

Illicit drug use among Sri Lankan males; understanding the crisis for prevention and harm reduction

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Background

Illicit drugs are defined as “*psychoactive substances that the production, sale or use is prohibited with the prevailing legal system in a given country and for the long term on regular basis for a non-medical purpose*” (1). Heroin, cannabis, opium, cocaine, methamphetamine, hallucinogens and other psychotropic drugs are the commonly used illicit drugs in Sri Lanka. Illicit drug use has been identified as an emerging public health problem in Sri Lanka during the recent decades due to a multitude of factors. According to National Dangerous Drug Control Board (NDDCB), the number of drug addicts, the number of rehabilitation admissions and the number of drug-related arrests have increased in the country during the past few years. Many individuals and their families have suffered due to drug addiction throughout the world, and Sri Lanka is no exception. It affects a country in many aspects including economic, social, health and educational spheres.

Throughout human history, people have been using some kind of stimulant in the form of alcohol or drugs for various reasons. However, in the recent past, with the introduction of illicit drugs, it has rapidly spread especially among the young males. As illicit drug use is a significant public health problem in males, people who can contribute to national development are finally left as dependents. Furthermore, given the socio-cultural context of the country, as in many Asian countries, Sri Lanka has a male-centered family-based society.

By leaving males as dependent on an illicit drug, there is a direct threat to the backbone of the family. This creates a pressing need to reinforce the existing national policy on drug abuse with a focus on developing interventions targeting health, education, treatment, and rehabilitation of the drug users and strengthening law enforcement agencies to prevent drug use. Therefore, it is a national responsibility to address the illicit drug use disorder using appropriate mechanisms.

A scant attention has been given to explore this problem and no detailed analyses are available to assess illicit drug use behaviour in a local context. This paucity of data has further impeded the development and implementation of preventive and harm reduction programmes as well as health promotion activities in the country. Hence, a detailed analysis of illicit drug addiction among males was carried out to elicit necessary information, particularly for understanding the extent of the problem and its burden on the legal system of the country, identification of high-risk individuals and proper planning of drug prevention and harm reduction programmes in order to make Sri Lanka a “Drug-Free Community” in the future.

For this purpose, two separate studies were conducted for detailed analysis of illicit drug addiction among males. The first study was conducted to assess the patterns, determinants and associated health and social problems of past illicit

drug use among incarcerated males in the Galle Prison (2-4). Permission was obtained from the Commissioner General of Prisons, Ministry of Justice and Prison Reforms. Ethical approval for the study was obtained from the Ethical Review Committee of the Postgraduate Institute of Medicine, University of Colombo, Sri Lanka. The second study was conducted to assess patterns and determinants of drug use and its effects among male drug addicts in selected drug rehabilitation centers in Sri Lanka and factors affecting relapse after rehabilitation (5-10). It consisted of three different components; A cross sectional study (6-8), a longitudinal follow up study (9) and a nested case control study (10). Permission for the data collection was obtained from the Chairman of the NDDCB, Sri Lanka. Ethical approval was obtained from the Ethical Review Committee, Faculty of Medicine, University of Ruhuna, Sri Lanka.

STUDY 1: ILLICIT DRUG USE AND INCARCERATION

Introduction

A significant amount of prison admissions out of total admissions in many countries, including Sri Lanka are drugs-related. It has been reported that there have been nearly 80,000 drug-related arrests in Sri Lanka in year 2021 with a prevalence of 390 arrests per 100,000 general populations. Nearly 24,000 drug-related prison admissions were reported in the same year (11). Drug-related offences account for much of the prison admissions, making it a significant social concern. Yet scant attention has been given to explore this problem in a local context.

Methodology

To address this paucity of data, a cross-sectional study was conducted which assessed past illicit drug use behaviour among a random sample of 449 incarcerated males in the Galle Prison (2-4). Data were collected using a set of interviewer-assisted, self-administered questionnaires which included validated a Sinhala version of the European Questionnaire on Drug Use among Prisoners (EQDP) (12), Drug Abuse Screening

Test (DAST) - 20 (13) and ICD 10 symptom checklist for substance abuse disorders. ICD 10 symptom check list for substance use disorder and DAST 20 check list were applied in relation to a duration of one-year period prior to prison admission. The study sample included adult male prisoners who were convicted, remanded or who had appealed against their convictions. Almost all prison admissions (>99%) to the Galle Prison were males and hence only male prison inmates were included for the study. Prisoners who were mentally unsound to respond to the study questionnaires were excluded from the study. The prison register was used as the sampling frame and the participants were selected from the register using computer-generated random numbers until the required sample size was achieved. After confirming eligibility, each study subject was approached through prison medical centre. Close ended questions were used to assess the presence of health and social problems which are common among drug users as identified through literature review. Associations between categorical variables were assessed using the chi-square (χ^2) test. Level of significance was considered as 0.05.

