
HOME TEAM JOURNAL • SPECIAL ISSUE • JANUARY 2020

HOME TEAM JOURNAL

BY PRACTITIONERS,
FOR PRACTITIONERS

**SPECIAL ISSUE:
SPOTLIGHT ON DRUGS**

SOCIETAL IMPACT OF CANNABIS

**IMPACT OF DETERRENCE ON
DECISION-MAKING PROCESSES OF
DRUG TRAFFICKERS**

**PUBLIC PERCEPTION OF
SINGAPORE'S ANTI-DRUG
POLICIES**



**SINGAPORE'S ANTI-DRUG STRATEGY:
A SUM OF EXPERIENCE, EVIDENCE AND ENVIRONMENT**

HOME TEAM JOURNAL

The Home Team Journal is a publication by the Home Team Academy in collaboration with the Ministry of Home Affairs of Singapore and its departments, which are collectively known as the Home Team. It is a journal by practitioners and researchers for practitioners and specialists in safety and security.

PUBLISHER Home Team Academy

ADVISOR Puah Kok Keong
Deputy Secretary (Policy),
Ministry of Home Affairs

**PROJECT
DIRECTORS** Lal Nelson
Chia Yee Fei

GUEST EDITOR Stella R. Quah

**EDITORIAL
MANAGEMENT** Lim Jing Jing
Saif Haq

All correspondence should be addressed to the

Home Team Journal Editorial Board
Home Team Academy
501 Old Choa Chu Kang Road, Singapore 698928

Email: MHA_HT_Journal@mha.gov.sg

Those wishing to submit manuscripts should send abstracts of proposed articles to the Editor at MHA_HT_Journal@mha.gov.sg.

CONTENTS

HOME TEAM JOURNAL • SPECIAL ISSUE • JANUARY 2020

- FOREWORD** 02 by Josephine Teo
Minister for Manpower and Second Minister for Home Affairs
- INTRODUCTION** 03 by Guest Editor Stella R. Quah
Health Services and Systems Research, Duke-NUS Medical School, Singapore
- SPOTLIGHT ON DRUGS** 04 **From Harm Reduction to Harm Prevention:
A Cross-national Comparison of Eleven Countries**
Stella R. Quah
Health Services and Systems Research, Duke-NUS Medical School, Singapore
- 17 **Review of Empirical Evidence
on the Link between Drugs and Crime**
Gursharon Kaur Sidhu
Research & Statistics Division, Ministry of Home Affairs, Singapore
- 24 **Societal Impact of Cannabis**
Gursharon Kaur Sidhu
Research & Statistics Division, Ministry of Home Affairs, Singapore
- 30 **Costs of Drug Crime: Literature Review
and Methodology**
Euston Quah, Wai-Mun Chia, Tsiat-Siong Tan
School of Social Sciences, Nanyang Technological University
- 39 **The Intergenerational Transmission of Offending
from Drug-Abusing Parents: Understanding the Impact
of Parental Drug Abuse and Incarceration on Children's
Offending Behaviour in Singapore**
Eng Hao Loh, Charmaine Ch'ng Wei Lin, Xiang Long Cheng
Singapore Prison Service
- 52 **Public Perception towards Singapore's Anti-drug Policies**
Suet Lay Liang
Research and Statistics Division, Ministry of Home Affairs, Singapore
- 56 **Deterrent Effect of Historical Amendments to
Singapore's Sanction Regime for Drug Trafficking**
Yee Fei Chia
Research & Statistics Division, Ministry of Home Affairs, Singapore
- 65 **The Impact of Deterrence on the Decision-Making
Process of Drug Traffickers**
Jasmin Kaur, Kah Shun Teo & Salina Samion
Singapore Prison Service & Central Narcotics Bureau
- 81 **Singapore's Anti-drug Strategy: A Sum of Experience,
Evidence and Environment**
Lal Nelson
Research & Statistics Division, Ministry of Home Affairs, Singapore



Copyright © 2020. All rights reserved.

No part of this publication (content and images) may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, scanning, recording or otherwise, without the prior written permission of the Home Team Academy.

The opinions expressed in this issue are the authors' and do not necessarily reflect those of the Home Team Academy or the authors' departments.

Foreword



The *Home Team Journal* serves as a platform to share knowledge among practitioners on homefront safety and security matters. In this Special Issue, we have brought together researchers from different backgrounds and disciplines to share with us their drug-related research. The articles provide insights on various aspects of the drug problem, from the social and economic costs on society, and the consequences of liberalising drug policies, to the effectiveness of Singapore's anti-drug policies and the public's support for them.

The battle against drugs is not easily won. It requires constant vigilance, especially against an international backdrop where well-funded interest groups mount active and sophisticated advocacy for the liberalisation of drug policies. Of course, they neglect to highlight the high costs to society. In this regard, several studies in this Special Issue provide compelling evidence. Sidhu found multiple studies spanning different jurisdictions that demonstrated a clear and unambiguous link between drug abuse and crime. In their study on children of drug abusers in Singapore, Loh et. al. found that children of drug abusers were more likely to be exposed to anti-social activities at home and anti-social peers. The study also found that one in five drug abusers who were parents, had children who later in life also went on to commit criminal offences.

Given the highly negative consequences on society, Singapore imposes stiff penalties against drug trafficking. The effectiveness of our regime is backed by evidence: two separate studies by Chia and Kaur et. al. found that Singapore's severe penalties have had a deterrent effect on drug trafficking behaviour. This tough stance against drugs is strongly supported by the Singapore public, as shown in the public perception study described in Liang's article.

This Special Issue would not have been possible without the contributions of many individuals. I would like to thank Professor Stella Quah, Adjunct Professor at Duke-NUS Medical School, for sharing her expertise through her role as Guest Editor. Her thoughtful comments have helped the contributors sharpen and contextualise the insights from their studies. I would also like to thank the contributors for agreeing to share their studies, and the administrative team for putting all of it together into this Special Issue of the *Home Team Journal*.

I am certain that readers will find the selection of studies useful and enlightening.

Mrs. Josephine Teo
*Minister for Manpower and
Second Minister for Home Affairs*

Introduction by Guest Editor



Current global statistics on drug addiction - technically known as substance use disorder or dependence syndrome - show a marked increase in psychoactive substances use harming the physical and mental health of individuals as well as the welfare of families and communities. Psychoactive drugs' destructive effect is particularly serious on children and youth. A clear example is cannabis. Children and youth are the most vulnerable groups targeted by the marketing of cannabis products, with increased Tetrahydrocannabinol (THC) content in countries and jurisdictions where cannabis is now legal. The marketing practices used by cannabis producers in those locations involve all types of media, and one of the most effective marketing vehicles to reach young consumers is social media. Consequently, young audiences in countries like Singapore - geographically distant from the cities and regions where cannabis is legal - are just as vulnerable to the false marketing message that cannabis is safe. This Special Issue of the *Home Team Journal* addresses these features of the international drug situation today.

The articles in this Special Issue examine specific aspects of the global problem of substance use disorder from the perspective of its impact on individuals, families and communities. The authors apply their multidisciplinary expertise to the analysis of relevant aspects of the drug problem, drawing from international as well as local research evidence. The first four articles address the international situation and the other five articles provide evidence from Singapore.

Applying a health sociology perspective in the first article, I compare and contrast two different approaches to substance use disorder - harm reduction and harm prevention - illustrating the arguments with current evidence-based research from eleven countries that offer harm reduction services. In the second article, Sidhu presents a "Review of Empirical Evidence on the Link between Drugs and Crime" examining studies on how drug trafficking generates and exacerbates crime. The third article is Sidhu's review of international statistics and studies on the "Societal Impact of Cannabis" pointing to the adverse consequences of legalising cannabis experienced in jurisdictions that have implemented it. Economists Quah, Chia and Tan explain in the fourth article the main economic theories and measurements used to assess the "Costs of Drug Crime" internationally and highlight the nuances of their application to the local context.

Articles fifth to ninth focus on Singapore. The fifth article is a study of the intergenerational transmission of offending behaviour by Loh, Ch'ng and Cheng. This team of psychologists compare the parental history of offences of two groups of young people, offenders and non-offenders. The sixth, seventh and eighth articles deal with Singapore's legislation on psychoactive drug use from different angles. Liang presents the results of a survey on the local public perception of Singapore's drug-related policies. Chia examines the possible deterrent effect of policy amendments, particularly the Mandatory Death Penalty (MDP), by examining drug trafficking case files four years before and after the enactment of the MDP. The eighth article by Kaur, Teo, and Samion scrutinises deterrence from the perspective of individuals serving prison time for drug trafficking offences. Nelson sums up this Special Issue by discussing the drivers behind Singapore's anti-drug strategy.

Professor Stella R. Quah

Guest Editor

Home Team Journal Special Issue:

Spotlight on Drugs

From Harm Reduction to Harm Prevention: A Cross-national Comparison of Eleven Countries

Stella R. Quah

Duke-NUS Medical School, National University of Singapore

ABSTRACT

Background – International figures show an increase in both psychoactive substance use and the harms (physical, psychological and social) that it brings. Scientific evidence from different fields of knowledge demonstrates that the use of psychoactive substances leads to addiction (substance use disorder) and inflicts serious harm to drug users, particularly to people who inject drugs, their families and their larger community.

Objective – This article discusses two different approaches to substance use disorder: harm reduction and harm prevention. Data from 11 countries that follow the ‘harm reduction’ approach and experience unintended collateral harms are presented to illustrate the situation.

Findings – The steady growth and seriousness of harms caused by psychoactive substance disorder worldwide indicate the importance of considering a different approach: harm prevention. Harm prevention is a multipronged approach comprising all concerted efforts by civil society, the government, and the private sector, to use prevention, rehabilitation and treatment to eradicate the harm that substance use disorder exacts upon individuals and communities. The harm prevention approach is evidence-based and incorporates current biomedical and psychosocial research on drug addiction and its predictors. Why do we need a multipronged approach? Four decades of research show that the problem of psychoactive substance use disorder requires comprehensive and multipronged solutions. Focusing only on individual addicts ignores the drug-promoting socio-cultural environment, the multifactorial nature of drug addiction, and the pathway to addiction. The pathway towards substance addiction comprises biological, psychological and sociocultural dimensions and follows three stages: misuse, abuse and addiction. Examining why individuals enter this path and proceed along it, research demonstrates that the biological, psychological and sociocultural dimensions of substance addiction are interlinked, and that young individuals and those with a genetic predisposition to drug addiction are particularly vulnerable.

Introduction

The problem of psychoactive substance use is global. The United Nations Office on Drugs and Crime (UNODC) estimate that in 2017 about “5.5% of the global population aged 15-64”, that is, “271 million people worldwide ... had use drugs at least once the previous year”, an increase from 4.8% in 2009 (UNODC, 2019a:2). The number of years of healthy life lost to the use of drugs worldwide has risen from about 25 million in 1991 to over 40 million in 2017 (UNODC, 2019a:20). Moreover, “opioids present the greatest harm to the health of users”: the worldwide number of ‘past-year’ opioid users in 2017 was estimated at 53.4 million and “opioids accounted for 110,000 (66%) of the 167,000 deaths attributed to drug use disorders” (UNODC, 2019a:12). Perhaps more concerning is the continued upward trend of adolescent drug users (12 to 17 year-olds), considering scientific evidence that the brain is not fully developed yet at that age and thus adolescents are even more vulnerable than older users to long-term serious harms caused by psychoactive drugs consumption (UNODC, 2019a: 13-14).

The pathway to drug addiction typically begins as recreation (‘trying a drug for fun’) or misuse leading to abuse and finally dependence. The serious harm that psychoactive substances inflict on addicted individuals, their families and their larger community is demonstrated by scientific evidence and is acknowledged by governments and civil society worldwide. Of the large variety of attempted solutions, two main but contrasting efforts to deal with the problem stand out. One is the harm reduction approach advocating the right to use drugs and what it deems as ways to use drugs ‘safely’. The other is the harm prevention approach that focuses on the basic right of individuals to health and on the crucial role of prevention and rehabilitation. Much has been said and written about harm reduction but less about harm prevention. Thus, the objective of this brief discussion is to compare both approaches, highlighting the most important features of each.

The empirical evidence presented in this discussion of the two approaches are based on 11 countries where harm reduction services are available: Australia, New Zealand, Canada and the United Kingdom (Commonwealth countries); Germany, Portugal, Sweden and the Netherlands (European Union members); and Indonesia, Malaysia and Thailand (ASEAN members). The data sources comprise published scientific studies, official databases, and reports published by the respective national governments, agencies, as well as international organisations such as the United Nations Office on Drugs and Crime (UNODC), the World Health Organization (WHO), UNAIDS, and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), among others.

While the sources are official, a caveat is in order. The main challenge for studies on psychoactive substance users - people who use drugs (PWUD) in general and people who inject drugs (PWID) - is the nature of the data. Given the difficulties of reaching the entire population of PWUD and PWID, most statistics are estimates. One common hurdle is reaching the PWUS/PWID population. Regular illicit drug consumption, particularly drug injecting, usually takes place in private and concealed locations. Cross-national studies face an additional challenge: not all countries collect or report annual data systematically or use the same standard classification for all drug-related problems. The EMCDDA publishes figures on PWID as well as prevalence of ‘high-risk drug users’ (a category that combines intensive use of psychoactive drugs as well as drug injecting). The most recent EMCDDA data - that is, 2016-2017 - on five of the 11 countries, show that the problem of ‘high-risk’ drug use is more intense in the United Kingdom (prevalence of 8.09 per 1,000 population aged 15-64) and Portugal (4.97) compared to Germany (1.95) and the Netherlands (1.25). There are no figures on ‘high-risk drug users’ for the other seven countries in the study. The number of drug-related deaths suggest an increasing trend from

2010 to 2018, with the exception of Australia that reported a sharp decrease during the same period (see Table 1). Unfortunately, no countrywide statistics on drug-related deaths are available for the three Asian countries, and the most recent data on New Zealand are for 2010-2014.

The discussion of both approaches is presented in four steps: (1) what is harm reduction; (2) the unintended collateral harm of harm reduction services; (3) what is harm prevention; and (4) how the harm prevention approach averts collateral harm.

The Harm Reduction Approach

Harm reduction is the approach promoted by Harm Reduction International (HRI), a non-governmental

organisation initiated in England in 1990 (HRI, 2012, 2019a). Due to its strong advocacy character, some experts consider HRI as ‘a movement’ (Van Wormer and Davies, 2003:27). HRI explains that “there is no universally accepted definition of harm reduction” but that harm reduction “refers to policies, programmes and practices that aim to minimize negative health, social and legal impacts associated with drug use, drug policies and drug laws” (HRI, 2019a). HRI declares that

Recognising that only a small percentage of people who use drugs experience problematic use, harm reduction may also help people maximize any potential benefits that they gain from using drugs. ... Many

Table 1. Drug-related Deaths, High-Risk Drug Users, Injecting, NSP and Hepatitis C Prevalence ^a

Country	(1) Number of Drug-related Deaths (Overdose)		(2) Estimated Number of NSP Kits Distributed per Injecting Drug User/Year		(3) Prevalence of PWID: Estimated Number of Injecting Drug Users per 1,000 Population Aged 15-64		(4) Prevalence of High-Risk Drug Users per 1,000 Population Aged 15-65
	2010-2014	2017-2018	2011-2014	2017-2018	2012-2013	2017-2018	2016-2017
Commonwealth							
Australia	8,547	1,795	203	624,881	6.4	5.7	nd
New Zealand	200	nd	277	233	4.5	5.6	nd
Canada	nd	11,500	23	nd	3.2	3.6	nd
UK	2,000	3,256	nd	nd	2.2	2.8	8.09
Europe							
Germany	1,250	1,272	2	nd	1.1	2.4	1.95
Portugal	25	30	110	116,271	1.6	2.0	4.97
Sweden	370	626	214	214	0.1	1.3	nd
Netherlands	95	262	nd	nd	0.1	0.1	1.25
Asia							
Indonesia	nd	nd	44	2.5	0.4	0.2	nd
Malaysia	nd	nd	522	18	5.9	5.3	0.677
Thailand	nd	nd	12	10	0.6	1.4	nd

people who use drugs do not need treatment, and those experiencing problems associated with drug use may be unwilling or unable to enter abstinence-only treatment for myriad reasons. While abstinence from drug use may be the goal for some people who use drugs this is an individual choice and should not be imposed, or regarded as the only option. (HRI, 2019a).

Accordingly, HRI promotes ‘safer’ use of “illicit and licit drugs”. HRI defines ‘safer use’ as drug use that is less likely to spread blood-borne infections, mainly HIV, hepatitis B, and hepatitis C infections. HRI fosters four main free or “inexpensive” services for the ‘safe use’ of drugs: distribution

of clean injecting kits through needle and syringe programmes (NSP); ‘supervised injection facilities’ (SIFs) also known as ‘Drug Consumption Rooms’ (DCRs); and naloxone peer-distribution programme (naloxone is a drug to counter opioid overdose) - also known as ‘Take-Home-Naloxone’ (THN) in the United Kingdom (HRI, 2019a). A supplementary harm reduction service offered in some European cities is street-mounted automatic injection kit dispensers (AIKD) that “enable the self-operated exchange of injection equipment” (EMCDDA, 2019:5).

Three significant and related global developments over the past decade challenge the harm reduction goal of ‘safe’ drug use. First, scientific evidence of serious health damage caused by psychoactive substance use is increasing (e.g., UNODC 2019;

Sources and notes:

(a) Countries vary in the time period (range of years) used to report data. Some use range of years while others report specific year. This table shows time periods to facilitate comparison. Figures for all countries are estimations as provided in the sources.

- EMCDDA (2019b) Country Drug Reports; Government of Canada (2019); Morrow (2018: 59). Australia’s earliest figure is for the decade 2001-2012 (Roxburgh et. al., 2017) but the 1,795 drug-induced deaths occurred in one year, 2017 (AIHW (2019).
- NSP (Needle and Syringe Programme). Sources: HRI (2012); Stone et al (2018). Data for 2017-2018 calculated from UNAIDS (2019) and EMCDDA (2019a: 92) New Zealand’s 2011-2014 figure was calculated based on its estimation of “10,000 needle exchange attendees” in 2014 (UNAIDS, 2015b:5) and its total population in 2013 (WHO, 2015)
- Sources for the period 2012-2013: UNAIDS (2015b); WHO (2015). For the period 2017-2018: Stone et. al. (2018) and UN (2019).
- EMCDDA (2019b) Country drug reports <http://www.emcdda.europa.eu/countries/drug-reports/2019/>. The EMCDDA (2019c) defines ‘high-risk drug use’ as “the use of psychoactive substances (excluding alcohol, tobacco and caffeine) intensively and/or by high-risk routes of administration [injecting] in the last 12 months”.
- The sources for the 2005-2014 figures are Mathers et. al. (2010); Romelsjo et. al. (2010:16225); IDT (2010a); AIHW (2015a), and INCB (2015:96). The UK are for 2005/06 and 2007/08. Portugal’s figures are for 2003, 2007 and 2012. The figure for New Zealand refers to persons with “severe problem with opioid abuse” (INCB, 2015:96). Data for 2017-2018 are from UNODC (2019) Table 3.1.
- UNAIDS (2019) Country Factsheets <https://www.unaids.org/en/regionscountries/countries/>
- Malaysian National Anti-Drug Agency (2019) Drugs Statistics-Laman Web Rasmi Agensi Anti Dadah Kebangsaan. The figure refers to users of opioids, methamphetamine and amphetamine-type stimulants in 2018.

(5) Hepatitis C (HCV) Prevalence among PWID (%)		(6) HIV Prevalence among PWID (%)
2005-2014	2015-2018	2018
53.5	51.0	1.7
57.0	nd	0.2
68.0	nd	10.9
46.0	53.0	1.0
73.1	nd	4.9
87.7*	88.3	21.3
81.7	54.6	0.4
55.3	76.2	10.2
63.5	nd	28.8
67.1	nd	13.5
nd	88.2	20.5

WHO 2019a; Degenhardt et. al., 2017; Jekeran et. al, 2017). Second, scientists, policy makers and law enforcement experts agree that the last stage of the drug use trajectory, substance use disorder, is an illness. More specifically, it is a chronic rather than acute illness and it is labelled ‘dependence syndrome’ in the 10th revision of the International Statistical Classification of Diseases or ICD-10 (WHO, 2010). The American Psychiatric Association (APA) and the international medical community appear to now accept the evidence-based notion that a person affected by ‘dependence syndrome’, also known as ‘substance use disorder’, is unable to stop the illness on his/her own, and thus requires assistance to begin rehabilitation (e.g., Leshner, 2003; Cohen, 2004; Arias et. al., 2016). Third, as policy makers, communities, and families become aware of the increased seriousness and scope of drug addiction harms, it is essential for international organisations and governments to explore conscientiously other approaches. As stated by the UNODC,

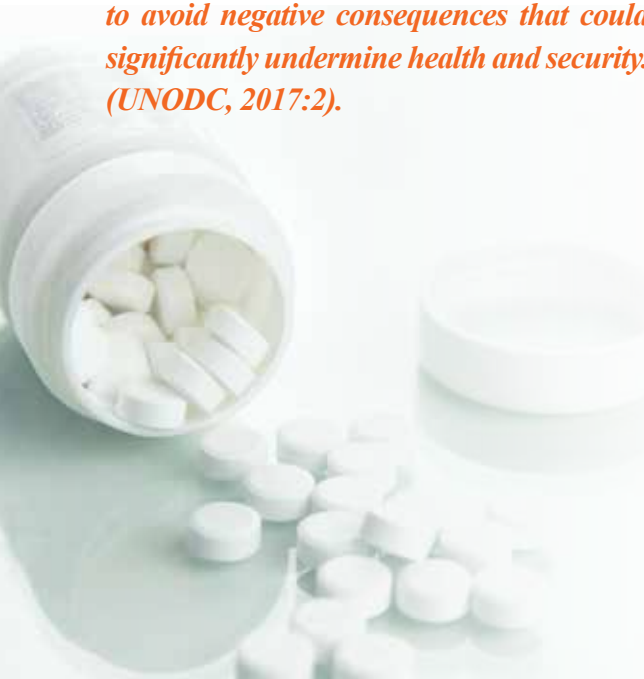
Using narcotic drugs and psychoactive substances without medical supervision, is associated with significant health risks. For this reason, the production, sale, distribution and use of these substances have been regulated under the control of the international treaties ... with the aim to avoid negative consequences that could significantly undermine health and security. (UNODC, 2017:2).

This position reflects the current inclination of most international agencies and governments facing the drug problem (including the governments of the 11 countries in the study) to follow scientific evidence on the serious harm brought about by psychoactive substance use disorder. Consequently, it is important to examine and compare the two approaches, harm reduction and harm prevention.

Unintended Collateral Harm of Harm Reduction Services

Social science research findings show that Newton’s third law of motion, ‘for every action there is ... a reaction’, applies in a general sense to social behaviour. More importantly, social actions typically have unintended consequences. The impact of unintended consequences is substantiated by a wealth of evidence-based social science research over the past century and it is most visible in the unintended adverse consequences or spillover effects of policies and programmes envisioned by their designers to assist individuals and communities. Three of the four main harm reduction services—NSP, SIFs and DCRs— provide PWID with both clean injecting paraphernalia and a supportive and private setting for drug injecting. That is, these services support injecting as a mode of drug use. Herein lies the most vivid illustration of unintended collateral harm of the NSP, SIFs, DCRs and AIKDs. Harm Reduction literature assert that the NSP and DCRs/SIFs teach and facilitate “safer drug use” including provision of clean injecting and counselling on the risks of shared used of injecting equipment, in order to prevent infection transmission. HRI recommends that the NSP should aim for ‘high coverage’ stating that less than 100 needles per injector is ‘low coverage’; 100-199 needles per injector is ‘average coverage’; and 200 or more needles per injector is ‘high coverage’ (HRI, 2012:28).

Unfortunately, the good intentions of harm reduction advocates do not lead to the expected goal of ‘safe injecting’. Harm reduction services that support drug injecting have negative unintended consequences. These are the most elementary reasons for the unintended consequences: (1) ‘Safe



injecting rooms' and 'safe injecting facilities' are not the only locations where PWID go for drug injecting. (2) Providing clean injecting kits through NSP and aiming for 200 or more needles per injector simply increases the number of needles and syringes each injector has, but does not guarantee that the injectors would stop sharing them. And (3), teaching PWID how to take the necessary precautions to avoid infections, does not assure they would take those precautions every time they inject drugs. On the contrary, research show that the provision of information and free sterile injecting kits to PWID does not preclude them from sharing of needles and injecting equipment or their circumventing pre-injection skin cleaning and other infection-preventing practices (e.g. Bonar & Rosenberg, 2014).

Injecting increases the probability of transmission of blood-borne infections - mainly HIV and Hepatitis C and B. The prevalence of HIV infection shows signs of decreasing around the world, as well as among PWID, but Hepatitis C (HCV) is rising, as shown in Table 1. In 2018, the prevalence of HIV among PWID ranged from 0.2% (New Zealand) to 28.8% (Indonesia). In contrast, HCV prevalence per 1,000 PWID in 2017-2018 ranged from 51.0% (Australia) to 88.3% (Portugal). Drug injecting inflicts many other serious harms to PWID in addition to these blood-borne infections. The promotion of injecting equipment and quiet locations to inject appear to foster these and other serious unintended collateral harms including overdose, infective endocarditis and groin injecting.

Overdose

Current scientific evidence demonstrate that injecting opioid users "are at an elevated risk of death" (Jekeran et. al., 2017:424), and that injecting is strongly associated with disease burden and opioid overdose deaths (e.g. Degenhardt et. al., 2017; Roxburgh et. al., 2017; UNODC, 2017, 2018; WHO, 2019a). To illustrate, eight of the 11 countries in the study have records on drug-related deaths. Their reported figures show an increase in deaths - most of them caused by opioid overdose - from the period 2010-2014 to 2017-2018 (see

Table 1). Canada reported the highest number: 11,500 deaths in 2017-2018, followed by the United Kingdom with 3,256; Australia 1,795; and Germany 1,272.

As mentioned earlier, one of the services promoted by the harm reduction approach is naloxone, a drug to counter opioid overdose. Harm reduction advocates advise PWID to keep naloxone at home to use in an emergency, to be administered by family members or friends of the drug injector in the event of an overdose (EMCDDA, 2015:71). Naloxone was classified as dangerous in the hands of non-medical persons (UNODC/WHO, 2013). In most Asian countries, naloxone is "a scheduled drug" that "cannot be sold over the counter" (HRI, 2012:33). However, WHO now advises "to make naloxone available in communities without prescription" (WHO, 2019a:6).

Infective Endocarditis

Infective endocarditis (IE) refers to the inflammation of the endocardium - the lining membrane of the heart cavities and connective tissue - due to infection with bacteria, fungi and other microorganisms. Infective endocarditis is becoming "increasingly common among people who inject drugs" (Weir et. al., 2019:93; Wurcel et. al., 2016). More specifically,

Injection drug use ... can lead to IE through direct injection of bacteria or through spread from skin and soft tissue abscesses into the bloodstream. ... it is estimated that anywhere between 5% and 20% of people who inject drugs have had IE. ... [Compared to IE patients with non-drug use] people with [injection drug use-related] IE have ... higher mortality after valve replacement and increased frequency of repeated endocarditis. (Wurcel et. al., 2016:1)

Medical researchers explain that bacteria on the skin is common among PWID because intravenous

drug injectors tend to have “high nasal and cutaneous colonization rates with staphylococcus aureus”; and that “repetitive cocaine injection leads to vasospasm and distant thrombosis” (Starakis, Panos & Mazokopakis, 2012:249).

There is no sufficient published information on the impact of IE in all the 11 countries in the study. Table 1 illustrates two other serious harms experienced by PWID namely, drug-related deaths and Hepatitis C virus (HCV) infection. However, we may reasonably assume IE is common among PWID in the 11 countries as IE is associated with repetitive drug injecting. Some studies define frequent injecting as exceeding 120 times per month and involving a combination of substances including heroin, prescription and non-prescription opioids, crack cocaine and other drugs (Roy et. al., 2017:18). In fact, consumption of psychoactive substances via injection tend to be repetitive because “opioids cause physical dependence that compels PWID to inject daily” (Roy et. al., 2017: 22). According to the UNODC, “Due to the short duration of their effects, injection of stimulant drugs is frequently associated with rapidly repeated injecting, with some individuals reporting more than 20 injections a day” (UNODC, 2019b:23).

Groin Injecting

Some PWID practise groin injecting, which is particularly dangerous. In 2013, 38% of British PWID surveyed reported groin injecting (EMCDDA, 2014a:65). The trends of groin injecting and of injecting a mix of crack and heroin called ‘speedball’, highlight the expanding danger and controversy over the needle exchange programme (Palmateer et. al., 2010). According to D. A. Zador from the National Addiction Centre in London,

... groin injectors are currently managed largely with advice from harm reduction agencies on sterile injection practice, guidance on the ‘safe’ distinction of the femoral vein from the artery prior to injection and other information. These

practices deserve serious questioning. Can groin injecting behavior be made safer with a shelf-full of ‘safe’ groin injecting pamphlets? Possibly not. ... Recent work using ultrasonography demonstrates that chronic deep vein injecting can alter the usual neurovascular anatomy of the femoral region, hence it is unlikely that groin injecting can ever be taught as a safe procedure. ... How far should we protect user freedom to engage in high-risk behaviours and when should prevention and/or discouragement of these behaviours take priority? In other words, in terms of harm reduction, where should one ‘draw the line?’ (Zador, 2007: 1791).

The Harm Prevention Approach

In contrast to harm reduction, harm prevention is an evidence-based, multipronged approach comprising all concerted efforts by civil society, the private sector, and the government, to avert the harm that drug addiction exacts upon both the individual and the collective (family, school, workplace, recreation networks, community and nation), through prevention, treatment and rehabilitation. At the individual level, the harm prevention approach comprises various modalities of psychosocial therapy including “strengths-based” and other personalised therapeutic counselling such as the Twelve-Step Approach, Motivational Enhancement Therapy (MET), and other cognitive behavioural strategies; and abstinence-oriented treatment that may be residential and may include a combination of detoxification, rehabilitation, counselling, vocational/occupational training and aftercare. In contrast to the harm reduction approach, counselling, therapy and rehabilitation in the harm prevention approach are abstinence-oriented and medically supervised. The harm prevention approach applies current medical and psychosocial research evidence on psychoactive substance dependence and its predictors and,

consequently, it is fundamentally different from the harm reduction approach (Quah, 2017).

The harm prevention approach applies the biomedical terms ‘dependence syndrome’ and ‘substance use disorder’ as interchangeable labels for the illness of drug addiction. WHO’s definition of ‘dependence syndrome’ follows the APA’s Diagnostic and Statistical Manual of Mental Disorders’ latest edition DSM-5 (APA 2013). The only difference is that APA removed its earlier distinction between drug dependence and drug abuse and now uses the term “substance use disorder” to diagnose a person who meets two or more of these 11 characteristics: “(1) used larger amounts of substance/longer; (2) repeated attempts to quit/control use; (3) much time spent using; (4) craving; (5) neglected major roles to use; (6) social/interpersonal problems related to use; (7) activities given up to use; (8) hazardous use; (9) physical/psychological problems related to use; (10) tolerance; (11) withdrawal” (Norko and Fitch, 2014: 443-44).

Four principles - three of them evidence-based and one ethics-based - support the harm prevention approach. Those principles are: (1) substance use disorder or dependence syndrome is the final of three stages along a trajectory that begins with trying psychoactive drugs as recreation; (2) a combination of social and psychological factors nudge the person along that trajectory from recreation to regular use and then on to dependence; (3) the final stage is an incapacitating illness - substance use disorder or dependence syndrome - that renders the drug user powerless to stop drug consumption independently, thus requiring external help to recover. Principle (4) is ethics-based: given the universal ethical norm that health is a basic human right (e.g., WHO, 2019a:9), the harm prevention approach deems rehabilitation as a fundamental right of people who are affected by substance use disorder. Accordingly, from the perspective of the harm prevention approach, denying rehabilitation to persons affected by an illness - such as substance use disorder or dependence syndrome - that impairs his/her ability to make decisions on his/her own welfare, is a violation of that person’s right to health.

How the Harm Prevention Approach Averts Collateral Harm

The above four principles illustrate how the harm prevention approach averts collateral harm. Let us examine each in turn.

(1) Substance use disorder is not an event but the outcome of a process. Thus, in order to preclude the problem as early as possible, it is important to understand why a person begins taking drugs. Studies show that behaviour can be learned and can be modified and changed. That is, for a regular individual, “the path towards substance addiction comprises biological, psychological and sociocultural processes” (Rotgers, 2003:167). Besides genetic predisposition, a person’s path to the illness is also influenced by many factors including his/her social and cultural environment shaping “the easiness and frequency of drug availability”; “drug-related cues as reminders of drug use (for example, relationships, situations, ‘sights, smells, sounds’, music)”; and “the presence of a ‘drug-free alternative’ activities” (Doweiko, 2009:33-35). Consequently, providing a drug-free environment at home, in schools, the workplace, recreational locations and services, and in the community at large, is the first basic step towards preventing substance use disorder. The harm prevention approach seeks to mobilise the entire community in this effort and to promote a drug-free culture.

(2) Biomedical and social science experts acknowledge the close link between the molecular and social dimensions of the drug problem: “Among the things that we know about addictions with reasonable scientific certainty is that they come intertwined with a host of other health, social, economic, family and mental health problems” (Miller and Miller, 2009:685; Fulton, 2014; CCSA, 2014:29;). International policy agencies acknowledge this combination of predictors of substance use disorder identified by scientific research (UNODC, 2015a:33; 2015c; 2019a; 2019a). Accordingly, the harm prevention approach activates the collaboration of mental health experts, social workers, welfare agencies,

educators and primary care physicians, to identify early signs of distress - physical, emotional, social, or economic - in adolescents and adults trying drugs recreationally, and offer them and their loved ones counselling, therapy and other assistance to prevent the onset of substance use disorder.

(3) Psychoactive substance use has negative physical impact on the user. Summarising “almost three decades of research” on the biological damage caused by drug addiction (substance use disorder or dependence syndrome), A.I. Leshner reported: “scientists have concluded that drug addiction is without doubt a brain disease—a disease that disrupts the mechanisms responsible for generating, modulating, and controlling cognitive, emotional, and social behaviour” (Leshner, 2003; Cohen, 2004:58).

(4) As psychoactive substance disorder is an illness that impacts the brain’s reward system and other functions, the harm prevention approach asserts that rehabilitation is a fundamental right of people affected by substance use disorder. Let us examine this point in more detail: the key difference between the harm reduction approach and the harm prevention approach rests on their opposite positions regarding the drug user’s autonomy or self-determination. Harm reduction advocates assert that a person has the right to choose to take drugs and that continuing drug consumption, regardless of the consequences, is a personal choice. The harm prevention approach considers the autonomy argument incorrect for two main reasons.

First, substance use is a self-inflicted harm that affects not only the drug user, but also his/her loved ones, immediate family, social network and the larger community (Government of Canada, 2019a; 2019b; Quah, 2017:159). Writing on liberty, J.S. Mill explained that a person’s self-inflicted “mischief” that “seriously affect ...those nearly connected to him ... and in a minor degree society at large” ... becomes amenable to moral disapprobation” (Mill, 1991:96). Mill’s norm

applies to substance use disorder and to the need for significant others, family and community to assist the person affected to avert drug use, or to recover if the illness has advanced.

