



## RESEARCH ARTICLE

### A PUBLIC HEALTH APPROACH TO COMBAT THE PROBLEM OF ILLICIT DRUG USE IN MAURITIUS

**Dr. T. Ibrahim and Dr. S. Peerally**  
General Practitioner, MBBS, Mauritius.

#### Manuscript Info

##### Manuscript History

Received: 30 November 2019

Final Accepted: 31 December 2019

Published: January 2020

##### Key words:-

Illicit Drugs, Management, Public Health Approach, Youth

#### Abstract

Illicit drug use is a multi-facet problem which is affecting around 246 million people world-wide (UNODC, 2015). The use of illicit drugs has increased over the years in the Mauritian population such that it is affecting the population at large, cutting across all age groups and classes, in particular touching the youngsters; at present 40% of youngsters aged between 15 and 25 years are consumers of the synthetic drugs in Mauritius (L'express, 2018). Such a phenomenon will ultimately result in massive dreadful health, social and economic implications. Thus, this paper tries to propose public health measures that can be helpful in curbing the current problem of illicit drug use in the island of Mauritius.

*Copy Right, IJAR, 2020,. All rights reserved.*

#### Introduction:-

Illicit drugs, in particular synthetic drugs use, a global multi-facet problem is on the rise in Mauritius (National Drug Observatory report, 2016) and is affecting the population at large, cutting across all age groups and classes, in particular touching the youngsters- it is regrettable to note that on average at least two out of five youngsters aged between 15 and 25 years are consumers of the synthetic drugs in Mauritius (L'express, 2018). Globally, around 246 million people were consuming illicit drugs in 2013 (UNODC, 2015). The most common illicit drugs consumed in Mauritius are cannabis, synthetic drugs (new psychoactive drugs, NPS), heroin, cough mixtures, sedatives and hypnotics (National Drug Observatory report, 2016). Synthetic drugs are used to imitate the effects of illicit drugs such as cannabis, ecstasy and cocaine (Better health channel, 2018) and they have gained increased popularity in our country since the year 2013 (National Drug Observatory report, 2016) because of their cheap price, easy availability, less trouble with the law as not all of them are governed by the dangerous drug act of Mauritius.

In Mauritius, hospital admission related to morbidity due to illicit drug use has increased by 47% from 2015 to 2016 (National Drug Observatory Report, March 2018) whereby 23% of the patients admitted for side-effects of synthetic drugs were students (Defimedia, 2018). An increase in the mortality rate has also been noted- according to World Health Organization, WHO and ICD 10 classification of death, 23 deaths were assigned to drug use in 2016 as compared to 17 in 2015.

Synthetic drugs use is associated with multiple negative health, social and economic implications. They cause addiction, dependence, increased rate of school failures, domestic violence, divorce, road traffic accidents, crime as well as a decrease in the work force of the country. Crime rate has increased from 4.8 to 5.1/1000 population from 2016 to 2017 which parallels an increase in drug offence by 10% (Crime, Justice and Security Statistics, 2017). A decrease in safety, couple with an increase in criminality rate can precipitate a drop in the amount of tourist and subsequently a drop in the economy of Mauritius.

**Corresponding Author:-Dr.T. Ibrahim**

Address:-General Practitioner, MBBS, Mauritius.

Furthermore, it has been reported in Mauritius that 95% of people who injects drug are suffering from hepatitis C (IBBS survey 2009, 2011, 2013, 2017), 35% suffers from HIV (National Drug Observatory report, 2016) and 44% suffers from HIV and HCV co-infection. To combat this dilemma, one has to adopt three level measures namely-supply reduction, demand reduction and harm reduction strategies. Currently, the following interventions are implemented in Mauritius to reduce the demand and harm due to illicit drug use:

**Primary Prevention:**

Amendments were made to the Dangerous drug act 2000 to include new psychoactive drugs. Media campaigns were conducted and a march was organised on the occasion of the International Day against substance abuse and drug trafficking to make the population aware and sensitize them about the disastrous effect of the NPS. Sensitization campaigns were delivered to vulnerable population.

Capacity building exercise were undertaken whereby rectors, teachers, prison officers healthcare staffs were trained about illicit drugs and their early diagnosis and treatment.

**Secondary prevention:**

Detoxification program is made accessible to the drug users. Needle exchange program and condoms are offered freely to the key population.