Results

The study revealed that, 48.9% of the male prison inmates were imprisoned due to drug-related offences and among them 57.9% were prison readmissions (3). Among drug-related offences, the majority (75.5%) were incarcerated for keeping illicit drugs for consumption followed by engaging in lucrative crime to obtain money for drugs (11.1%) (3). Past illicit drug use was reported among 57.6% based on DAST 20 screening. Cannabis (80.3%) and heroin (58.2%) were identified as the commonly used illicit drug before imprisonment and on long term regular basis while poly drug use was reported by 36.2%.

According to DAST 20, only 8.3% of illicit drug users had severe problematic level of addiction followed by substantial (27.2%), moderate (27.5%) and low (37.0%) levels. Interestingly, 35.4% of the prison inmates required inpatient rehabilitation care at a drug rehabilitation center based on the American Society of Addiction Medicine (ASAM) criteria.

Illicit drug dependence was identified among 56.7% illicit drug users based on ICD 10 symptom checklist for substance use disorder (3). Past illicit drug use was associated with younger age, being unmarried, engaging in manual works and use of alcohol and tobacco products ($p < 0.05$ for all). The prison inmates in younger age groups and those with a history of polydrug use were significantly more likely to be addicted to illicit drugs while younger age, history of polydrug use and addiction to illicit drugs were significantly associated with problematic drug use ($p < 0.05$) (3).

Accidents and injuries (23.2%), dental caries (16.9%), skin diseases (9.1%), respiratory diseases (8.3%) and suicidal attempts (5.1%) were reported as common health problems among incarcerated males in the Galle Prison after initiation of illicit drug use. At least one health problem was experienced by 43.7 % of these drug users. Of the social problems, legal problems (72.8%), financial problems (51.6%), employment problems (26.0%), disputes in community (23.6%), disrupted family relationships (21.3%) and disruption of academic activities/education (20.1%) were identified as common problems encountered after initiation of illicit drug use. At least one social problem was reported by 83.0% of the drug users (4).

Prison inmates who had history of polydrug use, addicted to illicit drugs and had a high level of problematic drug use ($p < 0.01$ for all) were more likely to have health problems and social problems after initiation of illicit drug use. Previous prison admissions failed to show an association with presence of health problems and presence of social problems ($p > 0.05$) experienced after the initiation of illicit drug use (4).

Discussion

Drug-related prison admissions, presence of drug dependence, problematic drug use and presence of health and social problems due to illicit drug use were reported in significant amounts among incarcerated males. Hence, more attention should be directed to address those problems through appropriate health and social interventions such as rehabilitation programmes for drug users and screening for health problems. Result of this study will be helpful for policy makers and legal

authorities in developing strategies to prevent drug-related readmissions among prison inmates with a history of illicit drug use. The identification of inmates with past illicit drug use is required at the time of prison admission, which is important to refer them to proper rehabilitation care. Furthermore, it will be beneficial to reduce burden on prison system of the country due to illicit drug use.

STUDY 2 – A; CHARACTERISTICS OF ILLICIT DRUG USERS ADMITTED FOR REHABILITATION

Introduction

The characteristics of drug users and exposure to vulnerable factors for drug use have geographical heterogeneity throughout the world according to the literature. Sri Lanka is considered as a transit point for global drug trafficking due to its unique geographical location. As illicit drug use has become a significant public health problem in Sri Lanka, in the past few decades, a detailed analysis of these factors is necessary for the identification of high-risk individuals and proper planning of drug prevention programmes in the local context.