Second, the harm reduction approach presumes that when consuming drugs, PWID are exercising their freedom of choice. In fact, this presumption that people affected by substance use syndrome are able to exercise authentic autonomy is at the core of the recommendations made by the Reference Group to the United Nations on voluntary treatments for drug dependence (UN, 2010b: 22-25). This presumption is flawed. The individual is able to exercise authentic autonomy only when he/she can make rational choices, for example, to choose the most beneficial course of action out of a range of alternatives. Research indicates that making treatment services accessible to PWUD and PWID is important but insufficient because it is highly likely that their ability to make rational choices to protect or enhance their well-being is absent or seriously impaired by their substance use disorder. The deterioration of brain functions caused by psychoactive substance use is well documented (e.g., Barbarin, 1979; Hammer et al., 1997; Kreek, 2000; Van Wormer & Davis, 2003:95-171; Nasrallah & Smeltzer, 2003:129; Carlezon & Konradi, 2004:48; Uhl, 2004; Caplan, 2008; Verdejo-Garcia & Bechare, 2009; Doweiko, 2009; De Leon, 2010; Meier et al., 2012). Scientist Harold Doweiko summarises it thus:

Repeated exposure to the drugs of abuse initiates a process of ‘restructuring’ in the brain’s reward system, memory centres, and the higher cortical functions that control reward-seeking behaviour. Strong drug-centred memories are formed, helping to guide the individual to select behavioural choices that lead to further drug-induced rewards. ... Essentially, a normal biological process that evolved to help early humans survived in the wild has been subverted by

the reward potential of the compounds that they have invented (Doweiko, 2009: 34).

Summarising medical research findings on the biological damage caused by drug addiction, Alan Leshner explained: “Based on almost three decades of research, scientists have concluded that drug addiction is without doubt a brain disease—a disease that disrupts the mechanisms responsible for generating, modulating, and controlling cognitive, emotional, and social behaviour” (Leshner, 2003; Cohen, 2004:58).

In essence, a person afflicted by substance use disorder needs treatment but is unable to seek it or to stop drug consumption on his/her own, due to the impairing effect of the psychoactive substance. How does the harm prevention approach solve this dilemma? The harm prevention approach offers ethical intervention. Ethical intervention is an “organised effort” of the person’s “significant others” to help him/her “break through the wall of denial, rationalisation and projection” and it must be conducted “under the supervision of a chemical dependency professional”, with the person’s welfare as the fundamental objective, “seeking to attain the addict’s agreement to immediately seek treatment.” (Doweiko, 2009: 324). The intervention process is ‘the restoration of autonomy’ as medical ethicist Arthur Caplan explains: “Once competency and coercion are distinguished, it is clear that both are requisite for autonomy. Mandatory treatment which relieves the coercive effects of addiction and permits the recreation or re-emergence of true autonomy in the patient can be the right thing to do” (Caplan, 2008:1920).

In addition to the ethical intervention of loved ones to help the addict with treatment and rehabilitation, the harm prevention approach involves families, community and nation as a whole in the endeavour of preventing the young from entering the path of substance use. Worldwide evidence of psychoactive substance use over the past two decades show that dependence is affecting younger populations. The UNODC’s call to governments two decades ago is

even more relevant today: “As a majority of people first use drugs during school age, prevention work has to set in earlier” (UNODC, 2000: 104).

Conclusion

To recap, the solutions to the increasing problem of substance use disorder offered by the harm reduction approach are NSP and SIFs for injecting drug users; and OST comprising methadone, codeine, buprenorphine and other substances. The harm reduction approach promotes these services as ‘safe’ modes of injecting and managing psychoactive substances use and may include some counselling and information on ‘safe’ injecting. In contrast, the harm prevention approach comprises different modalities of psychosocial therapy, counselling, and rehabilitation, including sustained abstinence from drugs as the one of its key objectives.

Three significant worldwide developments have unsettled the harm reduction approach since 2010. First, the harm prevention approach highlights evidence that substance use disorder - dependence syndrome - is an illness and that it must be treated as a chronic rather than acute illness (UNODC, 2015a:34). The scientific evidence refutes the position of the harm reduction approach that psychoactive drug use is the drug user’s lifestyle choice.

Second, evidence-based scrutiny of the harm reduction approach shows that, given the known high risk behaviours of PWID, the NSP’s effectiveness in preventing the transmission of infectious diseases (HIV, HCV, and HBV) is lower than expected as PWID routinely share needles and injecting equipment, and bypass pre-injecting skin cleaning and other infection-preventing practices. Even supporters of harm reduction acknowledged that in “the community of injecting drug users ... commitment to safe-injection practices may wane as the physiological and psychological desperation associated with addiction takes precedent over all else” (Dechman, 2015:496).

Third, all the 11 countries in the study allow the co-existence of both approaches although this does not necessarily translate into allocation of public funding despite harm reduction advocacy groups' strong lobbying to seek financial support from the government. They also seek and receive support from non-governmental organisations, private individuals, foundations and civil society to support their activities and services. HRI has noted that governments' support for the harm reduction approach worldwide is lower than expected (HRI, 2019a; 2019b). The early support international

agencies gave to the harm reduction approach has declined due to the lack of systematic evidence-based scrutiny of harm reduction outcomes, the growing scientific evidence of the physical, psychological and social harm inflicted on the person by psychoactive substance use, and the recognition of substance use disorder as a chronic illness. It is hoped that this discussion of the unintended collateral harms of the harm reduction approach and of the contributions of the harm prevention approach add to the search for effective evidence-based solutions to the drug problem.

References

- AIHW [Australian Institute of Health and Welfare]. (2014). Drug treatment for opioid dependence. Retrieved from <http://www.aihw.gov.au/>
- AIHW. (2015a). National opioid pharmacotherapy statistics 2014. Retrieved from <http://www.aihw.gov.au/>
- AIHW. (2019a). Alcohol, tobacco & other drugs in Australia. Canberra: AIHW. Cat. no. PHE 221. Retrieved from <https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia>
- Arias F., Arnsten J.H., Cunningham C.O., Coulehan K., Batchelder A., Brisbane M., Segal K., & Rivera-Mindt M. (2016). "Neurocognitive, psychiatric, and substance use characteristics on opioid dependent adults," *Addictive Behaviors*, 60: 137-143.
- Barbarin, O.A. (1979). "Recidivism in drug addiction: A behavioural analysis," *Addictive Behaviors*, 4, 121-132.
- Bonar, E.E., & Rosenberg, H. (2014). "Injection drug users' perceived barriers to using self-initiated harm reduction strategies", *Addiction Research and Theory*, 22, 4:271-278.
- Caplan, A. (2008). "Denying autonomy in order to create it: The paradox of forcing treatment upon addicts," *Addiction*, 103, 1919-1921.
- Carlezon, W.A., & Konradi, C. (2004). "Understanding the neurobiological consequences of early exposure to psychotropic drugs: linking behavior with molecules", *Neuropharmacology*, 47, Supplement 1, 47-60.
- CCSA [Canadian Centre on Substance Abuse]. (2014). *Collaboration for Addiction and Mental Health Care: Best Advice*. Ottawa: CCSA. Retrieved from <http://www.ccsa.ca/Eng/topics/Mental-Health-and-Substance-Abuse/Pages/default.aspx>
- Cohen, P.J. (2004). *Drug Addiction and the Law: Policy, Politics and Public Health*. Durham, NC: Carolina Academic Press.
- De Leon, G. (2010). "The therapeutic community: A recovery-oriented treatment pathway and the emergence of a recovery-oriented integrated system." In R. Yates and M.S. Malloch (eds.), *Tackling Addiction. Pathways to Recovery*. London: Jessica Kingsley Publishers, pp. 70-83.
- Degenhardt, L., Peacock A., Colledge S., et.al. (2017). "Global prevalence of injecting drug use and sociodemographic characteristics and prevalence of HIV, HBV, and HCV in people who inject drugs: a multistage systematic review," *Lancet Global Health*, 2017, 5:e1192-1207.
- Dechman, M.K. (2015). "Peer helpers' struggles to care for 'others' who inject drugs", *International Journal of Drug Policy*, 26, 5:492-500.
- Doweiko, H.E. (2009). *Concepts of Chemical Dependency*. 7th Edition. Belmont, CA: Brooks/Cole.
- EMCDDA [European Monitoring Centre for Drugs and Drug Addiction]. (2015). *European Drug Report 2015*. Lisbon: EMCDDA.
- EMCDDA. (2018). *Perspectives on Drugs – Drug consumption rooms: an overview of provision and evidence*. Lisbon: EMCDDA.
- EMCDDA. (2019a). *European Drug Report 2019*. Luxembourg: EMCDDA.
- EMCDDA. (2019b). *Country Drug Reports 2019*. Retrieved from <http://www.emcdda.europa.eu/countries/drug-reports/2019/>
- EMCDDA. (2019c). "Problem drug use". Retrieved from <http://www.emcdda.europa.eu/topics/problem-drug-use>

- EMCDDA. (2019d). *Drugs in syringes from six European cities. Results from the ESCAPE project 2017*. Luxembourg: EMCDDA.
- Fulton, B.S. (2014). *Drug Discovery for the Treatment of Addiction. Medicinal Chemistry Strategies*. Hoboken, N.J.: John Wiley & Sons.
- Greer, A., & Ritter, A. (2019). "Editorial: Harm reduction and the opioid crisis: Emergency policy challenges", *International Journal of Drug Policy*, in press. Retrieved from <https://doi.org/101016/j.drugpo.2019.05.015>
- Government of Canada. (2019a). Federal Actions on Opioids as of April 2019. Retrieved from <https://www.canada.ca/en/health-canada/services/substance-use/>
- Government of Canada. (2019b). National Report: Apparent Opioid-related deaths in Canada (June 2019). Retrieved from <https://health-infobase.canada.ca/database/national-surveillance-opioid-mortality.html>
- Hammer, R.P., Egilmez, Y., & Emmett-Oglesby, M.W. (1997). "Neural mechanisms of tolerance to the effects of cocaine," *Behavioral Brain Research*, 84: 225-239.
- HRI [Harm Reduction International]. (2012). *The Global State of Harm Reduction 2012. Towards and Integrated Response*. London: HRI, K. Stone & S. Shirley-Beavan. Retrieved from <https://www.hri.global/>
- HRI. (2019a). "What is harm reduction?" Retrieved from <https://www.hri.global/>
- HRI. (2019b). *Harm Reduction Group Response to the Health and Social Care Committee Inquiry on Drugs Policy*. London: HRI. Retrieved from <https://www.hri.global/contents/1908>
- IDT [Instituto da Droga e da Toxicodependencia]. (2010). *National Report (2009 Data) to the EMCDDA – Portugal: New Developments, Trends and in-depth information on selected issues*. Lisbon: IDT and EMCDDA.
- INCB [International Narcotics Control Board]. *Report of the International Narcotics Control Board for 2014*. New York: UN.
- Jekeran, A., Håkansson A., Rylance R., Wagner P., Alanko Blomé M., & Björkman P. (2017). "Death from liver disease in a cohort of injecting opioid users in a Swedish city in relation to registration for opioid substitution therapy," *Drug and Alcohol Review*, 36, 5:424-431.
- Kreek, M.J. (2000). "Methadone-related opioid agonist pharmacotherapy for heroin addiction. History, recent molecular and neurochemical research and the future in mainstream medicine," *Annals of the New York Academy of Sciences*, 909: 186-216.
- Leshner, A.I. (2003). "Understanding drug addiction: Insights from research." In A.W. Graham, T.K. Schultz, M. Mayo-Smith, R.K. Ries, and B.B. Wilford (eds), *Principles of Addiction Medicine*. Chevy Chase, MD: American Society of Addiction Medicine, pp. 47-56.
- Malaysian National Anti-Drug Agency. (2019). *Drugs Statistics-Laman Web Rasmi Agensi Anti Dadah Kebangsaan*.
- Mathers, B.M., Degenhardt, L., Ali, H., Wiessing, L., Hickman, M., Mattick, R.P., Myers, B., Ambekar, A., & Strathdee, S.A. (2010). "HIV prevention, treatment, and care services for people who inject drugs: a systematic review of global, regional and national coverage," *The Lancet*, 375 (1 March), 1014-1028.
- Meier, M.H., Caspi, A., Ambler, A., Hartington, H., Houts, R., Keefe, R.S.E., McDonald, K., Ward, A., Poukton, R., & Moffitt, T. (2012). "Persistent cannabis users show neuropsychological decline from childhood to midlife," *Proceedings of the National Academy of Sciences*, 109, 40: E2657-E2664.
- Miller, P.G., & Miller, W.R. (2009). "What should we be aiming for in the treatment of addiction?" *Addiction*, 104, 685-686.
- Morrow P.L. (2018). "The American opioid death epidemic—Lessons for New Zealand?" *New Zealand Medical Journal*, 131, 1469: 59-63.
- NAP [National Academy of Sciences]. (2017). *The Health Effects of Cannabis and Cannabinoids: The current state of evidence and recommendations for Research*. Washington DC: NAP.
- Nasrallah, H.A., & Smeltzer, D.J. (2003). *Contemporary Diagnosis and Management of the Patient with Schizophrenia*. Pennsylvania: Handbooks In Health Care.
- Norko, M.A., & Fitch, W.L. (2014). "DSM-5 and Substance Use Disorders: Clinicolegal Implications", *Journal of the American Academy of Psychiatry and the Law*, 42: 443-452.
- Palmateer, N., Kimber, J., Hickman, M., Hutchinson, S., Rhodes, T. & Goldberg, D. (2010). "Evidence for the effectiveness of sterile injecting equipment provision in preventing hepatitis C and human immunodeficiency virus transmission among injecting drug users: a review of reviews," *Addiction*, 105, 844-859.
- Quah, S.R. (2017). "Illicit psychoactive substance use and harm prevention." In S.R. Quah and W.C. Cockerham, (eds), *The International Encyclopedia of Public Health*. 2nd Ed., vol 4: 151-181; and *Elsevier Reference Module in Biomedical Sciences*, <http://dx.doi.org/10.1016/B978-0-12-803678-5.00521-X>
- Rotgers, F. (2003). "Cognitive-behavioral theories of substance abuse." In F. Rotgers, J. Morgenstern and S.T. Walters (eds). *Treating Substance Abuse: Theory and Technique*. 2nd Edition. New York: The Guildford Press, pp. 166-189.
- Romelsjo, A., Engdahl, B., Stenbacka, M., Fugelstad, A., Davstad, I., Leifman, A., & Thiblin, I. (2010). "Were the changes to Sweden's maintenance treatment policy 2000-06 related to changes in opiate-related mortality and morbidity?" *Addiction*, 105, 1625-1632.
- Roy, E., Arruda, N., Leclerc, P., Morissette, C., Blanchette, C., Blouin, K., & Alary, M. (2017). "Drug use practices among people who inject drugs in a context of drug market changes: Challenges for optimal coverage of harm reduction programs", *International Journal of Drug Policy*, 45, 18-24.

- Roxburgh, A., Hall, W.D., Dobbins, T., Gisev, N., Burns, L., Pearson, S., & Degenhardt, L. (2017). "Trends in heroin and pharmaceutical opioid overdose deaths in Australia," *Drug and Alcohol Dependence*, 179: 291-298.
- Starakis, I., Panos, G., & Mazokopakis, E. (2012). "Dealing with the substance abuse epidemic and infective endocarditis: Clinical, immunologic and pathogenic aspects", *Current Vascular Pharmacology*, 10: 247-256.
- Uhl, G.R. (2004). "Molecular genetic underpinnings of human substance abuse vulnerability: likely contributions to understanding addiction as a mnemonic process," *Neuropharmacology*, 47, 140-147.
- UN [United Nations]. (2019). World Population Prospects. Retrieved from <http://population.un.org/wpp/DataQuery>
- UNAIDS [The Joint United Nations Programme on HIV and AIDS]. (2015a). *Progress Reports Submitted by Countries – New Zealand*. Retrieved from <http://www.unaids.org/en/dataanalysis/knownyourresponse/countryprogressreports/2014countries>
- UNAIDS. (2019b). Country Factsheets. Retrieved from <https://www.unaids.org/en/regioncountries/country>
- UNAIDS. (2019c). Data UNODC. Retrieved from <https://dataunodc.org/>
- UNODC [United Nations Office on Drugs and Crime]. (2000). *World Drug Report 2000*. New York: UNDC and Oxford University Press.
- UNODC. (2015a). *World Drug Report 2015*. Vienna: UNODC. Retrieved from http://www.unodc.org/documents/wdr2015/World_Drug_Report_2015.pdf
- UNODC. (2017). *International Standards for the Treatment of drug Use Disorders*. – Draft for Field Testing. Retrieved from <https://www.unodc.org/>
- UNODC. (2019a). *World Drug Report 2019 Booklet 2 Global Overview of Drug Demand and Supply*. Vienna: UNODC.
- UNODC. (2019b). *HIV Prevention, Treatment, Care and Support for People Who Use Stimulant Drugs.-Technical Guide*. Vienna: UNODC.
- Van Wormer, K. & Davis, D.R. (2003). *Addiction Treatment. A Strengths Perspective*. Toronto: Thomson.
- Verdejo-Garcia, A. & Bechara, A. (2009). "A somatic theory of addiction," *Neuropharmacology*, 56, 48-62.
- Weir, M.A., Slater J., Jandoc R., Koivyo S., Gard A.X., & Silverman M. (2019). "The risk of infective endocarditis among people who inject drugs: a retrospective, population-based time series analysis," *Canadian Medical Association Journal*, 191, 4:e93-e99.
- WHO [World Health Organization]. (2012). "WHO/UNODC/UNAIDS Technical guide for countries to set targets for universal access to HIV prevention, treatment and care for injecting drug users – 2012 revision. Geneva: WHO. Retrieved from https://www.who.int/hiv/pub/idu/targets_universal_access/en/
- WHO. (2015a). "Substance abuse". Retrieved from http://www.who.int/topics/substance_abuse/en/
- WHO. (2019a). *The public health dimension of the world drug problem - How WHO works to prevent drug misuse, reduce harm and improve access to medicine*. Geneva: WHO. Retrieved from <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>
- Wurcel, A.G., Anderson, J.E., Chui, K.K.H., Skinner, S., Knox, T.A., Snyderman, D.R., & Stopka, T.J. (2016). "Increasing infectious endocarditis admissions among young people who inject drugs", *Open Forum Infectious Diseases* [OFID], 1-5.
- Zador, D.A. (2007). "Facilitating groin injecting behaviour: harm reduction or harm production?" *Addiction*, 102, 1791-1792.

About the Author:



Professor Stella Quah (Ph.D) is Adjunct Professor, Health Services and Systems Research, Duke-NUS Medical School, Singapore. Prior to joining Duke-NUS in July 2009, she was faculty member of the Department of Sociology, University of Singapore - later the National University of Singapore (NUS) - from 1977 to 2009; and Research Sociologist at the Department of Social Medicine and Public Health (SMPH), University of Singapore, from 1973-1975. Professor Quah is a current member of several Institutional Review Boards. Among her most recent publications on sociology of health and social epidemiology are the *Blackwell Encyclopedia of Health, Illness, Behaviour and Society*, Co-Editor and contributor (Wiley-Blackwell, 2014); *International Encyclopedia of Public Health*, 2nd Ed., Editor-in-Chief (Elsevier, 2017); and Section Editor of Epidemiology and Public Health, *Elsevier Reference Module in Biomedical Sciences* (2014-2019). Her published research on family sociology includes the *Routledge Handbook of Families in Asia* (Routledge, 2015); and *Families in Asia – Home and Kin* (Routledge, 2009) among others. Her complete and current list of publications by theme is found at <https://www.stellarquah.website/>

Review of Empirical Evidence on the Link between Drugs and Crime

Gursharon Kaur Sidhu

Research & Statistics Division, Ministry of Home Affairs, Singapore

ABSTRACT

Abuse of illicit drugs inflicts substantial costs on abusers, their families, as well as the society at large. One of the channels through which drug abuse can exert a toll on society is through its impact on crime. This paper seeks to assess the literature to better understand the relationship between drug abuse and crime. Overall, there is substantial evidence to suggest that drug abusers have a higher tendency to engage in criminal behaviour and crime, and that drug consumption and trafficking fuel other crimes.

Background

Abuse of illicit drugs inflicts substantial costs on abusers, their families, as well as the society at large. One of the channels through which drug abuse can exert a toll on society is through its impact on crime.

While illicit drugs have traditionally been perceived to be a driver of crime, in recent years, some proponents of harm reduction approaches to illicit drugs have suggested that the liberalisation of drug policies could, in fact, lead to improvements in the crime situation.

Against this backdrop, this paper seeks to assess the literature to better understand the relationship between drug abuse and crime, with a focus on violent and property crimes. In particular, the paper seeks to understand whether there is likely a causal link between drug abuse and crime; that is, whether abuse of illicit drugs leads to criminal acts.

Overview on the Nexus between Illicit Drugs and Crime

Goldstein (1985) provided a framework that conceptualised three triggers through which drugs could cause persons to commit crime; namely the psychopharmacological, economic-compulsive, and systemic triggers. Subsequent research has found specific evidence for each of these three triggers.

Psychopharmacological Trigger

In the Goldstein (1985) conceptual framework, the psychopharmacological trigger covers situations where drug users become excitable, irrational, or exhibit violent behaviour as a result of the ingestion of specific substances. An example of a study that has found evidence for this trigger is Boles and Miotto (2003), which described how chronic amphetamine intoxication produces a psychotic, paranoid state that may result in aggressive acts.

This study found that smoking methamphetamine produced a “high” that lasts up to 24 hours compared to 20-30 minutes for smoking cocaine. After large doses of amphetamines, certain individuals might experience violent outbursts.

Economic-compulsive Trigger

The economic-compulsive trigger refers to situations where drug users engage in economically motivated crime in order to support an expensive drug habit (Goldstein, 1985). An example of a study that has found evidence for this trigger is Hutchinson, Gore, Taylor, Goldberg and Frisher (2000), which found that 954 injecting drug users (IDUs) in Glasgow interviewed in 1993 and 1994 reported a mean expenditure of £324 on drugs per week, 71% of which was financed illegally. 750 respondents reported having an illegal source of income, out of which 69% reported acquisitive crime, 14% reported drug dealing and 8% reported prostitution as their main source in the previous six months.

Systemic Trigger

In the Goldstein (1985) conceptual framework, the systemic trigger refers to crimes that occur as part of the illegal drug market and the enforcement of drug laws. Such crimes occur mainly between dealers and users, but extends into other areas such as police corruption. Examples include murders over drug turf and violence by drug distributors in the course of territorial disputes, retribution for selling “bad” drugs, the use of threat and violence to enforce rules within a drug-dealing organisation, fighting among users over drugs or drug paraphernalia, battles with police, and elimination of informers. Examples of studies for the systemic trigger include Goldstein, Brownstein, Ryan & Bellucci (1989),

which examined 414 murders in New York City and found that almost 40% of the homicide events were related to the exigencies of the illicit market system. The two most common circumstances of systemic homicides were territorial fights between rival dealers and homicides occurring during robberies of drug dealers. Another example would be Dembo, Hughes, Jackson & Mieczkowski (1993), which found that in West Central Florida, the United States, two-thirds of youthful crack sellers admitted hurting or killing someone due to their involvement in the drug trade.

Meta-analysis of Studies on the Nexus between Drugs and Crime

More recently, Bennett, Holloway and Farrington (2008) conducted a meta-analysis of 30 studies looking at the connection between drugs and crime. The types of drugs covered in the studies examined include heroin, crack, cocaine, amphetamines, ecstasy and cannabis. The main finding from the meta-analysis was that the likelihood of offending was about three to four times greater for drug users compared to non-drug users. The meta-analysis also revealed that the relationship between illegal drug use and crime varied as a function of the type of drug used. For example, crack cocaine use displayed the strongest relationship with crime, followed by heroin and powder cocaine. The likelihood of offending was found to be about six times greater for crack users, three to three-and-a-half times greater for heroin users and two-and-a-half times greater for cocaine users as compared to non-crack, non-heroin and non-cocaine users respectively. Bennett, Holloway & Farrington (2008) also investigated selected recreational drugs and their connections with crime, and found that the likelihood of marijuana users offending were one-and-a-half times higher than the odds of non-marijuana users offending.



Drug Abuse and Violent/Serious Crimes

Although there are slight variations in the categories of crime classified as violent under different jurisdictions, the types of violent crimes examined in these studies typically included murder, manslaughter, rape, robbery and aggravated assault.

Evidence from the United States

Several studies have found evidence supporting a link between drug abuse and violent/serious crimes in the US context. Examples include:

- a. Chaiken & Chaiken (1982) looked at the prevalence of illicit drug usage amongst male violent inmates. They found that 83% of over 2,000 male violent inmates from the states of California, Michigan and Texas had used drugs during the same period as when they committed their crime.
- b. Ball, Rosen, Flueck & Nurco (1982) examined the criminality of male opiate addicts over an 11-year period. Using a random sample of 243 addicts in the city of Baltimore that had been selected from a population of 4,069 male opiate addicts who had been arrested (or identified) by the Baltimore Police Department between 1952 and 1971, the authors tracked the criminal history of the sample over an 11-year period using interviews and data from official records. They found that criminal activity was higher during active drug use, and the number of crime days showed a six-fold increase per year during active drug use as contrasted with abstinent periods. Overall, 60% of the sample had been arrested one or more times for crimes of violence during the tracking period.
- c. Stretesky (2009) studied the relationship between methamphetamine use and homicide at the national level for the US. The study combined data from the National Household Survey on Drug Abuse and Survey of Inmates in State and Federal Correctional Facilities to create a case-control design that could be used to compare inmates who had been incarcerated for

homicide (i.e., murder, voluntary/non-negligent manslaughter, and manslaughter) against a comparison group derived from the general population. The study found that in the United States, the likelihood of committing homicide was nearly 9 times greater for an individual who had used methamphetamine. Notably, the association between methamphetamine use and likelihood of committing homicide persisted even after accounting for alternative drug use (e.g., alcohol, heroin, cocaine etc.), sex, race, income, age, marital status, previous arrests, military experience, and education level, supporting the idea that there was a potential causal relationship between methamphetamine and violence.

Evidence from Portugal

In 2001, Portugal implemented a new law that decriminalised drug use for all categories of drugs. While the law maintained the status of illegality for using or possessing any drug for personal use without authorisation, the offence was now considered to be an administrative offence, rather than a criminal one (European Monitoring Centre for Drugs and Drug Addiction, 2011). Portugal's decriminalisation has often been hailed as a "success story" (e.g., Greenwald, 2009) and there is some evidence to suggest that it might have helped to reduce "problematic drug use", drug-related harm (Hughes & Stevens, 2010) and preventing overdose deaths within the country (Greenwald, 2009). However, there is also evidence to suggest that decriminalisation was associated with increases in homicides in Portugal in the years following the change in the law:

- a. Coelho (2015) noted that figures from the United Nations Office on Drugs and Crime's World Drug Report 2009 indicated that the number of drug-related homicides in Portugal had increased by 40% since decriminalisation.
- b. Yablon (2011) utilised a "difference-in-differences" quasi-experimental modelling approach to examine the impact of

decriminalisation on the homicide rate in Portugal between 2001 and 2008. To account for overarching time trends (e.g., changes in other factors) that could have also affected the homicide rates during the study period, the study compared changes in homicide rates in Portugal before and after decriminalisation relative to changes in homicide rates in other European countries during the same period. The study found decriminalisation to be associated with an approximately 25% increase in the homicide rate between 2001 and 2008.

Drug Abuse and Property Crimes

There is a sizeable body of research that suggests that the abuse of illegal drugs is associated with property crime in multiple jurisdictions around the world, usually driven by economic-compulsive factors. Drug abuse in general, and more specifically the abuse of heroin and/or cocaine and/or crack, has been found to be associated with much higher levels of offending. The range of drug-related property crimes includes shoplifting, burglary, handling stolen goods, theft, the forging of medical prescriptions and street robbery committed to support the purchase of drugs. That being said, it is important to acknowledge that the link between drug abusers and property crimes may be also related to factors other than substance use. Some abusers may have long histories of crime involvement before becoming drug abusers, while others may come from economically disadvantaged backgrounds. Some studies have shown that drug abusers who are employed or better educated may be less likely to commit property crimes for the purposes of buying drugs as they are more likely to have a legitimate source of income [see Felson & Staff (2017); Stewart, Gossop, Marsden & Rolfe (2000); Nurco & Shaffer (1982)].

Studies that Looked at Illicit Drugs in General

a. Entorf & Winker (2008) examined the relationship between illicit drug use and property crimes in Germany between 1976 and 1995 using panel data on 10 German states. The use of panel data allowed the researchers

to construct panel data regression models that accounted for the effects of confounders such as state-specific characteristics and also institutional changes (e.g., changes of the federal law) that could have independently influenced the prevalence of property crimes. The study found that drug offences had a significant impact on property crimes with a parameter estimate of 0.06 to 0.10, i.e., a 1% increase in drug offences was associated with 0.06% to 0.1% increase in theft.

b. To study the relationship between illicit drug use and acquisitive crime in Australia, Goldsmid & Willis (2016) utilised data derived from the Drug Use Monitoring in Australia (DUMA) programme, which conducted interviews with detainees at selected police stations and watch houses across Australia about their drug use and criminal offending. The study compared police detainees who were found to be on certain drugs (e.g., methamphetamine/speed/ice, cannabis, heroin or ecstasy) 30 days prior to being arrested to non-drug users. To quantify the association between illicit drug use and receipt of income from acquisitive crime, the authors ran a logistic regression. They found that the likelihood of methamphetamine users reporting income from an acquisitive crime was four-and-a-half times higher than that of a non-drug user; likelihood of a heroin user reporting income from acquisitive crime was about four times higher than that of a non-user; and the likelihood of a cannabis user reporting income from acquisitive crime was about two times higher than that of a non-user.

Studies that Focussed on Particular Types of Drugs

a. Bennet & Holloway (2004) examined the association between illicit drug use and acquisitive crime in the England and Wales using data derived from the New English and Welsh Arrestee Drug Abuse Monitoring (NEW-ADAM) programme. The NEW-ADAM programme was a national research study comprising interviews and voluntary urine tests

designed to establish the prevalence of drug use among arrestees. The programme interviewed 3,091 arrestees between 1999-2001. The authors found that among arrestees who said they had used heroin and/or cocaine and/or crack in the last year, 75% reported having committed one or more acquisitive crimes in the last 12 months compared to 17% of arrestees who had not used any drugs in the past 12 months. The authors also found that among arrestees who reported using one or more illegal drugs in the last 12 months and committing one or more acquisitive crimes, 60% acknowledged a link between their drug use and offending behaviour. Among these arrestees, 83% reported they needed money to buy drugs and to support their addiction.

b. Felson & Staff (2017) found evidence that suggested that both heavy and infrequent users of crack cocaine, heroin and powder cocaine commit theft to support their drug habits. The authors studied a nationally representative sample of prison inmates (5,371 property offenders and 4,588 drug offenders) in the United States and compared users of certain drugs to non-users. Using logistic regression models that accounted for the effects of possible confounders such as employment, education, prior record, drug prices, alcohol use, and demographic characteristics, the authors showed that:

- i) The likelihood of an offender engaging in drug-motivated theft was almost nine times greater for a heavy user (almost daily or daily) of heroin compared to an offender who had not used illicit drugs in the past month.
- ii) The likelihood of an offender engaging in drug-motivated theft was about 16 times greater for a heavy user of crack cocaine compared to an offender who had not used illicit drugs in the past month.
- iii) The likelihood of an offender engaging in drug-motivated theft was close to four times higher for a heavy powder cocaine user compared to an offender who had not used illicit drugs in the past month.

iv) The likelihood of an offender engaging in drug-motivated theft was one-and-a-half times more for a heavy marijuana or methamphetamine user compared to an offender who had not used illicit drugs in the past month.

v) Even infrequent users of crack cocaine, heroin and powder cocaine were found to have a higher tendency of committing drug-motivated theft. For example, the likelihood of engaging in drug-motivated theft for an infrequent user of crack cocaine was almost seven times greater compared to an offender who had not used illicit drugs in the past month, and two times greater for infrequent heroin and powder cocaine users.

Studies that Utilised Within-person Analyses

The strongest evidence showing that drug abuse fuels economic crime comes from within-person analyses using individual-level longitudinal data. Such analyses are able to account for unobserved fixed characteristics of the individual that could have also influenced the individual's propensity to commit property crimes. These studies show clearly that increases in drug use over time are associated with increases in the propensity to commit economic crimes, even after controlling for time-stable differences between individuals.

a. Horney, Osgood & Marshall (1995) utilised a life-event calendar approach to document month-to-month variations in offending and life circumstances that could be studied to better understand factors associated with changes in criminal behaviour. Using data obtained from a retrospective survey of 658 convicted inmates in the state of Nebraska who were sentenced to the Nebraska Department of Correctional Services during a nine-month window in 1989-1990, the study found that the use of drugs corresponded to a 15-fold increase in the likelihood of drug crime (e.g., drug dealing) during months of drug use. In addition, during months of drug use, the odds of committing a property crime increased by 54% and the odds of committing an assault increased by over 100%. Overall, illegal drug

use increased the odds of committing any crime by six-fold.

- b. Uggen & Thompson (2003) analysed longitudinal data on offenders, drug addicts, and youth dropouts who participated in the National Supported Work Demonstration Project to examine the factors influencing changes in criminal behaviour. The National Supported Work Demonstration Project was an experimental employment programme that operated in nine cities in the United States. Participants provided monthly drug use, income, and crime information and were tracked for at least eighteen months, which allowed the researchers to track changes in circumstances, as well as changes in criminal behaviour. The authors found strong evidence showing that drug use was an independent cause of illegal earnings and criminal activity. Illegal earnings were found to rise substantially during periods of active drug use. For example, the use of cocaine or heroin was associated with an increase in illegal earnings of approximately USD\$500 to USD\$700 in the following month.
- c. In a follow-up to their 2003 study (Uggen & Thompson, 2003), Thompson & Uggen (2012) examined the relationship between earnings from drug dealings and other forms of illegal earnings

(e.g., earnings from predatory crimes such as robbery and burglary). The authors found that drug earnings and other illegal earnings were complements rather than substitutes, that is, when people began earning more from drug sales, they also started earning more from other forms of illegal activity, suggesting that they were becoming increasingly embedded in the criminal way of life beyond just drug dealing. This finding suggests that the social harm resulting from drug-related economic crimes has a more widespread impact that goes beyond just the harms resulting directly from the drug trade.

Conclusion

Overall, there is substantial evidence to suggest that there is a likely a causal relationship between drug abuse and crime. Notably, there have been multiple studies covering different jurisdictions that have found positive associations between abuse of illicit drugs and criminal activity even after accounting for the effects of possible confounders. Hence, it would appear that drug abusers have a higher tendency to engage in criminal behaviour and crime, and that drug consumption and trafficking fuel other crimes; without drugs, crime rates would likely be lower.

References

- Ball, J. C., Rosen, L., Flueck, J. A., & Nurco, D. N. (1982). Lifetime criminality of heroin addicts in the United States. *Journal of Drug Issues*, 12, 225-239.
- Bennett, T., Holloway, K., & Farrington, D. (2008). The statistical association between drug misuse and crime: A meta-analysis. *Aggression and Violent Behavior*, 13, 107-118.
- Bennet, T. & Holloway, K. (2004). *Drug use and offending: summary results of the first two years of the NEW-ADAM programme*. Home Office Research, Development and Statistics Directorate. Research Findings No. 179. London: Home Office.
- Boles, S.M. & Miotto, K. (2003). Substance abuse and violence: A review of the literature. *Aggression and Violent Behavior*, 8, 155-174.
- Chaiken, J. M. & Chaiken, M. R. (1982). *Varieties of criminal behaviour: Summary and policy implications*. Santa Monica, CA: Rand.
- Coelho, M.P. (2015). Drugs: The Portuguese fallacy and the absurd medicalization of Europe. *Motricidade*, 11(2), 3-15. (Letter to the Editor).
- Dembo, R., P. Hughes, L. Jackson, and Mieczkowski, T. (1993). Crack Cocaine Dealing by Adolescents in Two Public Housing Projects: A pilot study. *Human Organization*, 52, 89-96.
- Entorf, H. & Winker, P. (2008). Investigating the drugs-crime channel in economics of crime models: Empirical evidence from panel data of the German states. *International Review of Law and Economics*, 28 (1), 8-22.