**Tertiary Prevention:**

Prevention of relapse with naltrexone and through psychosocial intervention and rehabilitation services are offered.

**Other Measures:**

Supply reduction measures were reinforced in prison as well as methadone substitution therapy and campaigns on substance abuse are undertaken for detainees in prison (IBSS survey 2013; National Drug Observatory report, 2016; National Drug Observatory report, 2018).

Despite the above measures, the problem of illicit drug is at its peak. Therefore, the following evidence-based strategic plan is proposed to address this issue. The main goal of the plan is to suggest public health measures to reduce the demand and harm associated with illicit drug use in young boys and girls. The plan is gender sensitive as well as conforming to a multi-sectoral, life course and human right approach. Furthermore, the plan addresses the different level of prevention as described below:

**Primary preventions:****Community-intervention:**

Community intervention is a universal approach targeting the whole population, irrespective of their risk of falling into drugs. It has been proved to be effective (WHO, 2007).

**Community interventions can be implemented through the following approach:****Reinforce awareness through media campaigns about the problem of illicit drugs with focus to synthetic drugs and its associated dangers:**

Media campaigns may be promoted through the use of radio channel, via internet, through commonly used social media such as Watts-app and facebook, bill boards and back of buses.

Research has shown that the pre-requisite for a campaign to be successful is that the level of awareness of the problem has to be high in the community and the community needs to be motivated for a change (Prochaska, J., Johnson, S., & Lee, P., 1998).

At least four different ways for diffusing the information is needed as evidence has shown that for a campaign to be impactful, a minimum of three plus exposure is required per day (Naples , M . J, 1997).

Segmentation of the audience on basis of age, social status and other determinants can be considered in order to meet the different need of different categories people of the community for behavior change communication (UNAIDS, 2002).

**Reinforcement of existing school- based prevention program in the following ways:****Drug education can be made as a core examinable subject of the curriculum of late primary schooling, secondary and tertiary education:**

Drug education is one of the most important measures in the fight against illicit drug use (UNODC, 2004). It has been found that subjects that are examinable are taken more seriously and in this case, it may result in better outcome in the future as the students will at least gain knowledge about drugs (Alex.K, 2017; UNESCO, 1994).

**The drug education program has to be designed in such a way that it imparts the following:**

1. Information about the different drugs available and the dangers of taking them (knowledge-based).
2. Provide training about social resistance skills whereby the young individual can recognize situation where they can be victim of peer pressure for taking drug and how to respond most effectively to such circumstances.
3. Provision of competent-enhancement program and psychological support to students with poor school performance and to those who cope poorly with stressful situation.  
Such students will have regular follow-up with a psychologist. Ample evidence has shown that poor school performance is an important risk factor to fall into drugs (NIDA, 2003; Griffin.K.W & Botvin.G.J, 2010; David C. L et al, 2002).
4. Ensure that anti-bullying policy is respected in school.
5. Mentoring programme in school, colleges and university (Renstrom.M , Ferri.M & Ahmed.M, 2017)
6. Promote health clubs in schools

The proposed programme will be long-term, interactive and delivered through blended mode (Griffin.K.W & Botvin.G.J, 2010) including: didactic lectures, student-lead interventions such as seminar, role-play, discussion; teachers will act as facilitator of the course (WHO, 2006).

The current school based program in Mauritius is predominantly knowledge-based. Knowledge-based program has not been proved to be too effective. Instead, school program based on combined approach of knowledge-based, competence training and social influence have proved fruitful (Health and social care, 2016).

Furthermore, the intervention needs to be initiated at a reasonable age where it is early enough to prevent risky behaviours (Chowdry, Kelly and Rasul, 2013). It has been noted that there is increased risk of indulging into risky behaviours at every transition from early childhood through young adulthood (NIDA, 2003). Therefore, initiation of such program around the age of 9-10 years may prove effective as it corresponds to the age of pubertal changes.

**Implementation of Family based intervention**

Family based intervention involves training of the parents or guardians in drug education (Ashery et al. 1998), allowing them to recognize the initial tell-tale signs of drug intake in their children (Bauman et al. 2001). Moreover, such intervention has to empower parents to recognize the early risk factors that precede drug use in later-life and to intervene as early as possible (Webster-Stratton & Taylor T. 2001) and equipped the parents in good parenting skills and behavioural skills; focus on measures to improve family bonding and create a peaceful house environment (NIDA, 2003; Bauman et al. 2001). The family-based intervention needs to make provision for offering psychological therapy and counselling to high risk families.

