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Problematic level of drug use and its associated factors among illicit drug users in Sri Lanka: Experience from a multicentre study

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Summary

Background: Illicit drug use causes a variety of consequences including medical and social problems. Proper assessment of problematic drug use is useful before selecting to manage clients as inpatients, to avoid unnecessary admissions to rehabilitation centres. This study aimed to assess the problematic level of drug use among illicit drug users in selected rehabilitation centres in Sri Lanka using Drug Abuse Screening Test 20 (DAST 20). **Methods**: A cross-sectional study was conducted among 431 institutionalized male drug addicts from five selected rehabilitation centres in Sri Lanka. Sinhala translation of the DAST 20 was used to assess the problematic level of illicit drug use. Data analysis was done using SPSS statistical software (Version 20). Chi-square test and binary logistic regression were used to identify the predictors of problematic drug use. The level of significance was considered as 0.05. **Results**: A majority (n=374, 89.4%) of the sample were addicted to heroin. Nearly 17.0% (n=73) of the illicit drug users had a severe problematic level of addiction while over half of the sample (n=233, 54.1%) had a substantial level of addiction. Exposure to abuse during childhood/adolescence (OR=3.9, 95%CI=2.5-6.3, p<0.001), initiation of drug use in adolescence (OR=2.3, 95%CI=1.4-3.8, p<0.05), high income (OR=1.7, 95%CI=1.02-2.8, p<0.05) and being a non-manual worker (OR=2.6, 95%CI=1.001-6.5, p<0.05) were predictive of a high problematic level. **Conclusions**: Problematic level of drug use and its associated factors varied among the sample, indicating that some of the admissions to rehabilitation centres could actually be managed as outpatients.

Key Words: Illicit drug use; drug addicts; problematic level; DAST 20; rehabilitation

1.   Introduction

Illicit drug use is identified as a significant public health problem in many countries throughout world including Sri Lanka [20]. Problematic illicit drug use is defined as "use that is accompanied by a degree of addiction by which the user is no longer offered the possibility to control his/her use and that is expressed by psychological and physical symptoms" [17, 18, 31].Several factors have been identified as predictors of problematic illicit drug use in literature. Both risk factors and protective factors have been reported with regard to initiation of drug use behaviour as well as its continuation [4]. However, vulnerability to addiction differs from person to person and no single factor determines whether a person will become addicted to drugs [21]. According to

National Institute on Drug Abuse in United States of America (NIDA), when there are various risk factors, there is a greater chance leading to abuse of drugs and addiction, whereas protective factors reduce the risk of developing an addiction [22]. These risk and protective factors may be either biological (genes, stage of development, medical/mental conditions, and even the gender/ethnicity of the drug user) or environmental (home, school, workplace, society, and culture) [1, 14, 16, 22, 24].

Many researchers throughout the world have attempted to identify the determinants of illicit drug use. These determinants include both risk factors and protective factors related to initiation and continuation of illicit drug use behaviour implicating personal, environmental and social factors. These determinants of illicit drug use can affect any individual without

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boundaries. A Polish study on 559 drug users investigated to what extent the individual factors related to family and environment affect the extent of drug addiction [12]. The study concluded that the main family factors associated with drug addiction are the family atmosphere, the strength of family ties, sense of family happiness, the structure of authority in the family and alcoholism. In families where there is warmth and love, children did not or rarely take drugs. Drug addicts have weaker family ties than do those who do not take drugs. In families with contacts with drugs, authority belonged to the mother to a greater degree (54.4%) than to the father (23.6%). In 46.3% of the families studied, the authority was drunk [12].

