

**AN EXPLORATORY STUDY OF COCAINE USE
IN MALAYSIA**

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UNIVERSITI SAINS MALAYSIA

2025

AN EXPLORATORY STUDY OF COCAINE USE IN MALAYSIA

by

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**Thesis submitted in fulfilment of the requirements
for the degree of
Master of Social Science**

April 2025

ACKNOWLEDGEMENT

First and foremost, praises and thanks to Allah S.W.T, for His showers of blessings throughout my research work to complete the research successfully.

I would like to express my deep and sincere gratitude to my main supervisor, Prof. Dr. Vicknasingam and my co-supervisor, Dr. Darshan Singh for their continuous support and guidance throughout my journey for master's degree. It was a great privilege and honour to work and study under their guidance.

I am extremely grateful to my mother, family and friends for their love, prayers, support and sacrifices throughout my studies. I would like to dedicate this thesis to my beloved kids, Khalish and Keisha, and my late father, who had pass away during my completion of this study.

I would like to express my appreciation to En. Hafizi Harun, the president of Pengasih Malaysia who had inspired me to transform my life through education.

Finally, I would like to thank Nesha and all my study participants. This study would not been possible to complete without them.

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LIST OF ABBREVIATIONS

ATS	Amphetamine-Type Stimulants
CIP	Cocaine-Induced Psychosis
CREST	Cocaine Rapid Efficacy Screening Trial
HIV	Human immunodeficiency virus
IDU	Injecting Drug User
MDMA	3,4- Methylenedioxymethamphetamine
MOH	Ministry of Health
MSM	Men who have sex with men
NADA	National Anti-Drug Agency
NIDA	National Institute of Drug Abuse
PDRM	Royal Malaysia Police
PWUDs	People Who Use Drugs
STI	Sexual Transmitted Infections
SUD	Substance Use Disorder
UNODC	United Nations of Drugs and Crime

KAJIAN PENEROKAAN PENGGUNAAN KOKAIN DI MALAYSIA

ABSTRAK

Terletak berhampiran dengan segitiga emas, Malaysia berhadapan dengan isu-isu yang serius berkaitan penyalahgunaan dan penyeludupan bahan psikoaktif terlarang. Dadah seperti heroin dan methamphetamine yang berasal dari segitiga emas mempunyai sejarah yang lama di Malaysia, justeru terdapat data yang banyak mengenai penggunaannya. Manakala, konteks penggunaan kokain masih kurang diketahui di Asia Tenggara memandangkan aktiviti penyeludupan dan penggunaan kokain masih baru dan dadah ini tidak berasal dari kawasan segitiga emas. Disebabkan jurang ini, kajian ini bertujuan untuk memahami konteks penggunaan kokain di Malaysia. Kajian ini juga bertujuan mengenalpasti motif penggunaan kokain, isu kesihatan berkaitan kebergantungan dan kesan gejala tarikan, tahap ketulenan dan jaringan pengedaran. Enam belas pemberi maklumat yang melaporkan diri menggunakan kokain telah direkrut melalui pemberi maklumat utama dan ditemubual melalui platform maya sebaik sahaja persetujuan diperolehi. Bagi menjaga privasi, pemberi maklumat mempunyai pilihan untuk mematikan kamera semasa temubual, sementara mereka juga diberi jaminan maklumat yang diberikan adalah sulit. Majoriti adalah lelaki ($n=10/16$), dengan purata umur 31.75 tahun. Kesemua mereka adalah dari golongan profesional, dan sampel terdiri daripada kumpulan etnik campuran. Hasil dapatan kajian menunjukkan bahawa kokain, atau dikenali sebagai '*coke*', seringkali digunakan sebagai '*party drug*' lazimnya untuk kesan perangsangnya, untuk kekal berjaga dan untuk memfokus, serta membolehkan untuk minum lebih banyak alkohol dan bersosial untuk tempoh yang lama. Penggunaan kokain dengan alkohol dilaporkan dapat meningkatkan euforia. Semua pemberi maklumat mendakwa menggunakan

kokain di parti persendirian atau pub dalam kalangan kumpulan kecil kawan-kawan. Kokain secara fizikal dalam bentuk serbuk putih biasanya diletakkan di atas permukaan yang rata dan licin, dan disusun dalam satu garis lurus (bergantung pada ketebalan dan panjang) sebelum ia digunakan (disedut) melalui hidung secara tidak berkala antara selang tempoh tiga puluh minit hingga satu jam. Kokain dijual pada harga yang sangat tinggi bergantung pada ketulenannya (1 gram sekitar RM 700 – RM 1200) dan ia kebanyakannya diperolehi melalui rangkaian kenalan yang rapat. Berdasarkan maklumat dari responden, penggunaan kokain tidak menyebabkan pergantungan dan penarikan diri, mungkin kerana ia digunakan sekali sekala sahaja. Ringkasnya, kajian ini mendapati bahawa kokain popular digunakan sebagai ‘party drug’, terutamanya di parti persendirian di rumah atau di pub, dalam kalangan kumpulan kecil kawan-kawan. Kajian lanjut diperlukan untuk memahami konteks tersembunyi penggunaan kokain dalam populasi pengguna yang berbeza, laluan penyeludupan, dan isu kesihatan untuk membolehkan penggubal dasar membangunkan intervensi untuk membendung penyalahgunaannya di negara ini.