When family-based intervention is combined with school based problem, the effect is found to be 2-9 times higher compared to when only school based intervention is implemented alone ( Hernandez, L., Rodriguez, A. M., & Spirito, A., 2015; Kumpfer KL, Alvarado R, Whiteside HO, 2003).

**Organise more National essay, song and drama competitions on dangers of synthetic drugs and encourage the youth to participate by rewarding the winners:**

At present, role plays on drugs by secondary school students are broadcasted. This has to be made more frequent for a better impact.

**Deliver Drug education to people visiting youth clubs, women's clubs and in faith-based institution such as church, mosques, temples, madrasa and so on:**

The rationale for undertaking such activities is that community prevention which targets the population at multiple settings was found to be very effective (NIDA, 2003; Chou et al, 1998).

**Prevention at workplace (WHO),**

Periodic awareness program can be implemented through the use of healthy posters and training human resource officers to help staffs that show signs of illicit drug use.

By having a safer and supportive working environment, mental health of the young adults will be better and hence less risk of falling into drugs (Malik.R, 2018).

**Implement measures to decrease stigma towards people who abuse illicit drugs:**

It has been shown by different studies that stigma prevent and discourage access to health services (Substance Use Prevention and Harm Reduction Guideline, 2018; UNAIDS, 2016). Thus, decreasing stigma can improve care and ultimately in the long-term can decrease the health and economic impact associated with illicit drug use (Livingston et al, 2012). However, such types of measures are debatable as it can be thought as encouraging illicit drug use.

**Primordial/primary interventions towards creating a supportive environment:****Mental health promotion:**

Several studies confirm that poor mental health is associated with increased risk of substance abuse (NIDA, 2016). Thus, it is desirable to promote measures to improve the mental health of the population by ensuring that all families in Mauritius are having the basic minimum salary designated by the government and have their basic needs.

**Promote sport and other leisure activities:**

Reports have shown that increasing sports and leisure activities can serve as a useful means to decrease illicit drug use in the youth population (M. Kwan et al, 2014). Such services should be made more easily accessible with less formality.

**Encourage and provide incentives for Community policing activities:**

Evidence has shown that Community policing activities is effective in preventing illicit drug use (OJP, 2000).

**Prescription Drug Monitoring program and limit over-the-counter sale of drugs:**

Implement Prescription Drug Monitoring program, limit over-the-counter sale of drugs and enforce policies to restrict doctors to prescribe medicine that can lead to addiction and dependence such as opioid analgesics, benzodiazepines, amphetamines and pregabalin among others only for the minimum period needed for therapy such that easy availability of such drugs in the surrounding is decreased (APHA, 2015).

**Role of pharmacists:**

Pharmacists should be encouraged to participate actively in designing illicit drug use prevention program, education and awareness program to sensitize the population. They also need to be able to prevent prescription-drug abuse and non-prescription drug abuse by using their professional judgement to assess if the purchase is legitimate (ASHP Statement, 2015).

**Primary and harm reduction interventions targeting high risk group****Peer training and peer-led intervention.**

Peers can access young boys and girls that are hard to reach. Peer-led intervention has been successful in preventing tobacco and cannabis use (MacArthur et. al., 2016).

Offer regular psychological support and counselling service to children whose parents receive substance abuse treatment (OJP, 2000).

Strengthen psychological support and follow-up for young people who are victim of domestic violence.

Reinforce the law to ensure that young people are either in educational or vocational institutions till 16 years and once they have completed their studies, they are facilitated to secure a job as quickly as possible.

Evidence shows that substance abuse has a direct relationship with rate of unemployment ( Lee.j.O et al, 2015).

Screen and provide the required level of intervention for all pregnant ladies attending the antenatal clinic or hospital (WHO, 2001).

**Brief screening for college students and initiation of early treatment where needed:**

It has been found that delaying the age of taking illicit drugs as well as the least exposure to these agents can prevent major negative health impact (Griffin.K.W & Botvin.G.J, 2010; Strang et. al., 2012)).

