



Pacini Editore & AU-CNS

Report

Heroin Addict Relat Clin Probl 2023; 25(1): 13-19

HEROIN ADDICTION &
RELATED CLINICAL
PROBLEMS

www.europad.org
www.wftbd.org

Previously used substances and predictors of illicit drug use among incarcerated male prisoners in Galle, Sri Lanka

Nuwan Darshana ¹, Rumi Ruben ², and Champa Wijesinghe ¹

1. Department of Community Medicine, Faculty of Medicine, University of Ruhuna, Sri Lanka

2. Psychiatry Unit, Teaching Hospital, Karapitiya, Sri Lanka

Summary

Background. A significant proportion of prison admissions are related to illicit drug use in many countries, including Sri Lanka. There is a direct relationship between illicit drug use and criminal behaviour. This study aimed to assess predictors for illicit drug use among incarcerated males in the Galle prison system. **Methods.** A cross-sectional study was conducted among 441 incarcerated males in the prison complex in Galle and were selected using simple random sampling. A pre-tested, interviewer-assisted, self-administered questionnaire was used to assess the history of illicit drug use behaviour and possible predictors related to drug use. Addiction to illicit drugs and problematic levels of drug use were determined using the ICD 10 symptom check list and the Drug Abuse Screening Test (DAST-20). **Results.** Past illicit drug use was reported among 57.59% (n=254) of incarcerated males in the Galle prison system. Among them, 58.2% were addicted to heroin. Being younger in age and unmarried, engaging in manual labour and tobacco and alcohol use were identified as predictors for prior illicit drug use among male prison inmates. Younger inmates and those with a history of polydrug use were more likely to be addicted to illicit drugs. **Conclusions.** Age, marital status, occupation, and status of drug use were identified as predictors for illicit drug use among prison inmates creating a considerable burden for the criminal justice system of the country. An urgent attention of policy makers is needed to address the prevention of the illicit drug use in the country.

Key Words: Illicit drug use; predictors; male prison inmates

1. Introduction

Psychoactive substances are defined as 'substances that, when taken in or administered into one's system, affect mental processes' [1]. According to World Health Organization (WHO) drug policy, psychoactive substances include the whole class of licit and illicit substances. Illicit drugs are psychoactive substances in which the production, sale or use is prohibited [2]. Heroin, cannabis, cocaine, crystal meth, hallucinogens and other psychotropic drugs are illicit drugs that are commonly found in Sri Lanka and addiction or usage of these illicit drugs has become a significant problem in the country [25]. Furthermore, it causes significant burdens for the economy of the

country, mainly for health services, the criminal justice system and for rehabilitation programmes [25, 38].

There is a direct relationship between drug use and criminal behaviour [7, 26, 30]. It was found that these problems arise primarily as a result of four factors [4]. According to Collins, illicit drug intoxication can lead to criminal behaviour, and drug dependence is associated with a high cost which can lead to lucrative criminal enterprises. Drug users engage in drug related crimes such as consumption, growing harvesting or manufacturing, smuggling, possession and illicit drug trafficking as defined by law [18]. Furthermore, the distribution system for illicit drugs can lead to competition and fraud leading to threats and violence. A significant proportion of prison admissions in many countries, including Sri Lanka,

are drug related [37]. It was reported that there were nearly 80,000 drug related arrests in Sri Lanka in the year 2016 with a prevalence of 390 per 100,000 population [25]. Nearly 24,000 drug related prison admissions were reported in the same year.

The prison population is considered one of the most vulnerable groups among vulnerable populations [3, 5, 6, 20, 29]. Although they deserve to be the focus of certain health and social interventions, according to the literature, considerably less attention is given to this group throughout the world [19].