AN EXPLORATORY STUDY OF COCAINE USE IN MALAYSIA

ABSTRACT

Located near the infamous ‘Golden-Triangle’ region, Malaysia has experienced significant issues with the abuse and trafficking of illicit psychoactive substances. Drugs such as heroin and methamphetamine that come from the golden triangle have a long history in Malaysia, therefore there is a lot of data on their use. While the context of cocaine use is still poorly known in Southeast Asia since the smuggling and the use of cocaine is still new and this type of drug does not come from the golden triangle area. Hence, due to this gap, the aim of this study is to describe the context of cocaine use in Malaysia. While the study also determined cocaine using motives, health issues in terms of its dependence and withdrawal causing effects, its purity level and distribution cadre. Sixteen informants who self-reported to have used cocaine were recruited through key-informants and interviewed through a virtual platform once informed consent was elicited. To protect privacy, informants had the option to switch off their cameras during the interviews, while they were also assured of data confidentiality. Majority males ($n = 10/16$), with a mean age of 31.75 years. All were professionals, and the sample composed of a mixed ethnic group. Findings indicate that cocaine, colloquially known as ‘*coke*’, is occasionally used as a ‘party-drug’ by professionals, commonly for its stimulant effects, to remain alert and focus, as well as to allow one to ingest more alcohol in the hope of socializing for a prolong period. The irregular use of cocaine with alcohol is reported to enhance euphoria. All claimed using cocaine privately at home-based parties and pubs among a small circle of friends. Cocaine which appears physically in the form of a white dried powder is usually laid on a surfaced and arranged in lines (depending on the thickness and length)

before it is administered (snorted) through the nostril irregularly between an interval of thirty minutes to an hour. Cocaine is sold at exorbitant prices depending on its purity level (1 gram around RM 700-RM 1200) and it is predominantly obtained through a strongly knitted network of acquaintances. Based on informants, cocaine consumption did not appear to cause dependence and withdrawal, perhaps because it is being used occasionally. In summary, this preliminary study found that cocaine is popularly used as a ‘party-drug’, mainly at private home-based parties and pubs by the affluent who wish to socialize. Further studies are needed to understand the furtive context of cocaine use in different population of users, its trafficking route, and health issues to enable policymakers to develop interventions to contain its misuse in the country.

CHAPTER 1

INTRODUCTION

1.1 Introduction

In the first chapter of the thesis, a synopsis of the global and national drug abuse problem is given. This chapter also includes descriptions of the study's problem, research question and objectives, scope of the study, significance and limitation of the study.

1.2 Global Drug Abuse Problem

According to a United Nations Office on Drugs and Crime (UNODC) report, 284 million peoples globally are predicted to have used illicit substances at least once in 2020, while some 38.6 million people have suffered from drug use disorder (or substance use disorders – SUDs) in the same year, showing that their drug usage causes harm to the point where they will inevitably go through withdrawal and would need treatment for their SUDs (See Figure 1.1). There is a substantial increase in the approximate number of drug users between 2010-2020, with an increase of 26 percent, partly attributing to the global population growth and urbanization (UNODC, 2022b). UNODC also projected that by 2030, the global number of people who used drugs will rose to 299 million (UNODC, 2021b) .

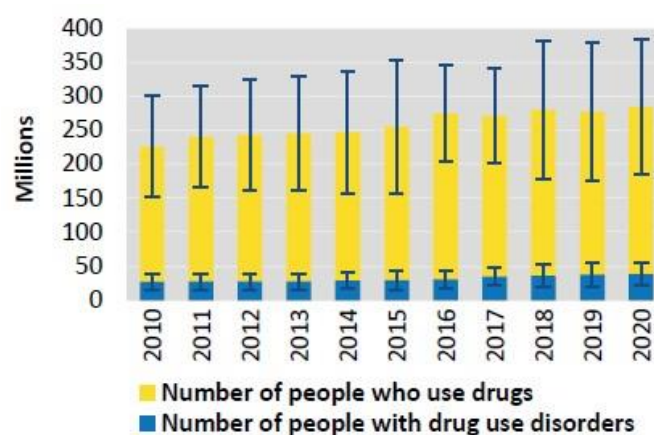


Figure 1.1 Global number of people who use drugs and people with drug use disorders from 2010 to 2020 (Source: UNODC, World Drug Report 2022 ; booklet 2 page 13)

1.2.1 Cannabis

According to UNODC, cannabis is the most commonly used drug in the world. In 2020, approximately 209 million people have tried cannabis at least once, an increase of nearly 23 percent over the past 10 years (UNODC, 2022b). The increased in cannabis use can be reflected to the global population growth and the legalization of cannabis use in few countries. A study on the impact of cannabis legalization in US, discovered that states that enact Medical Cannabis Laws typically saw a rise in adult cannabis use (Smart & Pacula, 2019).

Although cannabis is the most commonly used drug in the world, it has also been associated with high number of drug use disorder. Cannabis use disorder (CUD) is commonly characterised as the inability to give up cannabis use even when it is harming one's physical or mental health(Connor et al., 2021). The likelihood that cannabis use will lead to CUD increases with frequency of use. Study by Lopez-Quintero et al., (2011) suggests that the likelihood of a recreational cannabis user developing a dependency on the drug after any lifetime exposure was 8.9%. Prolonged

cannabis use is linked to serious drawbacks such as increased risk of psychotic disorder, cognitive impairment, increased joblessness, decrease life satisfaction and educational attainment, and poor mental health outcomes (Sherman & McRae-Clark, 2016).

Cannabis use among adolescents is a growing concern with far-reaching implications for public health and social well-being. The prevalence of cannabis use among adolescents is high. Report from UNODC estimated that 5.8 % of the global cannabis user are from the age 15-16 years old (UNODC, 2022b). The early initiation of cannabis use among adolescents can impact the brain developments. Lubman et al., (2015) identified two key processes (synaptic pruning and white matter developments) that could be negatively affected by cannabis use during adolescence, which has been linked to depression and schizophrenia.

