Reserch Article

Relationship between income generation and in the increasing drug dependence and risks of relapse: A cross-sectional study in drug treatment facilities in the Philippines

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ABSTRACT: This study aims to explain income-generating activities like occupation (formal, informal jobs) and other sociodemographic factors that potentially increase the risk of drug dependence and possible relapse. Study participants of 632 patients with a data survey form of questionnaire in 5 different drug treatment facilities were collected from July 2019 to September 2019, in 2 areas of NCR-Manila, Southwestern Visayas, and Davao City-Mindanao, Philippines. There were 42.55% of nicotine dependence, 41.88% alcohol use, 39.53% methamphetamine, and 52.24% cannabis dependence in a 30-day income generation, found to increase drug dependence significantly. A multiple logistic regression analysis was used to utilize the odds ratio of income generation and occupation (formal, informal jobs) which showed a significant relationship (AOR=7.69, 95% CI=4.61-13.73), (AOR=3.96, 95% CI=1.69-9.24) in both men and women in the increasing of drug dependence. The implication for this study leads to policymakers for providing economic intervention programs (livelihood or training skills) and drug-addiction awareness programs for the prevention of drug relapse among low to poor income earners – inpatients of a primary drug treatment rehabilitation center (6 months).

Key Words: *income generation, occupation, drug dependence, relapse, treatment rehabilitation,*

INTRODUCTION

Income satisfies the material needs of man, alleviating social- being an important determinant of health. (Long et al., 2014) Moreover, occupation is an indicator of economic opportunity, jobs and employments which generates income. (Fujishiro, Xu, & Gong, 2010) Yet, income generation may strongly affect health risk behaviors like nicotine dependence, alcohol dependence and drug dependence and other illicit drug use. Previous studies, explicitly link a strong relationship between income generations and occupation in the increasing of drug dependence and relapse. (DeBeck et al., 2007; Draus, Roddy, & Greenwald, 2010; Karimian et al., 2017; Luongo et al., 2017) However, there is still a scarcity of the study that focuses on occupation (formal, informal) and other socio-demographic determinants in relation to income earnings and increasing of drug dependence and the likelihood of relapse in a primary drug treatment facility (6 months). The Dangerous Drug Board (DDB) – government agency, declared that there were 1.8 million current drug users in the Philippines. Almost half of the estimated drug users as of 2016 flooded the government offices to surrender including participants who submit themselves as voluntary-surrenderee, readmission and crime -related detainees (drug peddling cases) in the facilities, residing to stay for 6 months and up to maximum year length depending of the extent of violations and incarceration. (Reyes, 2016; Simbulan, Estacio, Dioquino-Maligaso, Herbosa, & Withers, 2019) Drug dependence may directly be associated with higher income from previous studies, (Humensky, 2010) Nevertheless, this research studies explain drug dependence from illicit drug use probability to increase in low to poor income earners. From the Tenth Revision of the Classification of Diseases and Health Problems (ICD-10) defines drug dependence as a cluster of physiological, behavioural and cognitive phenomena in which the use of a substance or a class of substances takes on a much higher priority for a given individual than other behaviours that once had greater value- World Health Organization (WHO). Inferences in this research that income and other socioeconomic factors are intertwined with increasing of drug dependence and severity. (Galea & Vlahov, 2002; Spooner & Hetherington) Low-income level (Pope, Wallhagen, & Davis, 2010) and less education addresses the issue of drug dependence. (Goodman, Slap, & Huang, 2003; Reinherz, Giaconia, Hauf, Wasserman, & Paradis, 2000; Windsor & Negi, 2009) Hence, in some related studies, alcohol and nicotine dependence (Ramaekers et al., 2011) can be acquired by affordability regardless the cost of substance. (Calling, Ohlsson, Sundquist, Sundquist, & Kendler, 2019; Humensky, 2010; Valencia & Tran, 2019) Drug dependence and substance severity varies from which the availability of the drug and accessibility to socioeconomic resources. (Benjamin & Chidi, 2014) On the other hand, crime – related drug activities may likely more related to the increasing unemployment rates and informal occupation which is unsecure, unsafe and uncertain to social security. (Callahan et al., 2015; Maher, Dixon, Hall, & Lynskey, 2002; Melick, 2003) Additionally, informal occupation may generate more income from illegal resources in relation to increasing of drug dependence and risks of relapse. (Draus et al., 2010; Galvão, Saavedra, & Cameira, 2018; Wilkins & Sweetsur, 2011) Crime-related drug activities may more likely an underground transaction of illicit drugs from outsourcing producers and local manufactured illegally smuggled drugs which can be reached through low-income street dwellers, vendors, truck drivers and other lowest income earners. For example, if there were 5 grams a month a drug user as an estimate of money exchanged due to crime-related drug activities such as drug peddling and trading, the Philippines might accumulate a monthly intake of 8.5 million grams, amounting to 17 billion Philippine pesos per month or 204 billion pesos per year. (Curtis, Elan, Hudson, & Kollars, 2002) Relapse may also peril the treatment recovery success or fail to attempt its effort-full recovery. (Brandon, Vidrine, & Litvin, 2007; Hendershot, Witkiewitz, George, & Marlatt, 2011; Hunt, Barnett, & Branch, 1971) According to the National Institute on Drug Abuse (NIDA), between 40 to 60 percent of people recovering from drug addiction relapse. For instance, six months of the addiction treatment program (primary treatment) will likely increase the possibility of drug relapse reoccurrence to its income generating activities and occupation (formal, informal). Nevertheless, economic intervention and educational awareness programs on drug dependence may prevent these risks of relapse in a short treatment rehabilitation center (6 months).