According to a study carried out in Germany, substance use disorders were identified as the most frequent behavioural consequences of childhood abuse and neglect [26]. The study revealed that about 20% of the adults with experiences of abuse or neglect in childhood and 30% of the individuals seeking treatment for post-traumatic stress disorder had substance use disorder. Furthermore, the study revealed that 24%-67% of all patients in treatment for substance use disorder have a history of childhood abuse and neglect. The children of parents with substance use disorder had a higher chance of getting substance use disorder. About 16% of children and adolescents under the age of 20 years in the sample grew up in families with alcoholism and/or drug dependence. In addition to other risks to their development in cognitive and psychological domains, those children have an increased risk of experiencing violence and neglect [26].

Twin and family studies conducted by Bevilacqua and Goldman have found that the inheritance of substance use disorders had genetic and environmental influences [3]. They predicted that genetic influence for substance use disorder can be further investigated at an individual level with modern technology. Henkle conducted a study to assess the relationship between illicit drug use and employment, based on secondary data from 130 international research published between 1990 and 2010. The study found that the use of psychoactive substances and illicit ones often coexisted and the problematic substance use increases the likelihood of unemployment and decreases the chance of finding and holding down a job [11].

A variety of risk and protective factors were associated with adolescent nonmedical use of prescription drugs according to a study done in the USA [19]. Easy access, parental and peer prescription drug use and misuse of prescription drugs were identified as risk factors at the community level by this study. Academic failure and low educational level were identified as risk factors at school level and previous use of substances, violent behaviour, and lower perceived risk or harm of use were identified at the individual level [19].

Another study was done in the USA to assess risk factors associated with the problem use of prescription drugs using data of the National Household Survey on Drug Abuse. The study identified that older adults, females, those in poor/fair health, and daily alcohol drinkers as the highes risk groups [28].

It is said that social networks have an effect on drug addiction. A study was done to examine the scientific evidence regarding the association between characteristics of social networks of IDUs and the sharing of drug injection equipment [7]. The study concluded that social network characteristics are associated with drug injection risk behaviours and should be considered alongside personal risk behaviours in the prevention programmes [7].

A study done in Brazil on 478 students found that age, sex, social status and living with both parents were significantly associated with drug abuse [2]. Furthermore, stress was identified as a risk factor. Another study conducted by Sinha, using a series of population-based epidemiological studies, also identified stress and individual-level variables as risk factors for illicit drug use [29]. Onset of substance use at a young age, gender, treatment admission at older ages, higher parental criminal history, and having substance-using parents or relatives were identified as risk factors for illicit drug use in Turkey, according to a study done by Çiftçi Demirci et al. [6].

Simcha-Fagan and co-researchers [27] assessed the determinants of illicit drug use among a sample of children aged 14 to 22 years and identified that background, early child behaviours, parental-marital behaviours, the quality of the bond between parents and children and early adjustment problems with peers and at home, familial disorganization and parental antisocial behaviours are key predictors for illicit drug use.

The above evidence suggests that risk factors and protective factors identified by the researchers in different settings show a wide variation, probably reflecting the differences in socio-cultural contexts. Assessment of problematic level of drug use is beneficial for drug users' treatment and management, including rehabilitation, to achieve better outcome by minimizing relapses [5]. Furthermore, identification of predictors of problematic levels of drug use will be immensely helpful for the service providers to identify groups vunerable to the use of illicit drugs as well as drug users vulnerable to serious consequences and plan preventive strategies to overcome the problems of drug addiction. Similarly, policymakers will be able to use this information to develop policies to prevent illicit drug use among risk groups, implementing awareness programmes and management of persons with problematic drug use.

This study was conducted to assess problematic level of drug use among male illicit drug users in selected rehabilitation centres in Sri Lanka using Drug Abuse Screening Test 20 (DAST 20).