1.2.2 Opioids

A class of drugs that known as opioids that includes opiate and their synthetic analogue that act on opioid receptors in human body to depress breathing, elevate pleasure, and block pain signal sent by the nervous system. Opiates, which include morphine, codeine, and thebaine, are naturally occurring alkaloids that can be found in opium poppies. Heroin, hydrocodone, oxycodone, and buprenorphine are some of their semi-synthetic derivatives. The opioid class also includes a range of manufactured or prescribed opioids, including fentanyl, tramadol, and methadone. Globally, 61.3 million people had used opioids in 2020, including the use of prescription opioids for purposes other than medicinal ones, of which half were opiate users (mainly heroin) (UNODC, 2022b).

The use of opioids continues to be a significant cause of morbidity and mortality worldwide. In 2020, according to UNODC report, opioids accounted for 64% of all drug-related deaths (UNODC, 2022b). In addition, the largest portion of the worldwide disease burden is attributed to opioid use, which is also associated with significant morbidity (such as non-fatal overdose, HIV or hepatitis C infection, and medical and psychiatric comorbidities). The opioid use problem is reported to be prevalent in North America, South-West Asia, Oceania, and South Asia (UNODC, 2022b).

North America, particularly the United States and Canada, has been disproportionately affected by the opioid crisis. Three classes of opioids have been implicated in the US opioid crisis, which has been referred to as a “triple wave epidemic”: heroin, prescription opioid pills, and synthetic opioids other than methadone (Ciccarone, 2019). Currently, synthetic opioids, which mostly consist of illegally produced fentanyl and an increasing variety of chemical fentanyl analogues, are the primary cause of the overdose pandemic (Ciccarone, 2021). The illicit drug supply incorporates fentanyl, which is more potent than heroin, and sells it as heroin powder or as fake opiates or benzodiazepines pills (Ciccarone, 2019).

Efforts to address the global opioid crisis include harm reduction strategies, such as the distribution of naloxone (a medication that can reverse opioid overdose), needle exchange programs, and the expansion of medication-assisted treatment (MAT) using drugs like methadone and buprenorphine. However, despite these efforts, the global prevalence of opioid use remains a significant challenge. Continued research, international collaboration, and comprehensive strategies that address the root causes

of opioid addiction are essential to mitigating the impact of this crisis on individuals, families, and communities worldwide.

1.2.3 Amphetamine-Type Stimulants

Amphetamine-Type Stimulants (ATS) are a group of substance that stimulate the central nervous system. The group includes amphetamine and methamphetamine, pharmaceutical products that used for non-medical purpose such methylphenidate, phentermine and ecstasy (MDMA). While ATS acts as stimulant on the central nervous system, ecstasy acts as both stimulant and a hallucinogen. The highest prevalence of use from this group are amphetamine (including methamphetamine) and ecstasy.

Report from UNODC estimated that 34 million people have used amphetamine (including methamphetamine) while 20 million people have used ecstasy globally in 2020 (UNODC, 2022b). The prevalence of ATS use varies across different regions of the world. According to the UNODC, the highest proportion of amphetamine use was in North America, followed by East and Southeast Asia (see Figure 1.2). East and Southeast Asia have historically been significant hub for ATS production and consumption. Initially, ATS especially methamphetamine being sold as pills (yaba), but increasingly it is being sold in crystal form (ice/syabu). In Europe, ATS use is prevalent in several countries, with particular focus on ecstasy (MDMA). The Netherlands and Belgium are known for the production and distribution of MDMA (UNODC, 2022b), often in the form of ecstasy pills consumed recreationally in nightclubs and parties.

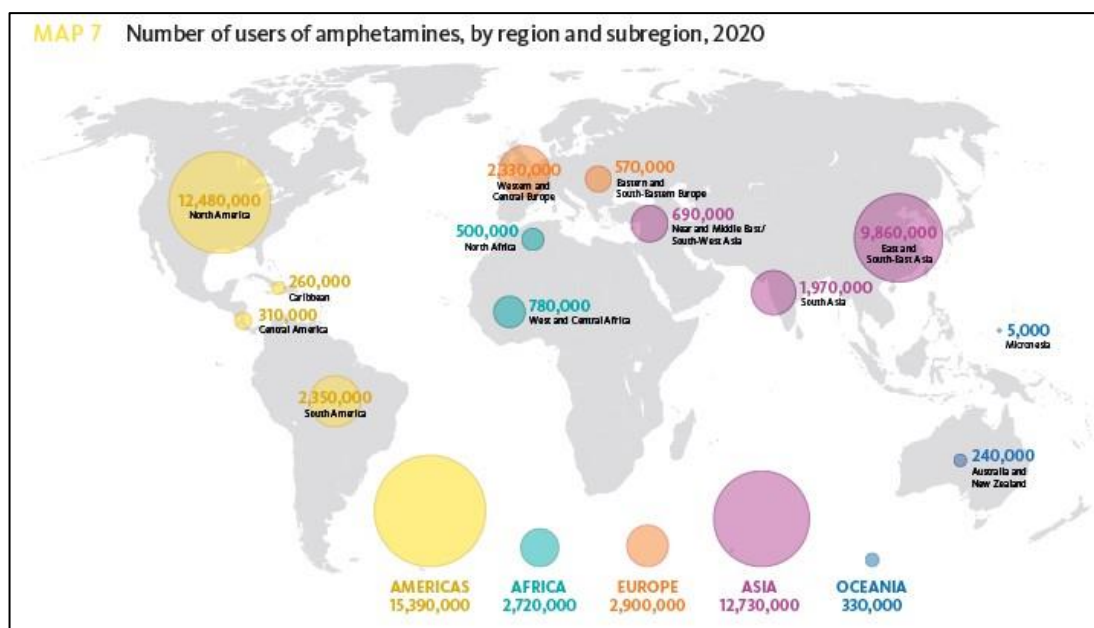


Figure 1.2 Number of users of amphetamines, by region and subregion in 2020.
(Source: UNODC, World Drug Report 2022; booklet 4 page 50)