Objectives of the Study

The goal of this study is to explain the relationship of (1) income

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generation as the main source of drug dependence. (2) To infer occupation (formal, informal) jobs as generating income activities that increases drug dependence. (3) To infer possible risks of relapse from a six months primary drug treatment rehabilitation centers in the region.

Methods

Study Population and Source of data

A total of six hundred thirty-two inpatient of five different drug rehabilitation facilities (424 males, 208 females) voluntarily entered the present study ranging ages from 14 to 60 years.

Income generation in a 30-day period prior to entry, and illicit drugs in the Addiction Severity Index (ASI) summary score of two time periods (30-day, use, lifetime use-years) were shown in. There were ten regional locations (NCR, Regions I, III, IV-A, V, VI, VII, X, XI, CARAGA) accredited treatment and rehabilitation center by the Department of Health, these were all residential centers from which allowed voluntary drug surrenderees to stay in the length of 6 months and maximum up to 12 months depending if there were crime – related drug activities mandated by law. Respondents are written informed consent were residing inpatients of two areas in NCR-Manila, Regions VI and VII - Southwestern Visayas, and the Region XI Davao City. Treatment program designed for six months of combined Therapeutic and Eclectic rehabilitation program. However, additional months are added to those in patients who are voluntarily signed-consent and inpatients' whose crime related offenses are mandated by law for continued treatment and recovery. Crime -related drug activities were based upon their criminal drug offenses of acquiring drugs (drug peddling cases) – illegally, which leads to drug dependence and severity such as (methamphetamine crystals "shabu", cannabis "marijuana") and other illicit drug use acquired through underground transactions. (Simbulan et al., 2019) The Institutional Review Board - IRB of Sahmyook University (approval no. #2-1040781-AB-N01-2017106HR) approved this study.

Social and economic factors

Income generation is defined as economic income; poor level: below ₱ 7,890 PHP ($156.38 USD): ₱ 7 890 to 15,780 PHP low to moderate ($156.38-$312.83 USD): ₱ 15,780 to 31, 560 PHP ($156.38-$624.90 USD) , and moderate to high: ₱ 31,560 to 78,900 PHP ($624.90-$1,562.10 USD). (Albert, Santos, & Vizmanos, 2018) Marital status (single, married, cohabitation), Education (none, primary/elementary, high school/vocational), Residential status (house owner/renter, living with relatives, informal settlers) and Occupation (formal, informal) jobs which is defined as the way an individual living. We categorized into; formal occupation, employment/jobs which has permanent income wages and under formal sectors, with social security and benefits (professionals, health care workers, others...). While informal occupation are jobs which is not permanent/casual laborer's, irregular part-time, any jobs not subject to a written contract and in the basic salary, wages – minimum per/day (drivers, irregular factory worker, construction, market seller, others...) (Albert, Dumagan, & Martinez Jr, 2015)