Methodology

A cross-sectional study was conducted among 431 institutionalized male drug addicts from five selected rehabilitation centres in four different districts namely; *Nawadigaanthaya* (Gampaha), *Meth Sevana* (Kandy), *Mith Sevana* (Galle), *Seth Sevana* (Colombo) and *New Life Rehabilitation Centre* (Galle). A pretested, interviewer-administered questionnaire was used to collect information on socio-demographic profile and characteristics, patterns and determinants of illicit drug use among the sample which were identified through existing literature. The history of exposure to vulnerable factors was assessed using a series of questions developed by the principal investigator based on existing evidence. Sinhala translation of the ICD 10 symptom checklist for substance use disorder was used to assess drug dependence. All interviews were conducted by the principal investigator in a separate room to maintain privacy.

Results

The study revealed a large volume of hidden information related to illicit drug use among males in Sri Lanka (5). Drug dependence was identified among 97.0% of illicit drug users based on ICD 10 symptom check list for substance use disorder. The majority (89.4%) of the sample were addicted to heroin. Cannabis was identified as the gateway drug for illicit drug use for 81% drug users. Experimental usage, peer pressure, being unaware about harmful outcomes of drug use, ability to conceal drug use behaviour from family, easy accessibility, previous use of alcohol and tobacco, history of exposure to psychoactive substance use within the usual living environment, being in a family with inadequate protection and unsatisfactory parenting status were identified as common characteristics of subjects with illicit drug use disorders and drug use behaviour. The age of the first drug use was positively correlated with the age of the first alcohol use ($r = 0.687$; $p < 0.01$) and first smoking ($r = 0.732$; $p < 0.01$). Ethnicity, area of residence, severity of drug use and age of initiation of drug use had statistically significant associations with presence of vulnerable factors for drug use ($p < 0.05$ for all) (6).

Discussion

Illicit drug use in Sri Lanka varies across the ethno-religious communities and socio-economic and cultural groups in the country. Heroin was identified as the main dependent drug and cannabis was identified as the gateway illicit drug for drug users while tobacco was identified as gateway psychoactive substance for psychoactive substance abuse. The adolescent period was identified as a risk period for the initiation of the use of psychoactive substances including illicit drugs. However, when study results are compared with the existing literature, it is clear that patterns and characteristics of illicit drug use shared a geographical heterogeneity throughout the world and geographical homogeneity within the region and within the country. The history of exposure to vulnerable factors for drug use was not uncommon in the sample. It is highly important to consider these findings, especially at the individual level during the design of appropriate preventive and harm reduction strategies for illicit drug use, in order to achieve a better outcome.

STUDY 2 - B; PROBLEMATIC LEVEL OF DRUG USE

Introduction

The problematic drug use indicates more severe patterns of drug use that cannot be reliably measured by a simple survey. It requires to assess treatment needs, and offers a realistic basis for estimating the social costs of drug problems. Proper assessment of problematic drug use is useful before selecting to manage as inpatient clients, to avoid unnecessary admissions to rehabilitation centers. Identification of this will be immensely helpful for the service providers to recognise vulnerable groups for illicit drug use as well as those susceptible for serious consequences in order to plan preventive strategies such as awareness programmes and in management of persons with problematic drug use.

Methodology

In the second part of the cross-sectional study, problematic level and its predictors were assessed based on the validated Sinhala translation of the DAST 20, for the first time in the local context (7). Problematic illicit drug use is defined as the 'drug use that is accompanied by a degree of addiction by which the user is no longer offered the possibility to control his use and that is expressed by psychological and physical symptoms' (14). DAST-20 inquired on possible involvement with intoxicants/ drugs not including alcoholic beverages during the past 12 months with 20 questions. Each 'yes' response scores 1 point and each 'no' response scores 0 points. According to the scoring instructions, 0 marks are taken as 'no problem reported' and a cumulative score of 1-5, 6-10, 11-15, 16-20 are taken as low, moderate, substantial and severe levels of problematic drug use, respectively. DAST score was compared with the American Society of Addiction Medicine (ASAM) Placement Criteria to assess problematic level of illicit drug use (13). For the purpose of subsequent analysis, drug users with DAST scores compatible with level III and IV of ASAM criteria were considered as having high problematic level and drug users with DAST scores corresponding to level I and II were considered as having low problematic level.

Data on the relevant independent variables were extracted retrospectively from the initial stage of the study to ascertain the presence or absence of the

selected risk factors at 0.05 significance level using regression analysis.