Targeting the high risk groups and offer them drug education and prevention intervention as needed (Johns Hopkins–Lancet Commission; NICE guideline, 2018).

**High risk groups:**

1. Young people with Tuberculosis, Hepatitis C and HIV
2. Commercial sex workers
3. Man having sex with man
4. Transgender
5. Homeless people
6. People who are sexually exploited
7. People who attend night clubs and festivals (drug education campaign to be undertaken in night clubs).
8. Juvenile offenders in correctional centres

**Secondary Prevention:****Increase the number of detoxification centers and observe the recipient of methadone for one hour after taking the drug to prevent traffic of methadone:**

This will make it more accessible for the person who abuse drug to receive treatment. Methadone, a synthetic opioid agonist, is used as detoxification or replacement therapy in people who abuse opioid drugs. Methadone does not produce significant euphoric effect. It is regarded as a good line of treatment as it decreases withdrawal effect induced by removal of opioid drugs (Bertram,G.K., Susan,B. & Anthony, J.T., 2015),decreases heroin use, crime and improves social functioning (Joni.T.B.F et al, 2016). However, this therapy is debatable as majority of people who are on Methadone are using other drugs such as alcohol and synthetic drugs to obtain their “high”. Thus, Methadone therapy may not be very useful in combatting the problem of illicit drugs.

Observing the patient of methadone intake for one hour may prevent the practice of holding the methadone in the mouth and thereafter spitting and selling it. Such traffic of methadone is common among the drug addicts in Mauritius.

**Reduce the age barrier to access Methadone detoxification program and allow universal access to harm reduction:**

Currently, the age of access to these programs is 18 years while on average at least two out of five youngsters aged between 15 and 25 years are consumers of the drugs. So, decreasing the age will allow more people to be treated and in the future decreases the drug burden on the country (IDPC/Youth RISE, 2014; Johns Hopkins–Lancet Commission).

**Tertiary Prevention:****Strengthening rehabilitation facilities:**

There is an urgent need to strengthen our current rehabilitation services which can be achieved through creation of more rehabilitation centres, implementation of more frequent follow-up and addressing individual issue to prevent relapse. Moreover, encouraging peer support may help.

On-going psychiatric and medical treatment is needed for those people who are suffering from sequelae following drug use to prevent further complications.

**Open debate on decriminalisation of small, non-violent drug offence and reviewing the law pertaining to issue of character of certificate:**

It will be desirable if small and non-violent drug offences are decriminalised such that the certificate of character is not affected. Otherwise it will be a barrier for securing a job and ultimately lead to frustration, depression and make the individual sink more in drugs (IDPC/Youth RISE, 2014; Johns Hopkins–Lancet Commission).

**Other Measures:****Behaviour change and behavior therapy:**

Behaviour change is a pre-requisite to fight against the war against illicit drug use in the youth (Wakefield, M. A., Loken, B., & Hornik, R. C., 2010). Different types of behavioural therapy including cognitive behavioural therapy, contingency management intervention, motivational incentives, motivational enhancement therapy and family behaviour therapy will be implemented mainly through primary prevention measures.

**Professional training and capacity building:**

Teachers, peers, social workers, nurses, midwives, prison officers, youth correctional centre officers, religious members such as priests, imams, pandits and community members need to be trained about how to deliver effective drug education and about the appropriate measures of how to deter and decrease the use of drugs in children, young boys young girls and adults and how to identify high risk group.

Educate health care workers about drug and how to make early diagnosis and manage drug problem through youth friendly services.

**Allocate more drug budget for harm reduction program:**

Currently, in Mauritius, most of the budget allocated for combatting drugs is directed towards repressive measures - 22% as compared to harm reduction measures-78%. It has been shown that harm reduction measures is associated with a 65% fall in HIV/AIDs rate in Mauritius from 2005-2014. Thus increasing budget for harm reduction programme may be beneficial, according to several studies (UNODC, 2014; HRI, 2010; PILs, 2015).

**Promote more research on illicit drug use with particular focus on synthetic drugs in Mauritius** (Johns Hopkins–Lancet Commission).

**Universal health coverage: It is advisable to make policies to ensure that people who abuse drugs also receive good humane treatment when they attend any hospital or healthcare facilities:**

According to Universal Health Coverage policy, all people including drug addicts should be able to access the required health services needed (WHO, 2018).