- European Monitoring Centre for Drugs and Drug Addiction (2011). *Drug policy profiles - Portugal*. Luxembourg: Publications Office of the European Office.
- Felson, R. B. & Staff, J. (2017). Committing Economic Crime for Drug Money. *Crime & Delinquency*, 63(4), 375-390.
- Goldstein, P.J. (1985). The drugs/violence Nexus. A Tripartite Conceptual Framework. *Journal of Drug Issues*, 39, 493-506.
- Goldstein, P. J., Brownstein, H. H., Ryan, P. J., & Bellucci, P. A. (1989). Crack and homicide in NYC. *Contemporary Drug Problems*, 16(4), 651-687.
- Goldsmid, S. & Willis, M. (2016). Methamphetamine use and acquisitive crime: Evidence of a relationship. *Trends & issues in crime and criminal justice No. 516*. Canberra: Australian Institute of Criminology.
- Greenwald, G. (2009). *Report on Drug Decriminalization in Portugal: Lessons for creating fair and successful drug policies*. Cato Institute: Washington, D.C. Retrieved from https://object.cato.org/sites/cato.org/files/pubs/pdf/greenwald_whitepaper.pdf
- Hammersley, R. (2011). Pathways through drugs and crime: Desistance, trauma and resilience. *Journal of Criminal Justice*, 39, 268-272.
- Hawke, J. M., Jainhill, N. & De Leon, G. J. (2000). Adolescent amphetamine users in treatment: Client profiles and treatment outcomes. *Journal of Psychoactive Drugs*, 32(1), 95-105.
- Horney, J., Osgood, D. W., & Marshall, I. H. (1995). Criminal careers in the short-term: Intra-individual variability in crime and its relation to local life circumstances. *American Sociological Review*, 60, 655-673.
- Hughes, C., & Stevens, A. (2010). What can we learn from the Portuguese decriminalization of illicit drugs? *The British Journal of Criminology*, 50(6), 999-1022.
- Hutchinson, S.J., Gore, S., Taylor, A., Goldberg, D. & Frisher, M. (2000). Extent and contributing factors of drug expenditure of injectors in Glasgow. *British Journal of Psychiatry*, 176, 166-172.
- Nurco, D. N. & Shaffer, J. W. (1982). Types and characteristics of addicts in the community. *Drug and Alcohol Dependence*, 9, 43-78.
- Simpson, M. (2003). The relationship between drug use and crime: A puzzle inside an enigma. *International Journal of Drug Policy*, 14, 307-319.
- Stretesky, P.B. (2009). National Case-Control Study of Homicide Offending and Methamphetamine Use. *Journal of Interpersonal Violence*, 24(6), 911-924.
- Stewart, D., Gossop, M., Marsden, J. & Rolfé, A. (2000). Drug misuse and acquisitive crime among clients recruited to the National Treatment Outcome Research Study (NTORS). *Criminal Behaviour and Mental Health*, 10(1), 10-20.
- Thompson, M., & Uggen, C. (2012). Dealers, thieves, and the common determinants of drug and nondrug illegal earnings. *Criminology*, 50, 1057-1087.
- Uggen, C., & Thompson, M. (2003). The socioeconomic determinants of ill-gotten gains: Within-person changes in drug use and illegal earnings. *American Journal of Sociology*, 109, 146-185.
- Yablon, D.R. (2011). *The effect of Drug Decriminalization in Portugal on Homicide and Drug Mortality Rates* (Honour's thesis). University of California, Berkeley. Thesis.

About the Author:



Gursharon Kaur Sidhu is a senior manager from the Criminal Justice and Immigration Research Directorate in the Research and Statistics Division (RSD), Ministry of Home Affairs, Singapore. She is in-charge of undertaking evidence-driven research in the domains of drugs and citizenship and is the ICA deskhead for research and statistical matters. Gursharon holds a Master's degree in Public Policy from University College London and a Bachelor in Social Sciences (Second Upper Honours) from the National University of Singapore. Prior to joining RSD, she was from the Research and Strategy Management Division in the Ministry of National Development (MND), where she worked on various housing related studies for the elderly, vulnerable groups (e.g., elderly in rental housing, single parents, families needing assistance) and foreigners. Gursharon was also Research Associate at the Institute of Southeast Asian Studies (ISEAS) – Yusof Ishak Institute, Singapore.

Societal Impact of Cannabis

Gursharon Kaur Sidhu

Research & Statistics Division, Ministry of Home Affairs, Singapore

ABSTRACT

This study reviews the impact of cannabis use on individual outcomes, such as other types of drug use and life outcomes. In addition, it also examines the experiences of various jurisdictions that have legalised cannabis use. Overall, the evidence suggests that there may be multiple negative consequences arising from cannabis abuse. In particular, early and repeated cannabis use appears to be especially harmful to the individual, particularly for adolescents. At the societal level, the case studies on the various jurisdictions that have legalised recreational cannabis suggest that legalisation has been associated with negative societal outcomes such as increases in crime, abusers who are minors, traffic accidents, and hospital visits.

Background

The legalisation of cannabis for medical and recreational use continues to be a hotly debated issue in many countries, even as more jurisdictions around the world legalise cannabis for medical and/or recreational purposes. Uruguay was the first country to legalise the possession, use and cultivation of cannabis for recreational purposes in 2013. Within the Netherlands, while the use and possession of cannabis remains a criminal offence, the government has pursued a policy of decriminalisation that has allowed licensed coffee shops to sell the drug to locals and tourists in small quantities (maximum of 5g) for personal consumption since 1976. In the United States, even though cannabis has remained illegal under federal law, the state of Colorado passed laws in 2012 making it legal to purchase, use and grow cannabis for medical and recreational purposes, following which a number of other states have then relaxed the criminal justice penalties associated with marijuana use and possession (Mckeganey, 2015).

More recently in October 2018, Canada became the second country in the world after Uruguay to legalise possession and use of recreational cannabis at the national level.

The International Narcotics Control Board (INCB), an independent and quasi-judicial monitoring body under the United Nations, stated in their 2018 annual report that the term “medicinal cannabinoids” refers to cannabinoids that have been extracted from the cannabis plant or synthesised, have had their safety and effectiveness evaluated in controlled clinical trials and have been licensed for use as medicines by medical authority (INCB, 2018). Legalising cannabis for medical use then has to do with using cannabinoids to alleviate the symptoms of certain conditions or diseases. People using it for such purposes do not usually feel the euphoria that is associated with its recreational counterpart. Recreational cannabis on the other hand is used without any medical justification and tends to

have higher Tetrahydrocannabinol (THC) content, which is what provides users with a “high”. INCB also noted in their report that programmes for the medicinal use of cannabinoids can potentially have adverse effects on public health and may increase cannabis use for non-medical purposes if these programmes are not controlled properly (INCB, 2018). This also makes the lines between “medical” and “recreational” cannabis use fluid and unclear.

This paper examines the impact of cannabis use on other types of drug use and life outcomes such as employment. In addition, the paper also looks at the experiences of various jurisdictions that have legalised cannabis use in terms of societal outcomes such as crime, road safety, youths and minors’ cannabis use rates, and effects on businesses. Evidence from multiple sources, including academic papers and reports from government bodies, are examined to elicit insights.

Link between Cannabis Use and Other Drug Use

Clinical and epidemiological studies have documented a significant link between repeated early cannabis exposure and an increased risk of other illicit drug use. This is a phenomenon known as the gateway hypothesis, and is an important aspect to consider when formulating policies on cannabis. Examples of studies that have documented this link include:

- a. Fergusson, Boden & Horwood (2006)’s 25-year longitudinal study on a birth cohort of New Zealand children found that even after controlling for both observed and non-observed confounders, the increasing use of cannabis was associated with the increasing use, abuse/dependence and diversity of use of other forms of illicit drugs at various ages. At age 15, weekly users of cannabis were over 60 times more likely to use other forms of illicit drugs as compared to non-users of cannabis. Although the strength of the association decreased with age, the strong and pervasive associations were consistent with a causal relationship leading from cannabis use to the use of other forms of illicit drugs.

- b. Golub & Johnson (2002), in a study of serious drug abusers in New York City, found that a large proportion of their sample (91%) began their illicit drug use with cannabis.
- c. Kandel, Yamaguchi & Chen (1992) found that between 86% and 90% of people using both cannabis and other illicit drugs used cannabis prior to the use of other illicit drugs.
- d. Kandel (1984) reported that 33% of occasional cannabis users and 84% of daily cannabis users reported using other illicit drugs.
- e. Lynskey et al. (2003) studied same-sex twin pairs where there was discordancy in terms of early cannabis use. The study found that the twin who had used cannabis by age 17 was about two to five times more likely to use other illicit drugs compared to the twin who did not use cannabis.

Impact of Cannabis Use on Life Outcomes

Cannabis use also appears more harmful when its onset occurs in younger versus older adolescents in regard to adjustment for the transition from young adolescence to young adulthood, education attainment, employment, delinquency and ability to adapt to an adult role:

- a. Fergusson & Boden (2008) utilised a longitudinal study design to follow a New Zealand birth cohort up to age 25. The study found that increasing cannabis use in late adolescence and early adulthood was associated with a range of adverse outcomes later in life. Increasing frequency of cannabis use during the period 14 to 21 years was associated significantly with the following outcomes by age 25: lower levels of degree attainment, lower income, higher levels of welfare dependence, higher risk of unemployment, lower levels of relationship satisfaction and lower levels of life satisfaction.
- b. Tucker, Ellickson, Collins & Klein (2006)

utilised a longitudinal study design to compare psychosocial functioning during late adolescence and young adulthood between lifetime cannabis abstiners, experimenters (i.e., those who had used cannabis on an infrequent basis) and those who were frequent users at Grade 12. They found that adolescent abstainers generally fared better than experimenters and frequent users, both concurrently and also later in life in terms of school engagement, family and peer relations, mental health, and deviant behaviour (e.g., skipping school, criminal behaviour, disorderly conduct).

Case Studies on Jurisdictions that have Legalised Cannabis

In view of the evidence that cannabis abuse can have negative consequences for the individual’s well-being and life outcomes, it is instructive to look at the impact of legalisation of cannabis on societal well-being.

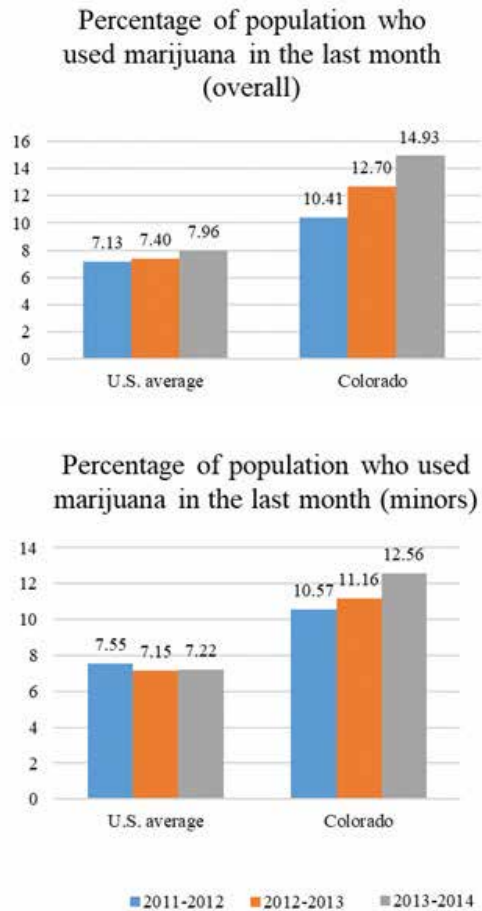
Evidence from the State of Colorado

Colorado was the first state in the United States to legalise cannabis for recreational purposes in 2012 for adults aged 21 years old and older. Given that a sufficient number of years has passed since cannabis has been legalised, the impact on society is likely to be more evident.

One of the direct consequences of legalisation is that adult cannabis use in Colorado increased post-legalisation: when comparing the three years prior to legalising recreational cannabis to the average of three years after legalisation, adult cannabis use increased by 67% in Colorado (Strategic Intelligence Unit, 2018). While the increase in adult use might not be unexpected, what was less expected was that cannabis use by youths and minors increased as well. According to the National Survey on Drug Use and Health (NSDUH) 2013-2014, Colorado led the nation for “last year marijuana use” among

overall population of cannabis users and “last month marijuana use” among 12 to 17 year olds (See Chart 1) (Smart Approaches to Marijuana, 2016). Use of cannabis among 12 to 17 year olds in Colorado increased from 9.82% in 2002-2003 to 12.56% in 2013-2014.¹ The percentage of those aged 18 to 25 years old using cannabis has also been on an upward trend since 2003. Cannabis offences in Colorado elementary and high schools have increased by 34% from 2012 to 2014 (Smart Approaches to Marijuana, 2016).

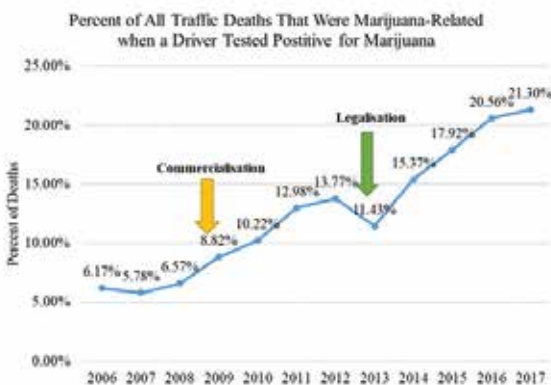
Chart 1. Marijuana Use Among the Overall Population and 12 to 17 Year Olds in Colorado and United States



Source: Adapted from Smart Approaches to Marijuana (October, 2016). Lessons learned after 4 years of marijuana legalisation, NSDUH state estimates.

Another consequence of the legalisation of cannabis in Colorado is that it might have increased traffic accidents. In particular, traffic deaths involving drivers who tested positive for cannabis more than doubled from 55 people killed in 2013 to 138 people killed in 2017, while the percentage of Colorado traffic deaths that were cannabis-related increased from 11.4% in 2013 to 21.3% in 2017 (See Chart 2) (Strategic Intelligence Unit, 2018).

Chart 2. Traffic Deaths that were Marijuana-related in Colorado



Source: Adapted from National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2017.

There is also evidence to suggest that the legalisation of recreational cannabis in Colorado negatively affected the workforce. For example, large businesses in Colorado reported that they had to hire residents from other states as many candidates from Colorado failed pre-employment drug tests (Smart Approaches to Marijuana, 2016). In addition, estimates from the National Survey on Drug Use and Health (NSDUH) 2013-2014 suggests that cannabis users (15%) were more likely to miss work in the past 30 days compared to alcohol users (7.9%) and the overall population (7.4%).

In terms of the impact of legalisation on crime, one of the arguments used to support the legalisation of drugs is that legalisation could help to reduce crime, particularly crime linked to drugs. To the contrary, there is evidence in Colorado that crime rates, particularly for crimes linked to drugs, actually rose after cannabis was legalised in 2012. In particular,

- a. A report by the Rocky Mountain High Intensity Drug Trafficking Area (HIDTA) task force indicated that the crime rate in Colorado has been rising faster than rest of the United States since legalisation. While crime rates declined or remained static in most states, the Colorado Bureau of Investigations (CBI) reported an 8.3% increase in property crimes and an 18.6% increase in violent crimes from 2013 to 2016 in Colorado (Strategic Intelligence Unit, 2018).
- b. Contrary to the argument that legalisation would reduce criminal involvement in the cannabis trade, organised crime linked to cannabis increased significantly in Colorado since legalisation, from 31 cases in 2012 to 119 cases in 2017 (Department of Public Safety, 2018).
- c. A news report by Mitchell (2016) said that contrary to expectations, prosecutors have seen an increase in homicides associated with the black market for cannabis in Colorado after legalisation. For example, in the city of Aurora, the last 10 of 15 drug-related homicide cases were connected to the cannabis trade.
- d. Freisthler, Gaidus, Tam, Ponicki, & Gruenewald (2017) found that in the city of Denver, areas adjacent to neighbourhoods where there were marijuana dispensaries saw about 84 more property crimes per year as compared to neighbourhoods without a nearby marijuana store.

Evidence from other US Jurisdictions

Apart from Colorado, data on other US jurisdictions also suggests that legalisation of cannabis has had a negative impact on certain societal outcomes:

- a. Contreras (2017) looked at medical cannabis dispensaries in the City of Los Angeles and found these dispensaries to be significant crime attractors, especially for homicides and robberies. The placement of a medical cannabis dispensary onto a block in the previous year was associated with increases in crime rates in the following year including:
 - i) a 245% increase in homicides;
 - ii) 49% increase in robbery;
 - iii) 44% increase in aggravated assault;
 - iv) 38% increase in larceny; and
 - v) 22% increase in motor vehicle theft.

- b. For Washington D.C., the legalisation of recreational sale of cannabis went into full effect in February 2015. Spill-over effects were observed in Prince George’s County, Maryland, where the number of killings relating to the drug trade increased from 8 in 2015 to 26 in 2016. Of the 26 homicides, 19 were related to the sale of cannabis (Smart Approaches to Marijuana, 2017).

- c. In Oregon, the number of cannabis-related emergency room visits increased 85% between Oct 2015 (legalisation) to Oct 2016 (Oregon Public Health Division, 2016). Cannabis-related cases for children under five years old reported to the Oregon Poison Center rose by 271% between 2014 and 2017, from 14 to 52 cases (Smart Approaches to Marijuana, 2019).

Evidence from Canada

In October 2018, Canada legalised possession and use of recreational cannabis at the national level for adults aged 18 and older. While the amount of

time that has elapsed is too short for one to draw conclusions about longer-term consequences, some reports suggest that the legalisation of recreational cannabis in Canada might have had some immediate negative impact. In particular:

- a. In the province of Quebec, there were 89 cannabis poisoning cases reported to the Quebec Poison Centre between October 2018 to December 2018, a large increase compared to the 25 cases reported for the same period one year earlier between October 2017 to December 2017 (CBC News, 2019a).

- b. Contrary to expectations that legalisation would reduce the illegal cannabis trade, the Canada Border Services Agency reported that cross-border smuggling of cannabis into Canada did not appear to slow down after legalisation (CBC News, 2019b).

Conclusion

This review has shown that there may be multiple negative consequences arising from cannabis abuse. In particular, early and repeated cannabis use appears to be especially harmful, particularly for adolescents. At the societal level, the case studies on the various jurisdictions that have legalised recreational cannabis suggest that recreational legalisation had a negative impact on certain societal outcomes (e.g., increase in crime, abusers who are minors, traffic accidents, hospital visits). Overall, given the findings, and considering the negative effects of cannabis to both the individual and society, proposals to liberalise policies on cannabis need to take into account these harms.

.....
¹ Cannabis use among those aged 12-17 years old decreased from 2014-2016 (see ‘Economic and Social Costs of Legalised Marijuana’, Centennial Institute, Nov 2018). However, Colorado still has the highest rate of first-time marijuana use among those aged 12 to 17 years old as compared to other states. In addition, past month drug use among those aged 12 to 17 years old continues to be above the national average (Smart Approaches to Marijuana, 2019).

References

- CBC News (2019, Feb 3). Instances of cannabis poisoning on the rise, Quebec health officials warn. Retrieved September 6, 2019, from <https://www.cbc.ca/news/canada/montreal/cannabis-quebec-poison-control-1.5004183>
- CBC News (11 April 2019). Internal CBSA report blames illegal pot imports on supply shortages, organised crime. Retrieved September 6, 2019, from <https://www.cbc.ca/news/politics/cbsa-pot-border-legalization-1.5090885>
- Centennial Institute (November, 2018). Economic and social costs of legalized marijuana. Retrieved from www.ccu.edu/centennial/policy-briefs/marijuana-costs/
- Contreras, C. (2017). A Block-Level Analysis of Medical Marijuana Dispensaries and Crime in the City of Los Angeles. *Justice Quarterly*, 34(6), 1069-1095.
- Department of Public Safety. (2018, October). Impacts of Marijuana Legalization in Colorado. By Reed, J. K. Division of Criminal Justice.
- Fergusson, D.M. & Boden, J.M. (2008). Cannabis use and later life outcomes. *Addiction*, 103(6), 969-976.
- Fergusson, D.M., Boden, J.M., & Horwood, L.J. (2006). Cannabis use and other illicit drug use: Testing the cannabis gateway hypothesis. *Addiction*, 101(4), 556-569.
- Friesthler, B., Gaidus, A., Tam, C., Ponicki, W.R., & Gruenewald, P.J. (2017). From medical to recreational marijuana sales: Marijuana outlets and crime in an era of changing marijuana legislation. *Journal of Primary Prevention*, 38(3), 249-263.
- Golub, A. & Johnson, B.D. (2002). Substance use progression and hard drug use in inner-city New York. In: Kandel, D.B., ed. *Stages and Pathways of Drug Involvement: Examining the Gateway Hypothesis*, pp. 90-112. New York: Cambridge University Press.
- International Narcotics Control Board (INCB). (2018). Report of the International Narcotics Control Board 2018, Chapter 1. United Nations: Vienna. Retrieved from https://www.incb.org/documents/Publications/AnnualReports/AR2018/Annual_Report/Annual_Report_2018_E_.pdf
- Kandel, D.B., Yamaguchi, K. & Chen, K. (1992). Stages of progression in drug involvement in adolescence to adulthood: further evidence for the gateway theory. *Journal of Studies on Alcohol*, 53, 447-457.
- Kandel, D.B. (1984). *Marijuana users in young adulthood*. *Archives of General Psychiatry*, 41, 200-209.
- Lynskey, M.T., Heath, A.C., Bucholz, K.K., Slutske, W.S., Madden, P.A.F., Nelson, E.C., Statham, D.J. and Martin, N.G. (2003). Escalation of drug use in early-onset cannabis users vs co-twin controls. *JAMA*, 289, 427-433.
- Mckeganey, Neil. (2015). The Criminalization of (Some) Drug-Involved People. In Henry H. Brownstein (Ed.), *The Handbook of Drugs and Society* (pp. 371-386). West Sussex, UK: John Wiley & Sons.
- Mitchell, D. (2016, May 24). Prosecutors: Colorado sees increase in homicides motivated by marijuana. KDVR, FOX31 Denver News. Retrieved April 2, 2018, from <https://kdvr.com/2016/05/24/prosecutors-colorado-sees-increase-in-murders-motivated-by-marijuana/>
- Oregon Public Health Division. (2016, December). Marijuana report: Marijuana use, attitudes and health effects in Oregon. Oregon Health Authority: Portland, OR.
- Smart Approaches to Marijuana. (August, 2017). The Cole Memo: 4 years later – Status Report on State Compliance of Federal Marijuana Enforcement Policy. Retrieved from <https://learnaboutsam.org/wp-content/uploads/2017/08/SAM-The-Cole-Memo-4-Years-Later-Status-Report.pdf>
- Smart Approaches to Marijuana (October, 2016). Lessons learned after 4 years of marijuana legalization. Retrieved from <https://www.pccarson.org/wpcontent/uploads/2017/02/Lessons-Learned-After-4-Years-of-Marijuana-Legalization-2016-2.pdf>
- Smart Approaches to Marijuana (May, 2019). Lessons learned from state marijuana legalization. Retrieved from <https://learnaboutsam.org/wp-content/uploads/2019/07/2019LessonsFinal.pdf>
- Strategic Intelligence Unit. (2018). The Legalization of Marijuana in Colorado: The Impact, Volume 5. Prepared by Wong, K., Clarke, C. & Harlow, T.G. Rocky Mountain HIDTA.
- Tucker, J.S., Ellickson, P.L., Collins, R.L. & Klein, D.J. (2006). Are drug experimenters better adjusted than abstainers and users?: a longitudinal study of adolescent marijuana use. *J Adolesc Health*, 39(4), 488-494.

About the Author:



Gursharon Kaur Sidhu is a senior manager from the Criminal Justice and Immigration Research Directorate in the Research and Statistics Division (RSD), Ministry of Home Affairs, Singapore. She is in-charge of undertaking evidence-driven research in the domains of drugs and citizenship and is the ICA deskhead for research and statistical matters. Gursharon holds a Master's degree in Public Policy from University College London and a Bachelor in Social Sciences (Second Upper Honours) from the National University of Singapore. Prior to joining RSD, she was from the Research and Strategy Management Division in the Ministry of National Development (MND), where she worked on various housing related studies for the elderly, vulnerable groups (e.g., elderly in rental housing, single parents, families needing assistance) and foreigners. Gursharon was also Research Associate at the Institute of Southeast Asian Studies (ISEAS) – Yusof Ishak Institute, Singapore.

Costs of Drug Crime: Literature Review and Methodology

Euston Quah, Wai-Mun Chia, Tsiat-Siong Tan

School of Social Sciences, Nanyang Technological University

ABSTRACT

Drug crime imposes economic and social costs on societies, both tangible and intangible. In estimating the costs of crime by drug users, tangible costs include increased medical resources for treatment and rehabilitation, crime and law enforcement, reduced or lost productivity as well as property damage and loss. Intangible costs cover psychological pain and suffering and reduced quality of life by drug users, families of drug users and victims as well as lost life or premature deaths of drug users and victims. Updated dollar costs to society as a result of drug crimes, in a way, can provide policymakers an indication on the magnitude of the problems and hence help to contribute to informed decisions about allocations of these resources to reduce drug crime. The objective of the study is to review existing literature and identify approaches that can be used in estimating both the tangible and intangible costs of drug crime.

Introduction

Drug crime imposes enormous economic and social burdens on societies in the form of increased medical resources for treatment and rehabilitation, crime and law enforcement, psychological suffering by abusers and their families, reduced or lost productivity, lost life or premature deaths as well as property damage and loss. Efforts to reduce drug crime often mean competing demands on limited public resources. Updated dollar losses to society as a result of drug crimes, in a way, can contribute to informed decisions about allocations of these limited public resources in important ways as they could provide added information about the magnitude of the problems. More importantly, the data on drug crime are essential to evaluating costs and benefits of various policy alternatives that compete for resources.

With the emergence and development of reliable quantitative methods and techniques in economics and statistics, the exercise of calculating the dollar losses to society from drug crime has been undertaken in various advanced countries. These methods and techniques have developed from the very crude, used at the beginning of the twentieth century, to the more sophisticated, and better grounded in economic theory, which are now widely used.

The objective of this study is to discuss and identify methods and techniques that can be used to estimate reliably the costs of drug crime. To do so, we first study the existing literature of costs of drug crime research and discuss methods and techniques that have been developed to calculate such costs in

the literature. We then recommend methods and techniques which are deemed most appropriate for assessing costs of drug crime in the context of Singapore.

Drugs and Crime

The abuse of drugs can negatively affect all aspects of a person's life, impact their family, friends and community, and hence place a very high economic and social burden on society. One of the most important areas of risk in the use of drugs is the link between drugs and crime. The link between drugs and crime is a complex one. The key question always lies in whether drug use actually leads people into criminal activities or whether those who use drugs are already predisposed to such activities as many people who are dependent on drugs were already involved in criminal activities before becoming dependent on drugs. Moreover, many drug users commit no other crimes and many who commit crimes never use drugs. However, when the intensity of drug use becomes very serious, drugs and crime are directly and significantly correlated and drug use actually amplifies and perpetuates pre-existing criminal activities.

Empirical associations are well-established between drug use and crime. See for examples the works by Ball et. al. (1981); Chaiken & Chaiken (1990); Gropper (1985), Goldstein (1985) and Watters et. al. (1985). Very often, violence is not only associated with drug use but is committed to obtain money for future drug use. Other types of crime associated with drugs include trafficking of illicit substances and criminal acts that come along during the process of trafficking these substances. Generally, drug users also report greater involvement with crime and are more likely than other non-users to have criminal records, persons with criminal records are much more likely to be drug users than others, and crimes rise in number as drug use increases (Chaiken & Chaiken, 1990).

Generally, the types of crimes related to drugs can be classified into three different categories of use-related, economic-related and system-related crime:

- a. **Use-related crime:** These are crimes that involve individuals who consume drugs, and who commit crimes as a result of the effect the drug has on their thought processes and behaviour.
- b. **Economic-related crime:** These are crimes that an individual commits to fund his/her drug habit. Examples of these include theft and prostitution.
- c. **System-related crime:** These are crimes that result from the structure of the drug system. They include production, manufacture, transportation, and sale of drugs, as well as violence related to the production or sale of drugs.

Costs of Drug Crime

In general, costs of drug crime can be classified as tangible and intangible costs. Tangible costs are those for which a market value can be calculated. When reduced, tangible costs yield resources that become available to the society for consumption and investment purposes. Such tangible costs can usually be quantified with readily available data and survey and are usually measured using cost-of-illness and human capital approach. Tangible costs of drug crime include cost of drug consumption, increased medical resources allocated to treatment and rehabilitation, reduced or lost productivity, property damage and loss for victims, and cost of crime and law enforcement. Some tangible costs, such as victims' long-term medical expenses, cost of crime prevention programmes and averting behaviours are difficult to measure. These are important costs. However, most studies tend to exclude them partly because of lack of quality data sources.

Intangible costs, on the other hand, are difficult to measure but nonetheless have a real impact on society. Unlike the tangible costs, when reduced, the intangible costs do not release resources for alternative uses. Although difficult to quantify, these costs are nonetheless potentially very important to people and therefore need to be given

weight. Intangible costs cover psychological pain and suffering and reduced quality of life for drug users, families of drug users and victims, as well as lost lives or premature deaths of drug users and victims.

In the subsections below, we specifically refer to the work of McCollister et. al. (2010) in the estimation of the costs of drug crime, both tangible and intangible.

Tangible Costs of Drug Crime

According to McCollister et. al. (2010), the tangible costs of drug crime can be divided into three main categories, which include victim costs, costs of crime protection and law enforcement and crime career or productivity losses. Accordingly,

- a. **Victim costs** include physical injury costs, psychological injury costs, property damage costs, defensive expenditure, lost productivity, pain and suffering, as well as corrected risk-of-homicide or mortality costs. It should be noted that in the case of stolen property, unless property stolen is damaged or destroyed, it is typically not counted as a social loss because it is being seen as a transfer to another member of society, in this case, the criminal.
- b. **Costs of crime protection and law enforcement** include police protection costs, legal adjudication cost, as well as correction and sanction costs. Correction costs also include costs of incarceration. These costs are most commonly labelled as criminal justice system costs.
- c. **Crime career or productivity losses** are opportunity costs associated with law-abiding citizens who turn to illegal drug crime careers rather than legal and lawful careers that could otherwise benefit society. Crimes take time to conceive and carry out. This involves the opportunity cost of the criminal's time regardless of detection or incarceration. When detected and incarcerated, society loses productivity from these potential workers.

The effects of drug crime touch many segments of society. As drug crime escalates across a community, residents who were not personally victimised are affected by fear and psychological distress about becoming victims. While this emotional toll is intangible, the costs that individuals incur in the participation of more aversion activities, such as purchasing locks, security alarms, and other devices are tangible. These are other external tangible costs to society but are not included in the study of McCollister et. al. (2010).

Intangible Costs of Drug Crime

In McCollister et. al. (2010), intangible costs of drug crime include pain and suffering and corrected risk-of-homicide costs or mortality costs.

- a. **Pain and suffering** is the hardest to measure. Yet, when measured, they are inevitably the largest component of victim costs. For a drug-user's family, drug use can impose a lot of stress on parents, brothers, sisters and even grandparents - anyone who is part of the home. Drug abuse can destroy relational capital of drug users and their friends and families, either physically or in terms of abusing trust. Friends and families find it hard to count on them to do what they promise. They may lie or steal money to buy drugs. Dependence can erode, not only the human capital of the users but also that of their spouses, children and other family members. All these, put together, can lead family members to psychological distress or even physical injury.
- b. **Mortality costs** are costs of lost life related to drug crime. Any attempt to valuing a murder victim's life based on lost productivity covers only tangible costs. To account for the intangible costs associated with a murder, estimates on value of a statistical life are necessary.

Methods Used to Estimate the Intangible Costs of Victims

Given the importance of intangible costs in the overall cost of drug crime, in this section, we

discuss in detail some common methods used to estimate these costs in the literature.

Intangible costs of crime include pain and suffering (physical and psychological injuries) and mortality cost. Estimating the monetary value of pain and suffering for specific physical and mental injuries is the most challenging task in the estimation of the cost of crime. However, despite all the difficulties, it is important to note that this component of costs usually constitutes a large proportion of the total costs of crime. In the United Kingdom, a study conducted by Brand and Price (2000) for the Home Office reports that more than 50% of the estimated aggregate costs of crime appears to be driven by intangible losses. Similar findings are also reported for studies in the United States where Anderson (1992) finds that risk to life and health arising from crime accounts for about one-third of the burden of crime. The intangible costs to victims of (drug) crime are hard to measure because individual well-being is a theoretical concept that does not easily lend itself to income or monetary equivalents. When standard economic theory is applied in the estimation of cost of crime, losses in well-being are usually translated into monetary values by using the concept of either victim's willingness to accept (WTA) or victim's willingness to pay (WTP).

In the WTA approach, the cost of a crime is measured by the amount of money that would be required to compensate the crime victim. This amount of money should ideally cover all losses incurred by the victim, including his or her pain and suffering. On the other hand, in the WTP approach, the cost of a crime is measured by the amount of money a potential crime victim is willing to pay to reduce the risk of a particular crime would occur to him or her in the future. By measuring this risk reduction and money paid, we can calculate the cost of the crime to the potential victim.

Most methods for estimating the victim cost of crime are based on either the WTA or the

WTP concept. Six of these methods are briefly discussed below.

Cost-of-illness and Human Capital Approach

Cost-of-illness and human capital approach was among the first economic evaluation techniques developed in medical literature with the principal aim to measure the economic burden of a particular disease to society. This approach, most often, covers only the tangible aspects of costs and ignores completely the intangible aspect of it. When applied in estimating the costs of victims, the approach usually includes short-term medical expenses, lost wages, lost productivity and loss due to damaged property. In various studies on the costs of crime, this approach is used to calculate individually the costs of various types of crime such as assault, theft and burglary. Other previous studies which used this method to estimate the cost of drug-related crime are those by Harwood et. al. (1984), Rice et. al. (1991) and Cartwright (2008) among others.

One of the main advantages of the cost-of-illness and human capital approach is that it relies on readily available data and its estimation techniques are relatively straightforward as compared to the other existing approaches making it one of the most commonly adopted methods in medical and health literature. Although widely undertaken, there are, however, several arguments against undertaking and using the results of cost of illness and human capital studies. The main criticism comes from welfare economists, as to them, the cost-of-illness and human capital approach is not grounded in welfare economics theory as it ignores intangible losses suffered by crime victims because no attempt is made to measure victims' pain and suffering. A further argument against the cost-of-illness and human capital approach is that when a crime involves loss of life from homicide, the approach proposes calculating it in terms of lost productivity and ignores completely the intrinsic value of life. As a result, when cost-of-illness and human capital approach is used in the estimation, it usually tends to substantially underestimate the true social costs of crime.

Numerical Crime-ranking Method

The numerical crime-ranking method estimates the cost of victim's pain and suffering by asking survey respondents to directly attach numerical rankings to each type of crime. Studies using these methods include those by Roth (1978), Evans (1981), Phillips & Votey (1981) and Byers (1993). The numerical rankings can then be converted to monetary values through a crime valuation scale to estimate the total costs of crime. One important criticism of the numerical crime-ranking approach is that it is unclear as to how respondents can objectively and systematically rank the severity of crimes. Another criticism of this method lies in its difficulty to carry out a reliable conversion to obtain the respective monetary values. In fact, among the previously mentioned studies, only the one by Phillips & Votey (1981) actually takes a step further to convert such rankings into monetary values. Other criticisms on the method can be found in Cullen et. al. (1985) and Carlson & Williams (1993).