Table 1: Predictors of problematic level of drug use among drug users (N=431)

Associated factor	Problematic level of drug use		Total N (%)	OR (95% CI)	Significance
	Low n (%)	High n (%)			
Age category					
< 25 years (R)	42 (36.2)	74 (63.8)	116 (100.0)	1.4	p = 0.315
25 years and above	83 (26.3)	232 (73.7)	315 (100.0)	(0.7 to 2.8)	
Area of residence					
Western province	82 (25.2)	244 (74.8)	326 (100.0)	1.4	p = 0.171
Outside of Western province(R)	43 (40.9)	62 (59.1)	105 (100.0)	(0.8 to 2.5)	
Income category					
No income and < Rs. 50,000 (R)	59 (35.3)	108 (64.7)	167 (100.0)	1.6	p = 0.040*
Rs. 50,000 and above	66 (25.0)	198 (75.0)	264 (100.0)	(1.1 to 2.7)	
Occupational status					
Unemployed (R)	14 (50.0)	14 (50.0)	28 (100.0)	-	-
Manual workers	58 (33.1)	117 (66.9)	175 (100.0)	1.3	p = 0.584
				(0.4 to 3.4)	
Non-manual workers	53 (23.2)	175 (76.8)	228 (100.0)	2.5	p = 0.050*
				(1.1 to 6.5)	
Duration of drug use					
< 10 years (R)	74 (54.0)	137 (46.0)	211 (100.0)	1.1	p = 0.976
10 years and above	51 (23.1)	169 (76.9)	220 (100.0)	(0.5 to 1.8)	
Age of first drug use					
< 18 years	48 (21.7)	137 (78.3)	221 (100.0)	2.2	p = 0.001*
18 years and above (R)	77 (36.7)	133 (63.3)	210 (100.0)	(1.3 to 3.8)	
Family history of drug addiction					
Yes	34 (21.8)	122 (78.2)	156 (100.0)	1.5	p = 0.110
No	91 (33.1)	184 (66.9)	275 (100.0)	(0.9 to 2.5)	
Exposure to abuse					
Yes	51 (18.4)	226 (81.6)	277 (100.0)	3.9	p <0.001*
No	74 (48.1)	80 (51.9)	154 (100.0)	(2.4 to 6.2)	

R- Reference category * Statistically significant

Results

According to DAST-20 data (7), only 16.9% of the illicit drug users undergoing rehabilitation had a severe problematic level of addiction while over half of the sample (54.1%) had a substantial level of addiction. Interestingly, 29.0% of the illicit drug users (ASAM Levels I & II /low or moderate levels of addiction) admitted for rehabilitation could in fact be managed as outpatient clients based on ASAM guidelines. As in-patient rehabilitation care was recommended only for ASAM Levels III & IV/substantial or severe level of addiction, this indicated an unnecessary burden on the limited resources. Drug users with a history of exposure to abuse during childhood/ adolescence were nearly four times more likely to have a high problematic level of drug use compared to those who did not have a similar history (OR=3.9, 95% CI=2.4-6.2, $p<0.001$), thus making it the strongest predictor of problematic drug use. In addition, drug users who initiated drug use during adolescence (OR=2.2, 95% CI=1.3-3.8, $p<0.05$), who had a high income (OR=1.6, 95% CI=1.1-2.7, $p<0.05$) or who are non-manual workers (OR=2.5 95% CI =1.1-6.5 $p<0.05$) were more likely to have a high problematic drug use compared to those who initiated drug use during adulthood, had a low income or are in unemployed status (7). Age of the drug user, area of residence, duration of drug use and having a family history of drug use failed to emerge as significant predictors of the problematic level of drug use due to controlling confounding effect (Table 1).

Discussion

As the problematic drug use varied widely, the need for its assessment at individual level is evident for better implementation of rehabilitation process and effective utilization of the available resources. The study identified that a considerable proportion of drug users had unnecessary in-patient rehabilitation admissions (29.0%), causing an overburden on the rehabilitation system of the country. DAST 20 was identified as an important tool for screening of drug addicts to identify the problematic level of drug use and the study recommends its use at the community level and as an admission criterion in deciding the necessity

for in-patient treatment/ therapy at rehabilitation centres as well as in prisons.

