxification facilities in Pakistan, to avoid this emerging public health problem.

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