Property-Value Method

The property-value approach is based on the WTP concept. This approach is very commonly applied in estimating the value of environmental amenities that affect prices of marketed goods. The approach is developed based on the assumption that people value the characteristics of a good, or the services it provides, rather than the good itself. Thus, prices will reflect the value of a set of characteristics, including environmental characteristics, that people consider important when purchasing the good. The approach is relatively straightforward and uncontroversial because it is based on actual market prices which are fairly readily available. Multiple regression techniques are first used to analyse property value so that a hedonic price function which is used to determine the amount of property value attributable to nonmarket effect, separated from other property characteristics, is estimated. The hedonic prices of the nonmarket effect are then regressed on the household demand characteristics and nonmarket effect to determine the willingness-to-pay function. This function is

used to calculate the change in WTP due to the change in nonmarket effect. When this approach is used in estimating the costs of crime, after controlling for other factors, such as the size of dwelling, amenities, age of the structure and the likes, analysts can use the partial differential in property values with respect to neighbourhood crime rates to calculate the dollar amount residents in the safer neighbourhoods are willing to pay for a lower level of crime. The cost of crime to these residents can then be estimated based on this value. This approach is used in the studies of Linden & Rockoff (2008), Buck et. al. (1991), Buck et. al. (1993) and Ceccato & Wilhelmsson (2011).

The main advantage of the property-value approach is that it includes, at least conceptually, the intangible costs of crime to potential victims. These intangible costs are revealed through individuals' utility-maximising behaviour in their choice of where to live. However, the most serious disadvantage of this approach is due to data limitations making it hard to separate the cost of individual types of crimes from the total cost of crime to potential victims. Crime-specific cost estimates are needed for our purposes because drug abusers tend to commit some types of crime more often, and others less often, than criminals in general.

Quality of Life Method

Like the property-value approach, the quality-of-life approach also uses the WTP principle but in a slightly different framework. The amount of a crime victim's pain and suffering can be estimated by first ranking the severity of the physical and psychological injuries (Miller et. al., 1993). These rankings are then translated into monetary values by comparing the loss in quality of life due to the injury with the value of an index state such as perfect health or a statistical life (Viscusi, 1993). For example, consider a minor accident that causes an injury in a person such that he/she loses 30 productive days per year. This injury might be ranked at a loss equal to one-twelfth of the value of a remaining life, which can be measured by estimating the individual's WTP to reduce the risk

of death. However, if a doctor rates the individual as being 10% disabled, one could estimate the cost of the injury as one-tenth of the value of a remaining life. The most attractive feature about this approach is that it is generally easier to arrive at a victim cost estimate for each individual type of crime. The estimates for the cost of each injury, however, are quite subjective. These estimates can be derived in a number of ways, and no clear consensus exists about which way is the best.

Jury Compensation Method

The jury-compensation method is based on the WTA concept but borrows elements of the WTP principles. This method was first established in Cohen (1988) and Miller et al. (2006) where jury-compensation data were used to measure the cost of crime. The cost of pain and suffering from a particular crime is measured by estimating the cost of injuries to the victim. However, unlike the other approaches, in the jury-compensation method, cost of an injury is divided into observable component, such as medical expenses, lost wages and other economic losses, and an unobservable component, such as pain and suffering. The observable component is directly measured through interviews with victims or data obtained from medical records. The unobservable component of pain and suffering is indirectly estimated by equating it with the pain-and-suffering damages awarded to plaintiffs in civil cases who are asking compensation for similar injuries. For instance, in Miller et al. (1996), actual jury awards from victims of crimes are used to estimate the pain-and-suffering damages. If juries were to award injured individuals amounts that are larger than their observable and measurable economic losses, the difference can be attributed to pain and suffering. With this, one can obtain estimates for both the tangible and intangible victim costs for each type of crime by simply examining the combination of injuries involved.

Like the other methods, there are certain criticisms on the jury-compensation method. First, it is not clear that a particular type of physical injury suffered by a crime victim is truly similar to the

same type of injury suffered by a plaintiff in a civil case. Second, estimating crime victim's pain and suffering as a result of psychological injuries is especially difficult. There are obvious challenges in comparing crime victims' psychological injuries with those from civil cases. Third, not all jury awards in civil cases go to the injured plaintiff. Part of the award is also used to cover attorney's fees and other litigation-related expenses. If juries take these expenses into account when compensating victims, then the jury-compensation method, which measures pain and suffering by looking at the difference between the jury award and the observable and measurable component will overestimate the intangible cost of crime.

Contingent Valuation Approach

One promising research area is the use of contingent valuation (CV) techniques to directly elicit respondents' valuations of pain and suffering. For the CV approach, there are many ways to elicit willingness to pay estimates through surveys. Ludwig & Cook (2001) attempted to value the prevention of non-fatal incidents of gun-related violence in the United States. Respondents were asked whether they would vote, i.e., using a dichotomous choice format, for a specified dollar tax increase in return for a 30% reduction in gun injuries. A second study using contingent valuation survey by Cohen et al. (2004) asked respondents to value the benefits of US public programmes to reduce criminal offences associated with burglary, serious assaults, armed robbery, rape or sexual assault, and murder. The mean (annual) WTP to reduce incidents of these crimes by 10% was estimated for each crime type and taken to be the cost of an increased of 10% risk of these crimes. These are, by far, the only two stated preference studies on crime in the United States.

Atkinson et al. (2005) is the first application of CV to crime in the United Kingdom. In their study, realistic descriptions of the physical and mental health impacts of violent crime of varying severity were first described to respondents. By means of a questionnaire, respondents in a selected sample were then asked for their WTP to secure

an improvement or to avoid an undesirable change. Later, respondents were asked to value a 50% reduction in the risk of suffering from one or other of these crime outcomes by means of a payment card, with amounts varying from £0 to £5,000. Respondents were asked to place a tick against that amount which corresponded to the maximum they would be prepared to pay for reducing the risk by half. Again, the WTP obtained were taken to be the cost of an increase in risk of suffering. Their findings suggest that the costs of three officially classified (statistical) crimes are £5,300 for common assault (no injury), £31,000 for other (moderate) wounding and £36,000 for serious wounding.

While debates between WTP and WTA as to which measure should be used in a CV study are still ongoing, many researchers believe that CV estimates are more accurate when respondents are asked their WTP rather about their WTA. In 2013, using similar technique, Quah & Chia (2013) conducted the first state preference CV study of crime risks in Singapore, elicited individual preferences, in monetary terms, for changes in crime risks in Singapore. In this CV study, respondents were first presented with realistic descriptions of the physical and mental health impacts of violent crime of varying severity. Instead of technical terminology, respondents were presented a comparable but meaningful description of the symptoms likely to be suffered after a crime offence and the way these symptoms would affect their well-being. The descriptions of three types of injuries, common assault, other wounding and serious wounding, are the same as those used in Atkinson et. al. (2005). Respondents were then informed about the annual risk of being a victim of crime and asked how much they are willing to pay to reduce their own risk of being a victim by 50% and 99%. Information about WTP is obtained through a combination of double dichotomous choice payment questions with follow-ups and open-ended questions. Respondents were randomly assigned a first bid amount with predetermined lower and higher follow-up bids used if the respondent answers 'no' or 'yes' to the initial bid. For instance, respondent is asked an initial dichotomous choice question: are you willing to pay X per annum for

reducing your own annual risk of being a victim of crime against persons and violent property crime by 50%, where X is a randomly chosen price from one of our three pre-determined values of S\$10, S\$60 and S\$80. Those who answer 'no' are asked if they would pay a lower price and those who answer 'yes' are asked if they would pay a higher price. Respondents giving 'yes-yes' or 'no-no' responses are asked a final open-ended question. The bid vectors are: [S\$5, S\$10, S\$20], [S\$30, S\$60, S\$120] and [S\$40, S\$80, S\$160]. The number of actual survey for each age group was determined according to Singapore's demographic structure so that the sample is representative of the population of Singapore. 600 Singapore citizens and Singapore permanent residents aged 20-64 were randomly selected from various survey areas for face-to-face interviews. Based on the responses received, the survival function of WTP was estimated and the mean of WTP was derived from statistical theory. Their findings suggest that the costs of three officially classified (statistical) crimes are S\$41,197.1 for common assault (no injury), S\$264,344.3 for other (moderate) wounding and S\$342,413.0 for serious wounding. These unit values are significantly higher than those estimated by Atkinson et. al. (2005) reflecting higher WTP to reduce the risk of being a victim by Singapore Citizens and Singapore Permanent Residents.

Methods Proposed to Estimate the Costs of Drug Crime in Singapore

One way to estimate the costs of drug crime in Singapore is to classify the tangible and intangible costs of drug crimes under three categories such as cost to individual, cost to family and cost to society:

- a. **Cost to individual** includes cost to drug users and victims. For drug users, we cover in the analysis, the cost of drug consumption, loss of productivity and lost life as a result of drug intoxication. For victims, costs include lost productivity and additional medical expenses due to crime; we separately classify cost into non-homicide cost and homicide cost. The non-homicide offences include assault, rape, robbery, housebreaking, theft, motor-vehicle

theft, child physical abuse/neglect and child sexual abuse.

- b. **Cost to family** consists of both tangible and intangible costs. The tangible cost is lost productivity and income that could have been generated in lieu of providing care to family members who are drug abusers. The intangible cost is pain and suffering caused to a drug offender's family. For instance, family members may experience feelings of abandonment, anxiety, fear, anger, concern, embarrassment or even guilt. Despite the cost being intangible, they are real.
- c. **Cost to society** at the national level is mostly tangible. It includes cost of education, cost of law enforcement, and cost of incarceration, treatment, rehabilitation and aftercare. Other costs may include property damage for victims of crime.

Conclusion

This study provides a roadmap to estimate both the tangible and intangible costs of drug crime. Such estimates are essential for the evaluation of the economic impact of programmes that are designed directly and indirectly to reduce drug crime. The approaches proposed are standardised techniques used in the literature. Breaking down the estimates by cost to individual, cost to family and cost to society allows policymakers to easily identify the most costly components of tangible and intangible costs. It should be noted that the reliability and comprehensiveness of the tangible costs depends crucially on the availability of quality data. It is also important to note that the true societal impact of drug crime would be significantly underestimated if the intangible costs are not included in the analysis.

References

- Anderson, G. M. (1992). A sober look at the costs of intoxication. *Contemporary Economic Policy*, 10(2), pp. 111–115.
- Atkinson, G., A. Healey, & S. Mourato (2005). Valuing the costs of violent crime: A stated preference approach. *Oxford Economic Papers*, (4), pp. 559–585.
- Ball, C., J., L. Rosen, S. Flueck, A., & D. Nurco, N. (1981). The criminality of heroin addicts when addicted and when off opiates (J. A. Inciardi ed.). Newbury Park, CA: Sage Publications.
- Brand, S. & R. Price (2000). The economic and social costs of crime. Economics and Resource Analysis Research: Home Office Research Study 217.
- Buck, A. J., S. Hakim, & U. Spiegel (1991). Casinos, crime, and real estate values: Do they relate? *Journal of Research in Crime and Delinquency*, 28(3), pp. 288–303.
- Buck, A. J., S. Hakim, & U. Spiegel (1993). Endogenous crime victimization, taxes, and property values. *Social Science Quarterly*, 74(2), pp. 334–348.
- Byers, B. (1993). Teaching about judgments of crime seriousness. *Teaching Sociology*, 21(1), pp. 33–41.
- Carlson, J. & T. Williams (1993). Perspectives on the seriousness of crimes. *Social Science Research*, 22(2), pp. 190–207.
- Cartwright, W. S. (2008). Economic costs of drug abuse: Financial, cost of illness, and services. *Journal of Substance Abuse Treatment*, 34(2), pp. 224–233.
- Ceccato, V. & M. Wilhelmsson (2011). The impact of crime on apartment price: Evidence from Stockholm, Sweden. *Geografiska Annaler: Series B, Human Geography*, 93(1), pp. 81–103.
- Chaiken, M., J. & M. Chaiken, R. (1990). Drugs and predatory crime. *Crime and Justice—a Review of Research*, 13, pp. 203–239.
- Cohen, M. A. (1988). Pain, suffering, and jury awards: A study of the cost of crime to victims. *Law & Society Review*, 22(3), pp. 537–555.
- Cohen, M. A., R. T. Rust, S. Steen, & S. T. Tidd (2004). Willingness-to-pay for crime control programs. *Criminology*, 42(1), pp. 89–110.
- Cullen, F. T., B. G. Link, L. F. Travis, & J. F. Wozniak (1985). Consensus in crime seriousness: Empirical reality or methodological artefact? *Criminology*, 23(1), pp. 99–118.
- Evans, S. S. (1981). Measuring the seriousness of crime: Methodological issues and a cross cultural comparison. Ohio State University, Columbus: Ohio State University, Columbus.
- Goldstein, P. J. (1985). The drugs/violence nexus: A tripartite conceptual framework. *Journal of Drug Issues*, 15(4), pp. 493–506.
- Gropper, B. A. (1985). Probing the links between drugs and crime / Bernard A. Gropper. Research in brief. Washington, D.C. : U.S. Dept. of Justice, National Institute of Justice, 1985.
- Harwood, H. J., D. M. Napolitano, P. L. Kristiansen, & J. J. Collins (1984). Economic costs to society of alcohol and drug abuse and mental illness: 1980. National Institute of Justice/ NCJRS paper reproduction.

Linden, L. & J. E. Rockoff (2008). Estimates of the impact of crime risk on property values from Megan's laws. *American Economic Review*, 98(3).

Ludwig, J. & P. J. Cook (2001). The benefits of reducing gun violence: Evidence from contingent-valuation survey data. *Journal of Risk and Uncertainty*, 22(3), pp. 207–226.

McCollister, K. E., M. T. French, & H. Fang (2010). The cost of crime to society: New crime-specific estimates for policy and program evaluation. *Drug and Alcohol Dependence*, 108, pp. 98–109.

Miller, T. R., M. A. Cohen, & S. B. Rossman (1993). Victim costs of violent crime and resulting injuries. *Health Affairs*, 12(4), pp. 186–97.

Miller, T. R., M. A. Cohen, & B. Wiersema (1996). Victim costs and consequences: A new look. National Institute of Justice Research Report.

Miller, T. R., D. T. Levy, M. A. Cohen, & K. L. C. Cox (2006). Costs of alcohol and drug-involved crime. *Prevention Science*, 7(4), pp. 333–342.

Phillips, L. & H. L. J. Votey (1981). Establishing monetary measures of the seriousness of crime. In *The Economics of Crime Control* (Phillips, L. and Votey, H. L. Jr ed.), pp. 53–73. Beverly Hills CA.

Quah, E. & W.-M. Chia (2013). Valuing the intangible costs of violent crimes in Singapore. Nanyang Technological University, Singapore, unpublished manuscript.

Rice, D. P., S. Kelman, & L. S. Miller (1991). Estimates of economic costs of alcohol and drug abuse and mental illness, 1985 and 1988. *Public Health Reports* (1974+), 106(3), pp. 280–292.

Roth, J. A. (1978). Prosecutor perceptions of crime seriousness. *The Journal of Criminal Law and Criminology*, 69(2/7), pp. 232–242.

Viscusi, W. K. (1993). The value of risks to life and health. *Journal of Economic Literature*, XXXI, pp. 1912–1946.

Watters, J. K., C. Reinerman, & J. Fagan (1985). Causality, context, and contingency: relationships between drug abuse and delinquency. *Contemporary Drug Problems*, (3), 351.

About the Authors:



Professor Euston Quah is Albert Winsemius Chair Professor, Head of Economics at School of Social Sciences, Nanyang Technological University and Adjunct Principal Research Fellow of the Institute of Policy Studies at the National University of Singapore. He is also President of the Economic Society of Singapore since 2009 and Editor of the *Singapore Economic Review* since 2002. Professor Euston Quah's areas of expertise are Environmental Economics, Resource Allocation and Cost-Benefit Analysis, Law and Economics and Household Economics.



Professor Chia Wai Mun is Associate Professor of Economics at the School of Social Sciences, Nanyang Technological University. Her research covers topics in International Macroeconomics and Cost-Benefit Analysis. She is an associate editor to the *Singapore Economic Review*. In 2011, she was awarded the National Day Commendation Award for her contributions in teaching and research. She holds a PhD from Nanyang Technological University, an MSc from London School of Economics and a BSc from University of London, all in economics.



Tan Tsiat Siong is a doctoral researcher at the Interdisciplinary Graduate School, Nanyang Technological University. He is part of the Future Resilient Systems, Singapore-ETH (Zurich) Centre, where he works on energy usage and investment decisions, and instrument choice. He holds a Master's degree in Applied Economics from the National University of Singapore, and a Bachelor's degree (First-Class Honours) from the Nanyang Technological University.

The Intergenerational Transmission of Offending from Drug-Abusing Parents: Understanding the Impact of Parental Drug Abuse and Incarceration on Children's Offending Behaviour in Singapore

Eng Hao Loh, Charmaine Ch'ng Wei Lin, Xiang Long Cheng

Singapore Prison Service

ABSTRACT

This study examines how parental drug abuse and its subsequent consequences impact the next generation. For a holistic understanding of the phenomenon, a mixed-methods approach was used. Firstly, we sought to understand the extent of intergenerational offending in Singapore by investigating the prevalence of offending amongst children with drug-using parents based on a 10-year cohort of drug admissions into prison between 2008 to 2017. We then interviewed a group of youth offenders and non-offenders whose parents have abused drugs to understand how they have been impacted as a result of parental drug abuse. Specifically, we sought to understand what their risk and protective factors in relation to their offending behaviour were. Results show that the prevalence rate of intergenerational offending in Singapore is at 21.6%. Further analysis of the data found that having only one drug-abusing parent who is a mother, increases the likelihood of a child offending. Findings also suggest that both offending and non-offending youths face similar impacts of parental drug abuse, such as a weak attachment to parents and the need for social support. Factors that increase a child's risk of offending are also shared among both offending and non-offending youths and these include various mechanisms that derive from the familial and peer environments. Lastly, findings also suggest the importance of enhancing individual and familial protective factors to buffer against second-generation offending.

Introduction

Much has been documented about drug abusers and their addiction struggles, but have you ever wondered how their drug lifestyle has affected the people around them? Often, the innocent families of the drug abuser suffer from the aftereffects, with children in particular, having negative outcomes as a result of parental drug abuse. Existing literature indicates that children of drug-abusing parents

have an elevated risk for drug abuse and antisocial behaviour (Fergusson, Boden, & Horwood, 2008; Marmorstein, Iacono, & McGue, 2009; Pears, Capaldi, & Owen, 2007).

Based on the latest statistics of the Singapore Prison Service (SPS, 2017), 70.5% of the prison population¹ present with a history of drug abuse

and nearly 30% of new admissions are due to drug-related offences. As second-generation children of drug-abusing parents are often direct recipients of the harmful impacts of parental drug abuse, it is important to investigate the far-reaching effects of drug abuse to prevent intergenerational offending and protect citizens from the resulting harm.

Mechanisms Underlying Intergenerational Transmission of Offending

The term “intergenerational transmission” broadly refers to the “transfer of individual abilities, traits, behaviours and outcomes from parents to their children” (Lochner, 2008, p. 413). Farrington, Jolliffe, Loeber, Stouthamer-Loeber and Kalb (2001) describe six, not necessarily mutually exclusive, explanations for the intergenerational transmission of criminal behaviour (see Figure 1). For the purpose of the current research, this paper will only focus on two environmental perspectives (Exposure to Multiple Risk Factors and Mediation through Environmental Risk Factors) which are

viable areas for intervention efforts to prevent intergenerational offending.

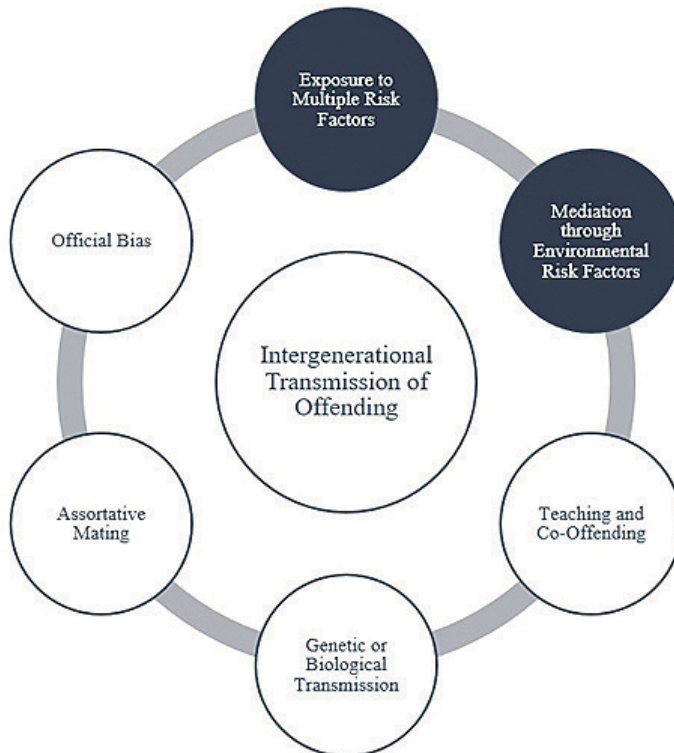
Exposure to Multiple Risk Factors

Farrington et. al. (2001) suggest that crime is only one element of a larger cycle of deprivation and antisocial behaviour. Individuals who offend also exhibit problems in other areas of their life, such as unemployment, heavy alcohol use and unstable living arrangements. These circumstances are transmitted from parents to children as the “successive generation may be entrapped in poverty, disrupted families, single and teenage parenting, and living in the most deprived neighbourhoods” (Farrington et. al., 2001:593). According to this explanation, criminality is transferred from parent to child through the continuity of a pattern of disadvantaged familial background features present.

Mediation through Environmental Risk Factors

A particular emphasis in environmental risk factors is the dynamics of the parent-child relationship, with

Figure 1. Mechanisms of intergenerational transmission of offending. This figure illustrates Farrington et. al.’s (2001) six explanations for intergenerational transmission of criminal behaviour.



parenting style a key mediator that has received much attention in the intergenerational offending literature (Goodwin & Davis, 2011; Hoeve et al., 2008). Using self-reports from 424 parents, Thornberry et al. (2009) found that mothers with a history of drug abuse and delinquency were more likely to exhibit parenting styles characterised by low affective ties to the child, poor monitoring and supervision, and inconsistent discipline. Such a parenting style in turn, has an impact on the child's antisocial behaviour.

Attachment to Parents

Dong & Krohn (2015) explored intergenerational discontinuity in offending and found that the more an adolescent is attached to their parents, the less likely they would become a delinquent, even if their parents have a serious criminal history. This finding is consistent with theoretical expectations of the criminological social control perspective which states that it is one's attachment to their parents that matters, rather than the criminal characteristics of parents themselves (Hirschi, 1969). However, a weakening or severing of the elements of this social bond increases the likelihood of deviant behaviour (Ford, 2009). In other words, the absence of parental attachment and ineffective parenting controls, such as poor parental supervision, are what increases the likelihood of a child's delinquent behaviour (Chapple, 2003). Studies have found that adolescents who have close relationships and strong bonds with their parents are less likely to involve themselves in antisocial behaviour such as drug abuse (Bahr, Maughan, Marcos, & Li, 1998; Ford, 2009; Mounts, 2002; Seydlitz & Jenkins, 1998; Sokol-Katz, Dunham, & Zimmerman, 1997; Yaacob, Idris, & Wan, 2015). Hence, dimensions of attachment, such as affective ties, supervision, communication and identification, may be protecting at-risk children from offending.

The Present Study

Research Aims

Establishing the prevalence of intergenerational offending among drug abusers in Singapore would allow us to understand the magnitude of

intergenerational offending and appreciate the impact on society. Alongside prevalence data, it would also be useful to understand the process of intergenerational offending and the mechanisms that contribute to these outcomes. This would help to make informed decisions on whether resources should be directed onto intervening the phenomenon.

As such, the current study employed both a quantitative and qualitative approach and was conducted in two parts. The first part of the study sought to find out how many parents have offending children out of all drug-abusing parents detained in SPS within the past 10 years. The second part of the study sought to explore how parental detention in Drug Rehabilitation Centre (DRC) for compulsory rehabilitation impacts child offending.

Part 1: Establishing Prevalence

Methodology

Procedure

Data was first generated to gather a list of inmates who were admitted into the Singapore Prison Service (SPS) for drug-related offences² between January 2008 to December 2017. This list was then sent to the Immigration & Checkpoints Authority of Singapore (ICA) to generate information about the offenders' family (number of children and who these children are). Next, the compiled list of children was checked against criminal justice records in SPS and with the Ministry of Social and Family Development (MSF) to verify if they have ever been sentenced to prison, juvenile homes or placed on probation. Only parents with children above the age of 12³ were taken into consideration when establishing the prevalence of intergenerational offending.

Results

Prevalence

Between 2008 to 2017, a total of 7,880 parents were incarcerated for drug-related offences. As of end 2018, the number of parents who have children 12

years old and above was 5,564 and 1,203 of them have at least one child who has offended, which places the prevalence rate of intergenerational offending at 21.6%. Table 1 presents the proportion of children who offended, in relation to their parents. Table 2 is a further breakdown according to gender.

Table 1. Proportion of Offending Children

Drug-Abusing Parent	Child Offended <i>n</i> (%)	Child Did Not Offend <i>n</i> (%)
Father Only	1069 (13.3)	6994 (86.7)
Mother Only	388 (19.1)	1640 (80.9)
Both	100 (15.3)	553 (84.7)

Table 2. Proportion of Offending Children According to Gender

Drug-Abusing Parent	Son Had Offended <i>n</i> (%)	Daughter Had Offended <i>n</i> (%)
Father Only	843 (78.9)	226 (21.1)
Mother Only	271 (69.8)	117 (30.2)
Both	72 (72.0)	28 (28.0)

Profile of Offending Children

Offending children also tend to begin contact with the criminal justice system at a younger age (16 to 20 years old; $\mu = 19.57$) as compared to their parents (21 to 30 years old; $\mu = 25.01$). In terms of their criminality, almost half of the children have low criminal versatility, where they were found to have committed only one type of offence. In addition, the top two offences committed are property crimes and drug-related offences.

Comparison between One and Two Drug-abusing Parents

A Pearson’s Chi-square Test of Contingencies was conducted to determine if there was a difference in a child’s likelihood of offending between having one or both parents as drug abusers who were incarcerated. The Chi-square test revealed that there was no statistical difference between the two groups of children and the proportion of them who offended were similar, whether or not they had one or two parents who were incarcerated for drug abuse (see Table 3). Further exploration found that having an offending mother has a statistically significant association with the child’s likelihood to offend (see Table 4).

Table 3. Chi-square Test

Drug-Abusing Parent	Child Offended <i>n</i> (%)		Chi-square	<i>df</i>	Sig.	ϕ
	No	Yes				
Only one	8634 (85.6)	1457 (14.4)	.379	1	.538	.006
Both parents	553 (84.7)	100 (15.3)				

Table 4. Chi-square Test

Drug-Abusing Parent	Child Offended <i>n</i> (%)		Chi-square	<i>df</i>	Sig.	ϕ
	No	Yes				
Mother only	1640 (80.9)	388 (19.1)	45.5	2	.000	.065
Father only	6994 (86.7)	1069 (13.3)				
Both parents	553 (84.7)	100 (15.3)				

Predictors of Intergenerational Offending

A binary logistic regression was performed to test the extent to which certain indicators (e.g.,



demographic variables) increased the likelihood of intergenerational offending. Using the standard enter method, the four-predictor model was significant, $\chi^2(5) = 366.551$, $p < .001$ (see Table 5a) and accounted for approximately 6% (Nagelkerke R²) of the total variance. However, along with the significant ($p < .05$) Hosmer and Lemeshow Test (see Table 5b), the results indicate that the model could be further enhanced with inclusion of other predictors.

All independent variables were significant factors for intergenerational offending (see Table 6), with offending parent type (mother) as the most significant. Children for whom only the mothers had offended were 4.073 times more likely to offend compared to children with two offending parents⁴. This result also supports the evidence from the Chi-square test that having an offending mother significantly increases this risk. Children who had more siblings and whose parents had more severe criminality, were also more likely to offend.

Table 5a. Model Summary Statistics

Chi-square	-2 Log Likelihood	Cox & Snell R ²	Nagelkerke R ²
366.551	8525.006	.034	.060

Table 5b. Hosmer and Lemeshow Test

Chi-square	df	Sig.
17.756	8	.023

Table 6. Variables of Intergenerational Offending

	β	S.E.	Wald	Sig.	Exp(β)	95% C.I. for Exp(β)	
						Lower	Upper
Offending Parent Type							
Offending Parent (Both)	-	-	112.398	.000	-		
Offending Parent (Father)	.828	.131	39.697	.000	2.288	1.769	2.961
Offending Parent (Mother)	1.404	.145	93.997	.000	4.073	3.066	5.410
Number of Children in the Family	.122	.016	56.772	.000	1.130	1.095	1.166
Total Number of Parental Drug Incarcerations	.065	.016	17.487	.000	1.067	1.035	1.101
Total Number of Parental Incarcerations	.072	.013	30.971	.000	1.074	1.048	1.102

*DV: Intergenerational Offending (Absent=0, Present=1).

*IV: Offending Parent Type (Father only=1, Mother only=2, Both Parents=3)

Discussion

The data used in this study showed that one in five drug-abusing parents would have a child who offends. Contrary to our expectation that having two drug-abusing parents would have a greater impact on influencing a child's likelihood of offending when compared to having only one drug-abusing parent, the Chi-square test indicated no such differences. This is similar to that found by Farrington, Coid & Murray (2009), where having two criminal parents was not worse than having one in relation to the child's conviction. This could be due to the higher chances of a child's family situation being picked up by social care services or because the child is being cared for by their prosocial relatives, both of which may place them in a more protective environment and hence reduce the likelihood of offending.

Impact of Drug-abusing Mother on Child Offending

Interestingly, the finding that a drug-abusing mother has the greatest impact on her children's offending is in contrast with the prominent intergenerational offending studies conducted overseas which found that convicted fathers had a higher likelihood of predicting child offending than mothers (see Farrington, Tfofi, & Crago, 2017). However, the current finding is also consistent with other studies where maternal imprisonment was found to have more adverse outcomes for children (Burgess-

Proctor, Huebner, & Durso, 2016; Dallaire, 2007; Johnson & Waldfogel, 2004; Murray & Farrington, 2008; Smith & Farrington, 2004). As mothers often take on the role of a primary caregiver and children are more likely to have lived with and been taken care of by their mothers before her imprisonment (Glaze & Maruschak, 2008; Mumola, 2000), children may have stronger attachment relations with their mothers. As such, the missing primary caregiver is more likely to cause unstable caregiving arrangements.

Finally, while prevalence rates provide statistical information on the extent of intergenerational offending as a result of drug-abusing parents, it is also important to explore the mechanisms behind this phenomenon. There are other variables that may mitigate the impact of parental drug abuse and incarceration on children's offending behaviour and hence, it cannot be examined in isolation from the potential impact of other socio-environmental factors. To better understand the impact and the transmission of intergenerational offending, Part 2 of the study was conducted.

Part 2: Examining the Impact of Parental Drug Abuse and Incarceration on Children

Methodology

Participants & Procedure

The sample consisted of two groups of youths who have parents previously admitted for rehabilitation in prison for drug abuse. The first group included a mixture of offending male youths ($n = 33$) recruited from the Reformatory Training Centre (RTC) and Drug Rehabilitation Centre (DRC) in the SPS as well as the Community Rehabilitation Centre (CRC). 81.8% of them had drug antecedents or were incarcerated for drug-related offences. Their age ranged from 17 to 21 years old ($\mu = 19.5$, $SD = 1.2$). The second group comprised of non-offenders ($n = 13$; 30.8% male) in the community who were recruited through convenience sampling with some help from non-governmental organisations such as Singapore After-Care Association and Singapore Children's Society. Their age ranged from 13 to

20 years old ($\mu = 16.5$, $SD = 2.3$). Of all youths interviewed, 21.7% of them had two drug-abusing parents.

Each interview was audio recorded with the participant's written consent and transcribed verbatim by the interviewer for data analysis.

Data Analysis

Data was analysed through qualitative content analysis and thematic analysis (see Vaismoradi, Turunen, & Bondas, 2013). Despite the small sample size of the non-offending youth sample, the themes surfaced in the findings were saturated among all the participants. Hence, the results presented are still largely relevant across the entire sample.

Results

The thematic analysis revealed various socio-environmental impacts of parental drug abuse on children and findings suggest that both offending and non-offending youths face similar impacts of parental drug abuse. Factors that increase a child's risk of offending and factors that help protect a child from the harmful effects of parental drug abuse, are also shared among both offending and non-offending youths. In particular however, it appears that having more protective factors helped to prevent impacted children from moving onto the path of offending.

Impacts of Parental Drug Abuse

1. Weakened Attachment to Parents

31 out of 46 (67%) participants reported themes of having a weakened attachment to their drug-abusing parent(s) and/or residual parent. Parental drug abuse often leads to parent-child separation when parents are arrested and sent to prison for rehabilitation. When parents are recalcitrant drug abusers, they end up spending a prolonged period of time in rehabilitation and the child eventually grows up in their absence with a loss of connection to their drug-abusing parent. Hence, the parent-child relationships become weaker and more distant over time.

“Because I don’t feel, I’m not attached to him ah. So our relationship also not very good la. All along la ‘cause we can’t get to communicate to each other ah. I think, 20 years of my life, the only time I know I’m spending with him maybe, one and a half years? Or two years, around there.” (Participant O18)

Furthermore, when the residual parent is the sole breadwinner of the family, they are often busy working and do not spend sufficient time with the child. Coupled with the idea that their family is incomplete, the child often felt that there was a lack of family bonding and parental love.

“Like, incomplete ah... Like, other people all, they have their, like family bonding time, like they go out together all. But we never... Although we are near to each other, we are very far. I don’t know how to say. Very distant.” (Participant D5)

2. Need for Social Support

As a result of the missing parent figure, the child experiences a loss of parental support and often feels lonely and neglected. Several participants (30%) mentioned not having anyone to talk to especially when they faced problems and a few had wanted someone to speak to about their parents’ drug abuse.

“Because your own, your own parents like going [in and] out of prison. Then when you need them, then they are not around. They are not there for you.” (Participant O6)

3. Exposure to Drug Environment within the Home

As a result of their parents’ regular drug abuse, 50% of participants grew up in a dysfunctional environment when their home became a drug den for their parents and their parents’ drug-abusing friends. Children often had immediate exposure to the use of illicit drugs and drug utensils (e.g., syringes) which were left lying about in the house.

4. Other Adversities Faced during Childhood

As a result of parental drug abuse, participants often meet with negative experiences while growing up. Their accounts during the interviews presented the following categories of adversity: physical neglect, emotional maltreatment and negative psychosocial development.

Physical neglect. The participants experienced physical neglect when their drug-abusing parents are neglectful in their parenting. For example, they do not perform their caregiver duties and are not concerned about their children’s well-being, seeming to place more importance over drugs instead of them. These events are often remembered as unpleasant memories filled with resentment.

“Last time like when I was young I could remember... she don’t really care about me because about drugs... she like take care of me for a while, then she always disappear, she’s not there.” (Participant O5)

Emotional maltreatment. Participants also experienced emotional strain when bearing witness to the arrests of their parents by law enforcement officers, which are often unexpected and unexplained. As such, they go through various emotional stressors such as sadness, shock, confusion and fear. In particular, they experience terror when they witness their parents’ resulting drug behaviours such as domestic violence, where they also often end up becoming the victims of physical abuse themselves.