The use of ATS poses significant harm to individuals and communities. Short-term effects of ATS use include increased heart rate, elevated blood pressure, and hyperthermia, which can lead to severe dehydration and heatstroke. ATS use can also cause agitation, paranoia, and aggressive behaviour, putting users at risk of accidents and violence. Long-term ATS use can lead to addiction, cognitive impairments, and mental health disorders such as anxiety, depression, and psychosis. Chronic use of ATS can result in cardiovascular problems, respiratory issues, and dental problems. Additionally, the use of ATS is associated with risky behaviour such as unprotected sex, which raises the ability of infecting HIV and other sexually transmitted diseases.

Despite the alarming prevalence and severe socio-medical consequences, there is still no effective pharmacotherapy have been recommended to treat ATS use disorder. Treatment providers rely mainly upon psychosocial intervention to reduce ATS use, and harm associated with ATS use (Tran et al., 2021). To develop more

effective treatment and prevention programmes, significant research funding is required.

1.2.4 Cocaine

Cocaine is among one of the most widely used stimulants in the world and is reported to be highly addictive. Stimulants has become a popular choice of drugs, where it is recreationally or commonly use to induce euphoria, increased confidence, alertness, sociability, hyperactivity, and reduce hunger (Docherty & Alsufyani, 2021; Farrell et al., 2019). UNODC estimated that 21.5 million people around the globe have had used cocaine at least once in 2020 (UNODC, 2022b). UNODC has estimated that the number of cocaine users have increased significantly since 2010. Despite the surged, UNODC found cocaine using trends changed and supply plummeted probably because of Covid-19 outbreak.

Cocaine is a psychoactive drug, and its alkaloid extracted from the leaves of two Coca species native to South America, *Erythroxylum coca* and *Erythroxylum novogranetense*. These tropical shrubs are commonly planted on highlands and used since time immemorial by the tribal people for its medicinal value. Coca cultivation is rampant in 3 Andean countries (Colombia, Peru, Bolivia) and poses profound challenges to economic, social, and environmental stability (Dávalos & Dávalos, 2020) . Initiative to curb coca cultivation and cocaine production and trafficking started in Colombia in the 80's followed by the announcement of Plan Colombia in 1999 (Mejia, 2015). The plan has successfully reduced and controlled the amount of land under cultivation from over 160,000 hectares in 2000 to 48,000 hectares in 2013 (UNODC, 2014). Nevertheless, UNODC reported that Colombia is among the largest

coca cultivator in the world where in 2020 which 143,000 hectares of its land had been used for coca cultivation (UNODC, 2022).

Cocaine has been trafficked from South America into different countries where demand for cocaine is reported to be prevalent. In addition, cocaine traffickers usually smuggle cocaine using different routes like through land, air, and sea. It is reported that transnational business is largely operated by organized crime groups (Arsovska & Allum, 2014; Chalk, 2000; Sampó & Troncoso, 2022). Their business activities include drugs and human trafficking, fraud, gambling, and money laundering (Woodiwiss, 2017). On the other hand, drug trafficking is organized through informal connections between people (friendship, family, ethnic group) rather than organized crime group who have a more fluid business apparatus. These clandestine connections form the basis for temporary criminal collaboration (Desroches, 2007; Kenney, 2007; Paoli & Reuter, 2008). Recent report from UNODC in The Series Cocaine Insight, highlighted that woman are now used and acted as drug mule for the global cocaine industry (UNODC, 2022a). As the cocaine market in the US is reported to have shrunk, despite the high demand, traffickers are now shifting their routes in the hope of expanding the cocaine market (UNODC, 2022b).

Globally, two most widely consumed product of cocaine are cocaine powder and ‘crack’ which comes in different forms; salts (cocaine hydrochloride), and base (freebase cocaine). Latest reports from UNODC highlights others variability of cocaine products mostly in South America region (UNODC, 2022b). These products are marketed with different street name such as ‘basuco’, ‘paco’, ‘merla’, ‘pasta base’, and ‘crack’ and varied from country to country (Romo-Avilés et al., 2015; Taylor, 2008; UNODC, 2021a). Moreover, cocaine that comes in a soluble form is preferred

to be injected by poly-drug users. Several studies have investigated on the use of ‘speedball’ and found cocaine is mixed with heroin to achieve greater levels of euphoria (Leri et al., 2003; Malow et al., 1992; Rhodes et al., 2007). In another study, Kudlacek et al., (2017) reported that cocaine is diluted (i.e., ‘cut’ as the term used on the streets) with several adulterants to increase the profit in the cocaine-related business. This report is supported by Duffau et al., (2020) study which analysed the purity of illicit street cocaine in Chile. Consequently, this substandard cocaine put users at danger because they are not fully aware of the additional risks they could experience.