**Open debate about the pros and cons of decriminalization of cannabis such that community can give their opinion and later help in decision making:**

Legalization of cannabis has proved to bring economic benefit, decreased drug trafficking and crime rate in Uruguay (Economix business, 2018).

However, in Netherland where cannabis is legal, strong association between cannabis and aggressive behaviour and delinquency is noted (Eurad, 2012). Furthermore, it has been shown that young people who started cannabis at an average age of 15.6 years have an increased likelihood of escalating to more harder drugs (Eurad, 2012).

**Reinforcement of laws governing measures to curb supply of drugs  
(National Drug Observatory Report, 2018)****All prevention measures are best implemented on a long-term basis with effort to reinforce the aim of the program.**

Evidence has shown that to be effective, drug prevention program need to be an ongoing one (NIH, 2014).

**Conclusion:-**

Illicit drug use is a pervasive problem of public health concern which is affecting the population of Mauritius at large, paving its way into many sectors including educational establishments. Illicit drug use is a preventable problem and current investment in appropriate prevention programs will be cost-effective in the future. However, if suitable measures are not taken, the future of our youth and the country will be blurred as illicit drug use has several devastating impacts on the health of the consumers, their surroundings as well as on the economy of the country which subsequently results into the vicious circle of poverty, poor health and lack of education. In an attempt to control this problem, a well- coordinated, integrated, multi-dimensional and multi-sectoral approach is needed whereby the public sectors, private sectors, national and international NGOs and stakeholders have to work together to promote the most effective universal and high risk preventive approach in addition to law enforcement strategies.

**Ethical Consideration:**

All journals and materials used for this paper are clearly referenced.

**Acknowledgements:-**

The writing of this article was not funded by any grant and did not receive any financial support.

**Conflict of interest:**

The authors have no conflict of interest to declare.

**References:-**

1. Alex.K, 2017. Challenges of Curriculum Design and its Implications on Policy: The Case of the Junior High School (JHS) Teaching Subjects in Ghana. Journal of Educational and Social Research Available at: <https://www.degruyter.com/downloadpdf/j/jesr.2017.7.issue-2/jesr.2017.v7n2p93/jesr.2017.v7n2p93.pdf>
2. APHA, 2015. Prevention and intervention strategies to decrease misuse of prescription pain medication.
3. Available at: <https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2015/12/08/15/11/prevention-and-intervention-strategies-to-decrease-misuse-of-prescription-pain-medication>