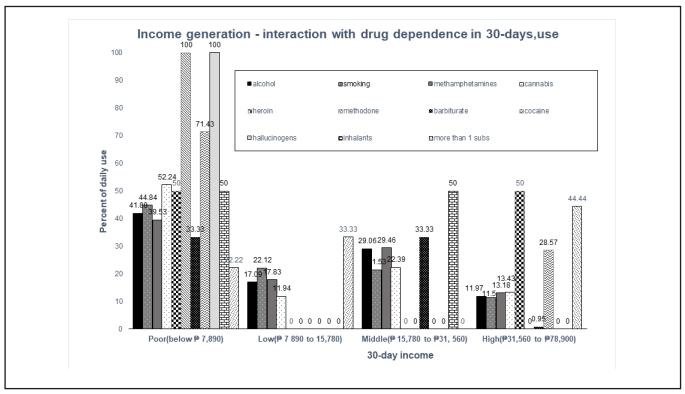
Statistical methods

We used STATA/MP 14.0 (www.stata.com) for statistical results of frequency, percentage, Pearson Chi2, significant value p-value of <.001, <.005. Our primary outcome variable is income generation was derived from the level of income (poor, low, middle, high). All models controlled for potential confounders such as age, sex, marital status, education, drug treatment location, living conditions also adjusted for any within cluster estimator. Potential predictors covariates to consider were occupation (formal, informal) indicative source of income generation. The current study used, Addiction Severity Index 5th Edition (McLellan et al., 1992) summary score of two- time period (30-days, use, lifetime use) and Fagerström Test for Nicotine Dependence (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991) to assess nicotine dependence (average of daily cigarette use). F statistic and R2 statistic were used to calculate the amount of other illicit drug use in a 30-day income generation prior to the entry in treatment rehabilitation center. Beta coefficient was also used to predict other illicit drug use of the Addiction Severity Index in 30 -day income generation and the mean variation inflation factor are equal to 1.53. Multivariate logistic regression produces odds ratio and confidence interval that determines the probability of relationship between income generation and occupation in the increasing drug dependence severity using Addiction Severity Index summary scores – two times period (30-days, use and lifetime use) Nicotine dependence (average daily cigarette use) and other sociodemographic variables.

Results

Income generation was illustrated in Income generation correlations to socio-demographic factors and illicit drugs in a 30-days use prior to their entry. Pairwise correlation analyses, showing strong positive correlations between marital status, education level, regional location, residential level, occupation and onset of use. However, nicotine dependence, alcohol, methamphetamine, cannabis increases a medium strength correlation between income generation in 30-days, use, $p < .05$. A Pearson's product-moment correlation was run to assess the relationship, between income level and covariates (from addiction severity index – summary score a 30-day use) prior to the entry. shows the regression analyses of other illicit drug use in a 30-day income generation, F value 11.67(10,621), R2=0.1582, p-value=<0.000. The value of overall R squared predicts a 15.82% increase of drug dependence methadone, barbiturates, heroin and more than 1 substance (including alcohol) from a 30-day income generation. The coefficient value of occupation (.747) predicts a positive significant relationship with income generation = 0.50, respectively., shows a multivariate logistic regression of 30-day income generation interaction with addiction severity index summary score – two time period (30-days, use, lifetime use). Age groups among women increased significantly in 30-day use and lifetime of drug use (AOR=41.86, 95%CI=5.05-347.21), (AOR=29.93, 95%CI=3.88-231.24) compared to men. DOH-TRC locations in Davao City, Mindanao increased significantly compared to other regional locations (AOR=15.15,95%CI=3.39-67.60) of drug treatment rehabilitation centers. In marital status, married women ((AOR=6.43,95%CI=2.04-20.23) showed statistically significant compared to engagement in drug dependence of 30-days, use and married men in lifetime use (AOR=3.88,95%CI=1.70-8.84). There was no direct relationship found between income generation and educational level in both men and women, based on our analyses using odds ratios which may likely differ from other findings that low income and less education were correlated. In residential status, those women who live in an informal settler were found to be positively associated with two times period of addiction severity index summary score, which shows an odds ratio of (AOR=3.16,95%CI=1.20-8.28), (AOR=3.92,95%CI=1.41-10.92). Occupation (formal, informal) jobs were increasingly significant both in men and women in two time periods of the ASI-summary score (AOR=7.96,95%CI=4.61-13.73), (AOR=3.96.15,95%CI=1.69-9.24), all p-values <0.05. Additionally, increasing significantly between income generation and occupation may likely affect the onset of alcohol and drug use among the age group of women (15-25, 26-35 years), (AOR=0.08,95%CI=0.03-0.24), (AOR=0.07,95%CI=0.02-0.20) to which accounted to direct relationship between income generation, occupation and a possible risk of relapse. However, nicotine dependence – FTND (average daily cigarette smoking), other drug dependence (methamphetamine and cannabis use) and Addiction treatment program showed less significant relationship between income generation and occupation. Yet, in alcohol dependence among women showed increasing significant results (AOR=6.45,95%CI=1.56-26.61), (AOR=7.26,95%CI=1.79-29.52) compared with men. The overall probability of Chi2 was significant, p-value=<0.000. To assess the statistical goodness of fit of the logistic regression model, we used Hosmer- Lemeshow test and the overall, p-value=<0.000.