1.2.5 Poly drug use

Drug use landscape has changed dramatically around the world with polydrug use becoming more popular among people who used drugs (PWUDs). Poly-drug use is defined as the use of multiple substances, including both legal and illegal drugs, concurrently and sequentially. It is associated with substance use disorder (Evans et al., 2017; Kachadourian et al., 2014), may potentially raise the possibility of a drug overdose (Kandel et al., 2017; E. D. Riley et al., 2016) and poses major challenges to treatment providers in developing effective treatment programs (Brands et al., 2008; Wang et al., 2017). Furthermore, the prevalence of poly-drug use among adolescents has become a significant concern since it can have serious consequences for their physical and mental health. A study in Spain found that the most critical time or age for starting poly-drug use are 14 and 15 years onwards (Font-Mayolas et al., 2013).

1.2.6 Women drug use

While the majority of PWUDs are men, women are also susceptible to use drugs as their male peers. According to UNODC, more than 40% of women use amphetamines, and engage in non-medical use of pharmaceutical substances such as stimulants, opioids, sedatives, and tranquillizers (UNODC, 2022b). Whether they inject drugs or not, women who use drugs face a myriad of challenges that augments their vulnerability to HIV. These challenges include engaging in sex work, contracting Sexually Transmitted Infections (STIs), viral hepatitis, developing mental health issues, reproductive health issues, childcare, stigma, violence, and have trouble accessing healthcare services (Azim et al., 2015). Furthermore, UNODC reported that women who use drugs are underrepresented in most drug treatment programs around the globe (UNODC, 2022b).

1.2.7 Drug overdose

Drug overdose is a critical public health crisis that continues to claim the lives of thousands of PWUD worldwide. UNODC reported that the majority of drug-related deaths worldwide are caused by drug overdose (UNODC, 2022b). An estimated 494,000 drug-related deaths attributable to drug overdose have occurred worldwide in 2019 (UNODC, 2022b). Despite the fact that drug overdose deaths garner a lot of media attention, non-fatal overdoses can have serious implications as well, such as cardiac and muscle issues, cognitive decline, renal failure, hearing loss, and injuries incurred during the overdose (Darke et al., 2007). Over the past decade, drug overdose cases have significantly increased in a number of nations across the world.

The most common substances associated with drug overdose are cocaine, opioid, ATS, alcohol and benzodiazepines (Hickman et al., 2007). According to the World Drug Report, opioids were the leading substance that cause of death in fatal overdose (UNODC, 2022b). Although heroin is the most common type of opioids been abused worldwide, the availability of prescription opioids and synthetic opioids which is more potent such as fentanyl have contributed to the increase in death-related opioid overdose (Nolan et al., 2018). In addition, polydrug use, or the concurrent use of multiple substances, is another factor linked to drug overdose. Coffin et al., (2003) reported that the likelihood of an overdose increases when opioids are used with other drugs, especially alcohol and benzodiazepines.

PWID are more vulnerable to drug overdose than PWUD through other routes of administration use to its rapid intoxication (Kaye & Darke, 2004). When a drug is injected, it enters the bloodstream right away, speeding up its delivery to the brain. Although heroin is the most common drugs been injected among PWID, mixing it with stimulants like cocaine and methamphetamine could elevate the risk for drug overdose. Previous research found that toxicity from multiple substances is common in drug overdose among PWID (Di Rico et al., 2018). Globally, 11.2 million peoples are estimated to inject drugs in 2020 (UNODC, 2022b).

1.3 Malaysia Drug Abuse Problem

Malaysia is a multi-ethnic country in Southeast Asia, with majority of its ethnic composition comprising of Malays, followed by Chinese and Indians. Malaysia is ranked as a developing country and has good infrastructure to support its economic expansion efforts. However, Malaysia could not escape from the long-standing drug abuse problem as it is located close to the “Golden-Triangle” region, where drugs are

illegally manufactured and trafficked into Southeast Asian regions. Historically, Malaysia first begun to experience problems with illicit drug use even before the opium war, where the opium use was reported to be common among the Chinese migrant workers who were brought from mainland China to work in the agricultural sector prior independence in Malaya. The concurrent emergence of the hippy culture and post-Vietnam war in the 1970's has further compounded the drug abuse landscape, subsequently causing the government to declare drugs as the country's number one enemy due to security reasons (Kamarudin, 2007).

In 2022, about 137,176 people have been detected to have used illicit drugs in Malaysia, an increase (11.4 %) was recorded in the prevalence of drug use compared to the previous year (National Anti-Drug Agency (NADA), 2022). These numbers represented the total number of people arrested under section ¹15(1) of the Dangerous Drug Act of 1952 by the Royal Malaysia Police (PDRM), as well as people undergoing mandatory rehabilitation under section ²6(1) Drug Dependents Act (Treatment and Rehabilitation) of 1983 by the National Anti-Drug Agency (AADK), patient receiving treatment in facilities under Ministry of Health (MOH) and patient receiving treatment and rehabilitation in a private rehabilitation centre. In fact, the actual number of PWUDs in the country could be larger than the reported government figure.

Johor and Kelantan have the highest number of PWUDs compared to the other states, while most PWUDs were predominantly males (National Anti-Drug Agency (NADA), 2022). Being the major population in the country, Malays recorded the highest percentage of PWUDs with 79.2 percent, followed by Chinese at 7.0 percent, Indian at 5.9 percent, and ethnic from Sabah and Sarawak, 4.8 and 2.3 percent

¹ Self-administration

² A person who undergone a test and certified by medical officer to be a drug dependent.

respectively (National Anti-Drug Agency (NADA), 2022). The biggest concern is that the majority of PWUDs are in their adolescent and young adult group. It has been recorded that 64.3 % of PWUDs in Malaysia comprised of younger age people (National Anti-Drug Agency (NADA), 2022).