STUDY 2 – C; MOTIVATION LEVEL FOR REHABILITATION

Introduction

Inadequate motivation for rehabilitation among persons with illicit drug use disorder is identified as the main reason for relapse after rehabilitation according to literature. Many persons with illicit drug use disorder in Sri Lanka enter into the rehabilitation process due to enforcement by family or through the legal system and only a few present as self-referrals (15). To change their illicit drug use behaviour, a client must reach a state of readiness and willingness to change. Measuring and addressing 'individual motivation' is identified as an important aspect of the rehabilitation process. Recognising the main influences which impact a person's engagement and retention in rehabilitation programmes is also an important pre-requisite for successful rehabilitation.

Methodology

The third part of the cross-sectional study assessed the motivation level for rehabilitation based on the 'Transtheoretical model' using the validated Sinhala translation of Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES). The motivation was assessed under the three sub-scales: Recognition, Ambivalence, and Taking Steps. Relevant descriptive statistics of SOCRATES scores were calculated. The level of motivation was determined based on the sum of the scores; low, moderate and high. To assess factors associated with motivation, the level of motivation was divided into two categories based on the median of total score obtained for SOCRATES. Those who had scores below median were considered as having a low level of motivation and those who had scores equal to or above median as having a high level of motivation. Data on the relevant independent variables were extracted retrospectively from the initial stage of the study to ascertain the associated factors with motivation for rehabilitation at 0.05 significance level using regression analysis.

Results

The study found that the majority (52.9%) had a moderate level of motivation for rehabilitation in all three sub-scales (8). High motivation for rehabilitation was reported by 23.4% based on total score, while a similar proportion (23.7%) reported low motivation. Of the five factors identified during χ^2 test analysis, only the problematic level of drug use and awareness about adverse consequences of drug use emerged as statistically significant predictors of motivation for rehabilitation in multivariate analysis.

The participants who reported higher problematic levels of drug use were less likely to have a high motivation for rehabilitation compared to those with a low problematic level (OR=0.564, 95% CI=0.366-0.872). Interestingly, being aware of adverse consequences of drug use (OR=1.778, 95% CI=1.108-2.853) was more likely to have a high motivation for rehabilitation compared to not being aware of the consequences. Age category, marital status, and duration of drug use failed to show associations with motivation for rehabilitation in binary logistic regression analysis (Table 2).

Table 2: Associated factors of motivation level for rehabilitation among drug users (N=431)

Associated factors of motivation level for rehabilitation	Motivation level for rehabilitation		Total N (%)	OR (95% CI)	Significance
	High	Low			
	(n=229) n(%)	(n=202) n(%)			
Age category					
< 25 years(R)	45 (38.8)	71 (61.2)	116 (100.0)	0.5 (0.3 to 1.1)	p = 0.051
25 years and above	184 (58.4)	131 (41.6)	315 (100.0)		
Marital status					
Unmarried/ divorced/ separated/ Widowed	134 (49.4)	137 (50.5)	271 (100.0)	1.2 (0.8 to 1.9)	p = 0.251
Married/ Living together (R)	95 (59.4)	65 (40.6)	160 (100.0)		
Duration of drug use					
< 10 years (R)	97 (45.9)	114 (54.1)	211 (100.0)	0.8 (0.4 to 1.3)	p = 0.439
10 years and above	132 (60.0)	88 (40.0)	220 (100.0)		
Problematic level of drug use					
Low (R)	52 (41.6)	73 (58.4)	125 (100.0)	0.5 (0.3 to .0.8)	p = 0.010*
High	177 (57.8)	129 (42.2)	306 (100.0)		
Awareness on adverse consequences of drug use					
Yes	64 (62.7)	38 (37.3)	102(100.0)	1.7 (1.1 to 2.8)	p = 0.017*
No (R)	165 (50.1)	164 (49.9)	329(100.0)		

R- Reference * Statistically significant

Discussion

Level of motivation for rehabilitation was found to be inadequate among males with drug use disorder and this finding was supported by the high readmission rate. The study emphasized the need of incorporation of assessment of 'readiness to change' into the rehabilitation process to identify those with low motivation to change drug use behaviour. This will facilitate early and rigorous interventions to prevent future relapses. Assessment of motivation for rehabilitation at the beginning of the rehabilitation process is important to plan rehabilitation activities and as well as to identify barriers for change among persons with illicit drug use disorder. Any persons with illicit drug use disorder can end up with a relapse despite having a higher motivation level at the beginning unless they maintain their action for at least six months. A repeat assessment of motivation at discharge from the rehabilitation center will be required, which could also be used as a valuable predictor of long-term rehabilitation for better outcomes. As a significant number of drug users had lack of motivation for rehabilitation, attention should be directed towards re-orientation of the rehabilitation programmes for persons with illicit drug use disorder in the country. By incorporating activities into rehabilitation programmes that increase recognition and avoid ambivalence, drug users can be supported to continue those actions even after discharge from the rehabilitation centers.