The situation is similar in Sri Lanka. Few studies have been carried out to identify patterns and determinants of illicit drug use among drug addicts in Sri Lanka, particularly among the prison population, and previous studies have been focused mainly on drug use characteristics and risk-taking behaviours of the users [8]. However, no studies have been carried out so far which can properly identify patterns and determinants of past illicit drug use in Sri Lanka. This lack of data has further impeded the development and implementation of preventive health measures and activities targeting illicit drug users, including the prison population.

The evidence confirms that illicit drug use and its related problems have become one of the prominent public problems in Sri Lanka and infers from relevant authorities and policy makers to prevent and control further consequences of this problem. Therefore, this study was designed to identify prior substance use and predictors for past illicit drug use among incarcerated males in prison in Galle, the findings of which may prove useful in planning early prevention and rehabilitation programmes [12, 14, 16, 17, 20, 28, 36, 39].

2. Methods

2.1. Study setting and participants

A cross-sectional study was conducted among a random sample of 449 incarcerated males in prison in Galle, Sri Lanka, from February 2018 to January 2019. The study sample included adult male prisoners who were convicted, remanded or who had appealed against the conviction and only those admitted within one year prior to data collection were included to minimize recall bias. Female prisoners and those prisoners who were diagnosed with psychiatric illnesses by the prison medical unit, and therefore determined to be too mentally unsound to respond to the study questionnaire, were excluded from the study.

2.2. Subject recruitment

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 by the prison medical centre. The permission of the Prison Medical Officer was obtained for subject recruitment. In addition, approval was obtained from the Board of Study in Community Medicine, Postgraduate Institute of Medicine (PGIM), University of Colombo, Sri Lanka to conduct the study. Permission was also obtained from the Commissioner General of Prisons, the Department of Prison, and the Ministry of Justice and Prison Reforms, Sri Lanka, to recruit the subjects. Ethical approval for the study was obtained from the Ethical Review Committee of the PGIM, University of Colombo, Sri Lanka.

2.3. Study instruments

A pretested, interviewer assisted, self-administered questionnaire with ended questions was used to assess the sociodemographic information and history of illicit drug use behaviour among study participants. The questionnaire consisted of four parts. Part A included personal information including sociodemographic data and other potential correlates of illicit drug use. Part B included prior history and patterns of past illicit drug use, which was prepared based on the European Questionnaire on Drug Use among Prisoners (EQDP) [24]. Part C included the ICD 10 symptom checklist for substance abuse disorders to assess drug dependence. Part D included the Drug Abuse Screening Test (DAST)-20 by Harvey A. Skinner to assess the problematic level of drug use [32]. Parts A and B of the questionnaire were designed based on existing literature, expert opinion, and the guidance of the supervisor. The judgmental validity of all four parts of the questionnaire was assessed by a panel of three specialists related to the field of study: namely, a Consultant Psychiatrist, a Consultant Community Physician, and a Behavioral Scientist.

2.4. Data collection

All data were collected by the principal investigator, after obtaining informed written consent. Data collection was conducted in a separate room with privacy, where only the principal investigator and the research participant were present. To ensure a high response rate and the accuracy of data divulged, the participants were assured that the information collected would be used only for research purposes, in an anonymous manner and no personally identifiable information would be collected. The questionnaire was given to the participant for completion apart from Part C. The investigator was available to assist the research participants while completing the questionnaire and provided necessary clarifications during the whole entire procedure. The principal in-

investigator interviewed research participants in part C of the questionnaire to identify illicit drug addiction disorder before imprisonment. Support from a language translator was obtained when required. Data collection was continued until the required sample size was reached.