4. ASHP Statement, 2015. the Pharmacist's Role in Substance Abuse Prevention, Education, and Assistance. Medication Therapy and Patient Care: Specific Practice Areas–Statements Available at: <https://www.ashp.org/-/media/assets/policy-guidelines/docs/statements/pharmacists-role-substance-abuse-prevention-education-assistance.ashx>
5. Bauman et al, 2001. The influence of a family program on adolescent tobacco and alcohol. American Journal of Public Health 91(4):604–610. Available at: <https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.91.4.604>
6. BERTRAM,G.K., SUSAN,B. & ANTHONY, J.T.,2015. Basic and clinical pharmacology. 13<sup>th</sup> ed. US: Mc Graw Hill.
7. Better health channel, 2018. synthetic drugs (new psychoactive drugs) Available at: <https://www.betterhealth.vic.gov.au/health/healthyliving/synthetic-drugs>
8. Channel news, 2017- Singapore to make fight against drugs a 'national priority': Shanmugam Available at: <https://www.channelnewsasia.com/news/singapore/singapore-to-make-fight-against-drugs-a-national-priority-shanmu-8710276>
9. Chou et al. 1998. Effects of a community-based prevention program on decreasing drug use in high-risk adolescents. Am J Public Health.; 88(6): 944–948 Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1508235/?page=1>
10. Chowdry, H., Kelly, E. and Rasul, I. (2013). Reducing risky behaviour through the provision of information. Research report for the Department for Education, by the Institute for Fiscal Studies and UCL. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.378.2312&rep=rep1&type=pdf>
11. Crime, Justice and Security Statistics, 2017 Available at: [http://statsmauritius.govmu.org/English/Publications/Documents/2018/EI1395/CJS\\_Yr17.pdf](http://statsmauritius.govmu.org/English/Publications/Documents/2018/EI1395/CJS_Yr17.pdf)
12. David C. L et al, 2002. Adolescent Substance Abuse: A Public Health Priority An evidence-based, comprehensive, and integrative approach. PLNDP National Project Office Center for Alcohol and Addiction Studies Brown University Box G-BH Providence, RI 02912. Available from: <http://www.plndp.org/Resources/adolescent.pdf>
13. Defimedia. 2018. National Drug Commission, 2015-2016. Available at: <https://defimedia.info/synthetic-drug-consumption-168-users-admitted-hospital>
14. Economix business, 2018. The economic impacts of legalization of marijuana in Uruguay. Available at: <https://latinamericanpost.com/22433-the-economic-impacts-of-the-legalization-of-marijuana-in-uruguay>
15. Eurad, 2012. Cannabis issues for policy makers. Belgium Available at: [http://www.eurad.net/filestore/PDF/212181Eurad\\_Cannabiscoversandpagesforweb.pdf](http://www.eurad.net/filestore/PDF/212181Eurad_Cannabiscoversandpagesforweb.pdf)
16. Griffin.K.W &Botvin.G.J, 2010. Evidence-Based Interventions for Preventing Substance Use Disorders in Adolescents. Child Adolesc Psychiatr Clin N Am. 19(3): 505–526. doi:10.1016/j.chc.2010.03.005 Available at: <https://www.ncbi.nlm.nih.gov/pubmed/20682218>
17. Health and social care, 2016. What works' in drug education and prevention? Scottish government Riagaltas na-h alba gov.scot Available at <http://www.edex.es/wp-content/uploads/What-works-in-prevention.pdf>