STUDY 3 - RELAPSE FOLLOWING REHABILITATION

Introduction

Relapse following rehabilitation is identified as a major drawback in the rehabilitation process of drug addicts. Drug addicts have to face many challenges within the society after discharge from rehabilitation and the majority are unable to cope with these new challenges, ending up with a relapse. With the higher number of readmissions, rehabilitation centres as well as prisons are overburdened and are unable to provide adequate facilities to drug addicts who require admission. Hence, assessment of the relapse rate is crucial to understand the extent of the burden of readmissions

following rehabilitation. Such information is valuable to attract the attention of policymakers towards uplifting of drug rehabilitation services.

Methodology

A longitudinal follow up study was conducted among a randomly selected sub sample of 189 drug addicts in the five selected rehabilitation centres which participated in initial cross sectional study. Drug addicts who have not completed their 3-month treatment period were excluded from the sample. The selected study subjects were followed up after discharge from rehabilitation centre up to a period of six months with two follow up interviews at 3 months and 6 months, respectively. Relapse is defined as 'a return to drug use after a period of abstinence often accompanied by reinstatement of dependence symptoms' (1). An interviewer-administered questionnaire was used to obtain information during the follow-up interviews. The contact numbers of the drug addicts and their family members and residential addresses were noted down with consent at beginning of the study. This contact information was used to locate the selected drug addicts during the follow-up. The support of outreach officers assigned to rehabilitation centers were used to facilitate this process. To minimize the loss to follow up, support was obtained from the selected rehabilitation centers, family members and outreach officers of NDDCB. The relapse rate was calculated at 3 months and 6 months, respectively.

Results

The study found a high relapse rate among male drug addicts in the sample following rehabilitation (9). At the end of three months, the relapse rate was 48.7%, whereas at the six month it was 59.6% excluding lost to follow-ups. The majority (84.4%) of the drug users who relapsed have experienced the relapse within the first three months after discharge from rehabilitation centres. The mean time taken to relapse was less than one month (mean = 3.1 weeks and SD = 4.8 weeks) (9). The easy availability and accessibility for drugs within the living community was identified as the main reason for relapse among 82.6% of drug users

who were relapsed. The majority (>89%) of the drug users were found to have a good health status at both follow and they were functioning well after discharge from the rehabilitation centers. Nearly 30% of the drug users had engaged in regular employment and had a stable financial status. Nearly 50% of the drug users had a mutually supportive relationship and a protective environment within family after discharge from rehabilitation centre. Legal problems were reported in a minority (<10.0%) of the sample at follow up. The majority were satisfied with the service received during rehabilitation (92.1%), and after discharge from the rehabilitation center (83.1%) (9).

Discussion

A significant number of drug addicts ended up with relapse during a very short period after discharge from rehabilitation centres. This should draw the attention of policymakers and health programme planners towards developing comprehensive follow up programmes for drug addicts especially during the initial period after discharge from rehabilitation centres. These findings further emphasize the need for individualized follow up plans enabling to pick up the drug addicts at the initial stage of relapse. The study recommends the design and implementation of a comprehensive follow-up plan on an individual basis featuring home visits with the help of a multidisciplinary team including family members, social workers, officers in the criminal justice system and staff in relevant rehabilitation centers to minimize number of relapses.

STUDY 4 – TRIGGERS FOR RELAPSE AFTER REHABILITATION

Introduction

There is always a relapse trigger that causes the individual to recommence the drug use behaviour. According to global literature, the most common causes for relapses are becoming overconfident, feeling full of self-pity, unrealistic expectations for recovery, lying and other forms of dishonesty, symptoms of depression, feelings of frustration in recovery, expecting too much from other people,

taking recovery for granted, abusing other substances, hunger, anger, loneliness and tiredness (16). With higher number of readmissions into prisons due to drug-related offences as well as higher number of readmissions to rehabilitation centres, the assessment of trigger factors for relapse at the individual level was identified as an important step to minimize relapses following rehabilitation processes in Sri Lanka.