Drug Abuse Screening Test 20 (DAST 20) was recognized as an important tool for screening of drug addicts to identify their problematic level of illicit drug use. It is a brief, self-report instrument not only for population screening but also for identifying drug problems in clinical settings and treatment evaluation. This was used to identify and quantify the level of problems related to drug abuse using 20 questions. The DAST was designed by Dr. Harvey A. Skinner in 1982 to be used in a variety of settings to provide a quick index of drug-related problems and it is freely available online. The questions inquired on possible involvement with intoxicants/drugs not including alcoholic beverages during the past 12 months. The DAST is identified as a reliable and valid instrument for clinical or research purposes that can be easily administered in a variety of populations. It tends to have moderate to high levels of test–retest, inter-item, and item–total reliabilities and a moderate to high level of sensitivity and specificity according to its psychometric properties [33].

2. Methods

2.1. Design of the study

This study was a component of a larger institution-based, cross-sectional study on patterns and correlates of drug use behaviour among institutionalized male drug users in Sri Lanka. The participants were recruited from five drug rehabilitation centres in four districts of Sri Lanka, namely, Colombo, Galle and Kandy, representing an island-wide distribution.

2.2. Sample

The study sample was made of 431 institutionalized male drug addicts from five selected rehabilitation centres using convenient sampling method. Nearly all treatment admissions (>99%) to the rehabilitation centres in Sri Lanka were made up of, therefore only institutionalized male drug users were included in the study. The male drug addicts included in the sample were 16 years or above, had their first contact with the investigators during the data collection period, including both first admissions and re-admissions; were admitted within one-month period and were mentally fit to respond to the study questionnaires. Readmissions of the same subject during data collection and participants who did not have the capacity to give legally effective consent were excluded from the study.

2.3. Study instruments

A pretested, interviewer-administered questionnaire was used to collect information on sociodemographic information, drug related factors and history of exposure to vulnerable factors among illicit drug users. The history of exposure to vulnerable factors was assessed using a series of questions developed by the principal investigator based on existing evidence. Presence of addiction to the illicit drugs before admission to rehabilitation was assessed among drug addicts according to the ICD 10 symptom checklist for substance use disorder. The questions were asked in relation to a period of one year prior to the admission.

Sinhala translation of the Drug Abuse Screening Test 20 (DAST 20) was used to assess the problematic level of illicit drug use. The questions inquired on possible involvement with intoxicants/drugs not including alcoholic beverages during the past 12 months. Based on a scoring system, 0 marks are taken as 'no problem reported' and a cumulative score of 1-5, 6-10, 11-15 and 16-20 are taken as low, moderate, substantial and severe levels of problematic drug use, respectively. DAST 20 was translated into Sinhala language using translation-back translation method. This questionnaire is not validated for the Sri Lankan setup yet. Therefore, the judgmental validity of the Sinhala version of DAST 20 was established including the face validity, content validity, and consensual validity by a panel of experts consisting of a Consultant Community Physician, a Consultant Psychiatrist, an expert in behavioural sciences and social work prior to its use in this study.

2.4. Study implementation

To conduct the study, ethical approval was obtained from the Ethical Review Committee, Faculty of Medicine, University of Ruhuna, Sri Lanka (Ref. No 11.07.2016:3.13). Permission for the data collection was obtained from the Chairman of National Dangerous Drug Control Board, Sri Lanka. Written informed consent was obtained from all participants after explaining the purpose and objectives of the study. Participants were ensured that the study was independent from the rehabilitation process and refusal of participation or withdrawal from the study would not affect the services they were receiving from the rehabilitation centre. All interviews were conducted by the principal investigator in a separate room to maintain privacy.

2.5. Data analysis

Data analysis was done using SPSS statistical software (Version 20). The factors associated with the problematic level of drug use were considered under

three sections; namely, Sociodemographic factors, drug-related factors and exposure to vulnerable factors during childhood/adolescence. Illicit drug users who can be managed as outpatient clients (ASAM Level I & II) were considered as having a low problematic level while illicit drug users who required inpatient rehabilitation care were considered as having a high problematic level during cross tabulation. Chi-square test was used to assess the association between variables. Binary logistic regression was used to identify the predictors of problematic drug use. The level of significance was considered as 0.05.