“I think he just took drugs... he became very violent. Ya, he.. I think like he call my mum names and something like that, I can’t remember. And then he, he hold me down onto the sofa... Then there’s another night also, he sat, I think he sat on my mum, like he hold my mum down with his.. body weight, so I had to call the police...” (Participant N9)

Negative psychosocial development. Lastly, participants also experienced shame and faced social stigma from their friends and relatives when their parents are known to have been detained in prison for rehabilitation. This affects their self-esteem and identity, where they feel that they are different from their peers. Continuous parental absence due to detainment also reinforces their perception that their parents do not love them enough to desist from drug abuse, which develops in them a fear of inadequacy.

*“I mean reality sucks ah. Ah you, realise that you don’t really have that things that you actually want ah. Like you want a better family but in fact you don’t ah... I... *sighs* there’s a lot of people out there which are very different from me ah. So I feel like... weird ah. Feel like I’m the weird one ah. They have like good family.” (Participant D10)*

Factors that Increase Risk of Child Offending

1. Poor Parenting Practices

The offending participants were found to have engaged in and maintained their offending behaviours as a result of inadequate supervision and parental control by their parent or their caregiver. Over 70% of them had mentioned that their parents or caregivers were permissive in their parenting style. Parents were also indulgent towards their children’s usage of substances such as alcohol and cigarettes before the legal age and some even encouraged the behaviours because they deemed them as harmless.

“[Father] give me green light already... he say “want smoke, smoke inside the toilet, and no cigarette, tell me, you don’t go and buy, don’t go ask people buy buy all.” [Mother] say “you want smoke, smoke at home inside toilet, don’t go and smoke outside. You’re still underage and stuff.” (Participant O22)

2. Presence of Antisocial Environment

An antisocial environment was present for 93% of all participants. For the youths who had offended, the influence from the antisocial environment was enough to lead them onto the path of offending.

As aforementioned, the children often grow up in a drug environment as a result of their parents’ drug abuse. They hence become vulnerable to the influence of a parent’s drug behaviour. When children are constantly exposed to their parents’ drug abuse, it is plausible that they may become normalised to the antisocial behaviours observed. In fact, it was noted that a significant portion of the participants developed permissive attitudes towards drugs as a consequence of parental drug abuse.

However, the antisocial environment is not only restricted within the household but extends to the children’s immediate social circle of friends. Having drug-abusing peers and being affiliated with gangs gave them free or discounted accessibility to drugs. As such, almost 20% of the offending participants in our study claimed that they had access to drugs from their antisocial peers. In addition, being with these antisocial peers exposed them to antisocial behaviours over a prolonged period of time, which led to their normalisation of such behaviours. Given the availability of drugs as well as normative and liberal attitudes toward drug abuse and other antisocial behaviours, the risk of engaging in antisocial and offending behaviours were exacerbated.

67% of all participants also often spent time with their antisocial peers and many of them cited their offending and antisocial behaviours (e.g., smoking) to be a result of peer influence. While some had engaged in these behaviours as a result of peer pressure, others did so because they wanted to fit in with their friends.

3. Lack of Parental Presence

As mentioned above, parents may end up neglecting their children because of drug abuse and incarceration, or because they (residual parent) are busy working to support the family. The resulting parental absence causes the children to feel a lack

of parental love and support. This then leads the child to develop the need to seek alternative forms of support to fulfil their need for connection. Hence, parental absence inadvertently shapes the social networks of these children, who end up spending a lot of unsupervised time hanging around their neighbourhood and increasing their risk of associating with antisocial peers who happen to loiter in the same neighbourhood. At the same time, parental absence signifies the absence of parental control and supervision. Without that, the likelihood of a child mixing with antisocial peers and picking up offending behaviours becomes even higher. In fact, some of the offending children had specifically mentioned that their parents' absence meant that there was no one to supervise them and correct their wrong behaviours.

4. Desire to Connect with Drug-abusing Parent

When a child feels extremely emotionally neglected by their parents' constant attention on drugs and cannot understand their decision to do so, they seek to comprehend their situation by following in the same footsteps as their drug-abusing parent. To these children, they felt the need to take drugs as well so that they could get closer to their parents and understand why their parents "choose" drugs over them. However, they ended up becoming victims to drug addiction. While they derived understanding on their parents' drug abuse, they could not remove themselves from the pitfall they had gotten into.

"Because of her. Because uh, I want to know how it feels. You get - you get what I mean? ... I tell her not to take drug, but she still take drug. Why she never listen to me? That's why I take drug. I want to experience what she experienced... Because I love my mum.. so.. so hard. I love her, since I'm young. I really want a good relationship with her and my sisters, but she keep on taking drugs. That's where I hate everything in my life and I involved in drugs. Ah, that's why I want to experience what she experienced. Cause she's been taking drugs more than

5 times, she went in more than 5 time, and she never learn from her mistake. I want to experience what is - what she experienced."
(Participant D3)

Onset of Child Offending Behaviour

The confluence of the aforementioned mechanisms has been found to be most prominent during a specific age period of adolescence. Based on the information gathered from the interviews, the crucial age window for offending behaviour appeared to be between 11 to 14 years of age, where a child is in his developmental stage of identity seeking. In fact, 67% of all participants mentioned that they had started their problematic antisocial (e.g., underage smoking, stealing and fighting) and offending behaviours during early adolescence. Hence, the chances of picking up bad behaviour and offending are also aggravated when the impacts of parental drug abuse and incarceration lead early adolescents to seek antisocial peer support outside of the home.

Protective Factors against Harmful Effects of Parental Drug Abuse

There are however, protective factors that can buffer against the harmful effects of parental drug abuse and incarceration. It also appears that having more of these factors helped prevent affected children from heading onto an offending path.

1. Strong Prosocial Support

28% of all participants mentioned that having a strong availability of prosocial support, be it from family or friends, helped to minimise the negative impact of parental drug abuse and incarceration. Often, this support also came from the residual parent who did not abuse drugs and had continued to carry out their parenting roles effectively. Along with other caregivers and relatives, these multiple figures of support provided the necessary warmth and nurture to ensure that the impacted children are still well-taken care of and supported emotionally, physically and mentally. For these children, having someone to speak to about their problems also helped them to cope with their negative feelings

about their parents' drug abuse, incarceration and absence.

“She...always come back from work, she always kiss us, to remind that she’s still there for us la. Then every morning when we sleep she put the blanket over us la. Yea, feel loved la... I receive enough care. I would say that my mother is still better than some other mum out there la. Because I think I saw some mum when the husband go inside then the mum also start taking drugs all. What I want to say is my mum is a strong lady la, I appreciate her la.” (Participant N4)

2. Constructive Use of Time

Almost one fifth of all impacted children also mentioned that they were not as heavily impacted by their parents' drug abuse and incarceration when they were kept occupied with other prosocial activities. For example, having active engagement in school or aftercare activities and arrangement, as well as bonding with their family members, helped to take their mind off the negative thoughts relating to their drug-abusing parents' absence when they are detained in prison.

Discussion

Impacts of Parental Drug Abuse and Incarceration on Children

The themes that emerged from the qualitative analysis provide insight into the impacts of parental drug abuse and incarceration on children and how it can lead to second-generation offending. Findings are largely consistent with the experiences of addicted youths who grew up in substance abuse families (as documented in Hedges, 2012), which mentioned that the constant exposure to substance use within their home normalised the behaviour from a young age and led to their eventual substance use. Findings are also consistent with literature on the impact of parental incarceration on children, which has been posited to be a traumatic event in their

lives and results in long-term economic, emotional and social consequences that negatively affect their well-being (Hairston, 2007; Mears & Siennick, 2016). From our study, it appears that parental drug abuse has an impact on the environmental risk factors of the second generation. It is these negative childhood experiences that are further exacerbated when the parents are eventually absent as a result of detainment for compulsory rehabilitation in the DRC.

Transmission of Offending from Drug-abusing Parents

Results from the current study show that the transmission of offending can be understood as an interaction of social control and social learning variables operating in a vulnerable period of adolescence. Going back to the social control perspective, weakened attachments with social control agents (e.g., parents and school), especially in cases of ineffective parenting, allows delinquency to occur (Chapple, 2003).

Based on our current findings, it is posited that weakened parent-child bonds was strongly associated with poor parental control and supervision, ultimately leading up to the offending children's antisocial behaviour. As for social learning, findings from the current study suggest that the exposure to an antisocial environment provides learning opportunities about problem behaviour. Exposure to an antisocial environment is therefore associated with the modelling of antisocial attitudes and normalising of antisocial behaviour such as cigarette and drug abuse from parents and peers, which then increase the children's risk of engaging in antisocial behaviour.

Protective Mechanisms that Mitigate Risk for Intergenerational Offending

There are also protective mechanisms that can help to buffer the risk for offending, which are also supported by literature. Prosocial support and activities can help children spend their time constructively, which keeps them occupied and results in a lower chance of them hanging around their neighbourhood unsupervised and associating

with antisocial peers. Also, by being strongly connected to school and invested in conventional activities and outcomes, children are less likely to engage in antisocial behaviours and use substances as that would jeopardise school aspirations, both in the present and the future (Ford, 2009).

Tying it Altogether

Putting it all into perspective, the transmission of offending can be explained by social control (weakened parent-child attachment) and social learning (presence of antisocial environment) factors that are present as a result of parental drug abuse and incarceration. The effects of these factors are also most prominent during a period of adolescence. The transmission of offending from drug-abusing parents can thus be demonstrated by a psychosocial control model of adolescent delinquency as put forth by Curcio, Mak & George (2017). The model posits that adolescents with weakened attachments to social control agents (e.g., parents, school, and values), and personal control factors of high impulsivity and low empathy, were more likely to engage in delinquency. Further, Curcio et. al. (2017) found that peer influence or peer risk-taking behaviour, was a significant predictor and along with sensation seeking, explained most of the variance in predicting delinquency for adolescents aged 13 to 14 years old.

The transmission of intergenerational offending from parent to child can thus be understood as a result of circumstances; it is through the amalgamation of the various impacts of parental drug abuse and incarceration, along with the risk factors in the child's life which most often led up to and perpetuated their offending behaviour. This is especially pertinent in the absence of protective factors.

Conclusion

The current research addresses three main questions: (1) to what extent is intergenerational offending prevalent among drug abusers in Singapore, (2) what is the impact of parental drug abuse and incarceration on the second generation,

and (3) how can we mitigate the impacts experienced? The research contributes in various ways to advance knowledge in our understanding of intergenerational offending within the context of drug abusers and it is the first in Singapore to examine the phenomenon. The corroboration of quantitative and qualitative data also enabled a clearer and rich understanding of the magnitude of intergenerational offending in Singapore as a result of drug-abusing parents and the impacts it has on the second-generation.

The current research raises the importance of parents and their caregiving roles in impacting a child's antisocial behaviours. It also serves to highlight that the second-generation inadvertently suffers the consequences of parental drug abuse. As a result, children of drug-abusing parents constitute a vulnerable group in the community and they should be provided with the necessary support to reduce the negative impact experienced as a result of parental drug abuse and incarceration, as well as to prevent second-generation offending.

Acknowledgements

We would like to thank Singapore After-Care Association and Singapore Children's Society, as well as our former research officer Ms Chee Shu Jia, for their valuable contributions to this research piece. Most importantly, we would also like to thank our Deputy Director, Dr Gabriel Ong Tzong Hwang (Psychological Research, Operations & Programme Design; Singapore Prison Service) for his continuous guidance, support and encouragement for the research project.

¹ Includes Penal, DRC, Remand and Criminal Law Detainee (CLD) inmate populations as of 31st December 2017.

² Drug-related offences can include drug consumption, possession, and trafficking.

³ Those with a child below 12 years old were not included in this calculation as the number of children below 12 years old who come into contact with the law is very low. This could possibly be due to the offending children being let off with a warning. 12-21 years old is also the age range of youth offenders in Singapore (Chng, Chu, Zeng, Li, & Ting, 2016).

⁴ When compared to children where only the fathers had offended, the likelihood of the child offending is 1.780 times.

References

- Bahr, S.J., Maughan, S.L., Marcos, A.C., & Li, B. (1998). Family, Religiosity, and the Risk of Adolescent Drug Use. *Journal of Marriage & Family*, 60(4), 979–992. <https://doi.org/10.2307/353639>
- Burgess-Proctor, A., Huebner, B.M., & Durso, J.M. (2016). Comparing the effects of maternal and paternal incarceration on adult daughters' and sons' criminal justice system involvement: A gendered pathways analysis. *Criminal Justice and Behavior*, 43(8), 1034–1055. doi:10.1177/0093854816643122
- Chapple, C.L. (2003). Examining intergenerational violence: Violent role modeling or weak parental controls? *Violence and Victims*, 18(2), 143–162.
- Chng, G.S., Chu, C. M., Zeng, G., Li, D., & Ting, M.H. (2016). A latent class analysis of family characteristics linked to youth offending outcomes. *Journal of Research in Crime & Delinquency*, 53(6), 765–787.
- Curcio, A.L., Mak, A. S., & George, A.M. (2017). Predictors of delinquency among adolescents and young adults: A new psychosocial control perspective. *Australian & New Zealand Journal of Criminology*, 50(2), 155–175. doi:10.1177/0004865816628594
- Dallaire, D.H. (2007). Incarcerated mothers and fathers: A comparison of risks for children and families. *Family Relations*, 56(5), 440–453. doi:10.1111/j.1741-3729.2007.00472.x
- Dong, B., & Krohn, M.D. (2015). Exploring intergenerational discontinuity in problem behavior: Bad parents with good children. *Youth Violence and Juvenile Justice*, 13(2), 99–122. doi:10.1177/1541204014527119
- Farrington, D.P., Coid, J.W., & Murray, J. (2009). Family factors in the intergenerational transmission of offending. *Criminal Behaviour and Mental Health*, 19(2), 109–124. doi:10.1002/cbm.717
- Farrington, D.P., Jolliffe, D., Loeber, R., Stouthamer-Loeber, M., & Kalb, L.M. (2001). The concentration of offenders in families, and family criminality in the prediction of boys' delinquency. *Journal of Adolescence*, 24(5), 579–596. doi:10.1006/jado.2001.0424
- Farrington, D.P., Ttofi, M.M., & Crago, R.V. (2017). Intergenerational transmission of convictions for different types of offenses. *Victims & Offenders*, 12(1), 1–20. doi:10.1080/15564886.2016.1187693
- Fergusson, D.M., Boden, J.M., & Horwood, L.J. (2008). The development antecedents of illicit drug use: Evidence from a 25-year longitudinal study. *Drug and Alcohol Dependence*, 96, 165–177.
- Ford, J.A. (2009). Nonmedical prescription drug use among adolescents: The influence of bonds to family and school. *Youth & Society*, 40(3), 336–352. doi:10.1177/0044118X08316345
- Glaze, L.E., & Maruschak, L.M. (2008). Parents in prison and their minor children. *Bureau of Justice Statistics Special Report*. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics. Retrieved from <https://www.bjc.gov/content/pub/pdf/pptmc.pdf>
- Goodwin, V., & Davis, B. (2011). Crime families: Gender and the intergenerational transfer of criminal tendencies. *Trends and issues in crime and criminal justice*, (414), 1.
- Hairston, C.F. (2007). *Focus on children with incarcerated parents: An overview of the research literature*. Baltimore, MD: Annie E. Casey Foundation.
- Hedges, K.E. (2012). A family affair: Contextual accounts from addicted youth growing up in substance using families. *Journal of Youth Studies*, 15(3), 257. doi:10.1080/13676261.2011.635194
- Hirschi, T. (1969). *Causes of delinquency*. Berkeley, CA: University of California Press.
- Hoeve, M., Blokland, A., Dubas, J.S., Loeber, R., Gerris, J.R.M., & Laan, P.H.v.d. (2008). Trajectories of delinquency and parenting styles. *Journal of Abnormal Child Psychology*, 36(2), 223–235. doi:10.1007/s10802-007-9172-x
- Johnson, E.I., & Waldfogel, J. (2004). Children of incarcerated parents: Multiple risks and children's living arrangements. In Pattillo, M., Weiman, D., & Western, B. (Eds.), *Imprisoning america: The social effects of mass incarceration* (pp. 97–132). New York, NY: Russell Sage Foundation
- Lochner, L. (2008). Intergenerational transmission. In S.N. Durlauf & L.E. Blume (Eds.), *The New Palgrave Dictionary of Economics* (pp. 413–417). London, UK: Palgrave Macmillan.
- Marmorstein, N.R., Iacono, W.G., & McGue, M. (2009). Alcohol and illicit drug dependence among parents: Associations with offspring externalising disorders. *Psychological Medicine*, 39(1), 149–155.
- Mears, D.P., & Siennick, S.E. (2016). Young adult outcomes and the life-course penalties of parental incarceration. *Journal of Research in Crime and Delinquency*, 53(1), 3–35. doi:10.1177/0022427815592452
- Mounts, N.S. (2002). Parental management of adolescent peer relationships in context: The role of parenting style. *Journal of Family Psychology*, 16(1), 58–69. doi:10.1037/0893-3200.16.1.58
- Mumola, C.J. (2000). Incarcerated parents and their children. *Bureau of Justice Statistics Special Report*. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics. Retrieved from <https://files.eric.ed.gov/fulltext/ED448903.pdf>
- Murray, J., & Farrington, D. (2008). The effects of parental imprisonment on children. *Crime and Justice*, 37(1), 133–206. doi:10.1086/520070
- Pears, K., Capaldi, D.M., & Owen, L.D. (2007). Substance use risk across three generations: The roles of parent discipline practices

and inhibitory control. *Psychology of Addictive Behaviors*, 21(3), 373-386. doi:10.1037/0893-164X.21.3.373

Seydlitz, R., & Jenkins, P. (1998). The influence of families, friends, schools, and community on delinquent behavior. In T. P. Gullotta, G. R. Adams, & R. Montemayor (Eds.), *Delinquent violent youth: Theory and interventions* (pp. 53-97). Thousand Oaks, CA: Sage.

Singapore Prison Service. (2017). *2017 SPS Annual Statistics Release*. Retrieved from https://www.sps.gov.sg/docs/default-source/stats-release/spa-annual-stats-release-for-2017_520kb.pdf?sfvrsn=2

Smith, C.A., & Farrington, D.P. (2004). Continuities in antisocial behavior and parenting across three generations. *Journal of Child Psychology and Psychiatry*, 45(2), 230-247. doi:10.1111/j.1469-7610.2004.00216.x

Sokol-Katz, J., Dunham, R., & Zimmerman, R. (1997). Family structure versus parental attachment in controlling adolescent deviant behavior: A social control model. *Adolescence*, 32(125), 199.

Thornberry, T.P., Freeman-Gallant, A., & Lovegrove, P.J. (2009). Intergenerational linkages in antisocial behaviour. *Criminal Behaviour and Mental Health*, 19(2), 80-93. doi:10.1002/cbm.709

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & health sciences*, 15(3), 398-405.

Yaacob, S.N., Idris, F.A., & Wan, G.S. (2015). Parental attachment, coping efficacy and antisocial behavior among adolescents from divorced family in Selangor, Malaysia. *Journal of Management Research*, 7(2), 364-374.

About the Authors:



Loh Eng Hao (BA, MA) is a psychologist employed at Singapore Prison Service (SPS). He has been working at the Correctional Research Branch since 2014 and has been involved in research projects looking into several areas such as reintegration and addiction-related issues. Besides from his research work, Eng Hao is also involved in carrying out clinical interventions as well as risk assessments for inmates housed within the Prison's jurisdiction.



Charmaine Ch'ng Wei Lin graduated with a Bachelor in Psychology (Hons Class IIA) in 2015 and has been a Research Officer with Singapore Prison Service (SPS) since 2016. She has been involved in various research projects that contribute to understanding offending as well as the evaluation and improvement of prison rehabilitation regimes and programmes. One of her main projects involves understanding the intergenerational transmission of offending, of which she has presented to local and international delegates at various conferences such as the Yellow Ribbon Conference (2018) and Asian Conference of Criminal and Operations Psychology (ACCOP 2019). In addition, she also helps to evaluate and facilitate internal and external research requests to SPS by assessing the robustness of research methods and ensuring that they adhere to ethical guidelines.



Cheng Xiang Long graduated with a Bachelor of Social Sciences in Psychology (2nd Upper), and joined Singapore Prison Service (SPS) as a psychologist in 2008. He completed his Master's Degree in Psychology (Clinical) and returned to SPS as a psychologist in 2014. He is currently a Lead Psychologist, and is the Senior Assistant Director of the Correctional Research Branch. In his current role, he conducts assessments and intervention for adult violent and sex offenders, and offenders with mental illnesses. He also supervises other psychologists in their assessment and intervention work. Additionally, he oversees a team of psychologists and research officers in conducting research on offenders' needs and trends to inform policy and practice of rehabilitation in SPS.

Public Perception towards Singapore's Anti-drug Policies

Suet Lay Liang

Research and Statistics Division, Ministry of Home Affairs, Singapore

ABSTRACT

The Ministry of Home Affairs, Singapore, conducted a public perception survey in 2018 to better understand Singaporeans' perception of drugs and Singapore's drug situation, and to gauge their support for Singapore's policies governing drug consumption, possession and trafficking. The survey found that a vast majority of respondents perceived drugs as harmful and wished to live in a drug-free society. A large majority also felt that our drug-related policies were effective, and indicated that they supported these policies.

Introduction

It is well documented that drug consumption, possession and trafficking harm lives and families, as well as create societal and economic problems for a nation.

Hence, Singapore adopts a zero-tolerance approach towards drugs, with the mission to create a drug-free society for Singapore, by having tough laws on drugs and by educating Singaporeans about the harms of drugs through structured and comprehensive Preventive Drug Education (PDE) programmes and initiatives.

As Singapore's stance on drugs is an integral part of the country's policy landscape for ensuring safety and security, it is important to understand the level of public support for these policies. Hence, the Ministry of Home Affairs (MHA) conducted a public perception survey in 2018 to find out Singaporeans' perceptions of drugs and Singapore's

drug situation, and to gauge their support for Singapore's policies governing drug consumption, possession and trafficking.

Survey Methodology

Participants

A survey company was appointed to conduct face-to-face interviews with 2,000 Singapore residents between July and October 2018 on behalf of MHA. This survey was based on a representative random sample of 1,500 Singapore Citizens and Singapore Permanent Residents, aged 13 and above. An additional 500 youths, aged 13 to 30 years old¹, were also interviewed for the purposes of understanding if there were any differences in opinion between the younger and older respondents, as past studies have showed that younger people had a more liberal mind-set towards drugs. For example, the

National Council Against Drug Abuse's (NCADA) Youth and Public Perception Survey (NCADA, 2017) found that around a third of youths perceived cannabis to be less harmful or non-addictive, and that the proportion of younger adults (aged 13 to 30) who held liberal attitudes towards drugs in general increased from 11% in 2013 to 16% in 2016.

Procedure

The survey data collected was cleaned and coded. The overall survey findings were also weighted to be representative of the Singapore resident population's age at the national level.

Key Survey Findings

Public Perception of Drug Harms

A vast majority – more than 97% – of the respondents acknowledged the harms of drugs on the abuser, his/her family, and the society. Almost all (98.1%) also wished to live in a drug-free society (see Table 1).

Table 1. Survey Findings on Public Perception of Drug Harms

Question	Strongly Agree / Agree	Neutral	Strongly Disagree / Disagree
Drug-taking will harm one's health	97.8%	1.7%	0.6%
Drugs affect one's life negatively	97.4%	1.6%	1.0%
Drugs affect families negatively	98.2%	1.1%	0.7%
Drug-taking has a negative impact on society	97.2%	1.9%	0.9%
Drug-trafficking has a negative impact on society	97.9%	1.1%	1.0%
I wish to live in a drug-free society	98.1%	1.7%	0.2%

Public Perception of Singapore's Drug Situation

A large majority of respondents had a positive view of Singapore's drug situation. 92.7% of the respondents felt safe in Singapore's drug-free environment and 89.0% agreed that our drug laws were effective in keeping the country relatively drug-free, while 80.5% agreed that the drug situation in Singapore is under control (see Table 2).

Table 2. Survey Findings on Public Perception of Singapore's Drug Situation

Question	Strongly Agree / Agree	Neutral	Strongly Disagree / Disagree
Singapore's drug-free environment makes me feel safe in Singapore	92.7%	4.8%	2.6%
The drug situation in Singapore is under control	80.5%	14.6%	4.9%
Singapore's laws on drugs are effective in keeping it relatively drug-free	89.0%	8.2%	2.8%

Support for Singapore's Anti-drug Policies

Support for Singapore's drug-related policies was also very high. The vast majority felt that we should continue to maintain tough laws to keep drugs out of Singapore (97.8%) and that drug-taking should remain illegal in Singapore (97.5%) (see Table 3).

Table 3. Survey Findings on Support for Singapore's Anti-drug Policies

Question	Strongly Agree / Agree	Neutral	Strongly Disagree / Disagree
We should continue to maintain tough laws to keep drugs out of Singapore	97.8%	1.7%	0.5%
Drug-taking should remain illegal in Singapore	97.5%	2.0%	0.5%

Support for Existing Punishments against Drug Trafficking

Most respondents endorsed imprisonment (93.0%) and caning (80.1%) as appropriate punishment for drug trafficking offences. A large majority of 69.6% also agreed that the death penalty was an appropriate punishment for trafficking a large amount of drugs (see Table 4).

Table 4. Survey Findings on Support for Existing Punishments against Drug Trafficking

Question	Strongly Agree / Agree	Neutral	Strongly Disagree / Disagree
Imprisonment is an appropriate punishment for drug traffickers	93.0%	5.0%	2.1%
Caning is an appropriate punishment for drug traffickers	80.1%	13.3%	6.5%
Death penalty is an appropriate punishment for drug traffickers who traffic a large amount of drugs	69.6%	18.1%	12.2%

Support for Mandatory Rehabilitation of Drug Abusers

There was a firm belief on the importance of rehabilitation. 97.6% of respondents agreed that drug abusers should undergo rehabilitation and 95.5% supported mandating rehabilitation of drug abusers (see Table 5).

Table 5. Survey Findings on Support Mandatory Rehabilitation of Drug Abusers

Question	Strongly Agree / Agree	Neutral	Strongly Disagree / Disagree
Drug abusers should undergo rehabilitation	97.6%	2.0%	0.4%
The Singapore Government should mandate rehabilitation for drug abusers	95.5%	3.5%	1.0%

Support against Legalisation of Drugs

Support against legalisation of drugs was high. 97.5% agreed that drug-taking should remain illegal in Singapore for drugs in general, and 87.1% agreed that cannabis abuse should remain illegal in Singapore (see Table 6).

Table 6. Survey Findings on Support against Legalisation of Drugs

Question	Strongly Agree / Agree	Neutral	Strongly Disagree / Disagree
Drug-taking should remain illegal in Singapore	97.5%	2.0%	0.5%
Cannabis abuse should remain illegal in Singapore	87.1%	10.0%	2.8%

Youth Attitudes towards Drugs

In terms of perceptions of drug harms and Singapore's drug situation, youths (i.e., respondents aged 13 to 30 years old) and respondents aged over 30 held similar views.

However, in terms of support for drug-related policies, youths were relatively less supportive of the death penalty for drug traffickers; a slight majority of 52.7% of youths felt it was appropriate, compared to a large majority of 74.6% among those aged over 30.

A large majority (79.9%) of youths agreed that cannabis should remain illegal. However, this is lower than the 89.2% among those aged over 30 that agreed (see Table 7).

Table 7. Survey Findings of Key Questions by the Two Main Age Groups (i.e., 13 – 30 years old and above 30 years old)

Question	Strongly Agree / Agree (13 – 30 years old)	Strongly Agree / Agree (Above 30 years old)
Drug-taking has a negative impact on society	93.8%	98.4%
Drug-trafficking has a negative impact on society	96.5%	98.5%
Singapore's laws on drugs are effective in keeping it relatively drug-free	87.1%	89.3%
We should continue to maintain tough laws to keep drugs out of Singapore	96.9%	98.0%
Imprisonment is an appropriate punishment for drug traffickers	89.9%	94.0%
Caning is an appropriate punishment for drug traffickers	77.5%	80.8%
Death penalty is an appropriate punishment for drug traffickers who traffic a large amount of drugs	52.7%	74.6%
Cannabis abuse should remain illegal in Singapore	79.9%	89.2%

Conclusion

A vast majority of the respondents acknowledged the harms of drugs on the abuser, his/her family, and the society; and had a positive view of Singapore's drug situation. The support for Singapore's drug-related policies was also very high.

Support for Singapore's drug-related policies among the youths is also generally strong, although to a lesser degree compared to older respondents. In this regard, working on improving awareness of the harms of drugs among youths should be a priority area for the Central Narcotics Bureau and the National Council Against Drug Abuse.

Acknowledgements

Special thanks to our MHA colleagues from the Policy Development Division, Community Partnership and Communications Group and the Central Narcotics Bureau who have contributed to the success of this survey.

¹ For respondents aged 18 and below, consent from their parent was obtained before they were administered the survey.

References

National Council Against Drug Abuse (NCADA). (2017, 27 April). Youth and Public Perception Survey 2015/2016. Retrieved from <https://www.ncada.org.sg/what-we-know/youth-and-public-perception-survey-2015-2016>

About the Author:



Liang Suet Lay is an Assistant Director in the Research & Statistics Division, Ministry of Home Affairs, Singapore, where she looks into Criminal Law and Safety Research, for example research on crime perception, crime prevalence and public perception towards crime legislation in Singapore. Ms Liang has a Bachelor Degree in Science, majoring in Economics, and a Master Degree in Information Studies.

Deterrent Effect of Historical Amendments to Singapore's Sanction Regime for Drug Trafficking

Yee Fei Chia

Research & Statistics Division, Ministry of Home Affairs, Singapore

ABSTRACT

One of the rationales for the use of capital punishment in Singapore has been that it deters potential offenders from engaging in crimes that are punishable with the death penalty. This study utilised historical data from the Central Narcotics Bureau's case files to investigate whether key amendments to Singapore's death penalty regime for drug trafficking that had been introduced in 1990 had a deterrent effect on drug trafficking behaviour. The study represents one of the first efforts in the empirical capital punishment literature to attempt to quantify the deterrent impact of the death penalty on drug trafficking. Our findings suggest that the introduction of the death penalty for the trafficking of cannabis and opium in 1990 likely had a deterrent effect on trafficking behaviour for these drug types.

Background

One of the rationales for the use of capital punishment in Singapore has been that it deters potential offenders from engaging in serious crimes like drug trafficking and murder. This study assesses the deterrent effect of the introduction of the mandatory death penalty for trafficking cannabis and opium in 1990.

Overview of Existing Empirical Research on the Deterrent Effect of Capital Punishment

The empirical research available on the deterrent effect of capital punishment appears to have focussed largely on quantifying the impact of the death penalty on homicide rates, with the implicit assumption that would-be perpetrators of homicide

followed a rational choice model where they would weigh the expected benefits of committing homicide against the expected costs (i.e., perceived sanction risk) associated with the act. The vast majority of these studies have examined the relationship between the death penalty and homicide rates in the United States, where the application of the death penalty for homicide cases has usually been determined by individual US states, and actual implementation of death penalty regimes has varied substantially from state to state.

As these studies were conducted on jurisdictions where the death penalty was not mandatory under any circumstances and was, in practice, applied only to a minority of cases eligible for the death penalty, the authors of the various studies have

tended to assume that execution events and rates, rather than the legality of the death penalty per se, were more salient considerations for potential perpetrators of homicide when assessing the potential cost of committing homicide. As such, the studies have typically used measures based on executions to quantify the perceived sanction risks associated with the death penalty. However, as researchers held differing views on how would-be perpetrators would interpret information on potential punishment to derive the expected cost of committing homicide and make decisions, the studies have used different specifications for the execution rate. In terms of data, the studies have typically utilised either state-level panel data on executions and homicides to estimate the “average national effect” of the execution rate on the homicide rate for the United States, or time series data to look at the effect of execution events or effect of changes in the execution rate on homicide rates within a specific US state.

The various studies have found a wide range of results, ranging from studies that did not find evidence of a deterrent effect to those that found a large deterrent effect.

a. Examples of Studies that did not Find Evidence of a Deterrent Effect

- i) Grogger (1990) examined data on daily homicide counts in California from the early 1960s to analyse whether the occurrence of executions had a short-term deterrent effect. The study did not find any evidence that executions deterred homicides in the two- to four-week period immediately surrounding the executions.
- ii) Katz, Levitt & Shustorovich (2003) utilised state-level panel data for the United States from 1950 to 1990 to examine the relationship between prison conditions, capital punishment, and crime rates. Using the number of executions per 1,000 state prisoners as the proxy for execution risk, the study found little evidence to suggest that the execution rate had an effect on crime rates.

On the other hand, the death rate among prisoners (which served as a proxy for prison conditions) was negatively correlated with crime rates, suggesting that poor prison conditions deterred would-be perpetrators from committing crimes.

- iii) Kovandzic, Vieraitis & Boots (2010) utilised state-level panel data for the United States from 1977 to 2006 to examine the relationship between sanction risk and homicide rates. Using various different specifications for the execution rate to proxy for the sanction risk, the authors found that the coefficients for the execution rate were mostly negative but statistically insignificant.
- iv) Using state-level panel data from 1980 to 2013, Roeder, Eisen & Bowling (2015) examined the factors that had contributed to the historical decline in violent crime rates in the United States. The authors concluded that while certain social, economic, and environmental factors, as well as one particular approach to policing, had contributed to the crime decline, the number of executions (proxy for the use of capital punishment) was not a statistically significant factor.

b. Examples of Studies that Found Evidence of a Moderate Deterrent Effect

- i) Land, Teske & Zhang (2009) utilised monthly Texas execution–homicide data from the Texas Department of Criminal Justice and the Texas Department of Public Safety over the period 1994 to 2005 to study the short-term effects of execution events on homicide in the state of Texas. The results suggested that execution events led to modest, short-term reductions in homicides in Texas, with part of the initial reduction being offset by a displacement effect (i.e., homicides were displaced to a later date, rather than deterred completely). All in all, the authors estimated that the total effect was a reduction of around 0.5 homicides per execution in the twelve months immediately following the execution.

- ii) Mocan & Gittings (2003) and Mocan & Gittings (2010) estimated the effects of the execution rate, death row removal rate (proxy for decrease in the expected cost of committing homicide), and death sentence commutation rate (proxy for decrease in the expected cost of committing homicide) on the rate of homicides across all US states between 1977 and 1997 using a state-level panel dataset on historical capital cases. The results suggested that during the period studied, on average, each additional execution led to around five fewer homicides, each additional death sentence commutation led to around five more homicides, and each additional removal from death row for reasons other than execution or death of inmate was associated with one additional homicide.

c. Examples of Studies that Found Evidence of a Large Deterrent Effect or that the Death Penalty Deterred Homicides Previously Believed to be “Undeterrable”

- i) Dezhbakhsh, Rubin, & Shepherd (2003) analysed county-level panel data for the United States over the period of 1977 to 1996 to examine the deterrent effect of the death penalty on homicides. The authors concluded that each execution led to, on average, eighteen fewer homicides.
- ii) Zimmerman (2004) utilised a simultaneous equations modelling method to examine the deterrent effect of capital punishment on homicides for US states over the years 1978 to 1997. The study found that each state execution event was associated with approximately fourteen fewer homicides per year on average. The study also found that the announcement of executions, rather than the existence of the death penalty itself, was the mechanism driving the deterrent effect.
- iii) Shepherd (2004) utilised monthly data on

homicides and executions for US states over the period of 1977-1999 to examine whether capital punishment deterred homicides typically thought to be undeterrable. The study found that the death penalty deterred murders that were likely to be crimes of passion, as well as murders by intimates, contrary to popular expectations that such murders could not be deterred. In addition, the study found that shorter waits on death row before execution increased the deterrent effect. Specifically, on average, one fewer murder was committed for every 2.75-year reduction in death row waiting time.