Over the last decade, the drug using trend in Malaysia has shifted, where people are beginning to substitute traditional drugs such as heroin and cannabis with synthetic drugs like amphetamine-type stimulants (ATS) and ketamine. ATS including crystal methamphetamine (ice, syabu), tablet methamphetamine (pil kuda, yaba), and ecstasy, are among the widely used drugs in Malaysia at present. In 2022, it is estimated that 93,609 people have used ATS, 37,742 used opiates, and 3,858 used cannabis (see Table 1.1) (National Anti-Drug Agency (NADA), 2022). The growing numbers of ATS users in the country alerts all parties to take appropriate measures to curb ATS use since its use is associated with social, economic and health issues. Findings from a local study by Hatim (2008) found that heavy methamphetamine use was associated with psychosis. While Singh et al., (2021) found that there is a tendency for ATS users to participate in criminal behaviours, ultimately leading to their engagement in criminal activities in the country.

Table 1.1 Prevalence of drug user and substance in Malaysia from 2020-2022
(Source: NADA, Drug Information Book 2022)

Type of drugs/year	2020	2021	2022
ATS	83,698	79,816	93,609
Opiate	39,599	39,100	37,742
Cannabis	3,396	3,179	3,858
Psychotropic pills	569	347	812
others	1,063	697	1,155
Total	128,325	123,139	137,176

Table 1.2 Drug seizures in Malaysia from 2018-2022 (Source: NADA, Drug Information Book 2020)

Drugs & Substance	Unit	2018	2019	2020	2021	2022
Cannabis						
Herbs	kg	1,894.76	649.58	5,734.37	3,728.28	8,120.89
Plants	tree	11	87	59	64	185
Opiate						
Heroin	kg	731.49	708.26	930.0	2,166.49	717.78
Opium	kg	0.2	0.39	NA	0.08	1.38
Codeine	litre	37,263.85	8,723.07	4,187.75	6,451.86	4,187.75
Cocaine						
Powder	kg	12.05	15,247.12	11.34	5.84	20.07
Crack	kg	NA	NA	NA	NA	NA
ATS						
Methamphetamine (crystal)		6,851.79	5,302.38	7,644.47	9,682.07	8,298.41
Methamphetamine (tablet)	pill	NA	NA	NA	NA	NA
	kg	226.12	198.75	207.42	357.45	383.63
Methamphetamine (liquid)	litre	269.89	308.4	864.95	188.52	49.59
Ecstasy	pill	NA	NA	NA	NA	NA
	kg	381.33	706.91	1,990.44	1,058.65	1,990.44

The 2022 Drugs Information Book released by NADA show drug seizures have increased exponentially compared to the previous years. This indicates that despite the Covid-19 pandemic in the country, the demand for drugs is still high in the country. Seizures for cannabis and ecstasy have increase significantly in 2022 compared to the year before (see table 1.2) (National Anti-Drug Agency (NADA), 2022). In recent years, Malaysia has seen a surge in the seizure of cocaine. The biggest cocaine seizure was in 2019, whereas 12 tonnes of cocaine were found mixed with coal in three containers in Penang port (Trisha N, 2019).The authorities believed that drug trafficking syndicate are using Malaysia as a transit hub for drug distribution to other parts of the world. However, there was also some suspicion that some of these drugs that were believed to be transit shipment also made it way to local distribution networks for local consumption of cocaine in the country. At present, there is no study or data on the prevalence of cocaine use in the country.

1.4 Problem Statement

Cocaine is a naturally occurring stimulant drug which is extracted from coca leaves, and the indigenous medicinal plant can be widely grown in many South American countries. Chewing and consuming coca leaves has been a traditional way of life for people in South America for thousands of years for its stimulant effects. UNODC estimated that 21.5 million people have used cocaine globally in 2020 (UNODC, 2022b). Despite the large population of cocaine users, information on cocaine seizures suggests that cocaine trafficking routes are geographically expanding into newer markets. While data on cocaine use appears sparse, authorities in Malaysia have seized certain amounts of cocaine in transit in the country between 2016-2020 (National Anti-Drugs Agency, 2020). This clearly indicates that though the shipment

was alleged to be in transit, there is no solid information to show that cocaine was being used in the country. Even NADA officials have not detected people using or abusing cocaine in the local context. Given this scenario, it can be implied that cocaine usage trend is still hidden or undetected, except for its seizures.

However, a recent preliminary study in Kuala Lumpur that used wastewater to detect drugs found cocaine among the other drugs detected (Du et al., 2020). Wastewater analysis is strong evidence to show that cocaine is being used in the country, however, these findings while indicate there is cocaine use in the country it does not provide information on the context of its use and the type of people who are using cocaine in the country. Hence, the important to conduct this study. Based on initial personal communications held with key-informers with drug use history, it is mentioned that there are people who are using cocaine in this country, but it is concentrated among the elites and partygoers at exclusive clubs. Furthermore, the routine drug screening procedure applied by the police does not test for cocaine use, since cocaine is not known to be widely used like cannabis, opiate, ketamine, benzodiazepines and ATS (methamphetamine, amphetamine and MDMA). Due to these factors, cocaine users remain hidden in the community. Though cocaine is alleged to be used in Malaysia, to date no studies have investigated its use among the locals in the country.

Given this research gap, the overarching aim of this study was to explore the context of cocaine use in Malaysia. Moreover, the study will also describe cocaine using motives, its health issues in terms of dependence and withdrawal, and purity. It is hoped that results of this study will provide an understanding of cocaine use locally and allow for the development of health interventions for people who use cocaine.

1.5 Research Questions

Four research questions have been developed based on the problem statement:

- 1) What is the context of cocaine use in Malaysia?
- 2) What is the price, and purity of cocaine in Malaysia?
- 3) What are the sociodemographic characteristics of cocaine users in Malaysia?
- 4) What health problems cocaine users face in Malaysia?