3.   Results

A total of 431 male illicit drug users from five selected rehabilitation centres participated in the study. There were no non-respondents and the response rate was 100%. The Majority of drug users were aged above 25 years (n=316, 73.3%) with mean age (SD) of 31.7 (10.3) years. Over 2/3rd of the sample (67.5%) had low education (educated below G.C.E O/L). The highest proportion of them were residents of urban areas around the capital city of the country (n=326, 75.6%). Among drug users, the majority (n=403, 93.5%) were employed and over half of them were non-manual workers (n=228, 56.5%). The majority (n=264, 61.2%) had a monthly income of more than 50,000 Sri Lankan rupees (LKR) with a mean (SD) of 73,122 (69,473) LKR. Nearly half

of the sample (n=234, 54.3%) was unmarried, while 65% of the drug users (n=277) lived in a nuclear family setting. Drug dependence/addiction was identified among 418 (97.0%) of illicit drug users in selected rehabilitation centres. Among them 89.4% (n=374) were addicted to heroin, followed by cannabis (n=18, 4.3%), and psychotropic drugs (n=8, 1.9%). Interestingly, 4.3% (n=18) of drug users were addicted to multiple drugs.

3.1.   Problematic drug use among drug users in selected rehabilitation centres

Problematic illicit drug use is defined as 'the 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' [18]. Drug Abuse Screening Test-20 (DAST-20) was used to assess problematic drug use among illicit drug users in this study (**Table 1**).

Problematic level of drug use was categorized as low, moderate, substantial and severe levels as described under methods (**Table 2**). According to DAST-20, although only 16.9 % (n=73) of the illicit drug users had a severe problematic level of addiction, over half of the sample (n=233, 54.1%) had a substantial level of addiction.

The scores of DAST-20 were compared against the corresponding American Society of Addiction

Table 1: Distribution of responses to DAST-20 by illicit drug users (N=431)		
Item in DAST 20	Number	Percentage
1. Had used drugs other than those required for medical reasons	431	100.0
2. Had abused illicit drugs	428	99.3
3. Had polydrug use	290	67.3
4. Were able to get through the week without using drugs	213	49.4
5. Were always able to stop using drugs when wanted to	169	39.2
6. Had "blackouts" or "flashbacks" as a result of drug use	166	38.5
7. Ever felt bad or guilty about drug use	392	91.0
8. Spouse or parents or family members ever complained about involvement with drugs	410	95.1
9. Drug abuse had created problems between spouse or parents or family member	350	81.2
10. Had lost friends because of the use of drugs	308	71.5
11. Had neglected by family because of use of drugs	160	37.1
12. Had been in trouble at work because of drug use	245	56.8
13. Had lost a job because of drug use	216	50.1
14. Had gotten into fights when under the influence of drugs	128	29.7
15. Had engaged in illegal activities in order to obtain drugs	169	39.2
16. Had been arrested for possession of illegal drugs	353	81.9
17. Had ever experienced withdrawal symptoms when stopped taking drugs	393	91.2
18. Had medical problems as a result of drug use	225	52.2
19. Had gone to anyone for help for a drug problem	291	67.5
20. Had been involved in rehabilitation program specifically related to drug use	171	39.7

Table 2: Problematic level of illicit drug use among past illicit drug users (N=431)

Problematic level	Number	Percentage	ASAM criteria*
Low level	11	2.6	Level I
Moderate level	114	26.5	Level II
Substantial level	233	54.1	Level III
Severe level	73	16.9	Level IV
*American Society of Addiction Medicine Placement Criteria			

Medicine (ASAM) Placement Criteria for drug users. According to these criteria, 125 (29.0%) of the illicit drug users (ASAM Levels I & II /low or moderate levels of addiction) could be managed as outpatient clients and a majority (n=306, 71.0%) of them required inpatient rehabilitation care (ASAM Levels III & IV/substantial or severe level of addiction).