Methodology

A nested case-control study was conducted using 108 cases and 74 controls (10). A drug addict who had been discharged from the selected drug rehabilitation centers in Sri Lanka after completion of rehabilitation (three months' rehabilitation course) and found to have relapsed during the follow up period of six months after discharge were defined as cases while those who didn't have a relapse during the specified period were defined as controls. Cases and controls were selected from among the 189 drug addicts who were participated in the longitudinal follow up study to assess relapse rate. To ascertain the presence or absence of the selected risk factors, data on the relevant independent variables were extracted retrospectively from the database created in the initial stage of the study. Data were analysed using regression analysis at 0.05 significant level to identify relapse triggers.

Results

The study identified few important triggers for relapse among male drug addicts who were rehabilitated. Six factors were found to be associated with relapse after rehabilitation among drug addicts, of which only two remained predictive of relapse after controlling for confounding. Use of alcohol and tobacco after discharge posed a considerably high risk (OR=15.1, 95% CI=6.2-36.7), while having adverse consequences in social relationships due to drug use demonstrated a lower risk (OR=0.3, 95% CI=0.1-0.9) (10). Follow up status after discharge from rehabilitation centre, service satisfaction of client during rehabilitation and after discharge from the

rehabilitation centre and having a history of previous rehabilitation did not emerge as significant risk or protective factor after controlling for confounders (Table 3).

Common predictors of relapse identified in literature such as employment status, marital status, age, family history of drug use, income and family type *etc.* failed to show significant associations with relapse in this sample.

Table 3: Risk and protective factors for relapse among drug users (n=182)

Factor related to rehabilitation	Relapse status		Total Number (%)	OR (95% CI)	Significance
	Not relapsed (n=74)	Relapsed (n=108)			
	Number (%)	Number (%)			
Follow up status after discharge from rehabilitation center					
Regular (R)	49 (49.5%)	50 (51.5%)	99 (100.0%)	-	
Irregular	23 (38.3%)	36 (61.7%)	60 (100.0%)	1.6 (0.7 to 3.7)	<i>p</i> = 0.256
No follow up	2 (8.3%)	22 (91.7%)	24 (100.0%)	3.1 (0.2 to 42.8)	<i>p</i> = 0.416
Service satisfaction during rehabilitation					
Satisfied (R)	72 (43.1%)	95 (56.9%)	167 (100.0%)	0.7 (0.1 to 10.1)	<i>p</i> = 0.858
Not satisfied	2 (13.3%)	13 (86.7%)	15 (100.0%)		
Service satisfaction after discharge from the rehabilitation center					
Satisfied (R)	70 (46.4%)	81 (53.6%)	151 (100.0%)	2.1 (0.2 to 17.3)	<i>p</i> = 0.464
Not satisfied	4 (12.9%)	27 (87.1%)	31 (100.0%)		
History of previous rehabilitation					
Yes	16 (29.1%)	39 (70.9%)	55 (100.0%)	1.8 (0.7 to 4.3)	<i>p</i> = 0.159
No (R)	58 (45.7%)	69 (54.3%)	127 (100.0%)		
Use of alcohol and tobacco after discharge					
Yes	30 (23.3%)	99 (76.7%)	129 (100.0%)	15.1 (6.2 to 36.7)	<i>p</i> <0.001*
No (R)	44 (83.0%)	9 (17.0%)	53 (100.0%)		
Problems in social relationships following drug use behavior					
Yes	65 (44.8%)	80 (55.2%)	145 (100.0%)	0.3 (0.1 to 0.9)	<i>p</i> = 0.046**
No (R)	9 (24.3%)	28 (75.7%)	37 (100.0%)		