2.5. Data analysis

The data were coded and entered an Epi-info data sheet and then transferred to a data base created using the Statistical Package for Science (SPSS) software (version 20). In the ICD 10 symptom check list for substance use disorder, if three or more of the symptoms among items 1, 2, 3, 5, 7 and 9 in the ICD 10 criteria were present, the participant was classified as having drug dependence syndrome. In the DAST-20, each 'yes' response scored 1 point and each 'no' response scored 0 points except for items 4, 5, and 7, which required reverse scoring. According to total marks, 0 marks was interpreted as no problem reported and a total score of 1-5, 6-10, 11-15, or 16-20 was taken as presence of drug abuse in low, moderate, substantial, and severe levels, respectively. The DAST score was then compared with the American Society of Addiction Medicine (ASAM) Placement Criteria in order to assess the problematic level of illicit drug use [9]. For subsequent analysis, drug users with DAST scores compatible with level III and IV of ASAM criteria were considered as indicating a high problematic level and drug users with DAST scores corresponding to level I and II were considered as

indicating a low problematic level. Associations between categorical variables were assessed using the Chi square test of independence. The level of probability was considered as 0.05.

3. Results

3.1. Sample characteristics

Most of the study subjects were from the Galle district (n=419, 95.0%), Sinhalese (n=415, 94.1%) and Buddhist (n= 411, 93.2%). Nearly half of the sample (n= 232, 52.6%) were above 30 years old. Three fourths of the sample had an education level below G.C.E O/L which was considered an unsatisfactory level (n=334, 75.7%), were manual workers (n=327, 74.1%) and living in a nuclear family setting (n=312, 70.7%). Nearly sixty percent of the study participants were married (n=261, 59.2%). The majority (n=303, 68.7%) had a satisfactory monthly income of over 25,000 Sri Lankan rupees (more than 70 US dollars). The Drug Abuse Screening Test-20 (DAST-20) was used to assess the presence of past illicit drug use behaviour and problematic drug use among incarcerated males in prison in Galle.

Past illicit drug use was reported among 57.59% (n=254) of incarcerated males in prison in Galle. Cannabis (n=204, 80.3%) and heroin (n=148, 58.2%) were the most used illicit drugs before imprisonment and used on a regular basis for a long time. Polydrug use was reported among 36.2 % (n=92) of incarcerated males with prior illicit drug use.

Table 1. Significant association of past illicit drug use and sociodemographic factors (N=441)

	Past illicit drug use		Total	Chi value	p-value
	Yes(n=254)	No(n=187)			
Age Category (years)				15.83	<0.001
19-24#	69(71.8)	27(28.2)	96(100.0)		
25-30#	72(63.7)	41(36.3)	113(100.0)		
31-36*	65(67.7)	31(32.3)	96(100.0)		
>36*	48(35.3)	88(64.7)	136(100.0)		
Occupation				5.86	0.015
Not employed•	29(58.0)	21(42.0)	50(100.0)		
Professional and semi-professional•	0(0.0)	1(100)	1(100.0)		
Non manual workers•	36(57.1)	27(42.9)	63(100.0)		
Skilled manual workers•	105(65.6)	55(34.4)	160(100.0)		
Unskilled manual workers	84(50.3)	83(49.7)	167(100.0)		
Marital status				14.96	<0.001
Married	131(50.2)	130(49.8)	261(100.0)		
Unmarried¶	118(69.8)	51(30.2)	169(100.0)		
Separated ¶	2(33.3)	4(66.7)	6(100.0)		
Divorced¶	3(60.0)	2(40.0)	5(100.0)		
Use of alcohol	181(61.1)	115(38.9)	296(100.0)	4.65	0.031
Use of Tobacco	229(69.8)	99(30.2)	328(100.0)	78.27	<0.001

*amalgamated, # amalgamated, •amalgamated, ¶ amalgamated

Among prior illicit drug users, 56.7 % (n=144) were addicted to illicit drugs according to the ICD 10 symptom checklist for substance use behaviour. It was 32.6% of the total study sample. According to DAST 20, only 8.3 % (n=21) of illicit drug users had a severe problematic level of addiction. The problematic level of illicit drug use according to the DAST score was compared with the American Society of Addiction Medicine (ASAM) criteria. Among them 164 (64.6%) illicit drug users could be managed as outpatient but the remainder (n=90, 35.4%) required inpatient rehabilitation care according to the American Society of Addiction Medicine Placement Criteria.