18. Hernandez, L., Rodriguez, A. M., & Spirito, A. (2015). Brief Family-Based Intervention for Substance Abusing Adolescents. *Child and adolescent psychiatric clinics of North America*, 24(3), 585-99. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/26092741>
19. HRI (Harm Reduction International), 2010. What is Harm Reduction, A position statement from the International Harm Reduction Association. Available at [http://www.ihra.net/files/2010/08/10/Briefing\\_](http://www.ihra.net/files/2010/08/10/Briefing_)
20. IBBS survey 2009 IBBS survey, 2011 Available at: [http://www.aidsinfoonline.org/kpatlas/document/MUS/MUS\\_2011\\_IBBS\\_PWID.pdf](http://www.aidsinfoonline.org/kpatlas/document/MUS/MUS_2011_IBBS_PWID.pdf)
21. IBBS survey, 2013 IBBS survey, 2016 Available at: <http://pils.mu/wp-content/uploads/2018/09/IBBS-TG-report-F.pdf>
22. IDPC, 2014. Case Study Series: The impacts of drug policy on young people. Available at: [http://files.idpc.net/library/IDPC-Youth-RISE-drug-policy-case-study\\_Mauritius.pdf](http://files.idpc.net/library/IDPC-Youth-RISE-drug-policy-case-study_Mauritius.pdf)
23. JONIT.B.F ET AL, 2016. EFFECTIVENESS OF METHADONE MAINTENANCE THERAPY AND IMPROVEMENT IN QUALITY OF LIFE FOLLOWING A DECADE OF IMPLEMENTATION. *JOURNAL OF SUBSTANCE ABUSE TREATMENT*. ELSEVIER. SCIENCE DIRECT. AVAILABLE AT: <HTTPS://WWW.SCIENCEDIRECT.COM/SCIENCE/ARTICLE/PII/S0740547216300095>
24. Johns Hopkins–Lancet Commission on public health and international drug policy Available at: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(16\)00619-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)00619-X/fulltext)
25. Kwan et al, 2014. Sport participation and alcohol and illicit drug use in adolescents and young adults: A systematic review of longitudinal studies. *Science direct, Addictive Behaviors* 39 (2014) 497–506 Available at: [https://ac.els-cdn.com/S0306460313003766/1-s2.0-S0306460313003766-main.pdf?\\_tid=a2420aeb-94d3-40f3-b194-ed02d70391b5&acdnat=1544034587\\_f938601a2d6d664b29cf1614fc28753b](https://ac.els-cdn.com/S0306460313003766/1-s2.0-S0306460313003766-main.pdf?_tid=a2420aeb-94d3-40f3-b194-ed02d70391b5&acdnat=1544034587_f938601a2d6d664b29cf1614fc28753b)
26. Lee, J. O et al (2015). Unemployment and substance use problems among young adults: Does childhood low socioeconomic status exacerbate the effect?. *Social science & medicine* (1982), 143, 36-44. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4601938/>
27. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4601938/>
28. LatinAmerican Post | Sofía Carreño Available on: <https://latinamericanpost.com/22433-the-economic-impacts-of-the-legalization-of-marijuana-in-uruguay>
29. L'express, 2018. The rising tide of synthetic drugs in Mauritius. Available at: <https://www.lexpress.mu/idee/327154/rise-synthetic-drugs-paradise-island-part-2>
30. Livingston et al (2012). The effectiveness of interventions for reducing stigma related to substance use disorders: a systematic review. *Addiction* (Abingdon, England), 107(1), 39-50. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3272222/>
31. MacArthur G.et al. 2016. Peer-led interventions to prevent tobacco, alcohol and/or drug use among young people aged 11-21 years: a systematic review and meta-analysis. *Addiction*, 111, 391-407. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4833174/>
32. Malick R. (2018). Prevention of substance use disorders in the community and workplace. *Indian journal of psychiatry*, 60(Suppl 4), S559-S563. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5844172/>
33. National Drug Observatory report, 2016. Publication of Ministry of Health and Quality of Life, republic of Mauritius. Available at: [http://ionnews.mu/wpcontent/uploads/2016/08/GOVERNMENT\\_PRINTER\\_NDO\\_8\\_AUGUST\\_Ministry-of-Health\\_FINAL\\_LAST.pdf](http://ionnews.mu/wpcontent/uploads/2016/08/GOVERNMENT_PRINTER_NDO_8_AUGUST_Ministry-of-Health_FINAL_LAST.pdf)
34. National Drug Observatory report, 2018. Publication of Ministry of Health and Quality of Life, republic of Mauritius. Available at: <http://health.govmu.org/English/Documents/2018/National.pdf>
35. Naples, M. J. (1997) Effective frequency: Then and now. *Journal of Advertising Research* 37 (4) : 7 – 13.
36. NICE guideline, 2018. Drug misuse prevention: targeted interventions. Public health England. Available at: (<https://www.nice.org.uk/terms-and-conditions#notice-of-rights>)
37. NIDA, 2016. Principles of substance abuse prevention for early childhood: a research-based. U.S. Department of Health and Human Services. Available at: [https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/early\\_childhood\\_prevention\\_march\\_2016.pdf](https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/early_childhood_prevention_march_2016.pdf)
38. NIDA, 2003. Preventing drug use among children and adolescent- a research-based guide for parents, teachers and community leaders. 2<sup>nd</sup> ed. US department of ealth and human service. National institute of health. National institute on drug abuse. Maryland. 20892 Available at: [https://www.drugabuse.gov/sites/default/files/preventingdruguse\\_2.pdf](https://www.drugabuse.gov/sites/default/files/preventingdruguse_2.pdf)
39. NIH, 2004. Drug facts-lessons learn from preventive research Available at: [https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/drugfacts\\_lessonsfromprevention.pdf](https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/drugfacts_lessonsfromprevention.pdf)