Figure 1. Represents income generation – interaction with drug dependence in a 30-days, use. In sub analysis, monthly income was strongly associated with monthly expenses on drug dependence. Conveyed income level from 323 (51.11%) participants in a formal occupation and 309 (48.89%) participants in informal occupation shows that from poor level income (below ₱ 7,890) accumulated 55.04% increase of drug dependence compared to low income group of 9.30%, middle income group of 16.88% and high level of income (₱31,560 to ₱78,900) which has 15.82% drug dependence. Those who reported having a poor income level, were individuals more likely to have an informal occupation.



Discussion

Consistent with other findings, our study supported significant literature on the relationship between income generation and drug dependence, (Callahan et al., 2015; DeBeck et al., 2007; Galvão et al., 2018; Jaffe et al., 2018) hence, we focus on occupation (formal, informal) jobs and other sociodemographic factors which increases drug dependence (Lowenstein, 2001) and the likelihood of drug relapse in primary treatment (6 mos.) rehabilitation (Hendershot et al., 2011) facilities in the Philippines. Income generation in a 30-days earning, and the use of nicotine, alcohol, methamphetamine, cannabis, and other illicit drugs were all significantly correlated with increasing drug dependence and more likely may gauge to risks of relapse. Poor income level has a higher drug dependence in a 30-day income generation which was likely accounted from a higher probability of crime – related drug activities. Moreover, occupation (formal, informal) may likely continue to sustain drug dependence possibly when no other occupations availability at hand. (Pierce et al., 2017; Seddon, 2000) According to the study of National Survey on Drug Use and Health: 2010, drug dependence affects any one of income earners regardless of their socioeconomic standing. Our current study also found out the relationship between income generation and other sociodemographic factors; women ages (21-29, 30-39) were significantly more drug dependents among men. In other related studies, women may engage in sex work and drug related activities in relations to income generation. (Long et al., 2014) Moreover, the robustness of these age groups (21-29, 30-39), may likely gauged to a higher income – generating activities, whether in informal jobs for consumption of drug dependence obtained from illegal resources would probably give up this crime – related drug activities if they did not need money to acquire for drugs. (DeBeck et al., 2007; Draus et al., 2010; Fischer, Medved, Gliksman, & Rehm, 1999) Additionally, earnings from occupation (formal, informal) were insufficient enough for their family needs resulting to find more ways to sustain their addiction. (Wilkins & Sweetsur, 2011) Regional located in Davao City, Mindanao and married women was found to have a significant relationship between income generation and increasing of drug dependence than most men in some regions. Other relevant studies depict the importance of marital status has the role of influencing perception towards substance use increasing or decreasingly. (Homish, Leonard, & Cornelius, 2008; Leonard & Homish, 2005) Women who live in an informal settler found to increase significant relationship with income generation and drug dependence. These findings reflect among women who were susceptible to engage in sex work and other crime-related drug activity. Those who live in an informal settler were more likely to have the accessibility of substance and increasing drug problems. (Lawana & Booysen, 2018) Onset of alcohol and drug use was susceptible to crime when drug use was first introduced like smoking, alcohol drinking, smoking methamphetamine and cannabis use. (Pierce et al., 2017; Poudel & Gautam, 2017; Slade et al., 2008; Valencia & Tran, 2019) Nicotine dependence was perceived as socially acceptable and less condemned among other illicit drug use. (Windsor & Negi, 2009) However, it urges more addicts for a higher drug dependence. (Unger, Soto, & Leventhal, 2016; Weinberger et al., 2017) Among other illicit drugs, methamphetamine was the most abused drugs commonly known in the Philippines as "poor man's cocaine". (Simbulan et al., 2019) This study further found that addiction treatment which primary of treatment (6 months) admission was not significantly associated between income generation in the increasing of drug dependence and crime, however, there was risk probability of readmission when drug relapse happens. (Hendershot et al., 2011) Growing numbers of drug dependence in the Philippines, accumulated to inequalities of income level, living conditions in particular to informal settler and below poverty line income earners, which greatly affects the high prevalence of increasing drug dependence and records of crime-related drug offenses. (Galvão et al., 2018; Windsor & Negi, 2009) The consequences of it, after drug treatment rehabilitation in the primary drug treatment program for six months is when these inpatients were more likely to relapse and continue with their occupation whether it may be formal or informal jobs as long as income generation exists. However, policymakers should provide economic interventions, promoting more skilled – alternative jobs which will help prevent individuals in higher risks of drug relapse. There are strengths and limitations of this study. First, Addiction Severity Index 5th edition and Fagerström Test for Nicotine Dependence were validated tools used as a questionnaire survey. However, income in a 30-day income generation were found to have a recall bias by providing a 30-day use of drugs and lifetime - two time period of addiction severity index summary score. These were found to be inconsistent in some regional areas (NCR-Manila, VI) of drug treatment facilities, we surveyed since some individuals may hinder the number of times of drug use and occupation (formal, informal) to which may not account for all income net expenditure on drugs. Therefore, the overall significance of income generation in relation to drug dependence, crime-related drug activities may be underestimated and needs a further longitudinal study.