While the differences in findings for these studies can be partially attributed to differences in time periods, jurisdictions examined and control variables in some instances, a key driver has been differences in the way that the measure for sanction risk perceived by would-be perpetrators of homicide has been specified. Re-analyses of existing studies (Donohue & Wolfers, 2005 & 2009; Fagan, 2006) have suggested that the size and statistical significance of the estimated deterrent effect are sensitive to seemingly small changes in specification for the execution rate (e.g., changing denominator from the number of death sentences handed down five years ago to number of death sentences handed down seven years ago etc.). These differences in specification have arisen primarily because there is insufficient knowledge of how potential murderers would interpret information to derive the sanction risk associated with committing homicide and then make decisions. As such, there does not seem to be a way to resolve disagreements about how sanction risks for these studies should be measured.

Besides the lack of consensus among researchers on how potential perpetrators of homicide quantified perceived sanction risks and made decisions, most of the empirical studies on the deterrent effect of capital punishment - regardless of the direction of the findings - have also generally

been critiqued for failing to account sufficiently for other factors that could also have affected homicide rates, thus potentially resulting in biased results (for a comprehensive review of studies, refer to National Research Council, 2012). Such factors would include severity of non-capital sanctions for homicides, effectiveness and efficiency of law enforcement and judiciary, prison conditions, political landscape, population demographic profile, macroeconomic conditions, secular time trends and so forth (National Research Council, 2012).

In addition, it may also be debatable whether the rational choice model can be easily applied to homicide as the act of killing might be fuelled by many other factors (e.g., impulsivity, anger, mental illness, substance abuse etc.) which generally would not contribute to rationality. As the rational choice model is arguably more applicable to crimes that generally involve a high degree of pre-planning, say, economic crimes such as drug trafficking, it may be instructive to study the deterrent effect of capital punishment in the context of such crimes. However, such studies are hard to find in the literature. This study seeks to help fill this knowledge gap and represents one of the first efforts in the empirical capital punishment literature to attempt to quantify the deterrent impact of the death penalty on drug trafficking.

Background on the Misuse of Drugs Act

Introduced in 1973, the Misuse of Drugs Act (MDA) is Singapore's main legislation for drug offences. The MDA provides for the enforcement powers of the Central Narcotics Bureau (CNB), and also sets out the definitions and penalties for the spectrum of drug offences, including trafficking, manufacturing, possession and consumption of controlled drugs.

In the case of drug trafficking, amendments to the MDA at various points in time introduced the Mandatory Death Penalty (MDP) for trafficking above specified quantities for certain drug types (see Table 1).

Table 1. Timeline of MDA Amendments Introducing the MDP

	MDA Amendments	Date of Commencement
1975	Mandatory death penalty introduced for the trafficking in more than 30g of morphine and 15g of diamorphine (or pure heroin).	12 Dec 1975
1990	Mandatory death penalty for trafficking of opium beyond 1,200g, cannabis beyond 500g, cannabis resin beyond 200g, and cocaine beyond 30g introduced.	15 Jan 1990
1993	Mandatory death penalty for trafficking in more than 1,000g of cannabis mixture introduced.	10 Dec 1993
1998	Mandatory death penalty for trafficking in more than 250g of methamphetamine introduced.	20 Jul 1998

As the MDA amendments introducing the MDP were specifically targeted against cases where there were larger quantities of drugs being trafficked, findings suggesting that the introduction of MDP for a particular drug type (1) reduced the probability that traffickers would traffic above the specified threshold, and/or (2) reduced the weight that traffickers chose to traffic for that drug type, could be construed as evidence that the introduction of MDP had a deterrent effect on traffickers' decisions.

Overview of Data Used for this Study

To study whether the introduction of MDP for specific drug types in the 1990s had a deterrent effect on drug trafficking behaviour for these drug types in Singapore, data from historical CNB case files for drug trafficking cases four years pre- and post- date of commencement of the MDP regime was utilised. Four-year windows were chosen for the analyses in this study after an inspection of the data as they were assessed to be more optimal in terms of providing sufficient data points for more robust analysis, while being short enough to minimise the possibility that the changes observed were more likely to be due to other factors, rather

than the introduction of MDP. For the analyses, we included only data from cases where the suspect was charged in court (i.e., excluded cases where there was not enough evidence to charge the suspect) and the charges were not subsequently withdrawn.

The CNB case file data represented contemporaneous records of trafficking cases and contained information on both the details of the case and the characteristics of the perpetrator. In particular, the dataset contained information on:

- a. Drug type trafficked;
- b. Net and gross weights of drug trafficked;
- c. Date of arrest;
- d. Place of arrest;
- e. Trafficker's age, gender, race, citizenship, employment status at time of arrest, prior drug offence history at time of arrest.

As the CNB case files covered only trafficking cases detected by the authorities, one limitation of this dataset would be that the cases in it might not be fully representative of the overall universe of trafficking cases.

Overview of Methodology Used for this Study

In view that capital punishment for drug trafficking had been introduced in Singapore in the form of a mandatory sentence, we focussed on estimating the effects associated with the implementation of the legislative changes, rather than the effects of execution events or changes in the execution rate. Besides the mandatory nature of the death penalty during the time period examined in this study, it should also be noted that unlike jurisdictions in the United States, Singapore does not have a history of publicising executions. As such, it does not appear plausible that potential offenders in Singapore would make decisions based on execution events or fluctuations in the execution rates that would be hard for them to deduce from available information.

On the other hand, the implementation of legislative changes is typically publicised through multiple mediums by the Singapore Government and hence, would more likely be information known to potential offenders.

In theory, the staggered timing of the MDA amendments introducing the death penalty for the various drug types could potentially serve as “natural experiments” that could be used to identify the deterrent impact of the introduction of MDP for a particular drug type. In particular, one potential approach would be to adopt a “difference-in-differences” regression modelling approach. In this approach, trafficking cases for the drug type where there had been a change in capital punishment regime (“treatment group”) would be compared against a “control group” consisting of trafficking cases for another drug type where there had been no change in the capital punishment regime during the study period. The inclusion of the control group would help account for the effects of overarching trends in drug trafficking/enforcement activities (e.g., changes in scale of drug syndicate operations in the region during the period, changes in intensity and/or effectiveness of enforcement efforts) that could have also affected drug trafficking activities in Singapore during the study period.

The original intention of the study was to examine the impacts of all of the MDP amendments introduced in the 1990s via a “difference-in-differences” regression modelling design, using heroin trafficking cases as the control group. However, it was feasible to utilise this approach only for cannabis trafficking due to the low incidence of cases for the other drug types for which the MDP was also introduced in 1990s. While we were still able to do some before-and-after comparisons for opium trafficking, we were forced to drop our plans to analyse trends in trafficking pre- and post- implementation of MDP for cannabis resin, cannabis mixture, cocaine, and methamphetamine as there were insufficient cases (i.e., lack of data points) for these drug types for robust analysis.

Analysis for Cannabis Trafficking

The mandatory death penalty for trafficking involving more than 500g of cannabis went into effect on 15 January 1990.

A preliminary examination of the data for cannabis (see Table 2) suggested that the proportion of cannabis traffickers who trafficked above the capital threshold of 500g remained similar in the four years before (25%) and the four years after (24%) the introduction of MDP for cannabis. The average net weight trafficked was lower after the introduction of MDP, albeit not statistically significant so. However, it could be argued that such a comparison might be overly simplistic and might not fully reflect the deterrent effect of the introduction of MDP as there might have been confounders. These confounders, such as changes over time in the profile of traffickers, overarching time trends in drug trafficking/enforcement activities (e.g., changes in scale of drug syndicate operations in the region during the period, changes in intensity and/or effectiveness of enforcement efforts etc.) could have obfuscated the deterrent effect associated with the introduction of the MDP.

Table 2. Summary Statistics for Cannabis Trafficking Cases Before and After Introduction of MDP for Cannabis

	4-year window before introduction of MDP (Number of Traffickers=101)	4-year window after introduction of MDP (Number of Traffickers=101)	Change
% of cannabis traffickers who trafficked net weights above 500g	25%	24%	-1%
Average net weight trafficked	1,559g	1,103g	-456g

Note: Differences between the two time periods not statistically significant.

In view of the possible existence of confounding factors, we adopted a “difference-in-differences” regression modelling approach that compared trends in trafficking cases for cannabis (“treatment group”) four years pre- and post- introduction of the MDP for cannabis against trends in trafficking cases for heroin (“control group”) over the same time period. This approach would help us quantify the deterrent effect of the introduction of MDP on cannabis trafficking behaviour in a more sophisticated and rigorous manner.

To implement the “difference-in-differences” approach, we estimated the following regression model:

$$Y_i = \mu + \gamma G_i + \delta T_i + \tau G_i T_i + \beta X_i + \varepsilon_i$$

Where

- $Y_i=1$ if net weight of drug trafficked was above capital threshold, i.e., 500g for cannabis (treatment group) and 15g for heroin (control group); 0 otherwise;
- $G_i=1$ if drug type trafficked was cannabis; 0 if drug type trafficked was heroin;
- $T_i=1$ if date of arrest was on or after 15 January 1990 (date of commencement of MDP for cannabis); 0 if date of arrest was before 15 January 1990;
- X_i = Trafficker’s characteristics such as age, gender, race, citizenship, employment status at time of arrest, prior drug offence history at time of arrest, as well as whether arrest took place at or near a border checkpoint.

In essence, the estimate for τ (i.e., the coefficient for the interaction term between G_i and T_i) would give us the estimated deterrent effect for the introduction of MDP for cannabis. The binary variable G_i accounted for time-invariant differences between cannabis and heroin trafficking cases, T_i accounted for general trends in the drug trafficking landscape in the four years before and after 15 January 1990, while X_i helped to account for drug trafficker characteristics that might also have affected the traffickers' decisions.

Table 3 summarises the findings from the “difference-in-differences” analyses, which suggested that the introduction of MDP for cannabis might have reduced the probability that cannabis traffickers would choose to traffic above the capital threshold for cannabis in the four years immediately following the change in the sanction regime by around 15 to 19 percentage points. These findings suggest that the presence of MDP might have been a salient consideration to traffickers and helped to deter them from trafficking large quantities of cannabis. Our analyses (results not shown in Table 3) also suggested that traffickers who had prior convictions for drug offences were less likely to traffic cannabis in amounts above the capital threshold. This could imply that the traffickers who likely had better knowledge of the law and the drug trade in Singapore were more cognisant of the consequences of carrying large amounts of drugs and hence, adjusted their decisions accordingly.

Table 3. “Difference-in-Differences” Estimates for the Deterrent Effect for the Introduction of MDP for Cannabis (Based on 4-year Windows Pre- and Post-Introduction of MDP)

	Model 1 (without trafficker characteristics)	Model 2 (with trafficker characteristics)
Reduction in probability of trafficking cannabis with net weights above capital threshold (500g)	- 15 ppt*	-19 ppt**

Notes: ppt=percentage points; *significant at 10% level;

**significant at 5% level; standard errors clustered by case identifier.

Besides the models described in Table 3, we also estimated alternative regression models using gross weights instead of net weights to define the dependent variable, as well as using other timeframes (e.g., five years pre- and post-, three years pre- and post-), to test the robustness of our findings. These alternative models yielded similar findings, suggesting that the findings were quite robust to changes in specifications. In addition, as per the standard practice for the methodology adopted, we also conducted placebo tests involving “artificial” treatment dates/groups – these tests suggested the parallel trends assumption needed for the “difference-in-differences” approach to be valid was likely not violated.

Analysis for Opium Trafficking

In response to concerns over large increases in opium production in the Golden Triangle in the late 1980s and fears that opium might become a cheaper alternative drug for heroin addicts, the Singapore Government decided to introduce the death penalty for opium trafficking (Jayakumar, 1989). The mandatory death penalty for trafficking in more than 1,200g of opium went into effect on 15 January 1990.

The low incidence of opium trafficking in the years both before and after the introduction of MDP for opium meant that, unlike the case for cannabis, it was not technically feasible to adopt a more sophisticated statistical modelling approach that could also account for confounders, such as changes in the profile of the traffickers and overarching time trends in drug trafficking/enforcement activities, to produce more robust results.

An examination of the data for opium indicated that the proportion of opium traffickers who trafficked above the capital threshold of 1,200g remained similar in the four-year windows before and after the introduction of MDP for opium. While the proportions of traffickers trafficking above the threshold remained similar, we also observed that the introduction of MDP was associated with a 66%

reduction (i.e., a decrease of 27,000g) in the average net weight of opium trafficked by traffickers, which is consistent with the notion that the introduction of MDP might have helped to reduce the quantity of opium that traffickers chose to traffic in Singapore during this period (see Table 4).

Table 4. Summary Statistics for Opium Trafficking Cases Before and After Introduction of MDP for Opium

	4-year window before introduction of MDP (Number of Traffickers=25)	4-year window after introduction of MDP (Number of Traffickers=28)	Change
% of opium traffickers who trafficked net weights above 1,200g	80%	78%	-2%
Average net weight trafficked	40,700g	13,700g	-27,000g**

Note: ** Difference is statistically significant at 5% level

Conclusion

While previous studies on the deterrent effect of capital punishment have largely focused on quantifying the impact of the death penalty on homicide rates using aggregated data, this study has examined the deterrent impact of the death penalty on drug trafficking using individual case data and represents one of the first efforts in the empirical capital punishment literature to look at drug trafficking.

Our findings are consistent with the hypothesis that the introduction of MDP for the trafficking of cannabis and opium had a deterrent effect on trafficking behaviour for these drug types in Singapore. In particular, our analyses suggested that once potential confounders such as changes in the profile of cannabis traffickers and overarching time trends in trafficking/enforcement activities were accounted for, the introduction of MDP for cannabis in 1990 was associated with a substantial reduction in the probability that cannabis traffickers chose to traffic above the capital threshold for

cannabis in the four years following the sanction regime change. This suggests that the introduction of MDP for cannabis might have been a salient consideration to traffickers and helped to deter them from trafficking large quantities of cannabis. We also found that the introduction of MDP for opium in 1990 was associated with a large reduction in the average net weight trafficked for opium, which again is consistent with the idea that introduction of MDP for opium in 1990 likely had a deterrent effect on trafficking behaviour.

Hence, based on these findings, one could argue that the introduction of MDP for drug trafficking in Singapore likely affected drug traffickers' decision making process and helped to deter them from trafficking larger quantities of drugs in Singapore.

Acknowledgements

The author would like to thank the Central Narcotics Bureau for providing the data used in this study.

References

- Dezhbakhsh, H., Rubin, P.H., & Shepherd, J.M. (2003). Does capital punishment have a deterrent effect? New evidence from postmortem panel data. *American Law and Economics Review*, 5(2), 344-376.
- Donohue, J.J., & Wolfers, J. (2005). Uses and Abuses of Empirical Evidence in the Death Penalty Debate. *Stanford Law Review*, 58(3), 791-845.
- Donohue, J.J., & Wolfers, J. (2009). Estimating the Impact of the Death Penalty on Murder. *American Law and Economics Review*, 11(2), 249-309.
- Fagan, J. (2006). Death and Deterrence Redux: Science, Law and Causal Reasoning on Capital Punishment. *Ohio State Journal of Criminal Law*, 4, 255-321.
- Grogger, J. (1990). The deterrent effect of capital punishment: An analysis of daily homicide counts. *Journal of the American Statistical Association*, 85(410), 295-303.
- Katz, L., Levitt, S.D., & Shustorovich, E. (2003). Prison conditions, capital punishment, and deterrence. *American Law and Economics Review*, 5(2), 318-343.

- Kovandzic, T.V., Vieraitis, L.M., & Boots, D.P. (2010). Does the death penalty save lives? New evidence from state panel data, 1977 to 2006. *Criminology and Public Policy*, 8(4), 803-843.
- Land, K.C., Teske, R.H.C. Jr, & Zheng, H. (2009). The short-term effects of executions on homicides: Deterrence, displacement, or both? *Criminology*, 47(4), 1009-1043.
- Mocan, H.N., & Gittings, R.K. (2003). Getting off death row: Commuted sentences and the deterrent effect of capital punishment. *The Journal of Law and Economics*, 46(2), 453-478.
- Mocan, H.N., & Gittings, R.K. (2010). The impact of incentives on human behavior. Can we make it disappear? The case of the death penalty. In *The Economics of Crime: Lessons for and from Latin America*, Rafael Di Tella, Sebastian Edwards, and Ernesto Schargrodsky, Eds, 379-418. Chicago: University of Chicago Press.
- National Research Council. (2012). *Deterrence and the Death Penalty*. Committee on Deterrence and the Death Penalty, Daniel S. Nagin and John V. Pepper, Eds. Committee on Law and Justice, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.
- Roeder, O., Eisen, L-B., & Bowling, J. (2015). *What caused the crime decline?* New York: Brennan Center for Justice at New York University School of Law.
- Shepherd, J. (2004). Murders of passion, execution delays, and the deterrence of capital punishment. *The Journal of Legal Studies*, 33(2), 283-321.
- Jayakumar, S. (1989). *Singapore Parliamentary Debates, Official Report (30 November 1989)*, vol 54 at cols 862-892. Retrieved from http://sprs.parl.gov.sg/search/topic?reportid=007_19891130_S0002_T0005.
- Zimmerman, P.R. (2004). State executions, deterrence, and the incidence of murder. *Journal of Applied Economics*, 7(1), 163-193.

About the Author:

Dr Yee Fei Chia, an economist by training, is currently a Director in the Research & Statistics Division, Ministry of Home Affairs, Singapore. Her previous experience in the Singapore Public Service included stints in the Ministry of Trade & Industry, Ministry of Health, as well as the Central Provident Fund Board. Prior to joining the Singapore Public Service, Yee Fei was an Assistant Professor of Economics based in the United States. Yee Fei holds a PhD in Economics from the University of Toronto.

The Impact of Deterrence on the Decision-Making Process of Drug Traffickers

Jasmin Kaur¹, Kah Shun Teo² & Salina Samion²

Singapore Prison Service¹ & Central Narcotics Bureau²

ABSTRACT

This study looks at the impact of deterrence measures such as risk certainty, severity and salience on the decision-making process of individuals who considered drug trafficking activities. A two-phase study was conducted. In Phase 1, a mixed-method qualitative study was completed, where drug traffickers were interviewed to understand their decision-making process, and focus group discussions were held for offenders both with and without drug trafficking convictions. In Phase 2, a quantitative study, measuring the key constructs from Phase 1, was carried out. Quantitative surveys were administered to both drug traffickers and other offenders who were sentenced to imprisonment from 2013 to 2018. The key findings showed that (1) one's risk perception was related to sanction awareness and impulsivity, and (2) trafficking behaviour was influenced by aspects of risk perception such as risk certainty and individual factors (i.e., criminal thinking). The findings point to the importance of factors such as sanction awareness and risk certainty in one's drug trafficking actions, while taking into account individual, contextual and situational factors. These factors influence both the absence of trafficking behaviour as well as the restriction of trafficking behaviour amongst drug traffickers.

Introduction

The concept of deterrence has shaped criminal laws and policies over the years. However, the evidence that deterrence prevents or reduces crime is inconclusive, with both proponents and critics of the theory. Drug trafficking, which refers to the selling and transferring of drugs, is a criminal behaviour that is usually associated with tough punishments. In certain jurisdictions, like Singapore, the deterrence element is also applied in the form of its tough laws that include the death penalty. Hence, it is crucial to study the impact of deterrence on the decision to traffic drugs. Having a comprehensive understanding of the psychological make-up and decision-making process undertaken

by drug traffickers can then inform prevention and supply reduction efforts.

Studies of decision-making in criminal behaviour entail the investigation of how offenders perceive the consequences or risks of various lines of action, and of how these perceptions shape their choices about participation in the criminal behaviour in question. A brief review of the literature on deterrence theory as well as the individual, situational, and contextual factors that could influence decision-making was undertaken, relating this to the possible understanding of drug-traffickers' decision-making process.

Subjective Risk Perception and Deterrence

Decisions about the involvement in criminal behaviour include forming expectations about the future, among other things. These expectations concern potential risks (costs, disincentives), as well as potential rewards (benefits, incentives). However, individuals differ in their ability and willingness to balance the various risks and rewards related to criminal actions (Jacobs, 2010). As such, the conditions under which many offenders commit their crimes appear to alter their subjective probabilities of the future and reward-punishment ratios.

An individual's perception of risks associated with committing criminal behaviour play an important role in the decision-making process to engage in crime. These risks include detection by authorities (degree of certainty), the unpleasantness of the resultant punishment (severity), the importance of the consequences (salience) and the swiftness of punishment (celerity). Specifically, perceived risk certainty refers to the individual's estimate of the likelihood of being detected, arrested, convicted, and incarcerated upon committing an offence, while perceived risk severity refers to the severity of consequences (e.g., length of sentence) and perceived risk salience refers to the importance of the risk to their decision (Apel, 2013; Bouffard 2015; Gutnik et. al., 2005).

The premise of deterrence, following the rational choice theory, is that if penalty is certain, severe, and swift, a rational person will undertake a cost-benefit analysis before engaging in crime. Having done so, the individual would be deterred from violating the law if the loss is greater than the gain (Ward, Stafford & Gary, 2006). Decker, Wright, and Logie (1993) observed that there is no direct relationship between sanctions and criminal action as these two variables must be linked through the

intervening variable of subjective perceptions of the risks and perceived rewards of committing the offence in a group of burglars.

“Restrictive deterrence” is the process whereby offenders continue to offend but limit the frequency, magnitude or seriousness of their offences to avoid punishment (Gibbs, 1975 as cited in Moeller, Copes & Hochstetler, 2016). This would include manipulating the severity of the consequences that may follow their crimes by committing crimes of less seriousness (Jacobs, 2010). An understanding of the decision-making process of individuals who limit their drug trafficking activities through restrictive deterrence would also buttress the value of deterrence and legal consequences that assist to minimise this criminal behaviour.

In summary, literature suggests that subjective risk perceptions inform a large part of the criminal decision making process. As such, therein lies a possibility that risk perceptions can be carefully managed by criminal justice authorities through a combination of legislation and more publicised enforcement (e.g., more visible police presence, stricter charging and sentencing practices) to deter potential criminal behaviour. While this may not result in complete prevention of crime, it could lead to crimes of lower frequency and magnitude.

Current research on deterrence shows that the association between subjective risk perceptions and criminal behaviour is impacted by other influencing factors. The lack of understanding of these influencing factors (such as self-control) leads to a misjudgement of the importance of the risk perception-crime link (Paternoster, 2010; Pratt et. al., 2006). Thus, other influencing factors should be taken into consideration when studying the impact of deterrence on decision-making of criminals.

Individual Factors Influencing Decisions for Drug Trafficking

Personality

Individual personality characteristics are found to be relevant factors that influence the decision-making of offending behaviours such as drug trafficking. Specifically, thrill-seeking traits and low self-control were related to drug trafficking activities (Little & Steinberg, 2006; Morselli & Tremblay, 2004). A study by Burt and Simons (2013) found that individuals who present with thrill seeking traits and impaired self-control had a higher likelihood of criminal offending. Additionally, the study by Little & Steinberg (2006) found that adolescents' impulse control restrained their frequency of marijuana selling, and adolescents' resistance to peer influence are less likely to be involved in marijuana selling. Similarly, Shammas, Sandbery and Pedersen (2013) highlighted that several drug traffickers spoke of thrills when managing or handling large operations, as well as the sensual attraction of doing higher-level sales of drugs.

Morselli & Tremblay (2004) examined the impact of low self-control and personal organisation features on the criminal earnings of a sample of offenders who were previously involved in market crimes such as drug trafficking. The findings underlined the benefits of low self-control in organised crime markets that enable the offender to thrive in such competitive settings. Specifically, the authors highlighted that the behavioural mechanisms characteristic of low self-control (impulsive, simple-task oriented, risk seeking, physicality, self-centred, and short-tempered) can all be interpreted as significant assets (quick thinking, uncomplicated, risk seeking, action-oriented, individualistic, and unforgiving-ruthless) in the involvement of competitive market crimes.

Criminal Thinking Patterns

Individuals are able to engage in criminal activities by using techniques of neutralisation to negate the criminality of their actions. Some examples of neutralisation techniques are denial of responsibility, denial of injury, denial of the victim, condemnation of the condemners, appeal to higher loyalties, everyone else is doing it, and claim to entitlement (Gottschalk & Smith, 2011; Heath, 2008; Sykes & Matza, 1957). Table 1 highlights the various types of neutralisation techniques employed by a group of middle-class drug traffickers in a study by Curcione (1997).

Table 1. Description of Neutralisation Techniques

Neutralisation techniques	Examples
Denial of responsibility	<i>"Customers came willingly to him for drug supplies"</i>
Denial of injury	<i>"Majority of clients had used for years without ill effects"</i>
Condemnation of the condemners	<i>Highlighting fraudulent practices in the conventional occupational world</i>

Frese & Gielnik (2014) highlighted the cognitive bias of overconfidence/over-optimism in criminal acts. Overconfidence refers to the individuals' tendency to overestimate their skills and abilities, in particular with regard to making accurate forecasts, having higher abilities relative to others, and becoming successful (Koellinger et. al. 2007). According to Simon and Shrader (2012), it is possible that overconfidence/over-optimism increases criminal entrepreneurs' impetus to initiate action and to persevere even in the presence of high failure rates and low expected returns. The presence of this criminal thinking can potentially shed some understanding to why criminals may persist in the offending behaviour, and are not deterred by severe penalties. The perception of low likelihood of being caught may also possibly contribute to their confidence that the offending is viable despite the risks.

Situational and Contextual Factors Influencing Drug Trafficking

A review of sanctions and perceptions of criminal behaviours by Apel (2013:88) suggested that there are “situational factors” that will “result in an offender’s contemplation” of committing a criminal offence. Apel defines ‘activation of intent’ as “the more immediate needs and desires which impel offenders from a state of indifference to a state of criminal motivation”. These factors also influence the way in which risk perceptions are utilised. For example, Apel expounded that a re-occurring “theme emerging from offender interviews, is the individuals’ common experience of a situational event that results in an intense, pressing need for money, which borders on desperation” (Apel, 2013:88).

In relation to drug trafficking, several researchers who have sought to understand the motivations of drug traffickers in the face of severe negative consequences, routinely point to several contextual factors such as the experience of economic deprivation, poor educational opportunities, and lack of attachment to the workforce (Macit, 2017; Shamma, Sandberg & Pedersen, 2014; VanNostrand & Tewksbury, 1999). Researchers have consistently determined that that individuals’ initiation to drug trafficking resulted primarily from financial need, and the perceptions of obstructed opportunities for substantial and gainful employment. These individuals saw drug trafficking as the fastest and only means of gaining financial survival and stability during these times of desperation (VanNostrand & Tewksbury, 1999).

Past research has also demonstrated that most drug traffickers were motivated by the recognition and respect achieved from trafficking drugs (Mohamed & Fritsvold, 2007; VanNostrand & Tewksbury, 1999). The sense of power associated with trafficking gave traffickers the freedom to pursue a measure of social status that other career

choices would not have provided. Coupled with the recognition and respect earned, drug traffickers often report that the extravagant lifestyles that come with the easy money earned from trafficking was what motivated them to enter and maintain their drug trafficking activities (Shamma et. al., 2014). Hence, “crime often provides the most efficient means available to resolve an offender’s present financial crisis” (Apel, 2013:88; see also: Mohamed & Fritsvold, 2007; VanNostrand & Tewksbury, 1999).

In summary, it is necessary to understand both (1) the impact of subjective risk perception/deterrence, as well as (2) other variables that would influence one’s decision making to traffic drugs. The current study thus examined offenders’ risk perception in terms of certainty, severity, salience and celerity in their decision to commit drug trafficking offences vis-a-vis their individual psychological, situational and contextual factors. Given that this was the first time that decision-making of drug traffickers was studied extensively, an exploratory qualitative approach preceded the quantitative study of the relationship between risk perception, individual factors, contextual factors and situational factors.

Methodology

This study had two phases. First, in Phase 1, an exploratory multi-method qualitative study was conducted to identify the decision-making process of individuals convicted of drug trafficking in Singapore. The first part of Phase 1 included semi-structured face-to-face interviews with 22 drug traffickers who were convicted within the past 2 years. The second part of Phase 1 comprised four sessions of face-to-face focus group discussions (FGDs) with a total of 28 offenders of varying offending backgrounds.

Guided by past literature, the semi-structured interviews aimed to understand the decision making process of drug traffickers at different

time points of their drug trafficking experience. The three main drug trafficking experiences of interest to the researchers were: (1) the participants' first trafficking experience; (2) the participants' subsequent decision to traffic drugs (or not traffic drugs); and (3) the decision-making process during the participants' current offence that led to arrest. The current study looked primarily at the decision-making process related to the current offence.

In order to minimise recall bias during the interview, the interview protocol was modelled after the procedures of critical decision method (CDM) (Klein, Calderwood & MacGregor, 1989; Fisher and Geiselman, 1992). For example, while obtaining the participants' unstructured accounts of their trafficking experience, timelines and common decision points (e.g., planning of trafficking) were identified to guide during the interview. Questions were also crafted using various methods of critical decision interview probes, like using environmental cues. Each interview was conducted with one participant at a time, by an interviewer and a scribe. The interviews lasted between one to two hours. The interviews were transcribed ad verbatim by two coders per transcription and the team gathered for a discussion to ensure inter-coder reliability. The research team then undertook a content approach to analyse the findings and generated initial themes.

Once the initial themes were identified, focus group discussions were held with 28 offenders (convicted of various offences such as drug trafficking, smuggling of other contraband items, drug consumption / possession) to confirm and refine some of the themes. These focus groups were conducted in groups of 6 to 8 participants per group. Efforts were made to minimise the methodological issues of confidentiality and to ensure that participants were comfortable to provide their own perspectives through the use of a deliberate protocol. This led to the generation of initial hypotheses and confirmation of the quantitative survey to capture the main areas of influence in the decision-making process to traffic drugs.

Subsequently, in Phase 2, a quantitative survey¹ was administered to 297 male Singaporeans who were admitted into Singapore Prison Service (SPS) from 2013 onwards. 163 of the participants had been convicted of drug trafficking offences, while the other 134 participants were in SPS for other offences such as smuggling, theft and drug consumption. The survey examined the subjective risk perception of the offenders (i.e., severity, certainty, salience and celerity of sanctions) at the time of committing their previous offence, personality factors (i.e., impulsivity, thrill-seeking) and criminal thinking (i.e., justification, criminal rationalisation), as well as contextual and situational factors related to drug trafficking. The quantitative study aimed to understand the impact of subjective risk perception to the decision-making process undertaken to traffic drugs.

Informed consent was sought from all participants to participate in the study and surveys were available in different languages for easy understanding of the participants. The surveys were collected in groups of 30 offenders and members of the research team were present to answer any questions or clarify misunderstandings from the survey questions. Confidentiality of responses was maintained throughout the data collection process.

Results

Key Findings from Phase 1: Qualitative Study

The qualitative study identified the following key factors that influenced the drug traffickers' involvement in drug trafficking activities. This included (1) individual factors such as thrill-seeking/impulsivity and criminal thinking patterns; (2) contextual factors such as a deviant social network and exposure to a client base of drug abusers; and (3) situational factors such as financial strain, desire for money and the need to sustain their own drug behaviour.

Individual Factors

Participants shared that they felt the thrill and satisfaction from the trafficking activities and continued their offending behaviour despite the consequences by engaging in cut off thinking.

- C10:** “Sometimes, you got contacts. Then, when you are packing the packs, you feel the thrill. It’s like your profession. I feel like thrill la.”
- T2:** “Don’t know, maybe...own satisfaction, something that I want to do, something that I want to do for myself.”
- T6:** “No I will be ok la, before I think too far too far. I might get scared right? So, I don’t care la just just do first la.”
- F5:** “Part of our gang activity, earning quite good money.... Never think about it [consequences], it’s just like a business. You have chosen this life, you know what is the consequences and you just do it.”

Participants shared that the company that they maintained was mainly deviant and had access to a client base to supply drugs.

Contextual Factors

- T2:** “Company that I mix with la. maybe ah... in my leisure time la...party this and that. Things like that, people that you hang around with...the gangsters, the nightlife.”
- C12:** “Start to feel like not going home, start to get to know bad company that teach me how to play drugs.”
- C6:** “Part of my gang ah. I took it from ah... from the senior one.”
- C12:** “It’s like I consume drugs, you consume drugs, then maybe your supplier kena caught so you just ask from me automatically because you know I also consume.”
- T6:** “I mix with the people who consume drugs, who get into these kinds of thing la. So easier for me and easier for them also at that point of time.”

Participants shared that the ability to make money easily was an attractive feature of trafficking drugs.

They did this for several reasons, to clear debts, pay for their daily necessities and drug use as well as to live a luxurious life.

Situational Factors

- T5:** “All the bills...because of the bills, and my wife keep on pestering me, and I made a decision to make a loan, from a loanshark ah. Yah. To clear the debts ah, which really stupid la.”
- C4:** “Never think too much lah, I just think ah, ok lah... grab the offer lah since I got no job ah. I take this thing can help me to survive for certain period.”
- T4:** “I go enjoy la...I... ah, go drink la. Everyday drink... I think I always go coffee shop, I drink my Carlsberg, got 10 cans... Somemore night club drink Chivas...I spend 1000 la a day...I always gamble what, today win tomorrow lose, today win tomorrow lose, like that only.”
- T2:** “To spend money la. Like I said, greed la...you have all these luxuries, you don’t have to work so damn hard under people’s supervision, under people’s shout and call like that...you can buy what you want, eat what you want, spend what you want...”
- C3:** “We all smoke then we must take many what. Some smoke, some sell la. The money come ah, we rolling back.”

Decision-Making Process of Drug Traffickers

Drug traffickers demonstrated the use of rational thinking in making their decision to traffic drugs in the current offence. The analysis demonstrated the presence of two groups of drug traffickers, those with awareness of the legal consequences and those who showed a limited understanding of the legal consequences. For those who displayed sanction awareness, they mitigated their risk perceptions by engaging in a neutralising process through applying criminal thinking (i.e., having a false sense of confidence, minimising the consequences to themselves) as well as engaging in extensive planning in their operations to restrict their likelihood of being caught. These traffickers also

limited the amount they trafficked to minimise the potential punishment. The group that had limited awareness of the legal consequences generally engaged in minimal planning or trafficked based on the orders given to them.

- C6:** “I never once think about getting caught... cause I do, I really do it safely ah.”
- F3:** “When the money keeps coming in, then you see money at present time, fear go away.”
- T6:** “I see a lot of people on the inside already and they are in for drug trafficking so, I was thinking ok if I get caught la is five years.”
- F9:** “Severe la. Just tell ourselves that we might be lucky, we won’t get caught.”
- F5:** “The risk is known...I don’t deal with people heavy on drugs, I deal with those who are able to take care of themselves, it’s a small circle.”
- F1:** “Boss say to deliver to who, what time all that, just go. Along the way that you think of ways, like that is better...But packaging wise is done by the boss, as his way of making sure I won’t get caught. It’s because of the value of the things but not up to me to do.”

- F28:** “But I am scared. That’s why didn’t sell. Later kena (get) sentence 5 years and rotan (caned).”
- F20:** “Never thought, scared. Scared of the high sentence. 1st time 5 years 5 strokes, it is scary enough.”
- F18:** “For me, drug trafficking is a higher sentence than consumption, it’s a risk.”
- F19:** “That’s why our percentage of getting caught is higher than getting away.”
- F21:** “Very likely. Because I think it is easy to get caught, too easy.”

Other reasons included the impact drug trafficking would have on their family relationships and the immorality of drug trafficking.