40. OJP, 2000. Promising Strategies to Reduce Substance Abuse. U.S. Department of Justice Office of Justice Programs 810 Seventh Street NW. Washington, DC 20531. Available at: <https://ojp.gov/docs/psrsa.pdf>
41. PILS. 2015. Cost/Benefit Analysis of Drug Policies in Mauritius. Stra consult Available at: <http://pils.mu/wp-content/uploads/2017/03/Cost-benefit-analysis-of-drug-policies-in-Mauritius.pdf>
42. Prochaska, J., Johnson, S., & Lee, P. (1998). The transtheoretical model of behavior change. In S. Schumaker, E. Schron, J. Ockene & W. McBee (Eds.), *The Handbook of Health Behavior Change*, 2nd ed. New York, NY: Springer
43. Renstrom.M, Ferri.M & Ahmed.M, 2017. Substance use prevention: evidence-based intervention. EMHJ • Vol. 23 No. 3 Available from: <http://www.emro.who.int/emhj-volume-23-2017/volume-23-issue-3/substance-use-prevention-evidence-based-intervention.html>
44. Strang et. al., 2012. Drug policy and the public good: evidence for effective interventions. *Lancet*. 379(9810):71-83. doi: 10.1016/S0140-6736(11)61674-7. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/22225672>
45. Substance Use Prevention and Harm Reduction Guideline, 2018. Ontrio Available at: [http://www.health.gov.on.ca/en/pro/programs/publichealth/oph\\_standards/docs/protocols\\_guidelines/Substance\\_Use\\_Prevention\\_and\\_Harm\\_Reduction\\_Guideline\\_2018\\_en.pdf](http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/protocols_guidelines/Substance_Use_Prevention_and_Harm_Reduction_Guideline_2018_en.pdf)
46. THE STRAITSTIME, 2017. DRUG USE AMONG THE YOUNG: A LOOK AT HOW IT'S TACKLED IN ICELAND AND FINLAND
47. Available at: <https://www.straitstimes.com/world/europe/drug-use-among-the-young-a-look-at-how-its-tackled-in-iceland-and-finland>
48. UNAIDS, 2002. Behaviour change communication for HIV/AIDS-a strategic framework. Family Health International Institute for HIV/AIDS 2101 Wilson Boulevard, Suite 700 Arlington, VA 22201 U.S.A. Available at: <http://www.hivpolicy.org/Library/HPP000533.pdf>
49. UNAIDS, 2016. Do no harm Available at: <http://rtesa.unaids.org/documents/publications/55-do-no-harm-health-human-rights-and-people-who-use-drugs/file>
50. UNESCO, 1994. The impact of examination systems on curriculum development: an international study.
51. Available at: [http://www.unesco.org/education/pdf/31\\_45.pdf](http://www.unesco.org/education/pdf/31_45.pdf) UNODC, 2015 Available at: [https://www.unodc.org/documents/wdr2015/World\\_Drug\\_Report\\_2015.pdf](https://www.unodc.org/documents/wdr2015/World_Drug_Report_2015.pdf)
52. UNODC (United Nations Office on Drugs and Crime), 2014. World Drug Report, Pg 1. Available at: [http://www.unodc.org/documents/wdr2014/World\\_Drug\\_Report\\_2014\\_web.pdf](http://www.unodc.org/documents/wdr2014/World_Drug_Report_2014_web.pdf)
53. UNODC, 2004. School-based education for drug prevention. United nation publication. Available at: [https://www.unodc.org/pdf/youthnet/handbook\\_school\\_english.pdf](https://www.unodc.org/pdf/youthnet/handbook_school_english.pdf)
54. Wakefield, M. A., Loken, B., & Hornik, R. C., 2010. Use of mass media campaigns to change health behaviour. *Lancet* (London, England), 376(9748), 1261-71. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4248563/>
55. Webster-Stratton & Taylor T, 2001. Nipping early risk factors in the bud: preventing substance abuse, delinquency, and violence in adolescence through intervention targeted at young children (0-8 years). *Prev Sci*. ;2(3):165-92
56. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/11678292>
57. WHO. 2018. Universal Health Coverage. Available at: [https://www.who.int/healthsystems/universal\\_health\\_coverage/en/](https://www.who.int/healthsystems/universal_health_coverage/en/)
58. WHO 2007. Outcome Evaluation Summary Report: WHO/UNODC Global Initiative (1999-2003) on Primary Prevention of Substance Abuse. Geneva. Switzerland Available at: [http://www.who.int/substance\\_abuse/publications/global\\_initiative\\_summary\\_report.pdf](http://www.who.int/substance_abuse/publications/global_initiative_summary_report.pdf)
59. WHO, 2006. Prevention of Drug use in schools. WHO regional office for South east Asia. Available at: [http://apps.searo.who.int/PDS\\_DOCS/B0760.pdf](http://apps.searo.who.int/PDS_DOCS/B0760.pdf)
60. WHO, 2001. Guidelines for the identification and management of substance use and substance use disorders in pregnancy. Geneva, Switzerland Available at: [http://apps.who.int/iris/bitstream/handle/10665/107130/9789241548731\\_eng.pdf;jsessionid=6E281B03652BF048C3160F6CD145C538?sequence.](http://apps.who.int/iris/bitstream/handle/10665/107130/9789241548731_eng.pdf;jsessionid=6E281B03652BF048C3160F6CD145C538?sequence.)