1.6 Research Objectives

The study objectives are mainly constructed based on the research question.

The following are the study objectives:

- 1) To understand the context of cocaine use in Malaysia.
- 2) To determine the price, and purity of cocaine in Malaysia.
- 3) To determine the sociodemographic characteristics of cocaine users in Malaysia
- 4) To identify health issues experienced by cocaine users in Malaysia.

1.7 Scope of Study

The study focused on cocaine use in the country. To my knowledge, this is also the first study on cocaine use in the country and the clandestine nature of cocaine use made it difficult to recruit cocaine users easily as many of the were not comfortable to be interviewed. As most of the interviews were conducted online, the study was not

confined to a particular geographic area in the country but participants throughout the country were eligible to take part in the study.

Since this was the first of cocaine use, the study was exploratory only and attempted to only understand the type of users and context of its use in the country.

1.8 Significance of Study

As mentioned above this is the first study and it provides a foundational understanding of cocaine use patterns, social and demographic influences, and potential health impacts specific to the local context. By generating baseline data, it establishes a critical reference point for future research and policy development tailored to address substance abuse within the country. Additionally, the study's findings can help inform public health strategies, awareness campaigns, and intervention programs, providing a culturally relevant framework for preventing and managing cocaine misuse.

Effective intervention strategies like developing surveillance tools to better monitor cocaine use in the country. It appears that the current surveillance measures used to monitor drug trends in the country are unable to detect cocaine use. This study shows that there are cocaine users in the country but due to how it has been used in exclusive settings, it may not be easily detected. Urine screening used by enforcement agencies are also unable to detect cocaine because the urine test kits do not test for cocaine.

Primary and secondary prevention strategies also need to be developed and adapted to local the local environment. Implementing evidence-based prevention

strategies will allow Malaysia to be prepared and ready to ensure that cocaine use does not become problematic in the country.

It appears that cocaine use is a relatively a new drug use phenomena in the country. While cocaine users reported to have not much health problems, we know from the literature that long-term cocaine use will result in poor health. There are existing treatment protocols that have been developed and we need to adapt and validate these protocols for local use.

1.9 Conclusion

The study problem statement, research questions, study objectives, study significance, and scope of study have been clearly delineated in this chapter. The following chapter is the literature chapter. All the relevant articles deemed appropriate to the scope of the study have been described in the following chapter of this thesis.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This is the literature review chapter of the theses. In this chapter, all relevant articles deemed appropriate to the scope of study have been identified and discussed.

2.2 History of Cocaine Use

Cocaine is a powerful addictive stimulant drug and has been used as recreational drugs. Despite its recreational use, several studies have shown that cocaine is also use for medical purpose in the past (Grinspoon & Bakalar, 1981; Martin, 1970), however, its use has been restricted due to the possibility of toxicity (Benowitz, 1993). Cocaine was first isolated by Albert Niemann in 1860 (Grzybowski, 2007). The plant is endogenous to South America, Mexico, Indonesia, and the West Indies (R. A. Goldstein et al., 2009) . The two cultivated species of commercial coca are known as *Erythroxylum coca* Lam. and *Erythroxylum novogranatense* (Morris) Hieron., (Plowman, 1982) .

Historically, cocaine is used with its derived source, coca plant. This is evident when history illustrate marks of coca leaves on the cheeks of Peruvian mummies (R. A. Goldstein et al., 2009). Moreover, the archaeological artifacts show that coca had been used since prehistoric times. The most well-known and extensively studied of these objects are the *coqueros*, the sculptures of coca chewers (Stolberg, 2011). People of ancient civilization especially the Inca used the plant for religious and social activity. They believe that the plant is sacred and after chewing it, it gave sacred powers which made it possible to the chewers to see in the future, learn about the past, communicate with the gods, and feels great both physically and spiritually without

experiencing hunger and thirst (Naranjo, 1981). Due to its sacrosanct status, coca leaf was only available to Inca society's upper class (Martin, 1970; Rogers, 1963) and were granted as reward for a modest achievement (Brundage, 1963; Martin, 1970). Coca plant has been declared by Inca priest as divine and named the first Inca Queen "Mama Cuca" (Gay, Inaba, Sheppard, Newmeyer, Rappolt, et al., 1975).

During the Spanish conquest of South America in the 16th century, cocaine use expanded markedly. Initially, the Spanish tried to ignore the magical power of the coca leaf and attempt to ban the use of cocaine in indigenous tribes but were unsuccessful. However, they started to exploit the coca leaf for their own purposes after they discover about its benefits. The Spaniard made it legal; the crop's worth was increased by 10% tax (R. A. Goldstein et al., 2009). In addition, due to its potential to increase individual's ability to carry out daily activities, including reducing physical exhaustion and quenching hunger and thirst, it has been used widely by manual labourers in mining industry. The practice of paying farm workers with coca leaves as a portion of their daily salary spread shortly after the conquest.

The medical communities in Europe and United States had begun to use coca by the nineteenth century. In 1859, one of Dr. Paolo Mantegazza's articles proposed that coca could improve mood, relieved tiredness, and encourage sexual activity (Grinspoon & Bakalar, 1981). It was in 1860, cocaine was first isolated by German chemist, Albert Niemann. In 1863, a chemist name Angelo Mariani launched Vin Mariani, the first coca wine. Mariani brought coca leaves to his home in Corsica, and made an extract to add to wine, which he claimed could relieve weariness and promote well-being (Stolberg, 2011).