R – Reference category

Statistically significant at *0.001 and **0.05 level

Discussion

Drug users are prone to use alcohol and tobacco after discharge from rehabilitation center instead of illicit drugs due to easy access in early stages after rehabilitation and this behaviour will end up in relapse after few months according to literature (17). In the local culture, many drug addicts may fear social isolation and disputes in community (18). Hence, they may be reluctant to reuse illicit drugs following rehabilitation due to unpleasant experiences in social relationships in past, thereby making the adverse consequences in social relationships a protective factor against relapse. Hence, social awareness among community is required to minimize social pressure on drug users following rehabilitation. It will help drug users to continue their drug free status following rehabilitation and to be recognised and respected as “persons free of drug use” in their living community leading to a lower risk of relapse. On the other hand, the close-knit family and social structures prevailing in the local context could have offered a strong social support network to the rehabilitated drug users with problems in social relationships, thereby helping them to overcome these problems. Although many relapse triggers described in literature, were not identified in the present study, as the problem of drug addiction not limited to the geographical boundaries, it is worthwhile to consider all the predictors of relapse together which were identified though literature without considering specific geographic regions. As relapses following rehabilitation is identified as a major drawback in the rehabilitation process in Sri Lanka, attention for relapse triggers is required in planning and implementing rehabilitation programmes for individuals addicted to drugs. This will minimize the number of relapses and ensure a better outcome of rehabilitation programmes in Sri Lanka.

Conclusion and Recommendations

These studies emphasized the need of considering the rehabilitation process at the individual level as characteristics, patterns, determinants, problematic level, addiction level and motivation level for rehabilitation varies among the drug addicts, although overall picture of drug use showed a

geographical homogeneity within the country. The DAST 20 was identified as an important tool for screening purposes of drug addicts to identify the problematic level and possible adverse consequences following drug use. Hence study recommends using the DAST 20 at the community level and as an admission criterion in deciding the necessity for inpatient treatment/therapy.

SOCRATES was identified as an important tool to assess readiness to change drug use behaviour throughout the rehabilitation process. Hence, its use is recommended in the assessment of the motivation level for rehabilitation at the beginning of the rehabilitation process. A repeat assessment on discharge from the rehabilitation centre would be helpful to achieve better outcomes in the post-rehabilitation follow up, particularly in integration of the drug users to the society. Being aware about adverse consequences was identified as more likely to have a high motivation level for rehabilitation, it will be required proper awareness on adverse consequences of illicit drug to improve motivation for rehabilitation among drug addicts. Therefore, it is recommended to include proper awareness programmes of adverse consequences of illicit drug use into the educational system of the country in order to prevent of illicit drug use, especially among young adolescents.

As many drug addicts reported adverse consequences following illicit drug use, it is recommended to develop a proper assessment system to screen drug addicts and to identify these adverse consequences early. This can be done at the community level, when entering into rehabilitation centers and when entering into prisons. Furthermore, a referral system should be incorporated into the rehabilitation process to address not only for health problems but also for family and social problems, employment problems and legal problems.

As a high relapse rate was observed, it is recommended to monitor and supervise the rehabilitation process even after discharge from rehabilitation centres with the help of a supportive network including the staff of rehabilitation centres, family members of drug addicts, social workers and the community. Introduction of discharge plans at an individual level according

to the socio-demographic background of the drug addicts is recommended before discharge. Drug addicts should be followed up according to the discharge plan. The necessity to incorporate solutions for identified health and social problems into the discharge plan is emphasized by the findings and it is recommended to obtain help from a multidisciplinary team including, family members, social workers, officers in the criminal justice system, health professionals, staff in relevant rehabilitation centers and many others to ensure the success of this discharge plan. Furthermore, a proper discharge plan will help in picking up the drug addicts at the initial stage of relapse preventing their return to drug addiction. Hence it is recommended to formulate a proper follow-up plan at the individual level targeting home visits.

The lack of research studies related to illicit drug use in the local context was noted although many were available in global and regional contexts. Hence, further research studies are recommended to identify gaps related to illicit drug use field in the local context in order to plan and implement better rehabilitation programmes within the country to make Sri Lanka a drug free country. Replication of this study in a community-based sample including female drug users would further enrich the knowledge base related to illicit drug use behaviour in Sri Lanka.

Summary

Addiction to illicit drugs is a global public problem and it needs immediate attention from all nations to prevent its spread and further damage caused by it. Sri Lanka is considered a transit point for global drug trafficking due to its geographical location and there is a high risk for increased drug use within the country including the use of novel psychoactive substances. The country needs well-planned preventive strategies to reduce drug use and mitigate the harmful effects caused by drug addiction. Therefore, the above detailed analysis of illicit drug use and incarceration, drug rehabilitation, problematic level of illicit drug use, motivation level assessment for rehabilitation, assessment of relapse rate and trigger for relapse

will be immensely helpful to the government and the policymakers to develop policies and to plan preventive strategies and harm reduction programmes to overcome the problems of drug addiction in order to make a “Drug- Free Sri Lanka”.

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