3.2. Factors associated with problematic level of illicit drug use among drug users

The participants' socio-demographic characteristics, drug-related characteristics and exposure to vulnerable factors during childhood/adolescence were cross-tabulated with problematic level of drug use in the bivariate analysis to identify significant associations.

Age category, area of residence, education level, occupational status, income category, marital status and family type were considered under socio-demographic determinants. The presence of higher problematic level of drug use was associated with older age of drug users (p<0.05), living in western province (p<0.01), being employed (p<0.01) and having a higher income (p<0.05). Educational level, marital status and family type failed to show statistically significant associations with the problematic level of drug use in the bivariate analysis.

Duration of drug use, age of first drug use, easy availability of illicit drugs and awareness about adverse consequences of drug use were assessed under drug-related factors. The presence of higher problematic level of drug use was associated with a longer duration of drug use (p<0.01) and initiation of drug use during adolescence (p<0.01). However, easy availability and accessibility for illicit drugs and awareness about adverse consequences of drug use did not show statistically significant associations with the problematic level of drug use.

Having a family history of drug addiction, exposure to violence and abuse and unsatisfactory parenting status were assessed under exposure to vulnerable factors during childhood/adolescence. The presence of higher problematic level of drug use was associated with having family history of drug addiction (p<0.05) and exposure to abuse (p<0.001) during childhood/adolescence, but not with exposure to violence and unsatisfactory parenting status during childhood/adolescence.

3.3. Predictors of problematic level of drug use among drug users

Binary logistic regression was used to assess the predictors of problematic level of drug use after controlling for confounders. The factors associated with problematic level of drug use identified during initial bivariate analysis were used as independent variables.

Age category, area of residence, occupational status and income category of drug users, duration of drug use, age of first drug use, family history of drug use and exposure to abuse during childhood/adolescence were considered in binary logistic regression. Out of these, only the occupational status, income category, age of first drug use and exposure to abuse during childhood/adolescence were found to be statistically significant with a higher problematic level of drug use in multivariate analysis (**Table 3**).

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=3.928, 95% CI= 2.467-6.252, p<0.001), thus making it the strongest predictor of problematic drug use. In addition, drug users who initiated drug use during adolescence (OR=2.292, 95% CI=1.382-3.802, p<0.05), who had a high income (OR=1.686, 95% CI=1.023-2.780, p<0.05) or who are non-manual workers (OR=2.553 95% CI =1.001-6.511 p<0.05) were more likely to have a high problematic level compared to those who initiated drug use during adulthood, had a low income or are in unemployed status.

Age of the drug user, area of residence, duration of drug use and having family history of drug use failed to emerge as significant predictors of the problematic level of drug use in multivariate analysis.

4. Discussion

This study assessed the problematic level of drug use among male drug users in selected rehabilitation centres in Sri Lanka, using Drug Abuse Screening Test (DAST) 20. Our findings revealed that a substantial or high problematic drug use was

Table 3: Predictors of problematic level of drug use among drug users (N=431)