Sigmund Freud, the father of psychoanalysis, started experimenting with cocaine in the early 1880s. In his outstanding medical analysis of cocaine, he describes cocaine's physiological effects and potential therapeutic value (Markel, 2011). It was Freud's colleague, Carl Koller that make use of the anaesthetic effects of cocaine. In 1884, cocaine was used as an analgesic agent (R. A. Goldstein et al., 2009). It was widely used for its analgesic properties to nerve block anaesthesia, epidural, and spinal anaesthesia. Physician prescribed cocaine quite indiscriminately and excessively for many ailments, including dependence on alcohol and opiates (Ashley, 1975).

In the US, up until 1916, cocaine could be purchased over the counter. It was marketed in multiple forms including cigarettes, cheroots, coca cordial, inhalants, cocaine crystals etc.(Das, 1993). In the mid-1980, cocaine started to be readily available in form of freebase cocaine or 'crack'. The popping noise it produces when smoked gave rise to the term 'crack'. Economic factors were commonly cited as the cause of the spike in cocaine consumption that took place in America during that period; 'crack' was reportedly cheaper than powder cocaine (Karch, 1999).

2.3 Pharmacology of Cocaine

The primary alkaloid presents in cultivated coca plant variants, cocaine has received the attention from researchers and writers in the literature. Numerous studies have been carried out to determine the pharmacological effects of cocaine use, particularly for its analgesic use. Chemically, cocaine is benzoylecgonine ($C_{17}H_{21}NO_4$). Its chemical structure is shown in Figure 2.1. This benzoylecgonine when treated with hydrochloric acid, becomes cocaine hydrochloride salt. Cocaine hydrochloride is a pharmaceutical form used as local anaesthetic (Carrera et al., 2004). On the other hand, freebase cocaine or 'crack' is

generally prepared from its hydrochloride salt by dissolving it in alkaline solution and followed by precipitation. On average, whole coca leaf contains 0.6% cocaine in its dried forms (Turner et al., 1979). Although this plant contains eighteen other alkaloids, its physiological effects are pale in comparison to those of cocaine (Novák et al., 1984). Cocaine is a tropane alkaloid that inhibits the serotonin, norepinephrine, and dopamine reuptake processes in the brain (Heal et al., 2014). Chronic cocaine use can cause a plethora of health issues and affect organs such as psychological, neurological, renal, cardiac, pulmonary, gastrointestinal, obstetrical, and otolaryngological (Boghdadi & Henning, 1997).

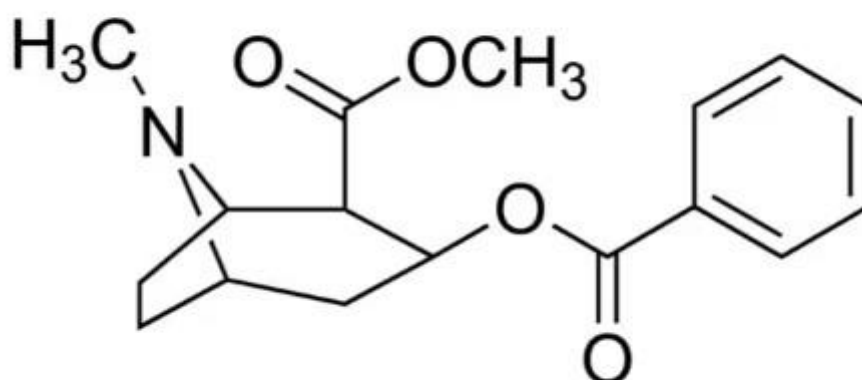


Figure 2.1. Benzoylmethylecognine (cocaine) molecular structure

Cocaine has complicated effects on the peripheral sympathetic nervous system, nerve conduction and the central nervous systems. It has both local anaesthetic and sympathomimetic effects. The presynaptic sympathetic nerve terminals are blocked in order to produce the sympathomimetic effects of cocaine. Cocaine causes catecholamines to build up in synaptic clefts by blocking reuptake, which significantly

increases cell receptor activation (Benowitz, 1993). Moreover, the second major action of cocaine is its local anaesthetic effect. The anaesthetic effect is achieved by competitively blocking fast sodium channels in the neuronal cells (Boghdadi & Henning, 1997).

Many of the effects of cocaine require a fully functional dopamine system in the brain. Studies performed by de Wit & Wise, (1977) support the theory that the pleasurable effects of cocaine are attributed to the dopaminergic system. For example, an animal will cease to self-administer cocaine if 6-hydroxydopamine is supplied in a way that chemically eliminates dopamine neurons (Roberts et al., 1977). Similarly, cocaine-induced hyperkinesia and stereotypic behaviours can be prevented if animals are pretreated with reserpine, which depletes the supply of dopamine and norepinephrine (Sayers & Handley, 1973). Furthermore, de Wit & Wise, (1977) demonstrated that the pleasurable effects of cocaine are diminished by selective blockade of dopamine receptors using pimozide, a dopamine position-2 receptor antagonist, but not by selective blockade of norepinephrine receptors. Cocaine blocks the reuptake of dopamine and facilitates its release. This action acutely increases synaptic dopamine concentrations, leading to increased dopamine neurotransmission that results in positive reinforcement (Dackis & Gold, 1985). The cocaine euphoria is thought to be caused by an abrupt rise in dopamine levels at synapses and dopamine transmission to the limbic regions of the brain.

Cocaine is primarily used by smoking and sniffing, but it can also be injected intravenously. Cocaine comes in two forms: base and crystalline salt (cocaine hydrochloride). Cocaine hydrochloride decomposes before it volatilizes when heated, while cocaine base is the form that is smoked because it is volatile and vaporizes when heated. Previous research has established that when cocaine is smoked, the resulting