3.2. Predictors for illicit drug use among incarcerated males

Predictors of illicit drug use among incarcerated males in prison in Galle were assessed according to three categories: factors associated with past illicit drug use, factors associated with addiction to illicit drugs and factors associated with problematic use of illicit drugs.

Statistically significant associations with past prior illicit drug use were identified by age, occupation, marital status, and use of alcohol and tobacco (Table 1). Those who were in younger age groups ($p<0.001$), unmarried ($p<0.001$), engaged in unskilled manual work ($p=0.015$) and who had a history of alcohol ($p=0.031$), and tobacco use ($p<0.001$), were more likely to have used illicit drugs in the past. Educational level ($p=0.933$), family type ($p=0.303$) and monthly income ($p=0.114$) were not statistically significantly associated with past illicit drug use.

Statistically significant associations for addiction to illicit drugs correlated with age, a history of polydrug use and prison readmissions (Table 2). Those who were in younger age groups ($p=0.011$), who had a history of polydrug use ($p<0.001$) and previous prison admissions ($p=0.035$) were more likely to develop an addiction to illicit drugs. Educational level ($p=0.153$), occupation ($p=0.867$), marital status ($p=0.859$), family type ($p=0.695$), monthly income

($p=0.698$) and a history of alcohol ($p=0.504$) and tobacco use ($p=0.356$) were not statistically significant when associated with addiction to illicit drugs.

Statistically significant associations for problematic use of illicit drugs were correlated with age, with polydrug use and addiction status (Table 3). Those who were in younger age groups ($p=0.009$), who had a history of polydrug use ($p<0.001$), and who were addicted to illicit drugs ($p<0.001$), were more likely to have problematic use of illicit drugs.

Educational level ($p=0.065$), occupation ($p=0.533$), marital status ($p=0.806$), family type ($p=0.586$), monthly income ($p=0.802$), having a history of alcohol ($p=0.158$) and tobacco ($p=0.950$) use and prison readmissions ($p=0.051$) were not statistically significant when associated with addiction to illicit drugs.

4. Discussion

In this study we found that nearly 60% of our surveyed subjects were using heroin before imprisonment testifying the possibility that these subjects would need treatment for their addiction when in prison. Treatment with opioid agonists in prison has been implemented worldwide [3, 12, 16, 17, 20-23, 28, 36, 39]. All those arrested and remanded into custody should be carefully assessed regarding their drug history. In the case of a previous opioid addiction, consideration should be given to treating this addiction even during incarceration.

Predictors for illicit drug use were assessed according to three categories. Predictors for prior illicit drug use, predictors for illicit drug dependence and predictors for problematic level of drug use.

Being in a younger age group, being unmarried, engaging in unskilled manual work, and a known history of using other psychoactive substances were identified as predictors for prior illicit drug use. Younger age groups are more likely to seek new experiences, and this may make them more likely engage in illicit drug use [15]. Similarly, many unskilled manual workers are engaged in strenuous jobs, which

Table 2. Significant association of addiction to illicit drugs and sociodemographic factors (n=254)

	Addicted to illicit drugs		Total	Chi value	p-value
	Yes(n=144)	No (n=110)			
Age Category (years)				6.41	0.011
19-24#	31(44.9)	38(55.1)	69(100.0)		
25-30#	39(54.1)	33(45.9)	72(100.0)		
31-36*	45(69.2)	20(30.8)	65(100.0)		
>36*	29(60.4)	19(39.6)	48(100.0)		
Polydrug use	79(85.9)	13(14.1)	92(100.0)	50.01	<0.001
Readmission to prison	91(62.8)	54(37.2)	145(100.0)	4.43	0.035

*amalgamated, # amalgamated,

Table 3. Significant association with problematic level of drug use (n=254)