	Low N (%)	High N (%)	Total N (%)	OR (95% CI)	p
Age category					
< 25 years	42 (36.2)	74 (63.8)	116 (100.0)	1.000	
25 years and above	83 (26.3)	232 (73.7)	315 (100.0)	1.430 (0.712-2.870)	0.315
Area of residence					
Western province	82 (25.2)	244 (74.8)	326 (100.0)	1.475 (0.845-2.574	
Outside of western province	43 (40.9)	62 (59.1)	105 (100.0)	1.000	0.171
Income category					
No income / < 50,000 LKR	59 (35.3)	108 (64.7)	167 (100.0)	1.000	
50,000 LKR and above	66 (25.0)	198 (75.0)	264 (100.0)	1.686 (1.023-2.780)	0.040
Occupational status					
Unemployed	14 (50.0)	14 (50.0)	28 (100.0)	1.000	
Manual worker	58 (33.1)	117 (66.9)	175 (100.0)	1.312 (0.497-3.460)	0.584
Non-manual worker	53 (23.2)	175 (76.8)	228 (100.0)	2.553 (1.001-6.511)	0.050
Duration of drug use					
<10 years	74 (54.0)	137 (46.0)	211 (100.0)	1.000	
10 years and above	51 (23.1)	169 (76.9)	220 (100.0)	1.009 (0.557-1.829)	0.976
Age of first drug use					
<18 years	48 (21.7)	137 (78.3)	221 (100.0)	2.292 (1.382-3.802)	0.001
18 years and above	77 (36.7)	133 (63.3)	210 (100.0)	1.000	
Family history of drug addiction					
Yes	34 (21.8)	122 (78.2)	156 (100.0)	1.513 (0.911-2.515)	0.110
No	91 (33.1)	184 (66.9)	275 (100.0)	1.000	
Exposure to abuse					
Yes	51 (18.4)	226 (81.6)	277 (100.0)	3.928 (2.467-6.252)	<0.001
No	74 (48.1)	80 (51.9)	154 (100.0)	1.000	

seen in over 70% of the drug users and having a history of exposure to abuse in the past (OR=3.9), being a non-manual worker (OR=2.6), starting drug use in adolescence (OR=2.3) and having a high income (OR=1.7) emerged as significant predictors of high problematic drug use.

DAST 20 is identified as an efficient tool for the screening of drug users to identify their problematic level of drug use [10]. This tool is not validated for Sri Lanka, although it has been used as a valid and reliable tool for screening purposes in many settings according to literature [9, 23, 30, 32]. However, in the existing literature, it was difficult to find studies on the use of DAST 20 for assessing the problematic level of drug use among drug users except in the DAST 20 validation process.

In our study, the majority of the sample (54.1%) had a substantial problematic level of drug use, while only 16.9% had a severe level, followed by low (2.6%) and moderate (26.5%) levels, according to DAST 20 scores. The illicit drug users with low or moderate problematic levels could be managed as outpatients according to the American Society of Addictive Medicine placement criteria [10]. In keeping with that, a considerable proportion of drug users in this sample had unnecessary admissions causing overburden of the rehabilitation system of the country. However, a majority (71.0%) who had a substantial and high problematic level of drug use required inpatient rehabilitation care. If it is possible to screen drug users in the community to assess the problematic levels of drug use, it would be helpful in identifying clients who essentially require inpatient rehabilitation. Oth-

erwise, DAST 20 can be used at the time of admission to screen problematic levels of drug users and plan rehabilitation activities according to their problematic level in order to achieve better outcome by minimizing relapses or to assess the effectiveness of the rehabilitation during follow up. Thus, DAST 20 proves to be a useful tool in the drug rehabilitation process.

In identifying the predictors of illicit drug use, the determinants of problematic drug use were assessed under three broad categories; namely, sociodemographic determinants, drug-related determinants and exposure to vulnerable factors during childhood/adolescence. Of all significant associations identified in the bivariate analysis, only three variables merged as significant predictors of problematic drug use when controlled for potential confounders. Having a history of exposure to abuse during childhood/adolescence was the strongest determinant of a high problematic level of drug use (OR=3.928, 95% CI= 2.467-6.252, p<0.001). Initiation of drug use during adolescence (OR=2.292, 95% CI=1.382-3.802, p<0.05), having a high income (OR=1.686, 95% CI=1.023-2.780, p<0.05) and being a non-manual worker (OR=2.553 95% CI =1.001-6.511 p<0.05) were also predictive of a high problematic level of drug use.

In a study done in UK, having parents or siblings with drug use problem, family disruption, poor attachment or communication with parents, child abuse, low school grades, truancy, exclusion from school, childhood conduct disorder, crime, mental disorders (in particular depression and suicidal behoviour during adolescence), social deprivation and onset of drug use at a young age were identified as risk factors for high problematic drug use [15]. Two of those factors (exposure to abuse and young age of onset of drug use) emerged as risk factors for high problematic level drug use in this study. However, all those factors were highly interconnected in a 'web of causation' [15]. Therefore, all the possible factors associated with illicit drug use need to be considered during the management of problematic drug use among people with illicit drug use disorder.