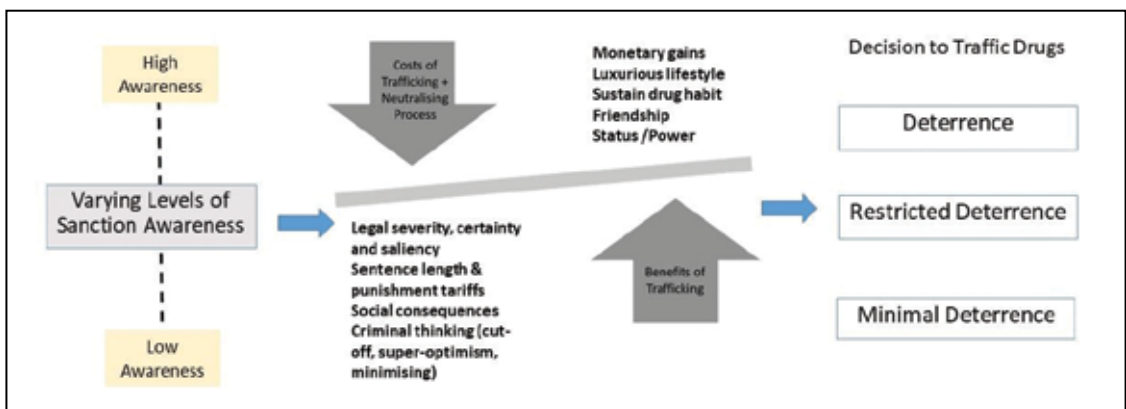
- F18:** “My mindset was, I only take drugs, I never think of trafficking. When I take drugs, I still thinking about my family, my mum and all that.”
- F27:** “I didn’t do because it is wrong.”
- F23:** “To me, you can take, but don’t sell. Don’t harm other people.”
- F25:** “Cigarettes don’t harm people. Selling drugs harm people.”

Decision-Making Process of Non-drug Traffickers

With awareness of legal consequences, non-traffickers stated that the legal consequences were the primary reason that prevented them from engaging in drug trafficking despite the financial gains that were possible.

Figure 1 illustrates the various factors that determined the decision-making of offenders to traffic drugs. It was evident that drug traffickers and non-traffickers engaged in a deliberate choice when they made the decision to traffic drugs.

Figure 1. Decision-making Process to Traffic Drugs



Key Findings from Phase 2: Quantitative Study

Table 2 outlines some key characteristics of the offenders who engaged in trafficking behaviour and those who did not. The trafficker group was further split into a group of restricted traffickers who stated that they limited the amount of drugs that they had trafficked and a group of unrestricted traffickers who did not limit the amount of drugs they trafficked. Differences in age, education level and drug consumption within the year prior to their incarceration was evident between non-trafficking offenders and restricted traffickers. Additionally, there were also individual differences in power orientation, criminal rationalisation and trust of others amongst these two groups. Both trafficker groups had longer sentences and had higher levels of impulsivity as compared to the non-trafficker group.

Table 3 provides the descriptives of sanction awareness and various aspects of subjective risk perception for the groups of restricted traffickers, unrestricted traffickers and non-traffickers. The restricted trafficker group had higher levels of sanction awareness compared to the unrestricted trafficker group. Additionally, the unrestricted trafficker group endorsed lower levels of risk certainty as compared to the non-trafficker group.

Relationship between Sanction Awareness and Risk Perception

A regression analysis was conducted to determine the relationship between sanction awareness and overall risk perception, controlling for impulsivity. All variables have been centred to reduce multicollinearity.

Table 2. Key Characteristics of Traffickers vs. Non-traffickers

	Traffickers		Non-traffickers (C)	Pairwise Comparison (Adj. <i>p</i>)
	Restricted Traffickers (A) N = 99	Unrestricted Traffickers (B) N = 64	N = 134	
Mean Age	44.79	40.97	45.97	C > A**
Primary Education and below	22.2%	31.3%	41.8%	C > A**
% Unemployed	17.2%	26.6%	11.9%	C < B*
Marital Status – Single	41.4%	39.1%	44.0%	n.s.
Earned ≤ \$2000 Legal Employment	72.3%	59.2%	74.4%	n.s.
Past Year Drug Consumption	93.9%	85.7%	84.3%	C < A*
Sentence Length (Days)	3619	3482	2281	C < A*** & B***
<i>Individual</i>				
Mean Impulsivity	2.22	2.23	2.08	C < A* & B*
Mean Thrill Seeking Propensity	4.18	4.01	3.80	n.s.
Mean Trust in Others	3.06	3.05	3.11	C > A*
<i>Criminal Thinking</i>				
Entitlement	2.45	2.31	2.37	n.s.
Justification	2.20	2.08	2.05	n.s.
Power Orientation	2.62	2.44	2.39	C < A*
Criminal Rationalisation	2.75	2.63	2.51	C < A*
Personal Irresponsibility	2.28	2.20	2.33	n.s.
<i>Contextual</i>				
Access to Client Base	45.5%	46.9%	-	$\chi^2(1) = .032$ (n.s.)
Negative Influence from Others	28.3%	23.4%	-	$\chi^2(1) = .470$ (n.s.)
<i>Situational</i>				
Sustain Drug Habit	47.5%	57.8%	-	$\chi^2(1) = 1.663$ (n.s.)
Desire for Lavish Lifestyle	45.5%	53.1%	-	$\chi^2(1) = .916$ (n.s.)
Financial Strain	62.6%	57.8%	-	$\chi^2(1) = .378$ (n.s.)

Note: * = Adj. *p* < .05, ** = Adj. *p* < .01, *** = Adj. *p* < .001, n.s. = χ^2 is not significant.

For non-traffickers, sanction awareness, impulsivity and their interaction explained 25.0% of the variance (Adj. $R^2 = .250$, $F = (3, 122) = 14.877$, $p < .001$). No main effect impulsivity ($\beta = -.143$, $t(122) = -1.781$, $p > 0.05$) on risk perception was observed or interaction between sanction awareness and impulsivity on risk perception were not observed ($\beta = -.253$, $t(122) = -.374$, $p > 0.05$). However, a main effect sanction awareness on risk perception was observed ($\beta = .457$, $t(122) = 5.603$, $p < .000$), where higher awareness predicts higher risk perception.

For traffickers, risk awareness, impulsivity and their interaction explained 14.3% of the variance (Adj. $R^2 = .143$, $F = (3, 155) = 9.755$, $p < .001$). As shown in Table 4, the results indicated significant main effect of sanction awareness ($\beta = .463$, $t(155) = 5.175$, $p < .001$), where higher awareness predicted higher risk perception. Significant interaction effect of impulsivity and risk awareness ($\beta = -.208$, $t(155) = -2.317$, $p < .05$) on risk perception was found among the traffickers. No main effect was observed for impulsivity on risk perception ($\beta = -.091$, $t(155) = -1.227$, $p > .05$).

Table 3. Sanction Awareness and Risk Perception of Offenders

	Traffickers		Non-traffickers (C) N = 134	Pairwise Comparison (Adj. p)
	Restricted Traffickers (A) N = 99	Unrestricted Traffickers (B) N = 64		
Awareness of Sanctions	23.3	21.9	22.8	A > B*
Mean Risk Certainty	3.21	3.05	3.27	C > B*
Mean Risk Severity towards Self	3.23	3.16	3.28	n.s.
Mean Risk Severity towards Others	3.30	3.26	3.28	n.s.
Mean Risk Salience	2.69	2.63	2.85	n.s.
Risk Celerity	2.34	2.41	2.50	n.s.

Note: * = Adj. $p < .05$, ** = Adj. $p < .01$, *** = Adj. $p < .001$, n.s. = χ^2 is not significant.

Table 4. Regression Results of Risk Awareness and Impulsivity on Risk Perception among Non-traffickers (N= 126) and Traffickers (N=159)

Variable	B	β	t	P	F	df	p	Adj. R^2
<i>Non-traffickers</i>								
Overall Model					14.877	3, 122	.000	.250
Risk Awareness ***	6.230	.457	5.603	.000				
Impulsivity	-2.849	-.143	-1.781	.077				
Risk Awareness x Impulsivity	-1.301	-.029	-.374	.709				
<i>Traffickers</i>								
Overall Model					9.755	3, 155	.000	.143
Risk Awareness ***	4.638	.467	5.175	.000				
Impulsivity	-1.428	-.091	-1.227	.222				
Risk Awareness x Impulsivity *	-3.993	-1.320	-2.317	.022				

Note: * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

In order to explore the interaction between sanction awareness and impulsivity on risk perception among traffickers, a simple slope analysis was conducted (see Figure 2). Impulsivity was split into high impulsivity (+1 SD) and low impulsivity (-1 SD). At both high and low impulsivity, sanction awareness predicted risk perception, where high awareness led to higher risk perception (High: $\beta = .352$, $t(85) = 3.489$, $p < .01$; Low: $\beta = .388$, $t(68) = 3.502$, $p < .01$). It should, however, be noted that B is higher at low impulsivity compared to high impulsivity, thus, suggesting that low impulsivity positively amplified the relationship between risk awareness and risk perception (see Table 5).

Multinomial Logistic Regression

A multinomial logistic regression was conducted to analyse predictor variables, including demographics, individual predisposition, sanction awareness and risk perception, that predict various trafficking behaviour (restricted trafficking, unrestricted trafficking and non-trafficking). Non-traffickers was the reference group in this analysis, where variables predicting restricted and unrestricted trafficking behaviours were compared. To take into consideration the composite effect of the different set predictor variables on trafficking behaviour, they were added into the model via

Figure 2. Two-Way Interaction between Impulsivity and Risk Awareness on Risk Perception

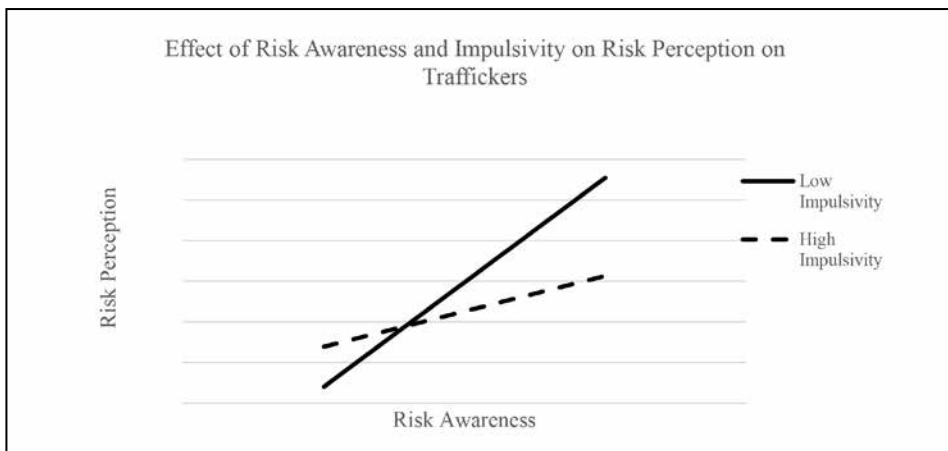


Table 5. Regression Results of Sanction Awareness on Risk Perception amongst Traffickers at High Impulsivity (N = 87) and at Low Impulsivity (N = 70)

Variable	B	β	t	p	F	df	p	Adj. R^2
<i>At high impulsivity,</i>								
Overall Model					12.173	1, 86	.001	.114
Risk Awareness**	2.593	.352	3.489	.001				
<i>At low impulsivity,</i>								
Overall Model					12.265	1, 69	.001	.139
Risk Awareness**	5.694	.388	3.502	.001				
<i>Note: * = $p < .05$, ** = $p < .01$, *** = $p < .001$.</i>								

enter method in this order: (1) demographics; (2) individual predisposition and; (3) risk awareness and perception. The final model is shown in Table 6. It explained 28.2% of the variance in trafficking behaviour and the model fit is statistically significant ($\chi^2(40) = 79.928, p < .001$).

For individual predisposition, higher rationalisation (Exp (β) = 1.062, $p < .05$) and lower denial of responsibility (Exp (β) = .881, $p < .001$) significantly predicted restricted trafficking compared to non-trafficking. Comparing restricted trafficking and non-trafficking behaviour, higher criminal rationalisation was 1.06 times more likely to be seen in a restricted trafficker compared to a non-trafficker. For sanction awareness and risk perception, sanction awareness was 1.13 times (Exp (β) = 1.130, $p < 0.05$) more likely to predict restricted trafficking compared to non-trafficking while risk certainty was 1.14 times

more likely to predict non-trafficking compared to restricted trafficking (Exp (β) = .881, $p < 0.05$). Other variables remain non-significant in the model.

On the other hand, younger participants were more likely to engage in unrestricted trafficking compared to non-trafficking (Exp (β) = .944, $p < .01$). Additionally, unemployed participants were 2.65 times more likely to engage in unrestricted trafficking compared to non-trafficking. Similar to the previous model, lower denial of responsibility (Exp (β) = .890, $p < .05$) and risk certainty (Exp (β) = .773, $p < .05$) predicted unrestricted trafficking compared to non-trafficking. It is also worthwhile to mention that impulsivity, in the final model, is approaching significance, where higher impulsivity predicted unrestricted trafficking compared to non-trafficking (Exp (β) = 1.040, $p = .056$). No other significant predictor variables are observed in the model.

Table 6. Parameter Estimates Contrasting Non-traffickers (N = 126) versus Restricted Traffickers (N = 94) and Unrestricted Traffickers (N = 61)

Predictor Variables	Non-traffickers (Ref.) vs. Restricted Traffickers					Non-traffickers (Ref.) vs. Unrestricted Traffickers				
	B	95% CI			p	β	95% CI			p
		Exp (β)	Lower	Upper			Exp (β)	Lower	Upper	
Age	.006	1.006	.969	1.044	.763	-.057**	.944	.906	.985	.007
Employment										
Unemployed	.530	1.699	.706	4.088	.237	.976*	2.653	1.034	6.809	.042
Employed (Ref.)		1.00					1.00			
Race										
Chinese	-.236	.790	.225	2.772	.713	.690	1.993	.390	10.182	.407
Malay	.193	1.213	.381	3.857	.744	.974	2.648	.554	12.652	.222
Indian	-.546	.579	.138	2.428	.455	.993	2.699	.472	15.446	.265
Others (Ref.)		1.00					1.00			
Marital Status										
Not Married	.210	1.234	.574	2.656	.590	-.225	.798	.331	1.926	.616
Married (Ref.)		1.00					1.00			
Impulsivity	.024	1.025	.989	1.061	.175	.039	1.040	.999	1.083	.056
Trust for Others	-.006	.994	.910	1.085	.886	-.049	.952	.861	1.053	.344
Risk Propensity	.022	1.023	.980	1.067	.298	.026	1.027	.976	1.079	.305
CT (Entitlement)	.006	1.006	.920	1.100	.899	.005	1.005	.907	1.113	.926
CT (Justification)	.017	1.017	.934	1.108	.690	.017	1.017	.921	1.124	.739
CT (Rationalisation)	.060*	1.062	1.007	1.121	.026	.027	1.027	.966	1.092	.395
CT (Power Orientation)	.071	1.074	.994	1.160	.069	-.004	.996	.911	1.089	.929
CT (Irresponsibility)	-.126**	.881	.812	.957	.003	-.117*	.890	.811	.976	.013
Risk Awareness	.122*	1.130	1.001	1.274	.047	-.040	.961	.844	1.094	.546
Risk Certainty	-.205*	.815	.674	.985	.034	-.258*	.773	.621	.962	.021
Risk Severity to Self	.017	1.017	.802	1.288	.891	.091	1.095	.830	1.445	.522
Risk Severity to Others	.054	1.055	.896	1.243	.520	.084	1.088	.906	1.306	.368
Risk Salience	-.116	.890	.778	1.019	.092	-.091	.913	.779	1.070	.260
Risk Celerity	-.070	.933	.756	1.150	.237	-.006	.994	.779	1.269	.962
Nagelkerke R ²						28.2%				
χ^2						79.928 (p < .001)				

Note. CI = Confidence Interval; CT = Criminal Thinking; * = $p < .05$, ** = $p < .01$, *** = $p < .001$; χ^2 = likelihood ratio tests of model.

Discussion and Implications

This study represents the first effort to understand the process in which individuals in Singapore make the decision to traffic drugs, taking into consideration individual, contextual and situational factors. The findings point to several key insights below.

Awareness of Sanctions Predicts Risk Perception of Drug Traffickers

This study demonstrated the importance of awareness of sanctions in predicting a drug trafficker's subjective risk perception. Deterrence can only be of utility if there is an accurate understanding of the sanctions involved in the criminal behaviour. Through both the qualitative and quantitative studies, it was found that awareness of sanctions was a key precipitating factor that was related to drug traffickers' subjective risk perceptions. The higher one's sanction awareness, the higher was the trafficker's subjective risk perception. Chalfin & McCrary (2017) described the importance of explicit information on the awareness of the sanctions that correspond to criminal activities such as drug trafficking. The need to advertise to the right audience for deterrence to have an impact is an important policy consideration that would increase the likelihood of subjective risk perception to be accurately informed and thus have the potential to impact criminal behaviour.

Of note is the interplay between sanction awareness and impulsivity in the subjective risk perception of drug traffickers. This shows that the impact of sanction awareness on a drug trafficker's subjective risk perception is amplified at lower impulsivity. This suggests the need to address impulsivity, especially among traffickers, in policy messaging or rehabilitation in order to improve effectiveness of sanction messages. Criminology research has also repeatedly espoused that the construct of

impulsivity is essential in understanding criminal behaviour and the findings in this study lend evidence to the importance of this construct in the interplay of sanction awareness and risk perception.

Importance of Individual, Situational and Contextual Factors in Drug Trafficking Behaviour

Individual factors, such as impulsivity and criminal thinking, play an essential part in the decision-making of offenders to traffic drugs. Individual differences in impulsivity differentiated the traffickers from the non-traffickers, with the traffickers reporting higher levels of impulsivity. Extant research on impulsivity clearly articulates its link to criminality and this is borne out in this study, with drug traffickers endorsing higher levels of impulsivity than non-traffickers, who were mainly drug abusers. This is noteworthy, given that previous research on drug abusers had found impulsivity to be associated with riskier drug use behaviours including polydrug use and needle sharing (Loxton et. al., 2008; Odum, Madden, Badger, & Bickel, 2000). Additionally higher criminal rationalisation predicted restricted trafficking compared to non-trafficking behaviour. The presence of criminal thinking to neutralise one's risk perception was also found in the qualitative study as traffickers described their use of criminal rationalisation to overcome the risk perceptions present regarding drug trafficking.

Situational factors such as the importance of financial difficulties, personal drug use have been purported as factors that result in an offender resorting to drug trafficking behaviour. The current study showed that these situational factors were present in Singaporean drug traffickers. Contextual factors that featured as important included access to a client base and presence of negative influence from

peers and family members. Through the qualitative and quantitative study, it was evident that financial gains were an important driver for both restricted and unrestricted traffickers. They engaged in criminal rationalisations and justifications in order to neutralise the risk of trafficking drugs and enjoy the financial gains. This was consistent with extant literature where drug traffickers were attracted by the luxurious lifestyle and purportedly easy money attained through drug trafficking (Shammas et. al., 2014). This addiction to the lifestyle itself served as a strong motivator to traffic drugs, as fears of losing monetary and personal gains maintained one's trafficking behaviours.

These have several implications in terms of prevention of trafficking behaviour amongst offenders. First, messaging or interventions on criminal rationalisation can be targeted at at-risk individuals or restricted traffickers in order to facilitate deterrence or desistance respectively. Second, situational and contextual factors can be addressed for high-risk individuals through providing financial assistance and avenues that encourage positive pro-social support. Additionally, links to opportunities to develop skills that would encourage productive employment opportunities can be encouraged amongst these offenders.

Importance of Risk Certainty in Decision-Making to Traffic Drugs

The deterrence literature has found that risk certainty is one of the key predictors of criminal behaviour, that is, if an individual is more likely to have high levels of certainty of being caught and punished for a criminal offence, they are less likely to commit the act. Research in deterrence indicated that the certainty of being caught is a more powerful and effective deterrent than the punishment itself (Nagin, 2013; Wright, 2010).

This finding was replicated in the current study. We found that offenders who trafficked drugs had lower levels of risk certainty than offenders who did not traffic drugs in both phases of the study. From the qualitative study, individuals who had been caught for drug consumption articulated risk certainty as one of the main reasons not to traffic drugs. This was further corroborated in the quantitative study, where both restricted and unrestricted traffickers endorsed lower levels of risk certainty than non-trafficking offenders. This lends evidence to the importance of a deterrence construct of risk certainty in deterring offenders from trafficking drugs. Efforts to deter people from trafficking can explore ways to increase perception of risk certainty.

None of the other risk perceptions (i.e., risk severity, risk salience and celerity) were significant in the current study. This may suggest that risk certainty plays a central role in deterring one from drug trafficking behaviour. Similarly, Pratt et. al. (2008) found that perceived risk certainty was a much stronger deterrent than perceived risk severity. Further research could unpack the aspects of risk certainty that differentiated trafficking behaviour, as well as, examine the impact of risk severity, salience and celerity in instances of high risk certainty. Past research had shown that the severity of punishment had a deterrent effect only if the certainty of punishment was high enough to make the severity of the punishment salient (Wright, 2010).

There are some limitations to the current study. First, offenders were asked to engage in recalling of their state of mind prior to their recent offending behaviour. While efforts were made to minimise recall bias through the use of the CDM (Klein, Calderwood & MacGregor, 1989), and by limiting participants to those who were recently convicted

for such offences, there are limitations to this procedure. It would be beneficial to conduct a prospective longitudinal study to examine the impact of incarceration and offenders' current subjective risk perception on offenders' likelihood of drug trafficking in the future. This would further buttress the understanding of the impact of deterrence on offenders' decision-making to engage in future trafficking behaviour.

Conclusion

Drug trafficking as a criminal behaviour has been studied extensively, given that it invariably plays a role in drug supply debates. One of the key questions is the impact of deterrence on the decision-making of offenders to engage in drug trafficking behaviours. The current study, looking at a sample of Singaporean offenders, has demonstrated the interplay between, individual, situational, contextual factors with sanction awareness and risk perception, specifically risk certainty in deterring non-trafficking offenders from engaging in trafficking behaviour. Also, there is strong evidence that many drug traffickers in Singapore restrict their trafficking activities to minimise the potential consequences of their drug trafficking activities, thereby lending support to the presence of restrictive deterrence.

Acknowledgements

Research Team

This paper draws from a larger study conducted by a research team comprising of Home Team Psychologists

from Central Narcotics Bureau (Teo Kah Shun, Salina Samion, Seah Wang Ling), Home Team Behavioural Science Centre (Jeffery Chin, Vivian Seah), and Singapore Prison Service (Natasha Lim, Jasmin Kaur, Shamala Gopalakrishnan).

Transcription support was provided from the research arms of Home Team Behavioural Science Centre and Psychological and Correctional Rehabilitation Division, Singapore Prison Service.

Advisors

Dr Majeed Khader, Chief Psychologist, Office of Chief Psychologist; Director of Home Team Behavioural Sciences

Mr Timothy Leo, Deputy Chief Psychologist, Office of Chief Psychologist, Director of Psychological and Correctional Rehabilitation Division, SPS

Research Advisory Panel

We would like to thank the following individuals for their invaluable insights and suggestions throughout the research process:

- a. Assistant Professor Joanne Yoong Su-Yin, NUS
- b. Dr Mathew Mathews, LKYSPP Senior Research Fellow
- c. Associate Professor (Adjunct) Long FY, NTU
- d. KC Ong, Former Chief Psychologist, MINDEF

¹ Survey covered demographic variables, drug attitudes, individual personality features, criminal thinking patterns, sanction awareness, risk perceptions (risk certainty, risk severity, risk salience, risk celerity), contextual and situation factors that were salient from the qualitative study.

References

- Apel, R. (2013). Sanctions, perceptions and crime: implications for criminal deterrence. *Journal of Quantitative Criminology*, 29, 67-101.
- Baron, R.A., Hmieleski, K.M., & Henry, R.A. (2012). Entrepreneurs' dispositional positive affect: the potential benefits and potential costs of being "up." *J. Bus. Ventur.* 27(3), 310-24.
- Bouffard, J.A. (2015). Examining the direct and indirect effects of fear and anger on criminal decision-making. *International Journal of Offender Therapy and Comparative Criminology*, 59(13) 1385-1408.
- Burt, C.H., & Simons, R.L. (2013). Self-control, thrill seeking and crime. *Criminal Justice and Behavior*, 40(11), 1326-1348.
- Chalfin, A. & McCrary, J. (2017). Criminal deterrence: A review of the literature. *Journal of Economic Literature*, 55(1), 5-48.
- Curcione, N. (1997). Suburban snowmen: Facilitating factors in the careers of middle-class coke dealers. *Deviant Behavior*, 18(3), 233-253.
- Decker, S. Wright, R., & Lodie, R. (1993). Perceptual deterrence amongst active residential burglars: A research note. *Criminology*, 31, 135-147.
- Fisher, R.P., & Geiselman, R.E. (1992). *Memory-enhancing techniques for investigative interviewing: The cognitive interview*. Springfield, IL, England: Charles C Thomas, Publisher
- Frese, M., & Gielnik, M. (2014). Criminal entrepreneurship, white-collar criminality, and neutralization theory. *Journal of Enterprising Communities: People and Places in the Global Economy*, 5 (4),300-308.
- Gottschalk, P., & Smith, R. (2011). Criminal entrepreneurship, white-collar criminality, and neutralization theory. *Journal of Enterprising Communities: People and Places in the Global Economy*, 5 (4), 300-308.
- Gutnik, L.A., Hakimzada, A.F., Yoskowitz, N.A., & Patel, V.L. (2005). The role of emotion in decision-making: A cognitive neuroeconomic approach towards understanding sexual risk behavior. *Journal of Biomedical Informatics*, 39, 720-736.
- Heath, J. (2008). Business Ethics and Moral Motivation: A Criminological Perspective, *Journal of Business Ethics*, 83, 595-614.
- Jacobs, B. (2010) Deterrence and deterrability. *Criminology*, 48, 417-441.
- Kleck G., Sever B., Li, S., & Gertz, M. (2005). The missing link in general deterrence research. *Criminology*, 43, 623-659.
- Klein, G. A., Calderwood, R., & MacGregor, D. (1989). Critical Decision Method for Eliciting Knowledge. *IEEE Transactions on Systems, Man, and Cybernetics*, 19 (3), 462-472.
- Koellinger, P., Minniti, M., & Schade, C. (2007). "I think I can, I think I can": overconfidence and entrepreneurial behavior. *J. Econ. Psychol.* 28 (4), 502-527.
- Little, M., & Steinberg, L. (2006). Psychosocial correlates of adolescent drug dealing in the inner city: Potential roles of opportunity, conventional commitments, and maturity. *Journal of Research in Crime and Delinquency*, 43 (4), 357-386.
- Loxton, N.J., Wan, V.L.N., Ho, A.M., Cheung, B.K., Tam, N., Leung, F.Y., & Stadlin, A. (2008). Impulsivity in Hong Kong-Chinese club-drug users. *Drug and Alcohol Dependence*, 95, 81-89.
- Macit, R. (2017). Becoming a drug dealer in Turkey. *Journal of Drug Issues*, 48(1), 106-117.
- Moeller, K., Copes, H. & Hochstetler, A. (2016). Advancing restrictive deterrence: A qualitative meta-synthesis, *Journal of Criminal Justice*, 46, 82-93.
- Mohamed, A.R., & Fritsvold, E. (2007). Damn, It Feels Good to be a Gangsta: the Social Organization of the Illicit Drug Trade Servicing a Private College Campus. *Deviant Behavior*, 27(1), 97-125,
- Morselli, C. & Tremblay, P. (2004). Criminal Achievement, Offender Networks and the Benefits of Low Self-Control. *Criminology*, 42, 773-804.
- Nagin, D. (2013). Deterrence in the twenty-first century. *Crime and Justice*, 42(1), 199-263.
- Odum, A.L., Madden, G.J., Badger, G.J., & Bickel, W.K. (2000). Needle sharing in opioid-dependent outpatients: Psychological processes underlying risk. *Drug and Alcohol Dependence*, 60, 259-266.
- Paternoster, R. (2010). How much do we really know about criminal deterrence? *The Journal of Criminal Law and Criminology*, 765-824.
- Pratt, T.C., Cullen, F.T., Blevins, K.R., Daigle, L.E., & Madensen, T.D. (2006). *The empirical status of deterrence theory: a meta-analysis*. In: Cullen FT, Wright JP, Blevins KR (eds) Taking stock: the status of criminological theory. Transaction, New Brunswick, pp 367-395.
- Shammas, V.L., Sandberg, S., & Pedersen, W. (2014). Trajectories to mid-and-higher-level drug crimes- Penal misrepresentations of drug dealers in Norway. *Brit. J. Crimol.* 54, 592-612

Simon, M., & Shrader, R.C. (2012). Entrepreneurial actions and optimistic overconfidence: the role of motivated reasoning in new product introductions. *J. Bus. Ventur.* 27 (3), 291–309.

Sykes, G., & Matza, D. (1957). Techniques of Neutralization: A Theory of Delinquency. *American Sociological Review* (22), 664-670.

Van Nostrand, L., & Tewksbury, R. (1999). The motives and mechanics of operating an illegal drug enterprise. *Deviant Behavior*, 20 (1), 57-83, DOI: 10.1080/016396299266597

Walters, G.D. (2005). Criminal belief systems: A integrated-interactive theory of lifestyles. Westport, Conn: Praeger. Chicago.

Ward, D., Stafford, M., & Gray, L. (2006). Rational Choice, Deterrence, and Theoretical Integration. *Journal of Applied Social Psychology*. 36. 571 - 585.

Wright, V. (2010). Deterrence in criminal justice: Evaluating certainty vs. severity of punishment. *The Sentencing Project*.

About the Authors:



Dr Jasmin Kaur is a principal psychologist and Senior Assistant Director, Data Science Branch within the Singapore Prison Service (SPS). She leads a drug workgroup for the Office of Chief Psychologist. She has conducted research on offending patterns, forensic risk assessment tools, and understanding offending behaviour, specifically drug offenders and violent offenders. In addition to her research portfolio, she has been a practising clinician for over 10 years, seeing clients with a variety of behavioural difficulties and mental health issues. Dr Jasmin Kaur holds a Doctorate in Clinical Psychology from James Cook University, Australia.



Teo Kah Shun is currently a psychologist at Central Narcotics Bureau (CNB). Her work areas include drug risk assessments for youth offenders and conceptualisation of evaluation frameworks for community programmes in drug operations and prevention. As a research analyst at CNB previously, she was involved in various fields of drug research including drug prevention, trafficking and rehabilitation. She continues to conduct research focusing on drug prevention areas like youths' perceptions of social norms and media interpretation.



Salina Samion joined the Ministry of Home Affairs (MHA) as a psychologist with the Singapore Prison Service (SPS) in 2003, where she was instrumental in the development of mental resilience services and evidence-informed offender rehabilitation programmes. She is currently a Principal Psychologist overseeing the Psychological Unit with the Central Narcotics Bureau (CNB), MHA. Prior to joining MHA, Salina was working in the community setting serving low-income families and the protection of vulnerable children. Apart from direct work, Salina has a deep passion in training and development as seen from her engagement as an adjunct faculty member with the then-SIM University, where she developed and delivered counselling courses at undergraduate and graduate levels. Salina's current focus is in issues related to drug abuse prevention and intervention, particularly amongst youths. She is also interested in research areas pertaining to the cultural nuances of offending and intervention and is currently pursuing a Doctoral Degree in this area.

Singapore's Anti-drug Strategy: A Sum of Experience, Evidence and Environment

Lal Nelson

Research & Statistics Division, Ministry of Home Affairs, Singapore

ABSTRACT

To deal with drug trafficking and abuse, the Singapore Government adopted a four-pronged anti-drug strategy. This strategy comprised targeted preventive education; tough laws and effective enforcement; comprehensive rehabilitation and supervision programmes; and working with families, NGOs and the community to rehabilitate and reintegrate ex-drug abusers into society. Singapore's anti-drug strategy has been shaped by three factors: (1) Singapore's long history in battling drug abuse; (2) its reliance on evidence of what works within the Singapore context to contain its drug situation; and (3) its environment— challenges posed by regional and global developments that impede Singapore's effort to keep the state drug-free.

Introduction

Singapore's battle with drug abuse has its roots in the opium trade started by its British colonial masters in the early 1800s. While there were concerns over drug abuse during the colonial era, Singapore drug abuse situation took a turn for the worse in the late 1960s. The global hippie movement of the 1960s and 1970s, which popularised a drug culture, and Singapore's proximity to a major drug-producing region (the "Golden Triangle" in Laos, Myanmar and Thailand) led to an increase in drug abuse in the local population, as well as more drugs being smuggled into Singapore.

Since the early 1970s, the Singapore government has made a concerted effort to minimise drug abuse and reduce drug trafficking. It has regularly

reviewed the various measures put in place to address the drug situation and over time adopted a four-pronged anti-drug strategy: (1) targeted preventive education; (2) tough laws and effective enforcement; (3) comprehensive rehabilitation and supervision programmes; and (4) working with families, NGOs, and the community to help ex-abusers reintegrate into society.

In this paper, I will argue that Singapore's anti-drug strategy is shaped by: (1) Singapore's long and arduous experience in fighting the drug problem; (2) evidence that tough laws and effective rehabilitation work; and (3) challenges to our environment, where both regional and international actors test our resolve to keep the state drug-free.

A Perennial Battle against Drug Abuse

Singapore's history of drug abuse goes back to the beginning of its colonial era. Opium was popular among early Chinese immigrants in Singapore. Smoking opium was not just a status symbol for the wealthy, but it also became popular among the labourers. For these labourers, who worked long hours in harsh conditions and lived in crowded accommodations, opium was a source of solace. Some used opium as a panacea for diseases like cholera and dysentery (Abdullah, 2005).

The harm associated with drug addiction was noted early in Singapore's history. In 1848, a British government surgeon, Dr Richard Little, published a report highlighting the dangers of drug addiction. He proposed having official control over the spread of opium smoking as "he discovered a worrying trend – opium smoking was no longer the pastime of the affluent but had permeated all sections of the community" (Tan, 2006:12). In addition to draining the addicts' financial resources, opium addiction had also severely affected their mental and physical health (Tan, 2006).

Despite Dr Little's observations, the British generally viewed the use of opium as beneficial for its medicinal and consoling effects on the labourers, rather than as harmful for its addictive properties when excessively consumed. However, a group of western-educated Straits Chinese, supported by religious organisations observing the ill effects of opium smoking, pressed for its ban. A 1907 commission to look into the problems linked to opium smoking did not find grounds to ban opium smoking but recommended to ban its sale to children, women and in brothels. (Abdullah, 2005).

Recognising its economic value, the British set up an opium packing plant in Singapore in 1914, making it a major opium distribution centre. However, as opium consumption increased among the local population, opium merchants became reluctant to employ workers who smoked opium as

they were perceived to be unsteady and unreliable. The colonial government then gradually started to impose restrictions on the sale of opium. From 1925, opium smokers were restricted to opium use within their own premises. In 1929, it became a requirement for opium smokers to be registered. This made unregistered opium smoking illegal (Abdullah, 2005).

During the Japanese occupation of Singapore, the Japanese encouraged the local Chinese population to smoke opium as a means to keep them under control. Around this time, the use of other drugs like cannabis and morphine were also becoming more prevalent in Singapore. Upon their return to Singapore after the Second World War, the British enacted new laws to deal with drug abuse. In 1951, the British introduced the Dangerous Drugs Ordinance (DDO) to replace all previous drug-related legislation. The DDO criminalised unauthorised possession of opium, cannabis, morphine, cocaine and heroin. Apart from imposing penalties, the Ordinance also required mandatory treatment and rehabilitation of abusers. In 1955, an opium treatment centre was set up in St John's Island for the rehabilitation of opium addicts (Lee et. al., 2018).