	Problematic level		Total	Chi value	p-value
	High (n=90)	Low (n=164)			
Age Category (years)				6.91	0.009
19-24#	15(22.8)	51(77.2)	66(100.0)		
25-30#	25(33.3)	50(66.7)	75(100.0)		
31-36*	32(49.2)	33(50.8)	65(100.0)		
>36*	18(37.5)	30(62.5)	48(100.0)		
Polydrug use	60(65.2)	32(34.8)	92(100.0)	55.93	<0.001
Addicted to illicit drugs	82(56.9)	62(43.1)	144(100)	67.25	<0.001

*amalgamated, # amalgamated,

provide an easy excuse for them to use illicit drugs such as cannabis as a means of alleviating aches and pains [35]. Moreover, engaging in unskilled manual work allows them to earn money on a day-to-day basis and it will facilitate the purchase of drugs for day-to-day consumption. Similarly, the use of other psychoactive substances acts as a gateway for illicit drug use while the consumption of illicit drugs with alcohol and tobacco products is not uncommon both in the local and global context [8, 10, 27].

In this study, younger age and a history of polydrug use were identified as predictors for addiction among prison inmates. As younger age groups are more likely to use illicit drugs, they can easily become addicted with continuous exposure within a short time [34]. Furthermore, they are likely to experiment with different types of illicit drugs, usually ending up in polydrug use. Also, younger persons are more likely to attend night clubs and beach parties, which are easily available platforms for them to experience different types of illicit drugs, leading them to polydrug use [11].

Belonging to a younger age group, a history of polydrug use and addiction to illicit drugs were identified as predictors for problematic drug use. Younger individuals usually have no regular income. Therefore, they may engage in various activities to purchase drugs including various types of criminal behaviour. Furthermore, they can cause more disruption to their family life, education, and employment due to drug use behaviour than older adults are likely to do, primarily due to impulsive behaviours inherent to their younger age. This may lead to numerous health and social problems including early marriage and separation, disruption of education, leaving jobs, etc. [34]. Polydrug use and addiction to illicit drugs directly affects the lives of the drug users, pushing them into the problematic level [33, 40].

In contrast to the above, the educational level of the participants, family type and monthly income did not affect previous illicit drug use under all three categories of usage. Similarly, occupation and marital status were not correlated with drug dependence

or a problematic level of use among the inmates according to our study. As most of the study subjects had a history of alcohol and tobacco product use, any confounding effect of this variable would have been minimal in the outcome of this study.

Older age, a history of previous prison admissions, prior heroin use and prior cocaine use were all factors more likely to be associated with illicit drug use according to one study conducted in United States [31].

Impulsive behaviour during childhood was identified as a predictor for past illicit drug use by three studies [2, 8, 13]. However, this aspect was not assessed in the present study, because in the questionnaire it was difficult to ask about the presence of impulsive behaviour during childhood.

It was a challenge to find published literature related to predictors for past illicit drug use among incarcerated males for comparison due to the lack of research. To overcome the lack of data in relation to predictors for past illicit drug use among prison inmates, properly designed research studies will be required in the future to assess this important aspect, which in turn will facilitate identification of risk groups and target the appropriate interventions.

To our knowledge this is the first study in Sri Lanka that makes a comprehensive assessment of predictors of illicit drug use among the prison population. However, there were a few limitations to this study.

As the prison population is considered 'a vulnerable population' it was necessary to take several precautions during the designing stage of the study. As the research addressed sensitive issues, some questions were omitted to avoid ethical issues, thereby limiting the comprehensiveness of assessment. Furthermore, the study population was limited to the prison in Galle which limited the generalizability of findings. In addition, the cross-sectional nature of the study may have masked the temporal relationship between past illicit drug use and associated problems. The possibility of recall bias and bias due to 'socially desirable responses' cannot be overlooked, although every step has been taken to minimize it.

The findings of this study will be helpful for policy makers and practitioners to identify vulnerable groups and develop preventive strategies to address drug related issues among prison inmates. Identification of prison inmates with a history of prior illicit drug use will be required at the time of prison admission, which will then enable their early referral for proper rehabilitation care. These measures will be beneficial to reduce the burden on the prison system of the country from repeated imprisonment due to illicit drug use.