Exposure to childhood abuse and neglect were identified as vulnerable factors for drug use in few other studies [26, 27], as confirmed by the present study findings. However, in those two studies, the main focus was on physical and sexual abuse. In contrast, the majority (64.3%) in this study were emotionally abused (results not shown). Isolation and avoidance are common reactions to emotional abuse and the majority fear those reactions [25]. Therefore, drug users who have been exposed to abuse during childhood/adolescence may feel isolation and avoidance by family and society due to past experience, compelling them to increase their drug use behaviour, so leading to a higher problematic level. This was further supported by the study done by Lloyd, who identified social deprivation as a risk factor for higher problematic drug use [15].

Two studies done by Henkel [11] and Nargiso et al. [19] found that the use of illicit drugs increases the likelihood of unemployment and decreases the chance of finding and holding down a job. However, the present study found that being a non-manual worker is more likely to predict a higher problematic level of drug use. Many drug users have frequent changes in their occupation, causing them to become manual workers [13]. Being a manual worker facilitates purchasing illicit drugs on a daily basis as most manual workers get daily payments for their work. However, unlike manual workers, being a non-manual worker ensures a stable financial status and it facilitates purchasing illicit drugs on regular basis. Therefore, it is not surprising that being a non-manual worker makes them more likely to have a higher problematic level of drug use as their stable financial status allows them to use drugs continually. This was further supported by the fact that the drug users with a high income were more likely to have higher problematic level in this study and this association was independent from their occupational category.

The drug users who initiated drug use during adolescence were more likely to have a higher problematic level according to the present study. Initiation of drug use during adolescence was identified as risk factor for higher problematic drug use by other researchers as well [6, 8]. Easy accessibility of illicit drugs by children and youth was identified as the main reason for this association. The easy accessibility enables them to experience different types of illicit drugs leading to addiction, so causing over time a probable increase in their problematic level [6, 8].

The age category, area of residence, duration of drug use and having a family history of drug use did not show statistically significant associations with the problematic level of drug use in multivariate analysis. Hence, any observed association of these variables with problematic drug use in the bivariate analysis could be due to the confounding effects. The discrepancies between our findings and the existing literature and the lack of information on determinants of drug use in local and global context emphasize the need of more robust studies to identify different risk factors and protective factors for drug use in the future.

However, generalizability of the findings to the population of drug addicts within the entire country was limited as only male drug addicts were included in the study and they were resident in urban areas around the capital city of the country. Moreover, the use of DAST 20 for this study on the basis of a judgmental validity only was identified as another limitation of the study.

The study identified DAST 20 as an important tool for screening purpose of drug addicts to iden-

tify the problematic level of drug use. Moreover, it identified associated factors for problematic drug use which were highly interconnected. As problematic drug use is a significant public health problem in many countries including Sri Lanka, this study finding will be beneficial to policymakers and health program planners interested in the field of illicit drug use in order to plan and to implement effective preventive and management programmes for people with illicit drug use disorders.

5. Conclusions

The problematic level of drug use vary widely among the drug users in rehabilitation centres in Sri Lanka. This emphasizes the need for assessment of problematic level at individual level for a better implementation of rehabilitation process. DAST 20 was identified as an important tool for the screening of drug addiction, in order to identify the problematic level of their drug use. This study recommends to use it at community level and as an admission criterion in deciding the necessity for inpatient treatment/therapy. Further, as the majority of the sample were addicted to heroin, implementing of preventive and management programmes for heroin seems to be worthwhile for a country like Sri Lanka. Moreover, this study underlines the need of psychometric evaluation of DAST 20 using more robust methods when further studies will be implemented.

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