In 1952, the Singapore Police Force (SPF) set up a special unit within the Criminal Investigation Department to control drug abuse. The SPF also set up another new unit, the Central Narcotics Intelligence Bureau, to collect intelligence on trafficking drugs into Singapore (Ong & Iralowitz, 1996).

In June 1959, Singapore attained self-rule and almost immediately launched a campaign against "yellow culture", a term that referred to decadent behaviours like gambling, opium smoking, pornography and prostitution. The government was concerned that the hippie movement of the West, which was strongly associated with a drug culture, would gain traction in Singapore (NLB online).

It is likely that these measures accounted for the gradual decrease in the number of persons arrested for drug abuse. The number of abusers arrested fell from a high of 4276 persons in 1953 to 604 persons arrested in 1962 (Ong & Iralowitz, 1996).

From the mid-1960s, the drug abuse problem in Singapore was on the rise again. Towards the end of the 1960s and early 1970s, there was an increase in persons arrested for possession of cannabis. Although the government had taken steps to stem the influence of the hippie movement, it was likely that the movement had an impact on local population as more addicts were found consuming cannabis and MX pills (National Council Against Drug Abuse, 1998).

There were also more seizures of cannabis smuggled into Singapore. Then Parliamentary Secretary for Ministry of Finance, Tang See Chin, reported that Singapore Customs had seized 192.9 lbs (approximately 87.5 kg) of cannabis shipped in the first six months of 1970 compared to 61.9 lbs (approximately 27.7 kg) in the same period in a year earlier (Tang, 1970).

Around the same time, a new drug – heroin – entered the Singapore drug scene. The number of heroin abusers arrested in 1972 was just four persons or 3.4% of all abusers arrested. This grew very quickly to 2,263 persons arrested for heroin abuse (or 53.9% of all abusers arrested) in 1975 (Ong and Iralowitz, 1996). Heroin was also popular among younger drug abusers as 68% of the 2,550 younger drug abusers arrested (aged 14 to 25 years) abused heroin (Hanam, 1976).

Also of concern was the number of drug-related deaths. Between 1969 and 1974, forensic pathologist Chao Tzee Cheng observed 65 cases of drug-related deaths, the majority of which were the result of addicts over-dosing on the streets (Tan, 2006).

Against this backdrop, the Singapore government embarked on a concerted effort against drug abuse and trafficking. A key development was the setting up of a new and dedicated Government department – the Central Narcotics Bureau (CNB) – in 1971 to lead the fight against drug abuse and trafficking in Singapore.

Recognising that the existing legislation to control drug abuse and trafficking was inadequate, the Government introduced the Misuse of Drugs Act (MDA) in 1973. The MDA replaced the Dangerous Drugs Ordinance (1951) and the Drugs (Prevention of Misuse) Act of 1969. The MDA contained several new features. It made a clear distinction between drug traffickers and drug abusers, differentiating the kinds of penalties administered to the offenders in each group. The MDA also listed 127 substances as controlled drugs. The MDA gave new powers to law enforcement officers to search, seize and detain offenders who smuggled controlled drugs in ships, aircrafts, trains and other vehicles where they had reasonable grounds to suspect controlled drugs were being trafficked. Heavier penalties were imposed on drug traffickers.

The MDA also gave law enforcement officers powers to obtain urine samples from suspected addicts and commit abusers for compulsory treatment (Chua, 1973). The opium treatment centre was renamed the Drug Rehabilitation Centre (DRC) to allow it to take in other types of drug abusers (Lee et. al., 2018). The DRC was used for the compulsory treatment and rehabilitation of drug abusers.

Despite these measures, the number of heroin addicts arrested continued to rise. The number of heroin abusers arrested rose from 3,225 persons in 1974 to 4,201 persons in 1975 (Ong and Iralowitz, 1996). The number of traffickers arrested had also increased from six in the first six months of 1974 to twenty-six over the corresponding period in 1975 (Chua, 1975).

To deal with the worsening drug situation, the Government made further amendments to the MDA in 1975. Explaining the need for the amendments, then Minister for Home Affairs, Chua Sian Chin, raised concerns of a rampant drug culture taking root in Singapore, weakening its social fabric and undermining its economy. Chua explained that Singapore's easy access by sea, air, road and rail made it difficult to detect the smuggling of illicit drugs. Furthermore, its proximity to the Golden Triangle (Laos, Myanmar and Thailand), raised Singapore's vulnerability to drug trafficking (Chua, 1975).

The MDA was amended to enhance penalties for drug offences, including the introduction of the mandatory death penalty (MDP) for the unauthorised manufacturing, importation and trafficking of more than 30 grams of morphine or more than 15 grams of diamorphine (Lee et. al., 2018).

In a concerted effort to flush out drug abusers and traffickers, Operation Ferret, co-ordinated by CNB with the help of other government agencies, was launched on 1 April 1977. This operation was highly successful as more than 7,000 drug offenders were arrested each year in 1977 and 1978. For the next 10 years, the drug problem remained stable with the number of drug offenders arrested remaining between 3,000 and 4,000.

However, in 1988, the number of drug abusers arrested exceeded 6,000 offenders (Ong and Iralowitz, 1996). Accounting for the rise in drug abusers in 1989, then Minister for Home Affairs, Professor Jayakumar, noted that there had been a bumper production of heroin from the Golden Triangle, especially from Myanmar, and highlighted that our neighbouring countries too had reported an increase in seizures of heroin. Professor Jayakumar also raised concerns over the increased popularity of cannabis among local abusers and the potential for

cocaine to enter the Singapore drug scene, as it was already very popular in the West (Jayakumar, 1989).

To address these concerns, the MDA was amended in 1989. The amendments extended the mandatory death penalty to trafficking more than 1.2kg of opium, more than 30g of cocaine, more than 500g of cannabis, or more than 200g of cannabis resin. The amendments also made it mandatory for repeat drug abusers to be jailed for a minimum of three years, up from two years previously (Lee et. al., 2018).

Between 1989 and 1992, the number of drug abusers arrested remained stable ranging between 5,000 and 6,000 offenders each year (Ong and Iralowitz, 1996). However, more addicts were admitted into DRCs. In 1993, 4,749 addicts were admitted into DRCs, representing a 24% increase over 1991. It was also observed that 70% of the addicts relapsed within two years of their release. The total DRC population in 1993 stood at a high of 8,130 addicts (Wong, 1994).

To make further improvements, a committee led by then Parliamentary Secretary, Ministry of Home Affairs, Associate Professor Ho Peng Kee, was set up in 1993 to review the drug situation in Singapore. The committee proposed an integrated anti-drug strategy comprising four pillars: (1) preventive drug education; (2) tough laws and rigorous enforcement; (3) effective treatment and rehabilitation of offenders; and (4) continued after-care of ex-offenders with the support of the community. Taken together, these four pillars formed the core components of Singapore's anti-drug strategy.

To advise the Government on drug policies and to mobilise public support for drug education programmes, the National Council Against Drug Abuse (NCADA) was formed in 1995. A number

of community-based programmes were introduced in 1995, including a residential scheme for inmates with strong family support; halfway houses for inmates without family support and a work release scheme to allow inmates to work during the day.

To discourage drug offenders from relapsing, the MDA was amended in 1998 to introduce the Long Term (LT) imprisonment regime for recalcitrant abusers. With this amendment, repeat drug abusers who had been admitted to the DRCs twice or had been convicted of a drug consumption offence twice previously would be liable for caning and long-term imprisonment of between 5 and 7 years (known as LT1). LT1 abusers who re-offended for drug consumption offences would be liable to up to 13 years of imprisonment and caning (known as LT2) (Lee et. al., 2018).

Improvements to preventive education, rehabilitation regimes and the introduction of harsher punitive measures combined to discourage new abusers and reduce relapse rates, bringing the drug problem under control. The number of abusers arrested fell by around half, from 201.7 persons per 100,000 resident population in 1993, to 100.3 persons per 100,000 resident population in 2002 (see Table 1).

A Strategy Based on What Works

The Harm Reduction Experiment that did not Work

Approaches to deal with the problems associated with drug abuse can be grouped into two broad categories: harm reduction and harm prevention. Every country has to decide for itself which approach or stance it wants to take.

Generally, countries that take a harm reduction approach advocate drug consumption in ways that are assumed to be safe, rather than treat drug consumption as a crime. The proponents of harm reduction usually utilise two programmes: the needle and syringe programme; and opiate substitution therapy. Essentially, the needle and syringe programme involves the distribution of clean injecting kits and supervised injecting facilities for the safe use of drugs. Opiate substitution therapy involves treating drug abusers with medication that has a similar effect of the drug that they are abusing but without withdrawal symptoms and craving (Quah, 2020).

Harm prevention, on the other hand, emphasises prevention, treatment and rehabilitation to avert the

Table 1. Drug Abusers Arrested Per 100.000 Resident Population (1993-2002)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<i>Drug abusers arrested</i>	201.7 (5,857)	208.3 (6,165)	199.6 (6,016)	187.2 (5,744)	152.1 (4,752)	141.6 (4,502)	118.5 (3,826)	96.4 (3,157)	102.7 (3,417)	100.3 (3,393)
<i>Repeat abusers arrested</i>	157.1 (4,564)	163.0 (4,824)	167.2 (5,308)	140.9 (4,323)	115.8 (3,618)	117.4 (3,733)	94.1 (3,040)	75.9 (2,485)	79.2 (2,633)	73.4 (2,482)
<i>New abusers arrested</i>	44.5 (1,293)	45.3 (1,341)	32.5 (978)	46.3 (1,421)	36.3 (1,134)	24.2 (769)	24.3 (786)	20.5 (672)	23.6 (784)	26.9 (911)

Source: CNB's Drug Situation Reports and Department of Statistics. Figures in parenthesis refer to total number arrested.

harm that drug abuse brings. Compared to the harm reduction approach that facilitates the consumption of drugs, the focus of harm prevention is on abstinence (Quah, 2020).

Quah (2020), in her study of 11 countries that took a harm reduction approach, reports on several problems associated with this approach. For instance, while the intention of a needle and syringe programme is to provide abusers with safe use of drugs, it does not guarantee that they will not share needles or inject themselves only at safe injecting facilities. In addition, Quah (2020) also found an increase in deaths resulting from overdose in eight of the 11 countries in her study.

Quah (2020) also observed that harm prevention offered a more comprehensive solution to drug abuse as it took into account many factors that led to addiction and sustained the habit. For instance, Quah (2020) found that it was important to promote a drug-free environment and encourage a drug-free culture. It was also important to recognise that drug abuse was not just self-inflicted harm but a social harm as well, affecting the abuser's family, friends and community. Finally, because of the biological damage caused by drug abuse, many addicts lacked the self-control required to seek the treatment they needed. Hence, mandatory treatment programmes are essential to rehabilitate drug abusers (Quah, 2020).

While Singapore's approach to address its drug abuse problem has always relied on harm prevention, it did experiment briefly with substitution treatment for opiate-dependent drug abusers. In 2002, the Centre for Drug Administration of Singapore's Ministry of Health allowed the use of buprenorphine (also known as Subutex), a drug typically used to treat opiate dependence.

Shortly after its introduction, drug abusers were abusing Subutex by mixing it with other drugs and injecting the cocktail into their body. Hence, instead of reducing opiate dependence, abusers were becoming dependent on this cocktail. Between September 2003 and August 2005, there were 50 buprenorphine-associated deaths. Clinicians

observed a number of cases with complications like abscesses, gangrene, limb amputations, etc. Media reports highlighted indiscriminate disposal of needles and hotspots where Subutex users congregated. Within four years of introduction, there were at least 3,800 known Subutex users in Singapore (Lee, 2006).

All these led to significant public concerns. To reign in the abuse, Subutex was included as controlled drug under the MDA in August 2006.

Programmes that have Helped Drug Offenders

Being on the doorsteps of one of the world's largest drug producing regions in the world – the Golden Triangle (Laos, Myanmar, Thailand), there is always a ready supply of illicit drugs trying to make its way into Singapore. Hence, it is not surprising that after the initial success in bringing down the number of abusers arrested in early 2000s, the drug situation in Singapore began to worsen in the late 2000s. The number of drug abusers arrested rose from 61.7 in 2007 to 76.5 in 2010 per 100,000 resident population. This could be attributed to the increase in the number of heroin abusers arrested which rose from 19.3 in 2007 to 47.5 in 2010 per 100,000 residents. There was also an increase in methamphetamine abusers arrested which rose from 6.2 in 2007 to 18.6 in 2010 per 100,000 residents.

This rising trend spurred the setting up of an inter-Ministry taskforce to review the situation in 2011. After completing its review in 2012, the taskforce made three recommendations: (1) increase the number of rehabilitation programmes to meet the criminogenic needs of drug abusers; (2) introduce a gradual step down care; and (3) introduce mandatory aftercare for drug offenders who had a high risk of re-offending.

To improve the rehabilitation of drug abusers, the Singapore Prison Service (SPS) introduced two additional programmes for DRC inmates (Integrated Criminogenic Programme – Modified (ICP-M) for those with low severity of drug abuse, and High on

Life (HoL) for those with moderate to high severity of drug abuse. The programmes targeted different profiles of drug abusers and inmates at higher risk of relapse with more intensive programmes and addressed a range of their criminogenic needs.

Recognising the need for a gradual step down from a DRC to a Halfway House, SPS introduced the Enhanced Drug Rehabilitation Regime. Under this regime, drug inmates assessed to be at higher risk of relapse were placed on longer periods of intensive rehabilitation programmes. prior to the release to an after-care facility.

In 2014, the Prisons Act was amended to introduce the Mandatory Aftercare Scheme (MAS) to help high-risk inmates, including drug abusers (LT inmates), to stay drug-free upon their release. Ten months prior to their release, these offenders undergo intensive programmes addressing their criminogenic needs, family and social functioning, and employability skills in SPS's pre-release centre. Following their release, they continue to receive supervision and counselling, be subject to curfew and urine tests and are monitored through electronic tagging. Mandatory after-care for such drug abusers could last for up to two years after their release.

As the first batch of drug offenders to receive mandatory after-care were only emplaced on the scheme in 2017, data on the efficacy of this programme is not yet available. However, the in-care rehabilitation programmes introduced earlier already seem to have an effect on lowering recidivism. Based on data on two-year recidivism rates, the findings for all sentence types have shown improvement over the last few years (see Table 2).

Tough Laws to Keep a Lid on Drug Trafficking

Singapore's close proximity to the Golden Triangle means that there is a need to stem the supply of illicit drugs into Singapore in addition to helping drug abusers recover from their addiction. Hence, Singapore relies on tough laws, including capital punishment, to keep a tight lid on drug trafficking into Singapore.

Generally, countries reserve capital punishment for the most serious crimes. The UN Economic and Social Council defines most serious crimes to be "intentional crimes with lethal or other extremely grave consequences" (United Nations, 1984).

Singapore considers drug trafficking to be among the most serious crimes. There is sufficient evidence that drug trafficking generates grave consequences to society through crime and other social ills. Sidhu (2020a) in her review of literature on the link between drugs and crime found that there is substantial empirical evidence that drug abusers have a higher tendency to commit crime. She cites several studies in her review that showed a link between drug abuse and violent crimes, as well as with property crimes (Sidhu, 2020a).

Even in the case of cannabis, a drug assumed by some to be safe for recreational use, Sidhu (2020b) found several studies that showed that cannabis was a gateway drug for other types of illicit drug abuse. She also found evidence that cannabis had adverse effects on the life outcomes of adolescents in terms of education attainment, employment, delinquency and ability to adapt to adult roles. In the US state of Colorado, legalisation of cannabis may have led to an increase in traffic accidents

Table 2. Recidivism Rates by Sentence Type (2011-2016)

	Release Year					
	2011	2012	2013	2014	2015	2016
<i>DRC</i>	31.1%	28.3%	31.9%	30.1%	29.5%	23.8%
<i>LT</i>	36.4%	38.3%	31.4%	31.5%	26.6%	25.0%

Source: Data from Singapore Prison Service (SPS). Data for recidivism rates after 2016 is not available at point of publication.

resulting in deaths. The number of drivers who tested positive for cannabis who were involved in accidents resulting in deaths rose from 55 in 2013 to 138 in 2017 (Sidhu, 2020b).

Given these serious concerns, Singapore imposes the mandatory death penalty for trafficking of a large amount of drugs. For example, trafficking in 15 grams or more of pure heroin (diamorphine) in Singapore would attract the death penalty. Although 15 grams of diamorphine appears to be a small amount, CNB estimates that this amount is equivalent to 1,250 straws of heroin, which would be sufficient to sustain 180 abusers for a week.

Critics of the death penalty argue that there is no evidence that capital punishment deters traffickers. However, as pointed by Chia (2020), there are studies that suggest that the death penalty is an effective deterrent against crimes that are liable for the death penalty, even though there are also studies that are unable to establish a significant statistical relationship. Chia's own study on the deterrent impact of the death penalty on drug trafficking in Singapore found that the introduction of MDP for cannabis and opium in 1990 likely had a deterrent effect on trafficking behaviour for these drug types (Chia, 2020).

Kaur et. al. (2020) also reported evidence that tough laws had a deterrent effect in their study on the decision-making processes of drug traffickers. The authors found that sanction awareness predicted risk perception and that traffickers who restricted their trafficking had higher levels of sanction awareness (Kaur et. al., 2020).

Singapore's tough laws on drug trafficking have managed to keep a lid on the drug trade. The number of traffickers arrested has remained relatively stable over the last ten years, averaging about 600 traffickers a year.

Keeping Singapore Drug Free Amidst a Challenging Environment

The global drug situation is a bleak one. The United

Nations Office on Drugs and Crime (UNODC) estimated that 271 million people in the world used drugs in 2016. This is about 30 per cent higher than in 2008. In 2017, an estimated 35 million people suffered from drug use disorders, while about 585,000 people died from drug use. Two Asian countries are the largest producers of opium – Afghanistan and Myanmar. The quantities of opioids seized in 2017 was an all-time high of 693 tons. Cannabis was the most widely used drug with an estimated 188 million users worldwide (UNODC, 2019).

As the global drug situation changes, many countries have weakened their resolve to fight their drug problems. As mentioned earlier, some have turned towards harm reduction strategies, and other have resorted to legalisation of certain drugs like marijuana.

Against this backdrop, both regional and global developments regularly challenge Singapore's efforts to keep the state drug-free.

Regional Challenges to Keeping Singapore Drug-free

Singapore's proximity to the Golden Triangle (Laos, Myanmar and Thailand), the second largest heroin producing centre in Asia, has been an important driver in shaping its anti-drug strategy.

At its peak in 1996, over 160,000 hectares (ha) of land in Myanmar were used to cultivate opium, making it the most prominent opium cultivator in the world. However, efforts to reduce opium production in the region, combined with a decline in demand for heroin saw the cultivation area fall to 36,100 ha (UNODC, 2018). Yet Myanmar remains the main supplier of illegal opium and heroin in East and Southeast Asia, producing opiates with a market value in excess of USD 1.1 to 2.3 billion (UNODC, 2018).

As demand for heroin decreased and that for methamphetamines increased, drug producers in the region turned their effort toward increasing

the supply of the latter. A 2019 UNODC report on synthetic drugs in East and South-East Asia observed that in recent years, transnational organised crime groups have increasingly produced methamphetamine and other drugs in the Golden Triangle (UNODC, 2019a). The 2019 UNODC study also reported that by the third quarter of 2018, methamphetamine seizures in the region totalled 116 metric tons, exceeding the previous high of 82 metric tons in 2017 (UNODC, 2019a).

The impact of the higher production of methamphetamines in the Golden Triangle is visible in Singapore. According to data provided by CNB, the amount of methamphetamines and cannabis seized in recent years have increased (see Table 3). More worryingly, the number of methamphetamine and cannabis abusers have increased (see Table 4).

It is clear that the lucrative revenue that the illicit drug trade brings encourages the regional drug lords to risk their drug couriers being caught. Tough laws, as part of Singapore's overall anti-drug strategy, have helped to contain the drug menace in Singapore.

Global Push towards Legalisation of Cannabis

Apart from regional developments, one major global development has been the trend among many countries to legalise the cultivation, sale and consumption of cannabis. It is likely that many of these countries, including those who do so for medical (so-called) purposes, take this route because they have given up on the fight against widespread cannabis abuse and because of the lure of huge commercial gain from legalisation.

Table 3. Selected Seizures by Drug Type (2009 – 2018)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<i>Heroin (kg)</i>	29.14	49.02	72.67	66.38	72.37	67.54	53.67	52.41	36.92	58.02
<i>Methamphetamine "Ice" (kg)</i>	3.72	5.59	14.08	50.84	44.06	12.53	15.58	18.27	22.18	19.33
<i>Cannabis (kg)</i>	7.06	8.53	12.88	14.86	15.57	35.03	44.29	54.01	44.05	61.77

Source: CNB's Drug Situation Reports.

Table 4. Drug Abusers Arrested by Drug Type Per 100,000 Resident Population (2009-2018)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<i>Total</i>	70.1 (2,616)	76.5 (2,887)	87.8 (3,326)	91.8 (3,507)	93.1 (3,581)	81.6 (3,158)	85.7 (3,343)	83.0 (3,265)	77.9 (3,091)	86.1 (3,439)
<i>Heroin</i>	38.2 (1,425)	47.4 (1,787)	50.8 (1,924)	58.6 (2,239)	53.6 (2,062)	40.3 (1,560)	32.1 (1,253)	26.5 (1,041)	21.4 (848)	17.5 (700)
<i>Methamphetamine</i>	14.5 (542)	18.6 (702)	30.5 (1,157)	26.8 (1,022)	32.0 (1,231)	34.8 (1,348)	47.6 (1,858)	49.7 (1,956)	50.2 (1,991)	53.6 (2,142)
<i>Cannabis</i>	3.4 (126)	3.5 (131)	3.4 (127)	3.7 (142)	4.8 (186)	4.8 (187)	5.0 (194)	5.8 (228)	5.1 (204)	5.3 (211)
<i>NPS</i>	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.1 (5)	0.1 (4)	0.0 (1)	0.0 (1)	8.6 (343)
<i>Others</i>	14.0 (523)	7.1 (267)	3.1 (118)	2.7 (104)	2.7 (102)	1.5 (58)	0.9 (34)	1.0 (39)	1.2 (47)	1.1 (43)

Source: CNB's Drug Situation Reports and Department of Statistics. Figures in parenthesis refer to total number arrested.

In 2013, Uruguay became the first country in world to make the growing, sale and consumption of cannabis legal. In supporting the bill to legalise cannabis in Uruguay, Sebastian Sabini, the president of the parliamentary commission set up to debate the bill said, “The war on drugs has failed. There are more consumers and more violence.” (Gilbert, 2012). Canada, which was the next country to fully legalise cannabis, did so for similar reasons. Its Prime Minister, Justin Trudeau, has argued that its anti-drug abuse laws had been ineffective – pointing out that Canadians were heavy users (BBC, 2018).

In Europe, Luxembourg became the first European country to legalise cannabis for recreational use. As with most other who have legalised recreational cannabis, Luxembourg did so because its battle with cannabis abuse had been unsuccessful (Boffrey, 2019).

In the United States, the state of Colorado and the District of Columbia legalised the medical and recreational use of cannabis in 2012. Following this, nine more US states have moved quickly to legalise cannabis, with the state of Illinois being the latest. Thirty-three states in the United States now allow the consumption of cannabis for medical purposes (Rense, 2019). In Asia, South Korea, and more recently Thailand, have legalised cannabis for medical purposes (UNODC, 2019c).

The increased pace of legalisation of cannabis around the world, coinciding with the increase in both the supply of and demand for cannabis in Singapore, is a major concern to the authorities in Singapore. This concern is accentuated by the findings from a recent survey, which shows a more liberal attitude among younger Singaporeans aged 30 years and below, toward cannabis consumption. The survey showed that 80% of those aged 30 years and below agreed that cannabis should remain illegal compared to 89% of those above 30 years (Liang, 2020).

Singapore’s concerns over the liberal attitudes of younger Singaporeans towards cannabis stems

from the evidence that cannabis use is linked to the increased use of other illicit drugs and that young cannabis users compared to cannabis abstainers were more prone to deviant behaviours and fared poorer on school, mental health, family and peer relationship outcomes (Sidhu, 2020b). These concerns underline the Singapore government resolve to keep the menace of cannabis out of reach of its citizens.

Emerging Issues Likely to Impede the Battle against Drugs

Dealing with Commercial Giants Bent on a Profit Motive

While interest groups lobbying for the liberalisation of cannabis laws have traditionally framed the movement as motivated by social justice and/or health issues, the commercial motivations behind the movement have become increasingly obvious as the cannabis industry expands in size and enters into the mainstream in some countries.

For instance, in recent years, large multinational corporations such as the Altria Group (the makers of Marlboro and other cigarettes) and Constellation Brands (the makers of Corona and other beers) have purchased large stakes in cannabis companies through multi-billion-dollar deals (Gelles, 2018). Beverage giant Coca Cola was reported to be keeping a close watch on the sector and had exploratory talks with Canadian licensed producer Aurora Cannabis Inc. with the aim of developing cannabis-infused beverages (Williams, 2018).

With the entrance of these corporate interests, lobbying efforts to liberalise cannabis laws have become increasingly organised and well-funded. For example, a 2015 ballot initiative to legalise cannabis in the US state of Ohio (which did not come to pass) was heavily funded by a group of corporate investors who sought to be granted a legal monopoly on cannabis production in Ohio (Wallace & Rauch, 2016). In addition, cannabis companies have also recruited high profile political figures, including prominent persons such as John

Boehner (former Republican Speaker of the US House of Representatives) and William F. Weld (former Republican Governor of the State of Massachusetts) to join their boards and advocate for the cannabis industry (Williamson, 2019).

The Threat from New Psychoactive Substances

Beyond the threat from traditional classes of illicit drugs, new psychoactive substances (NPS), compounds that are designed to mimic established illicit drugs, also pose a serious problem for many countries and Singapore. According to CNB (2019), there has been a rapid increase in the number, type and availability of NPS across the globe, and their abuse has been linked to adverse physical and psychological reactions, including paranoia, seizures, hallucinations and even death.

In Singapore, NPS was the third most commonly abused drug in 2018. There has been a sharp increase in NPS abusers arrested to 343 in 2018, from less than ten a year before 2018 (CNB, 2019). The diverse constitution of new NPS drugs makes detection challenging and increases the difficulty to determine the dangers of various NPS drugs.

Conclusion

Despite the challenges faced, Singapore has been relatively successful in keeping its drug abuse problem under check. This success accounts for the strong public support for Singapore's zero-tolerance stance on drugs. A recent survey indicated that almost all Singaporeans wished to live in a drug-free society and a vast majority found Singapore's drug-related policies to be effective and supported these policies (Liang, 2020).

Singapore's anti-drug strategies have evolved over the past 50 years and have been shaped by its history of battling drug abuse and trafficking, and is based on policies and programmes that work. However, being close to drug producing countries; with more and more countries giving up on the fight against drug abuse; with commercial companies pushing the legalisation of cannabis, and with

many new psychoactive substances to contend with, Singapore's battle to contain drug abuse is likely to continue for long time to come. Given the challenges it faces, Singapore needs to hold firm to its time tried-and-tested anti-drug strategy to keep its society drug-free.

References

- Abdullah, N. 'Exploring Constructions of the "Drug Problem" in Historical and Contemporary Singapore.' *New Zealand Journal of Asian Studies* 7, no.2 (December 2005): 40–70
- BBC. (17 October, 2018). Canada becomes second country to legalise recreational cannabis. Retrieved from <https://www.bbc.com/news/world-us-canada-45806255>
- Boffrey, D. (07 August, 2019). Luxembourg to be first European country to legalise cannabis. *The Guardian*. Retrieved from <https://www.theguardian.com/world/2019/aug/07/luxembourg-to-be-first-european-country-to-legalise-cannabis>
- Central Narcotics Bureau. (2019). *Drug Situation Report 2018*. Singapore: Central Narcotics Bureau. Retrieved from [https://www.cnb.gov.sg/newsandevents/reports-\(overview\)/drug-report/Indexdrug-situation-report-2018-new](https://www.cnb.gov.sg/newsandevents/reports-(overview)/drug-report/Indexdrug-situation-report-2018-new)
- Chia, Y.F. (2020). Deterrent Effect of Historical Amendments to Singapore's Sanction Regime for Drug Trafficking. *Home Team Journal, Special Issue (January 2020)*, 56-64.
- Chua, S.C. (1973). Missue of Drugs Bill. *Official reports - Parliamentary Debates (Hansard)*. Retrieved from: https://sprs.parl.gov.sg/search/topic?reportid=023_19730216_S0003_T0010
- Chua, S.C. (1975). Missue of Drugs (Amendment) Bill. *Official reports - Parliamentary Debates (Hansard)*. Retrieved from https://sprs.parl.gov.sg/search/topic?reportid=0143_19751120_S0002_T0008
- Gibert, J. (2012). Uruguay takes 'War on Drugs' in New Direction: The State as Dealer. *The Christian Science Monitor*. Retrieved from <https://www.csmonitor.com/World/Americas/2012/0919/Uruguay-takes-war-on-drugs-in-new-direction-The-state-as-dealer>
- Gelles, D. (12 December, 2018). When the Makers of Marlboro and Corona get into Marijuana. *The New York Times*. Retrieved from <https://www.nytimes.com/2018/12/12/business/cannabis-business-altria-canopy-constellation-cronos.html>
- Hanam, J. (1976). Our Problem. In S. A.-N. Association, *Conquer Drug Abuse Now*. Singapore: Singapore Anti-Narcotics Association.
- Jayakumar, S. (1989). *Official reports - Parliamentary Debates (Hansard)*. Budget, Ministry of Home Affairs. Retrieved from https://sprs.parl.gov.sg/search/topic?reportid=008_19890327_S0003_T0004

- Kaur, J., Teo, K.S., & Samion, S. (2020). The Impact of Deterrence on the Decision-Making Process of Drug Traffickers. *Home Team Journal, Special Issue (January 2020)*, 65-80.
- Lee, J., Yu, F., Auyong, H., & Chok, S. (2018). *Community-based approaches to the Prevention, Rehabilitation and Reintegration of Drug Offenders: The Singapore Anti-Narcotics Association*. Singapore: Lee Kuan Yew School of Public Policy, National University of Singapore.
- Lee, C.E. (2006). Tackling Subutex Abuse in Singapore. *Singapore Medical Journal*, Singapore: 47(11):919
- Liang, S.L. (2020). Public Perception towards Singapore's Anti-drug policies. *Home Team Journal, Special Issue (January 2020)*, 52-55.
- National Council Against Drug Abuse. (1998). *Towards a drug-free Singapore: Strategies, Policies and Programmes against Drugs*. Singapore: National Council Against Drug Abuse
- National Library Board. Campaign Against Yellow Culture is Launched. *HistorySG*. Retrieved from <https://eresources.nlb.gov.sg/history/events/47129576-377a-44e-05f-fefdd0cb765>
- Ong, T.H. & Isralowitz, R.E. (1996). *Substance Use in Singapore: Illegal Drugs, Inhalants and Alcohol*. Singapore: Toppan Company (S) Pte Ltd.
- Quah, S.R. (2020). From Harm Reduction to Harm Prevention: A Cross-national Comparison of Eleven Countries. *Home Team Journal, Special Issue (January 2020)*, 4-16.
- Rense, S. (27 June, 2019). America the Beautiful: These 11 States Let You Smoke Recreational Weed. *Esquire*. Retrieved from <https://www.esquire.com/lifestyle/a21719186/all-states-that-legalized-weed-in-us/>
- Sidhu, G.K. (2020a). Review of Empirical Evidence on the Link between Drugs and Crime. *Home Team Journal, Special Issue (January 2020)*, 17-23.
- Sidhu, G.K. (2020b). Societal Impact of Cannabis. *Home Team Journal, Special Issue (January 2020)*, 24-29.
- Tan, O. (2006). *Slaying the Dragon: Singapore's Fight Against Drugs*. Singapore: SNP Press International.
- Tang, S.C. (1970). Marijuana: Measures to End Smuggling, Peddling and Use. *Official reports - Parliamentary Debates (Hansard)*. Retrieved from https://sprs.parl.gov.sg/search/topic?reportid=005_19700722_S0007_T0024
- UN [United Nations]. (24 May, 1984). Safeguards Guaranteeing Protection of the Rights of those Facing the Death Penalty. *UN Economic and Social Council Resolution, 1984/50*.
- UNGASS [United Nations General Assembly Special Session on Drugs]. (2016). Statement for Roundtable on Demand Reduction, Speech by Mr K. Shanmugam, Minister for Home Affairs and Minister for Law.
- UNODC [United Nations Office on Drugs and Crime]. (2018). *Myanmar Opium Survey 2018: Cultivation, Production and Implications*. United Nations Office on Drugs and Crime.
- UNODC. (2019a). *The Challenge of Synthetic Drugs in East and South East Asia*. United Nations Office on Drugs and Crime.
- UNODC. (2019b). *World Drug Report 2019, Booklet 1: Executive Summary, Conclusions and Policy Implications*. United Nations Office on Drugs and Crime
- UNODC. (2019c). *World Drug Report 2019, Booklet 5: Cannabis and Hallucinogens*. United Nations Office on Drugs and Crime.
- Wallace, P., & Rauch, J. (2016). *Bootleggers, Baptists, Bureaucrats, and Bongs: How Special Interests will Shape Marijuana Legalization*. Washington, D.C.: The Brookings Institution.
- Williams, A. (October 5, 2018). Are investment returns from cannabis just a pipe dream? *The Financial Times*. Retrieved from <https://www.ft.com/content/def1a0a6-c646-11e8-ba8f-ee390057b8c9>
- Williamson, E. (03 June, 2019). John Boehner: From Speaker of the House to Cannabis Pitchman. *The New York Times*. Retrieved from <http://www.nytimes.com/2016/06/03/us/politics/john-boehner-marijuana-cannabis.amp.html>
- Wong, K.S. (1994) Budget, Ministry of Home Affairs. *Official reports - Parliamentary Debates (Hansard)*. Retrieved from https://sprs.parl.gov.sg/search/topic?reportid=010_19940309_S0002_T0005

About the Author:



Dr Lal Nelson, Senior Director, Research and Statistics Division, joined the Ministry of Home Affairs, Singapore, in 2005. In his current capacity, Dr Nelson oversees research studies undertaken in support of the Ministry's core functions, which include criminal justice, policing, drug-abuse control, safety, emergency preparedness, immigration and offender rehabilitation. Apart from these areas, the Research and Statistics Division also conduct studies on issues which affect security, public order and communal harmony. The Division also undertakes research projects utilising Behavioural Insights to nudge improvements to policy, operations and service outcomes for the Ministry. Dr Nelson started his career in Singapore's Ministry of Defence in 1986, where he helmed research portfolios. He graduated with a PhD in Criminology from the University of Melbourne and has a Master degree in Social Behaviour from the London School of Economics and Political Science, University of London.



The Home Team comprises 11 agencies:

Ministry of Home Affairs Headquarters • Singapore Police Force • Internal Security Department • Singapore Civil Defence Force • Immigration & Checkpoints Authority • Singapore Prison Service • Central Narcotics Bureau • Home Team Academy • Home Team Science and Technology Agency • Casino Regulatory Authority • Singapore Corporation of Rehabilitative Enterprises

All Home Team departments and agencies work together as one, in close partnership with the community, to keep Singapore safe and secure.



The Home Team Academy's mission, as the corporate university of the Home Team, is to empower learning and growth, and enable a united and successful Home Team. It aspires to be a leading corporate university in homefront safety and security.