Conclusion

In conclusion, average monthly income levels were below poor to low level. Although, in some brackets of income found as potential markers of the increasing of drug dependence, still the probability of high – risk was observed below the low to poor-income earners, which was associated with higher prevalence of drug dependence and risks of relapse prior to the shorter period of treatment (6 months).

Study Implications

This study aimed to suggest our policymakers to provide a more sustainable economic opportunity for inpatients after treatment and addiction awareness program for the prevention of drug relapse.

REFERENCES

1. Albert, J. R. G., Dumagan, J. C., & Martinez Jr, A. (2015). Inequalities in income, labor, and education: The challenge of inclusive growth. Retrieved from
2. Albert, J. R. G., Santos, A. G. F., & Vizmanos, J. F. V. (2018). Profile and Determinants of the Middle-Income Class in the Philippines. Retrieved from
3. Benjamin, A., & Chidi, N. (2014). Drug Abuse, Addiction and Dependence. Pharmacology and Therapeutics, 327.
4. Brandon, T. H., Vidrine, J. I., & Litvin, E. B. (2007). Relapse and relapse prevention. Annu Rev Clin Psychol, 3, 257-284. doi:10.1146/annurev.clinpsy.3.022806.091455
5. Callahan, S., LoSasso, A., Olson, B., Beasley, C., Nisle, S., Campagna, K., & Jason, L. A. (2015). Income Generation in Recovering Heroin Users: A Comparative Analysis of Legal and Illegal Earnings. Journal of offender rehabilitation, 54(5), 338-349. doi:10.1080/10509674.2015.1043479
6. Calling, S., Ohlsson, H., Sundquist, J., Sundquist, K., & Kendler, K. S. (2019). Socioeconomic status and alcohol use disorders across the lifespan: A co-relative control study. PLoS One, 14(10).
7. Curtis, G. E., Elan, S. L., Hudson, R. A., & Kollars, N. A. (2002). Transnational activities of Chinese crime organizations. Trends in Organized Crime, 7(3), 19-57.
8. DeBeck, K., Shannon, K., Wood, E., Li, K., Montaner, J., & Kerr, T. (2007). Income generating activities of people who inject drugs. Drug Alcohol Depend, 91(1), 50-56. doi:10.1016/j.drugalcdep.2007.05.003
9. Draus, P. J., Roddy, J., & Greenwald, M. (2010). "I always kept a job": Income generation, heroin use and economic uncertainty in 21st century Detroit. Journal of drug issues, 40(4), 841-869.