Hence, the results of this study can be utilized in the country's development on a national scale.

5. Conclusions

The high incidence of heroin-dependent subjects before their incarceration underlines the need to promote therapeutic measures for this disorder even during imprisonment. Younger age, being unmarried, engaging in manual work and use of alcohol and tobacco were identified as predictors for prior illicit drug use among male prison inmates. Younger inmates and those with a history of polydrug use were more likely to be addicted to illicit drugs. Younger ages, having a history of polydrug use and drug dependence were identified as predictors for problematic use of illicit drugs among prison inmates. Further research studies are required to identify residual signs and symptoms of opioid dependence in incarcerated patients.

References

1. APA (1993): Health Promotion in the Workplace: Alcohol and Drug Abuse. American Psychological Association (APA), PsycEXTRA Dataset.
2. BERNSTEIN M. H., MCSHEFFREY S. N., VAN DEN BERG J. J., VELA J. E., STEIN L. A. R., ROBERTS M. B., MARTIN R. A., CLARKE J. G. (2015): The Association between Impulsivity and Alcohol/Drug Use among Prison Inmates. *Addict Behav.* 42: 140-143.
3. CAMPBELL G. (2016): Audit of Admission Urines in Two Scottish Prisons in Prisoners Self-Reporting Opiate Misuse *Heroin Addict Relat Clin Probl.* 18(4): 13-22.
4. COLLINS D. J., LAPSLEY H. M. (2008): The Avoidable Costs of Alcohol Abuse in Australia and the Potential Benefits of Effective Policies to Reduce the Social Costs of Alcohol. American Psychological Association (APA), PsycEXTRA Dataset.
5. CROWLEY D., CULLEN W., LAMBERT J., VAN HOUT M. C. (2019): Hepatitis C Treatment and Prevention in Pwids and Prisoners: A Narrative Review of the Extant Literature. *Heroin Addict Relat Clin Probl.* 21(2): 5-19.
6. CROWLEY D., CULLEN W., LAMBERT J., VAN HOUT M. C. (2019): Hepatitis C Virus (Hcv) Screening in People Who Inject Drugs (Pwids) and Prisoners - a Narrative Review of Extant Literature. *Heroin Addict Relat Clin Probl.* 21(1): 35-45.
7. DERMENGIU D., SORIN H., RADU D., ACIU F., ASTARASTOAE V., IOAN B., CONSTANTINESCU G., ENACHE A., CIOCAN V., TALOS I., GORUN G., CURCA G. C. (2014): Substance Abuse in Romania. A Clinical Medical-Legal Perspective. *Heroin Addict Relat Clin Probl.* 16(3): 7-14.
8. DISSABANDARA L. O., DIAS S. R., DODD P. R., STADLIN A. (2009): Patterns of Substance Use in Male Incarcerated Drug Users in Sri Lanka. *Drug and Alcohol Review.* 28(6): 600-607.
9. EMCDDA (2008): Drug Abuse Screening Test (Dast-20). Available at <http://www.emcdda.europa.eu/html.cfm/index3618EN.html>.