10. Fischer, B., Medved, W., Gliksman, L., & Rehm, J. (1999). Illicit Opiates in Toronto: A Profile of Current Users. Addiction Research, 7(5), 377-415. doi:10.3109/16066359909004395
11. Fujishiro, K., Xu, J., & Gong, F. (2010). What does "occupation" represent as an indicator of socioeconomic status?: exploring occupational prestige and health. Soc Sci Med, 71(12), 2100-2107. doi:10.1016/j.socscimed.2010.09.026
12. Galea, S., & Vlahov, D. (2002). Social determinants and the health of drug users: socioeconomic status, homelessness, and incarceration. Public health reports (Washington, D.C. : 1974), 117 Suppl 1(Suppl 1), S135-S145.
13. Galvão, A. E. O., Saavedra, L., & Cameira, M. (2018). Economic and sociocultural poverty in drug abuse: from individual to sociopolitical responsibility. Saúde e Sociedade, 27, 820-833.
14. Goodman, E., Slap, G. B., & Huang, B. (2003). The public health impact of socioeconomic status on adolescent depression and obesity. American journal of public health, 93(11), 1844-1850. doi:10.2105/ajph.93.11.184
15. Heatherton, T., Kozlowski, L., Frecker, R., & Fagerstrom, K. (1991). Fagerstrom Test for Nicotine Dependence. Journal of Addictions, 86, 1119-1127.
16. Hendershot, C. S., Witkiewitz, K., George, W. H., & Marlatt, G. A. (2011). Relapse prevention for addictive behaviors. Subst Abuse Treat Prev Policy, 6, 17. doi:10.1186/1747-597x-6-17
17. Homish, G. G., Leonard, K. E., & Cornelius, J. R. (2008). Illicit drug use and marital satisfaction. Addict Behav, 33(2), 279-291. doi:10.1016/j.addbeh.2007.09.01
18. Humensky, J. L. (2010). Are adolescents with high socioeconomic status more likely to engage in alcohol and illicit drug use in early adulthood? Subst Abuse Treat Prev Policy, 5(1), 19.
19. Hunt, W. A., Barnett, L. W., & Branch, L. G. (1971). Relapse rates in addiction programs. J Clin Psychol, 27(4), 455-456. doi:10.1002/1097-4679(197110)27:4<455::aid-jclp2270270412>3.0.co;2-r
20. Jaffe, K., Dong, H., Godefroy, A., Boutang, D., Hayashi, K., Milloy, M. S., . . . Richardson, L. (2018). Informal recycling, income generation and risk: Health and social harms among people who use drugs. The International journal on drug policy, 60, 40-46. doi:10.1016/j.drugpo.2018.07.010
21. Karimian, M., Motevalian, A., Damghanian, M., Rahimi-Movaghar, A., Sharifi, V., Amin-Esmaeili, M., & Hajebi, A. (2017). Explaining socioeconomic inequalities in illicit drug use disorders in Iran. Med J Islam Repub Iran, 31, 108. http://europepmc.org/abstract/MED/29951409 doi:10.14196/mjiri.31.108
22. Lawana, N., & Booysen, F. (2018). Decomposing socioeconomic inequalities in alcohol use by men living in South African urban informal settlements. BMC Public Health, 18(1), 993. doi:10.1186/s12889-018-5925-4
23. Leonard, K. E., & Homish, G. G. (2005). Changes in Marijuana Use Over the Transition Into Marriage. Journal of drug issues, 35(2), 409-429. doi:10.1177/002204260503500209
24. Long, C., DeBeck, K., Feng, C., Montaner, J., Wood, E., & Kerr, T. (2014). Income level and drug related harm among people who use injection drugs in a Canadian setting. The International journal on drug policy, 25(3), 458-464. doi:10.1016/j.drugpo.2013.11.011
25. Lowenstein, L. (2001). Recent research into the direct relationship between criminality and substance abuse. International journal of adolescence and youth, 9(4), 257-272.
26. Luongo, N. M., Dong, H., Kerr, T. H., Milloy, M. J. S., Hayashi, K., & Richardson, L. A. (2017). Income generation and attitudes towards addiction treatment among people who use illicit drugs in a Canadian setting. Addict Behav, 64, 159-164. doi:10.1016/j.addbeh.2016.08.041
27. Maher, L., Dixon, D., Hall, W., & Lynskey, M. (2002). Property Crime and Income Generation by Heroin Users. Australian & New Zealand Journal of Criminology, 35(2), 187-202. doi:10.1375/acri.35.2.187