10. FERRENCE R. (2001): Diffusion Theory and Drug Use. *Addiction.* 96(1): 165-173.
11. FORSYTH A. J. M. (1996): Places and Patterns of Drug Use in the Scottish Dance Scene. *Addiction.* 91(4): 511-521.
12. GALANDER T., ROSALIM J., BETTS-SYMONDS G., SCULLY M. (2014): A Survey of Patients on Methadone Programmes in Wheatfield Prison, Dublin, Ireland. *Heroin Addict Relat Clin Probl.* 16(2): 17-22.
13. GONZÁLEZ R. A., VÉLEZ-PASTRANA M. C., RUIZ VARCÁCEL J. J., LEVIN F. R., ALBIZU-GARCÍA C. E. (2015): Childhood Adhd Symptoms Are Associated with Lifetime and Current Illicit Substance-Use Disorders and in-Site Health Risk Behaviors in a Representative Sample of Latino Prison Inmates. *J Atten Disord.* 19(4): 301-312.
14. GROSS G., CONROY S., LEONARDI C., MEROUEH F., ANTOLIN J. M., SOMAINI L. (2021): Reducing Opioid Dependence Therapy Risk in the Prison System and the Use of Extended-Release Buprenorphine as an Additional Treatment Option: A Consensus Statement. *Heroin Addict Relat Clin Probl.* 23(5): 15-22.
15. GRUNBAUM J. A., KANN L., KINCHEN S., ROSS J., HAWKINS J., LOWRY R., HARRIS W. A., MCMANUS T., CHYEN D., COLLINS J. (2004): Youth Risk Behaviour Surveillance--United States, 2003 (ABRIDGED). *J Sch Health.* 74(8): 307-324.
16. HENNEBEL L., STÖVER H., CASSELMAN J. (2005): Substitution Treatment in European Prisons. A Study of Policies and Practices of Substitution Treatment in Prison in 18 European Countries. *Heroin Addict Relat Clin Probl.* 7(2): 31-36.
17. KASTELIC A., KOSTNAPFEL-RIHTAR T. (2007): Agonist Opioid Treatment in Prisons. *Heroin Addict Relat Clin Probl.* 9(4): 21-30.
18. KLIMENKO T., KOZLOV A., BUKHANOVSKY A. (2012): Clinic and Social Aspects of Unlawful Activities of Persons with Psychoactive Substance Dependence [Letter]. *Heroin Addict Relat Clin Probl.* 14(2): 59-62.
19. LAFFERTY L., TRELOAR C., BUTLER T., GUTHRIE J., CHAMBERS G. M. (2016): Unlocking Dimensions of Social Capital in the Prison Setting. *Health Justice.* 4: 9-9.
20. LOVRECIC M., LOVRECIC B. (2012): The State of the Art Regarding Heroin Addicts in Prisons in Slovenia During the Period from 1990 to 2008 [Letter]. *Heroin Addict Relat Clin Probl.* 14(1): 59-64.
21. MAREMMANI I., PACINI M., LOVRECIC M. (2004): Clinical Foundations for the Use of Methadone in Jail. *Heroin Addict Relat Clin Probl.* 6(2): 53-72.
22. METZ V., MATZENAUER C., KAMMERER K., WINKLBAUR B., EBNER N., RADLER D., FISCHER G. (2010): Evaluation of Opioid-Dependent Prisoners in Oral Opioid Maintenance Therapy. *Heroin Addict Relat Clin Probl.* 12(1): 5-16.
23. MICHELS I. I., STÖVER H., AIZBERG O., BOLTAEV A. (2021): Opioid Agonist Treatment for Opioid Use Disorder Patients in Central Asia. *Heroin Addict Relat Clin Probl.* 23(1): 33-46.

24. MONTANARI L., ROYUELA L., ROSA M., VICENTE J. (2014): European Questionnaire on Drug Use among Prisoners (Eqdp). Available at http://www.emcdda.europa.eu/publications/technical-reports/european-questionnaire-drug-use-among-prisoners-eqdp_en
25. NDDCB (2017): Hand Book on Drug Abuse Information. Rajagiriya: Research Division, National Dangerous Drug Control Board., https://www.ingsa.org/wp-content/uploads/2019/07/NDDCB-Booklet-01.03.2019_Edited.pdf.
26. PACINI M., MAREMMANI A. G. I., PATRICIO L., BARRA M., MAREMMANI I. (2017): Crime Issues in Substance Use Disorders: Need for a Medically-Based Algorithm. *Heroin Addict Relat Clin Probl.* 19(5): 63-72.
27. PENG E. Y.-C. (2008): Association between Cigarette Smoking and Illicit Drug Use among Male Inmates in Taiwan. Paper presented at the 136th APHA Annual Meeting and Exposition.
28. PISEC A. (2003): Treatment of Prisoners Addicted to Prohibited Drugs in Institutions for Criminal Law Sanctions in Maribor, Slovenia. *Heroin Addict Relat Clin Probl.* 5(3): 37-42.
29. POWIS B., RANDHAWA K., GOSSOP M. (2017): Psychological Changes among Male Drug Dependent Offenders in a Prison-Based Therapeutic Community Programme. *Heroin Addict Relat Clin Probl.* 19(2): 49-58.
30. RAFAIEE R., OLYAEE S., SARGOLZAIIE A. (2013): The Relationship between the Type of Crime and Drugs in Addicted Prisoners in Zahedan Central Prison. *Int J High Risk Behav Addict.* 2(3): 139-140.
31. ROWELL-CUNSOLO T. L., SAMPONG S. A., BEFUS M., MUKHERJEE D. V., LARSON E. L. (2016): Predictors of Illicit Drug Use among Prisoners. *Subst Use Misuse.* 51(2): 261-267.
32. SKINNER H. A. (1982): Drug Abuse Screening Test. Available at <http://www.emcdda.europa.eu/html.cfm/index3618EN.html>.
33. SPOONER C. (1999): Causes and Correlates of Adolescent Drug Abuse and Implications for Treatment. *Drug and Alcohol Review.* 18(4): 453-475.
34. SUTHERLAND I., WILLNER P. (1998): Patterns of Alcohol, Cigarette and Illicit Drug Use in English Adolescents. *Addiction.* 93(8): 1199-1208.
35. THE CENTRE FOR HARM REDUCTION, THE MACFARLANE BURNET INSTITUTE FOR MEDICAL RESEARCH AND PUBLIC HEALTH (2003): Manual for Reducing Drug Related Harm in Asia. The Centre for Harm Reduction, Melbourne, Victoria, Australia.
36. UCHTENHAGEN A., STEVENS A., BERTO D., FRICK U., HUNT N., KERSCHL V., MCSWEENEY T., PUPPO I., SANTAMARIA A., SCHAAF S., STEFFAN E., GEGENHUBER B., TURNBULL P., WERDENICH W. (2008): Evaluation of Therapeutic Alternatives to Imprisonment for Drug-Dependent Offenders. Findings of a Comparative European Multi-Country Study. *Heroin Addict Relat Clin Probl.* 10(2): 5-10.
37. UNODC (2012): World Drug Report 2012. UN, Geneva.
38. WU L.-T. (2010): Substance Abuse and Rehabilitation: Responding to the Global Burden of Diseases Attributable to Substance Abuse. *Subst Abuse Rehabil.* 2010(1): 5-11.
39. YAKOUB S. (2001): Treatments of Substance Users Detainees in 'La Santé' Prison. *Heroin Addict Relat Clin Probl.* 3(2): 29-32.
40. YOUNG J., BUCHANAN L. (2000): The War on Drugs - a War on Drug Users? *Drugs: Education, Prevention and Policy.* 7(4): 409-422.

Contributors

All authors were involved in the study design, had full access to the survey data and analyses, and interpreted the data, critically reviewed the manuscript and had full control, including final responsibility for the decision to submit the paper for publication.

Role of the funding source

Financial support for the implementation of this review was provided by internal funds.

Conflict of interest

Authors declared no conflict of interest.

Ethics

Authors confirm that the submitted study was conducted according to the WMA Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects. This study was approved by the local ethics committee. All patients gave their informed consent to the anonymous use of their clinical data for this independent study.

Note

It is the policy of this Journal to provide a free revision of English for Authors who are not native English.

Received March 23, 2022 - Accepted July 8, 2022

© The Author(s) 2023. Pacini Editore Medicina and AU-CNS Press

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

For commercial re-use, please contact info@aucns.org