28. McLellan, A. T., Kushner, H., Metzger, D., Peters, R., Smith, I., Grissom, G., . . . Argeriou, M. (1992). The fifth edition of the Addiction Severity Index. J Subst Abuse Treat, 9(3), 199-213.
29. Melick, M. D. (2003). The relationship between crime and unemployment. The Park Place Economist, 11(1), 13.
30. Pierce, M., Hayhurst, K., Bird, S. M., Hickman, M., Seddon, T., Dunn, G., & Millar, T. (2017). Insights into the link between drug use and criminality: Lifetime offending of criminally-active opiate users. Drug Alcohol Depend, 179, 309-316. doi:10.1016/j.drugalcdep.2017.07.024
31. Pope, R. C., Wallhagen, M., & Davis, H. (2010). The Social Determinants of Substance Abuse in African American Baby Boomers: Effects of Family, Media Images, and Environment. Journal of Transcultural Nursing, 21(3), 246-256. doi:10.1177/1043659609358785
32. Poudel, A., & Gautam, S. (2017). Age of onset of substance use and psychosocial problems among individuals with substance use disorders. BMC Psychiatry, 17(1), 10.
33. Ramaekers, J. G., Theunissen, E. L., de Brouwer, M., Toennes, S. W., Moeller, M. R., & Kauert, G. (2011). Tolerance and cross-tolerance to neurocognitive effects of THC and alcohol in heavy cannabis users. Psychopharmacology, 214(2), 391-401. doi:10.1007/s00213-010-2042-1
34. Reinherz, H. Z., Giaconia, R. M., Hauf, A. M. C., Wasserman, M. S., & Paradis, A. D. (2000). General and Specific Childhood Risk Factors for Depression and Drug Disorders by Early Adulthood. Journal of the American Academy of Child & Adolescent Psychiatry, 39(2), 223-231. doi:https://doi.org/10.1097/00004583-200002000-00023
35. Reyes, D. A. (2016). The Spectacle of Violence in Duterte's "War on Drugs". Journal of Current Southeast Asian Affairs, 35(3), 111-137.
36. Seddon, T. (2000). Explaining the drug–crime link: Theoretical, policy and research issues. Journal of Social Policy, 29(1), 95-107.
37. Simbulan, N., Estacio, L., Dioquino-Maligaso, C., Herbosa, T., & Withers, M. (2019). The Manila Declaration on the Drug Problem in the Philippines. Ann Glob Health, 85(1), 26. doi:10.5334/aogh.28
38. Slade, E. P., Stuart, E. A., Salkever, D. S., Karakus, M., Green, K. M., & Ialongo, N. (2008). Impacts of age of onset of substance use disorders on risk of adult incarceration among disadvantaged urban youth: a propensity score matching approach. Drug Alcohol Depend, 95(1-2), 1-13. doi:10.1016/j.drugalcdep.2007.11.019
39. Spooner, C., & Hetherington, K. Social determinants of drug use.
40. Unger, J. B., Soto, D. W., & Leventhal, A. (2016). E-cigarette use and subsequent cigarette and marijuana use among Hispanic young adults. Drug Alcohol Depend, 163, 261-264.
41. Valencia, M. L. C., & Tran, B. T. (2019). Association Between Socioeconomic Status and Early Initiation of Smoking, Alcohol Drinking, and Sexual Behavior Among Korean Adolescents. 31(5), 443-453. doi:10.1177/1010539519860732
42. Weinberger, A. H., Platt, J., Esan, H., Galea, S., Erlich, D., & Goodwin, R. D. (2017). Cigarette Smoking Is Associated With Increased Risk of Substance Use Disorder Relapse: A Nationally Representative, Prospective Longitudinal Investigation. The Journal of Clinical Psychiatry, 78(2), e152-e160. doi:10.4088/JCP.15m10062
43. Wilkins, C., & Sweetsur, P. (2011). The association between spending on methamphetamine/amphetamine and cannabis for personal use and earnings from acquisitive crime among police detainees in New Zealand. Addiction (Abingdon, England), 106(4), 789-797. doi:10.1111/j.1360-0443.2010.03241.x
44. Windsor, L. C., & Negi, N. (2009). Substance Abuse and Dependence Among Low Income African Americans: Using Data from the National Survey on Drug Use & Health to Demystify Assumptions. J Addict Dis, 28(3), 258-268. doi:10.1080/10550880903028510